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Evaluation of 316(b) Demonstration
Detroit Edison's Monroe Power Plant

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Great Lakes Area Office
Office of Ecological Services
U.S. Fish and Wildlife Service

Final report for the Period
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by
Carole D. Goodyear

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Summary of EVALUATION OF 316(b) DEMONSTRATION--DETROIT EDISON'S MONROE POWER PLANT

1. In response to a request from the U.S. Fish and Wildlife Service's East Lansing Field Office/Office of Ecological Services (ELFO), the Great Lakes Fishery Laboratory undertook an evaluation of Detroit Edison's 316(b) demonstration for its coal-fired power plant at Monroe, Michigan. The evaluation was to serve (1) as a detailed critique of the Monroe plant 316(b) demonstration, for use by the field staff and other agencies responsible for reviewing that document, and (2) by way of example, as a guide to assist the field staff in their review of 316(b) demonstrations for other Great Lakes region power plants.

2. The 316(b) report states that an estimated 861,000 fish of various species, including 122,000 yellow perch, were impinged on the intake screens of the Monroe plant from June 1975 through May 1976 when the plant was operating at 57% of maximum capacity. These estimates differ substantially from those in the present report, which are based on Detroit Edison data for the same period of time and show a potential impingement of 4.7 million fish, including 626,000 yellow perch.

The higher estimates given in the present report result mainly from two sources. First, on most days when impingement data were collected, fish were counted from only a maximum of half of the plant's 16 intake screens. These count data were not expanded correctly to yield an impingement estimate for the whole plant that represented the number of fish impinged on the other screens from which no count data were collected. Secondly, the 316(b) did not consider as impinged any fish removed from the plant intake by the "fish collectors" (a prototype system for pumping live fish from the screenwells) installed in front of two of the plant's intake screens. In the present report, the fish removed by the collectors were considered to be impinged, because the 316(b) did not present evidence that these fish were returned unharmed to Lake Erie.

3. The 316(b) estimates that 21.4 million fish larvae (including about 5 million yellow perch larvae) and 13.1 million fish eggs were entrained at the

Monroe plant during mid-May 1975 through mid-May 1976. Using Detroit Edison's data, the present report estimates that 20.7 million fish larvae and 27.5 million fish eggs were entrained during that same period. The discrepancy between the two annual fish egg entrainment estimates is apparently due to an error in the 316(b) whereby mean egg density in the cooling water passing through the Monroe plant was calculated by dividing the number of eggs found in samples from stations in the plant intake canal by the combined volume of water passing through the sampling pumps at stations in the intake canal and at stations in the plant discharge canal.

Although the present report verifies the procedures used to calculate the entrainment estimates presented in 316(b) for fish larvae and provides a corrected estimate for egg entrainment at the Monroe plant, the entrainment of eggs and larvae may even have been substantially higher than indicated. This possibility arises because the samples used for estimating the numbers of larvae and eggs entrained were collected only at 1-m and 3-m depths in the 5-7 m deep intake canal and because information not presented in 316(b) indicates most entrainable eggs and larvae would have been more abundant near the bottom of the Monroe plant intake canal than near the surface.

4. The 316(b) presents no estimates of the numbers or biomass of macrozoobenthos or zooplankton entrained annually at the Monroe plant. The present report estimates, on the basis of Detroit Edison data, that 55.6 million macrozoobenthic organisms, most of which (77% by number) were chironomids, were entrained during May 1975 through April 1976. This estimate of the numbers of macrozoobenthos entrained at the Monroe plant may be low because these organisms would normally be found at highest densities on or near the bottom, and because the Detroit Edison samples on which this estimate is based were collected at depths of 1 m and 3 m in the 5-7 m deep intake canal.

An estimate of zooplankton entrainment was developed using cooling water flow data from the 316(b) and published information on the density of zooplankton at the plant intake. According to this estimate about

159,000 kg (175 tons) of zooplankton were probably entrained during 1975-76. The most abundant zooplankton entrained were probably rotifers (77% of the total by number) and cladocerans (74% of the total by weight).

5. The 316(b) presents several estimates of the impact of impingement and entrainment losses of fish at the Monroe plant on the source populations in western Lake Erie. Impingement impact was assessed on the basis of the simple ratio of the number of fish impinged of a given species to the number of individuals of that species in the source population; a similar assessment was presented for the impact of entrainment of larval fish on the source population of larvae. The impact of larval entrainment was also evaluated by projecting the loss of entrained larvae to an equivalent loss of adults. The impact of fish egg entrainment was evaluated by considering the estimated number of entrained eggs as the equivalent number of adult females required to produce the eggs. The adequacy of these 316(b) impact assessments is subject to the concerns expressed above regarding the accuracy of the 316(b) estimates of the numbers of fish and fish eggs entrained and impinged and to other concerns detailed in the main body of the present report.

No estimate of the impact of macrozoobenthos or zooplankton entrainment at the Monroe plant is given in the 316(b) report. The available information suggests that large numbers of organisms that are food for fishes are entrained and that zooplankton may have a high mortality because most are entrained when condenser discharge temperatures have risen to the acutely lethal level.

6. The 316(b) contains no discussion of the impact of the plant on the Raisin River even though the entire flow of the river is diverted through the Monroe plant for cooling water during most of the year. Although resident fish populations in the upper river would probably be little affected by the plant, those fish populations that required access to both the upper river and to Lake Erie would be denied this access by the Monroe plant.

7. The impact of the combined entrainment and impingement losses of yellow perch at the Monroe plant was estimated by means of a model

formulated for the U.S. Environmental Protection Agency by R. L. Patterson. This model projects the annual loss in potential yield of yellow perch to commercial and sport fisheries of western Lake Erie due to impingement and entrainment losses of that species at the Monroe plant. On the basis of the estimated impingement and entrainment losses of yellow perch given in the present report (approximately 626,000 and 5 million fish, respectively) and the assumption of 70% mortality of entrained larvae (as in Patterson's model), the annual loss in potential yield of yellow perch to the fisheries is about 265,000 pounds; if it is assumed, as in the 316(b), that the mortality of entrained larvae is 100%, the loss is approximately 267,000 pounds.

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I. INTRODUCTION

A. Background

The Federal Water Pollution Control Act Amendments of 1972, PL 92-500, require utilities in the Great Lakes region, as elsewhere in the United States, to conduct 316(b) studies demonstrating that their cooling water intake structures reflect the best available technology for minimizing adverse environmental impacts. Most of these adverse impacts result from the entrainment of small aquatic organisms, such as invertebrates and larval fish, and the impingement of larger organisms, usually adult fish. The objectives of the 316(b) intake study are (1) to accurately quantify entrainment and impingement losses at a power plant and (2) to predict the associated impacts of these losses on source populations in the water body from which that plant draws cooling water. If the responsible state or federal agency, by reviewing a particular 316(b) demonstration study and associated data, finds that entrainment and impingement losses are adversely affecting the source populations, that agency could require that the utility provide "better technology" to minimize these impacts.

In response to a request from the U.S. Fish and Wildlife Service's East Lansing Field Office/Office of Ecological Services (ELFO, East Lansing, Michigan), the Great Lakes Fishery Laboratory (GLFL) undertook an evaluation of Detroit Edison's recently completed 316(b) demonstration (Detroit Edison 1976a) for its coal-fired power plant at Monroe, Michigan. The evaluation was to serve (1) as a detailed critique of the Monroe plant 316(b) demonstration, for use by the field staff and other agencies responsible for reviewing that document, and (2) by way of example, as a guide to assist the field staff in their review of 316(b) demonstrations for other Great Lakes region power plants.

The work agreement between ELFO and GLFL (Appendix A) became effective on April 1, 1977, and an evaluation of Detroit Edison's 316(b) demonstration was initiated on April 4, 1977. An interim progress report was submitted to USFWS Regional Office, Twin Cities, Minnesota, and to the East Lansing Field Office on June 2, 1977, as required in the work agreement; a draft copy of the present report was submitted to the Twin Cities and East Lansing offices for review on February 27, 1978.

B. Procedures and Materials Used in the Evaluation

This evaluation, conducted according to the specifications of the work agreement (Appendix A), involved consideration of the following major elements of Detroit Edison's 316(b) demonstration: (1) the kinds of sampling gear and the manner in which that gear was employed to collect samples from which impingement and entrainment losses of aquatic organisms at the plant could be estimated, (2) the manner in which the impingement and entrainment samples and data were processed and analyzed to provide estimates of entrainment and impingement losses at the Monroe plant, and (3) the manner in which the estimates of impingement and entrainment losses and the other available information were used to arrive at an estimate of the impact of plant operation on the source populations of various aquatic organisms in western Lake Erie and the Raisin River, which serve as cooling water sources for the Monroe plant.

This evaluation required examining many of the original data bases summarized by Detroit Edison in their 316(b) demonstration. Included among these data bases are the following:

- Daily Impingement Data Sheets--Copies of the records listing the total numbers of each species impinged at the Monroe plant from June 1975 through May 1976 were furnished by Detroit Edison.
- Impingement Tally Sheets--Copies of the sheets upon which the numbers of fish collected from the test screenwells were recorded were obtained from Detroit Edison for 20 of the 164 test days. The totals from these tally sheets were transferred by Detroit Edison to the daily impingement data sheets.
- Length Data Sheets--Copies of the records of length measurements of fish from the test screenwells were furnished by Detroit Edison.
- Monthly Impingement Summary Sheets--Copies of Detroit Edison records summarizing the number of each species counted each month from the intake screens and the number of sampling days each month for 1972-76 were furnished to us by the Michigan Department of Natural Resources (MDNR).
- Daily Entrainment Data Sheets--A set of entrainment data collected at the Monroe plant from mid-April 1975 through mid-May 1976 was furnished to us by MDNR, which in turn obtained it from Detroit Edison.

A complete set of the above data bases is on file at GLFL.

As specified in the work agreement, this evaluation also presents an "alternative" evaluation of the impact on the source populations of western Lake Erie and the Raisin River of cooling water use at the Monroe plant. This alternative evaluation, designed to update and otherwise supplement the impact evaluation presented in the 316(b), was based, in part, on materials and data from the 316(b) demonstration, but also included other available information that seemed appropriate for a state-of-the-art impact evaluation.

C. Description of the Once-Through Cooling System at the Monroe Plant

This section, describing the general engineering and operating characteristics and site specific features of the Monroe plant cooling system, is presented to facilitate discussion of impingement and entrainment at the Monroe plant and to provide a general orientation for the reader who may not have a copy of the Monroe plant 316(b) demonstration (Detroit Edison 1976a) available for ready reference.

The Detroit Edison Company plant at Monroe, Michigan, has four generating units with a total rated capacity of 3,150 MW and is the largest generating facility on western Lake Erie. The plant has a once-through cooling system that draws water from the Raisin River via an intake canal at a point about 650 m upstream from the river mouth (Fig. 1). When the plant is operating at full capacity, the cooling water requirement is 3,248 cfs, which is considerably greater than the average flow of the Raisin River (698 cfs; USGS 1977). Throughout most of the year the entire flow of the Raisin River is diverted through the Monroe plant's cooling system, and the additional cooling water demand is met with water from Lake Erie, which is drawn "upstream" to the plant's intake canal through the Raisin River's lower channel. When the Raisin River is at peak flow (usually in February or March; USGS 1976, 1977) or when the plant is operating at sharply reduced capacity, the cooling water requirements of the plant may be met entirely with Raisin River water; at these times, surplus river water flows into Lake Erie via the river's lower channel.

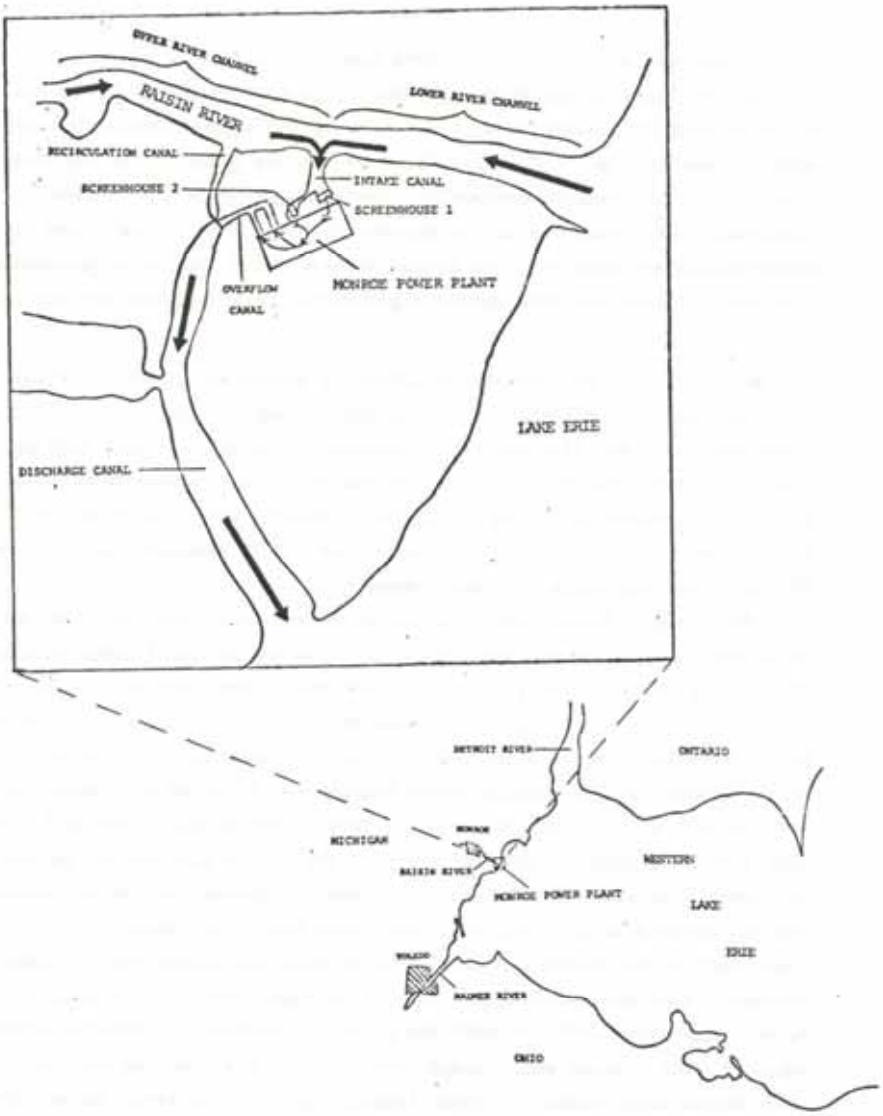


Figure 1. Location of Monroe Power Plant with respect to Lake Erie and the Raisin River (not to scale).

The intake canal branches and directs the cooling water flow into two screenhouses located immediately adjacent to the plant. In the screenhouses, the cooling water passes first through trash racks (fixed vertical metal bars 3 in. apart) and then through 3/8-in. mesh vertical traveling screens. Circulating pumps then force the water through the plant's heat exchangers, and the temperature of the cooling water rises about 22°F. The heated water passes out of the plant into the overflow canal and then into the discharge canal that empties into Lake Erie at a point about 2.5 km SSW of the mouth of the Raisin River. The prevailing lake currents at the plant site, which move along the shoreline from the mouth of the discharge canal towards the mouth of the Raisin River, may cause some recycling of the cooling water.

Organisms drawn into the plant's intake canal with the cooling water will be prevented from entering the plant if they are unable to pass through the 3-in. spacings between the bars of the trash rack. Those organisms that pass through the trash racks but are unable to pass through the 3/8-in. traveling screens will be impinged on these screens and killed. Detroit Edison is testing a prototype device designed to pump fish from immediately in front of the traveling screens and return them alive to Lake Erie. During June 1975-May 1976, a portion of the fish that would otherwise have been impinged in Screenhouse 1 were pumped into holding pools outside the plant for study and return to Lake Erie. Organisms that are not retained by the 3/8-in. screens (small fish, invertebrates, and phytoplankton) pass completely through the plant and return to Lake Erie via the discharge canal.

II. IMPINGEMENT AT MONROE POWER PLANT

A. Sampling Methods Used by Detroit Edison

The methods used for impingement sampling are stated on p. 4.3-1 of the 316(b) as follows (Detroit Edison 1976a):

> Fish impingement monitoring began for Units 1, 2, 3, and 4 in April 1972, June 1972, March 1973, and May 1974, respectively. As stated in Subsection 3.2.2.1.3, the traveling screens are rotated and washed automatically every 24 hours, and more frequently when increased loading dictates. In order to obtain a representative sample, at the end of a daily washing a basket was placed in position at the end of the sluiceway. After a 24-hour period, all the fish collected in the basket were counted and identified. Representative specimens were weighed, measured, and checked for deformities. Attempts were made to collect a minimum of one sample each week.

1. Location

The Monroe plant has 16 intake screenwells, each containing a 3/8-in. mesh traveling screen (Fig. 2). Detroit Edison divided the impingement data from these screenwells into two categories: counts from 2 test screenwells and counts from 14 nontest screenwells. The test screenwells were those in Unit 2 in which prototype fish pumping systems (referred to on the impingement data sheets as the "north collector" and the "south collector") were installed to remove fish before they were actually impinged. The fish impinged on the two test screens were counted and recorded separately from those impinged on the 14 nontest screens. The impinged fish from the nontest screens (the remaining six screens in Screenhouse 1 and the eight screens in Screenhouse 2) were washed into a common sluiceway in each screenhouse and collected en masse in a collection basket at the end of each sluiceway.

2. Gear

The mesh size of the collection baskets is not given in the 316(b), but according to Detroit Edison, it was approximately 1/4-in., which would be sufficiently fine to retain the smallest fish washed into it from the 3/8-in. mesh of the traveling screens. The above excerpt from the 316(b) says only that "representative" samples were collected and that all the fish washed into the basket were counted. It does not specifically state that all of the fish impinged on the traveling screens during a 24-h period were washed into the collection basket. Therefore, all of the impinged fish may not have been counted.

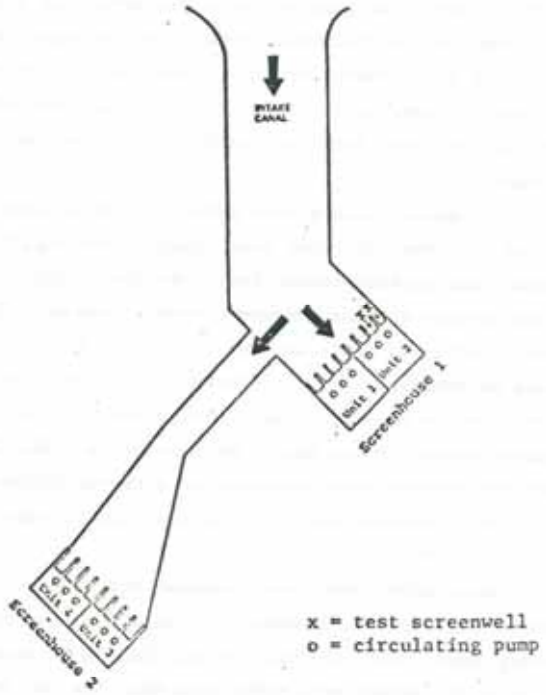


Figure 2. Monroe Power Plant, indicating location of test screenwells. Adapted from 316(b) Figure 4.4-1.

The above excerpt from the 316(b) states that representative specimens were measured but presents no data to show that these specimens were actually representative of the collection basket catch. The specimens must be representative of the impinged fish in order to show what age classes are being impinged. The 316(b) also presents no length-frequency distribution of the impinged fish to demonstrate the size selectivity of the traveling screens (i.e., the smallest size fish that is impinged) and to show that all age classes of impingeable fish are being sampled.

The 316(b) presents no description of the procedure for cleaning the trash racks in front of the traveling screens and no report of the kinds and numbers of fish, if any, removed from the trash racks (vertical steel bars spaced 3 in. apart). Some large fish therefore could have been impinged on these racks but not considered in the impingement estimates.

3. Schedule

The daily impingement data sheets obtained from Detroit Edison show that during June 1975-May 1976 (the year analyzed for impact in the 316(b)) the test screens were checked almost daily, Monday-Friday. The number of counts from the nontest screens, however, ranged from only 2 in August 1975 to 10 in November 1975 and April and May 1976. The screens were not monitored during the week of February 15-21. Otherwise, fish were usually counted from either the test or nontest screens more often than once a week, the minimum frequency stated in the above 316(b) excerpt. The 316(b) does not state that the screens were monitored on a pre-established schedule; thus, the monitoring schedule may not have been established in advance of observed screen loadings.

The daily impingement data sheets suggest that a major deficiency of Detroit Edison's monthly impingement estimates is that most of them are based on samples taken from only half of the plant's 16 screens. On 51% of the sampling days, counts were taken from only the two test screens. The test screens are located adjacent to one another in Screenhouse 1 (Fig. 2), and the 316(b) presents no evidence that impingement on these two screens was representative of impingement on the other 14 intake screens. Counts from the nontest screens were usually made for only Screenhouse 1

because, according to a Detroit Edison representative, the collection basket for Screenhouse 2 was often under water. Of 82 basket counts from nontest screens, 66 sampled fish only from Screenhouse 1 and 11 sampled fish only from Screenhouse 2. Sampling of impinged fish from Screenhouse 2 occurred only from January-May 1976. Fish were sampled simultaneously from both screenhouses and, therefore, impingement throughout the entire plant was measured on only 5 days during the year, and these 5 days occurred only during the month of April 27-May 27, 1976. Detroit Edison did not demonstrate that impingement data from the two screenhouses could be used interchangeably to estimate impingement occurring in the whole plant. The estimate for impingement at the Monroe plant is consequently heavily weighted to reflect impingement in Screenhouse 1. The effect of this bias on the estimate is not known.

B. Data Analysis

1. Verification of 316(b) impingement estimates

Although the 316(b) presents impingement data from the Monroe plant for 1972-76, we attempted to verify only the 1975-76 data because these were the data considered in the 316(b) impact analysis. Also, the plant did not become fully operational until mid-1974 and impingement in the earlier years would not be directly comparable to that occurring during full operation.

Table 4.3-1 from the 316(b) shows Detroit Edison's estimates of impingement at the Monroe plant from June 1975-May 1976.

TABLE 4.3-1 FISH IMPINGEMENT EXTRAPOLATIONS AT THE MONROE POWER PLANT, JUNE 1975 THROUGH MAY 1976

Species	1975 June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1976 Jan.	Feb.	Mar.	Apr.	May	Totals	% of Total
Gizzard shad	71	17552	48814	18879	15801	29060	83239	100779	143463	26447	11359	4154	509060	58.1
Alewife	777	211	7	81	1298	827	76	9		472	1658	5583	10799	1.2
Rainbow smelt	122	53		8	1628	2640	649	227	809		158	322	6111	0.8
Shiners	14484	10184	11613	12831	12679	6054	8147	8590	9889	2688	8968	5348	109507	12.7
Trout-perch	783	27	54	120	273	46	15	638	840	801	1868	47	5471	0.6
Logperch	47	52	37	140	369	227	39	4		6	63	136	1114	0.1
Walleye	6	104	121	98	6	36	14		51	8	12	3	459	0.1
Yellow perch	47391	8819	35551	12042	4164	1974	1348	1438	3378	852	3777	454	122201	14.2
White bass	206	3686	13462	12621	5229	739	364	122	224	23	140	74	37235	4.3
Channel catfish	60	46	64	204	31	10	186	78	354	15	29	20	1128	0.1
Coho salmon	2												2	0.1
Rock bass	64	28	21	27	15	9	29		5	43	83	56	380	0.1
Smallmouth bass			3	4	2	15					3	6	34	0.1
Freshwater drum	7704	3187	14027	17789	10348	1504	2458	487	1227	124	738	1951	60648	7.0
White crappie	4		31	25	31	23	55	25	39	2	46	78	388	0.1
Sunfish	73	129	37	61	83	74	169	38	20	36	34	29	783	0.1
Northern pike	30	36		11			3		7	7	15	6	114	0.1
Brown bullhead	4	2										2	8	0.1
Yellow bullhead				4		3		24	10	16	9	9	75	0.1
Goldfish	73	77	102	53	10	8	95	484	639	685	1438	92	2754	0.3
Largemouth bass	2		3		6		7					6	24	0.1
Chinook salmon	3	1				3				3			10	0.1
Carp		2		11		2	8	36	641	35	14	3	752	0.1
Suckers		5		21	2					5	3	5	41	0.1
Others	3			8	2					5	12	2	32	0.1
Totals	71811	44383	124878	76248	52232	43044	96868	110896	161509	32213	29972	17427	876231	

The above estimates were calculated according to the method described below from 316(b) p. 4.3-1.

> The total potential number of fish impinged per day was estimated by dividing the actual number of fish collected per month by the number of 24-hour sampling periods during the month. This number was then multiplied by the number of days in that particular month to obtain a monthly estimate. Data reduction for derivation of an estimate of potential monthly impingement involved the application of the following formula:
>
> $$I = \frac{NM}{H} \qquad (4.3.1)$$
>
> where
>
> I = potential number of organisms impinged on a monthly basis
> N = number of each category of organisms or species impinged during the monthly sampling effort
> M = number of days in the particular month of sampling effort
> H = number of 24-hour sampling periods during the monthly impingement sampling.

Detroit Edison's daily impingement data sheets from the Monroe plant were used to verify the estimates presented in Table 4.3-1 above. The analysis revealed that the extrapolations shown in Table 4.3-1 are major underestimates of impingement at the Monroe plant for the following reasons:

a) Separate estimates of the numbers of fish impinged per day (N/H in Equation 4.3.1 above) were apparently calculated for the test and the nontest screens, although this was not explained in the 316(b). These two estimates were then added together to calculate monthly impingement (I) for the plant as follows:

$$I = \left[(\Sigma C_t/H_t) + (\Sigma C_n/H_n)\right] \times M \qquad (1)$$

where I = number of fish impinged during month
ΣC_t = sum of fish counted from test screens
H_t = number of days fish were collected from test screens
ΣC_n = sum of fish counted from nontest screens
H_n = number of days fish were collected from nontest screens
M = number of days in month

Although Equation 4.3.1 is correct for calculating extrapolated monthly totals, Detroit Edison used the term N incorrectly for estimating impingement on the 14 nontest screens. In most cases, the term N for the nontest screens did not equal the total number of fish impinged on all the nontest screens but only the number of fish counted, although on most sampling days only the fish on the screens in Screenhouse 1 were counted (refer to Section II-A-3). The 316(b) estimates do not consider that the actual daily counts from the nontest screens usually represent impingement occurring in only a portion of the plant.

A frequency distribution of the number of circulating pumps operating on the days when impingement samples were collected (Fig. 3) indicates that almost 70% of the time the plant was operating at more than 50% capacity (more than six circulating pumps operating). Therefore, when fish were counted from only half of the intake screens and the term N was incorrectly used, as described above, impingement was seriously underestimated.

b) Notations by Detroit Edision on several of the impingement data sheets suggest that large numbers of young fish appearing in the impingement samples were at times not even counted (Table 1). The failure to count these small fish and to include them in the data base from which impingement was calculated further reduces the accuracy of the 316(b) impingement estimates shown in Table 4.3-1.

c) According to the daily impingement data sheets, the prototype fish collectors, located in front of the two test screens, were in operation during most of the 316(b) impingement sampling and were removing up to 95% of the fish from the test screenwells. Fish removed from the two test screenwells by the prototype fish collectors were prevented from being impinged and therefore were not used by Detroit Edison in calculating impingement for these two screenwells or for the entire plant. This practice is not explained in the 316(b) because, according to a Detroit Edison representative, the collectors were considered a permanent part of plant operation and only the screen counts were considered to represent true impingement. The exclusion of the fish pumped from the two test screenwells, from which the majority of the impingement data were obtained, contributes to a serious underestimate of impingement for the entire plant.

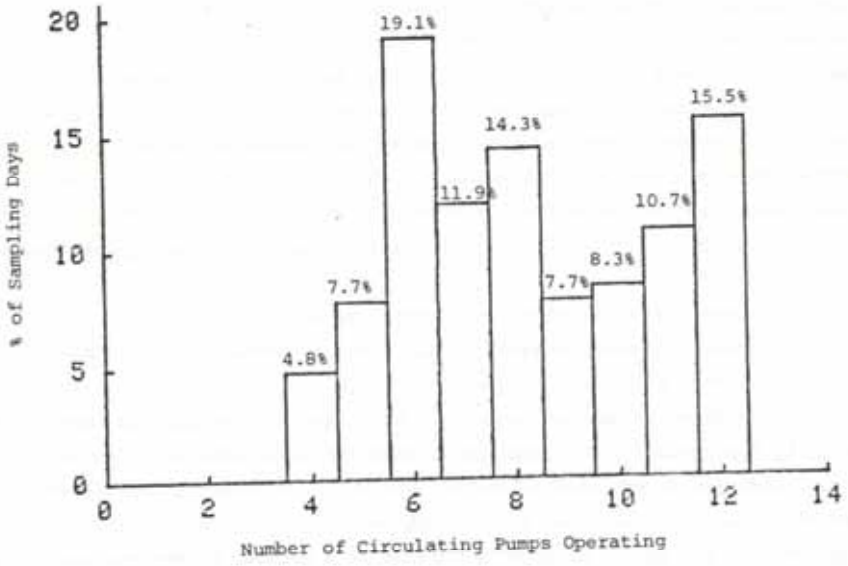
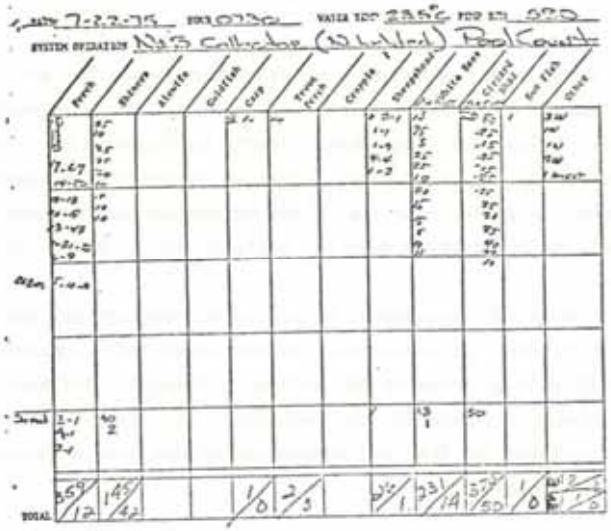
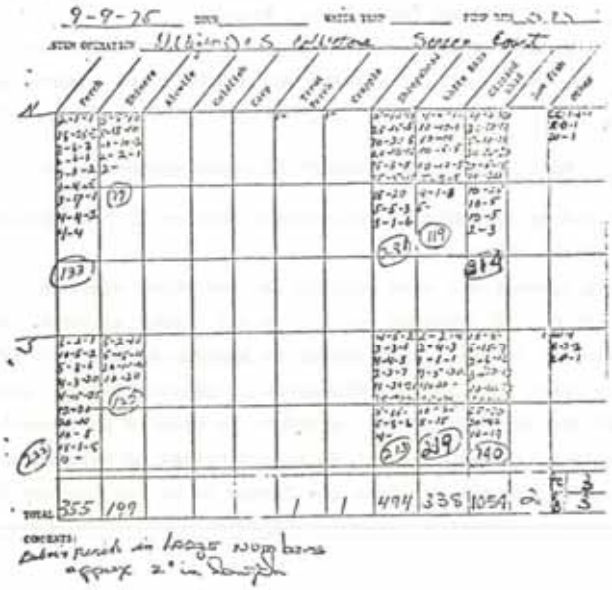


Figure 3. Number of circulating pumps operating on 168 days when impingement samples were collected during June 1975-May 1976. Derived from Detroit Edison's daily impingement data sheets.

Table 1. Detroit Edison daily impingement data sheets from the Monroe plant for July 22, 1975, and September 9, 1975, indicating large numbers of young fish in the test screenwells which were not included in the totals.



"Thousands of young of year fish"



"Baby perch in large numbers approx 2" in length"

Even without the major problems discussed above, the accuracy of the 316(b) estimates would be in doubt because of numerous discrepancies found on the daily impingement data sheets (refer to Appendix B). Most of these discrepancies are simple addition errors or errors that occurred when numbers were transposed from one column to another on the test screenwell tally sheets or transferred from the tally sheets to the daily impingement data sheets.

2. Alternative impingement estimates and statistical analysis

a. Calculation of estimates. We estimated daily impingement at the Monroe plant for 1975-76 by means of the following formula. For each sampling day, the formula corrects for the portion of the plant for which no data were collected and for the fish pumped out of the test screenwells by the prototype collectors.

$$\text{Daily estimate} = (C_t + C_p + C_n) \times (S_u/S_s) \times (P_p/P_s) \qquad (2)$$

where C_t = fish counted from test screens

C_p = fish pumped from test screenwells

C_n = fish counted from nontest screens

S_s = number of screens from which fish were collected

S_u = total number of screens in unit(s) whose screens were checked

P_s = number of circulating pumps operating in unit(s) whose screens were checked

P_p = total number of circulating pumps operating in entire plant

This yielded an estimate of impingement that could have occurred in the absence of the fish collectors.

Three assumptions were made to use the above equation:

a) Fish were impinged equally on all intake screens. The maximum water velocity in the intake system is apparently 120 cm/s (3.9 ft/s) in the secondary canal leading to Screenhouse 2 (Detroit Edison, undated). The potential for impingement may therefore be greater in Screenhouse 2 than in Screenhouse 1. If impingement is indeed higher in Screenhouse 2, impingement estimates for the entire plant are likely to be low because they are based

primarily on data from Screenhouse 1. Data with which impingement in Screenhouse 2 could be related to that in Screenhouse 1 are available for only 5 days during 1 month of the year (Section II-A-3) and are not sufficient for a reliable comparison.

b) All fish pumped from the test screenwells would have been impinged.

c) No fish were impinged by a circulating pump that was not operating. On 3 sampling days during the year, fish were collected from the intake screens when no circulating pumps were operating. This impingement could have been due to operation of the general service pumps, but, because each pump has a capacity of only 11 cfs, the pumps were not considered in the calculation, and the 3 sampling days were excluded from the analysis.

The manner in which Equation 2 was used to calculate daily impingement estimates can be demonstrated by using the data for gizzard shad collected by Detroit Edison in August 1975 (Table 2). The estimate for August 1 is:

$$(360 + 0 + 1938) \times (4/2) \times (12/3) = 18{,}384$$

Estimates for the other 10 sampling days were similarly calculated.

Monthly estimates were calculated from the daily estimates for each species according to the equation below:

$$\text{Number impinged each month} = \frac{\text{Sum of daily impingement estimates each month}}{\text{Number of sample days each month}} \times \text{Number of days in month} \qquad (3)$$

Using Equation 3 and the data in Table 2, the August estimate for gizzard shad impingement therefore is:

$$(148{,}583.4/11) \times 31 = 418{,}735$$

This is approximately eight times the 316(b) estimate of 49,814 (Table 4.3-1) which was calculated by Equation 1 as follows:

$$\left[(7708/9) + (1501/2)\right] \times 31 = 49{,}814$$

Table 2. Data base used in comparison of 316(b) and alternative methodologies for estimating gizzard shad impingement, August 1975. Detroit Edison daily impingement data sheets on which counts are recorded are presented in Appendix C.

Sampling date	Number of shad counted on screens		Number of shad pumped from test screenwells	Number of screens sampled	Number of screens in unit(s) sampled	Number of pumps sampled	Number of pumps operating in plant
	Test screens (C_t)	Nontest screens (C_n)	(C_p)	(S_s)	(S_u)	(P_s)	(P_p)
August 1	360	-	1938	2	4	3	12
5	1671	-	2611	2	4	3	12
6	328	-	1621	2	4	3	11
7	244	-	287	2	4	3	11
8	1458	-	1764	2	4	3	11
14	-	836*	-	8	8	6	10
21	-	665	-	8	8	6	12
26	1062	-	1132	2	4	3	12
27	1311	-	483	2	4	3	12
28	900	-	323	2	4	3	12
29	374	-	849	2	4	3	12

*Note error on data sheet; total should be 796.

The annual impingement estimate for all species combined, shown in Table 3, is approximately 4.7 million fish, which is considerably higher than the 861,000 fish estimated in the 316(b).[1/] The species composition shown in Table 3 (52% gizzard shad, 18% shiners, 13% yellow perch, 7% white bass, and 6% freshwater drum) is about the same as that shown in 316(b) Table 4.3-1.

NOTE

Estimates in figures and tables are based on Detroit Edison's impingement and entrainment data and are subject to the questions raised in the present report concerning the sampling methods.

b. Precision of impingement estimates. The monthly impingement estimates and associated 95% confidence intervals presented in Table 3 are illustrated in Figure 4 for all species combined and in Figures 5-9 for each of the five most commonly impinged species (gizzard shad, shiners, yellow perch, white bass, and freshwater drum).[2/] As shown in Figure 4 and Table 3, the sampling error (at $P = 0.05$ significance level) for each

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[1/] In most cases, the daily impingement estimates could be normalized by a $\log_{10}(x + 1)$ transformation (refer to Appendix D). Because, however, the 316(b) estimates were based only on the untransformed arithmetic data, our estimates are also based on the untransformed counts for comparison. [Impingement estimates based on the $\log_{10}(x + 1)$ transformation are presented in Appendix E; the transformation reduces the annual estimate by approximately 40%.]

[2/] The confidence interval is the interval of values on either side of the estimate which is expected to include the true population value (v). The 95% confidence interval (95% CI) defines the interval which, from repeated samples, will include the population value 95 times out of 100 and equals $v \pm ts_v$, where t is Student's t-statistic and s_v is standard error. The absolute value of ts_v can also be referred to as sampling error and defines the precision of the estimate; the smaller the sampling error, the better the estimate.

Table 3. Estimates of impingement at the Monroe Power Plant for June 1975-May 1976, calculated from Detroit Edison's daily impingement data sheets. S.E. = standard error, S_v; C.I. = absolute value of ts_v.

	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	TOTALS	% TOTAL
NO. OF SAMPLE DAYS	10	15	11	15	14	14	13	14	12	16	18	16		
LAMPREY	33	0	0	4	0	19	14	4	0	23	27	5	129	<0.1
S.E.	33.	0.	0.	4.	0.	19.	14.	4.	0.	23.	19.	3.	51.	
.95 C.I.	75.	0.	0.	9.	0.	42.	31.	10.	0.	50.	40.	7.	102.	
.90 C.I.	60.	0.	0.	7.	0.	34.	25.	8.	0.	41.	33.	6.	85.	
LONGNOSE GAR	0	0	0	11	81	30	14	0	0	26	20	3	185	<0.1
S.E.	0.	0.	0.	8.	36.	20.	14.	0.	0.	15.	11.	3.	48.	
.95 C.I.	0.	0.	0.	16.	78.	43.	31.	0.	0.	33.	22.	7.	96.	
.90 C.I.	0.	0.	0.	13.	64.	35.	25.	0.	0.	27.	18.	6.	80.	
BOWFIN	7	0	0	4	0	0	0	0	0	0	7	0	18	<0.1
S.E.	7.	0.	0.	4.	0.	0.	0.	0.	0.	0.	7.	0.	10.	
.95 C.I.	15.	0.	0.	9.	0.	0.	0.	0.	0.	0.	14.	0.	20.	
.90 C.I.	12.	0.	0.	7.	0.	0.	0.	0.	0.	0.	12.	0.	17.	
ALEWIFE	2790	290	132	84	1271	1979	40	16	0	1270	1891	5798	15521	0.3
S.E.	515.	98.	69.	45.	653.	569.	28.	16.	0.	376.	476.	2515.	2779.	
.95 C.I.	1165.	210.	154.	96.	1411.	1229.	61.	33.	0.	801.	1004.	5354.	5961.	
.90 C.I.	944.	172.	126.	79.	1157.	1008.	50.	27.	0.	659.	828.	4408.	4647.	
GIZZARD SHAD	453	461403	418735	113288	37350	245045	351936	171934	521500	107775	30461	6648	2446528	52.2
S.E.	197.	152130.	93057.	27473.	8503.	98610.	96102.	49227.	212072.	17763.	6032.	1445.	315193.	
.95 C.I.	455.	326319.	207330.	58931.	18367.	212997.	209406.	106438.	466770.	37853.	12728.	3079.	630702.	
.90 C.I.	360.	267901.	168618.	48381.	15059.	174638.	171254.	87270.	380881.	31138.	10496.	2533.	527002.	
COHO SALMON	48	0	0	0	0	0	0	0	0	0	0	0	48	<0.1
S.E.	48.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	48.	
.95 C.I.	109.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	96.	
.90 C.I.	88.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	80.	
CHINOOK SALMON	33	0	0	0	16	4	7	0	0	2	0	0	52	<0.1
S.E.	33.	0.	0.	0.	16.	4.	7.	0.	0.	2.	0.	0.	37.	
.95 C.I.	75.	0.	0.	0.	33.	9.	16.	0.	0.	5.	0.	0.	75.	
.90 C.I.	60.	0.	0.	0.	27.	8.	13.	0.	0.	3.	0.	0.	63.	
SMELT	218	262	43	85	12800	11933	1957	328	694	8	319	753	29400	0.6
S.E.	89.	119.	29.	48.	5990.	3237.	609.	79.	257.	8.	64.	153.	6652.	
.95 C.I.	201.	255.	65.	103.	12956.	6992.	1327.	170.	565.	17.	136.	327.	13711.	
.90 C.I.	163.	210.	53.	84.	10623.	5733.	1085.	139.	461.	14.	112.	269.	11457.	
NORTHERN PIKE	48	8	0	32	40	4	39	8	41	14	32	15	281	<0.1
S.E.	35.	6.	0.	22.	35.	4.	32.	8.	39.	10.	18.	10.	76.	
.95 C.I.	78.	12.	0.	47.	76.	8.	70.	17.	85.	22.	38.	21.	150.	
.90 C.I.	64.	10.	0.	38.	63.	7.	57.	14.	69.	18.	32.	17.	130.	
MUSKELLUNGE	30	40	0	9	0	3	7	0	0	0	0	0	89	<0.1
S.E.	30.	20.	0.	6.	0.	3.	7.	0.	0.	0.	0.	0.	38.	
.95 C.I.	68.	43.	0.	14.	0.	7.	16.	0.	0.	0.	0.	0.	75.	
.90 C.I.	55.	36.	0.	11.	0.	6.	13.	0.	0.	0.	0.	0.	63.	

GOLDFISH	339	565	396	538	275	230	2557	1443	5305	5748	1578	264	19246	0.4
S.E.	83.	203.	100.	130.	100.	55.	425.	363.	2881.	1100.	483.	64.	3186.	
.95 C.I.	188.	436.	222.	280.	216.	120.	927.	784.	6342.	2344.	1019.	137.	6375.	
.90 C.I.	153.	358.	181.	230.	177.	98.	758.	643.	5175.	1928.	840.	113.	5327.	
CARP	0	51	23	217	3	9	198	58	881	436	17	3	1876	<0.1
S.E.	0.	33.	23.	123.	3.	6.	92.	28.	381.	108.	11.	3.	428.	
.95 C.I.	0.	71.	50.	264.	7.	13.	200.	60.	839.	227.	22.	6.	755.	
.90 C.I.	0.	59.	41.	216.	5.	10.	163.	49.	685.	188.	18.	5.	715.	
SHINER	88587	136137	159870	60063	66642	42653	54124	21492	54748	55080	70132	57951	861279	18.5
S.E.	18014.	34728.	75863.	10588.	13623.	9572.	13463.	3508.	15967.	15972.	14325.	18552.	94489.	
.95 C.I.	40148.	74492.	169023.	22711.	29627.	20677.	29335.	7577.	35143.	34036.	30226.	39534.	189072.	
.90 C.I.	33020.	61156.	137464.	18645.	24127.	16953.	23990.	6213.	28677.	27999.	24926.	32521.	157985.	
WHITE SUCKER	41	25	63	85	49	24	21	4	5	35	18	18	368	<0.1
S.E.	33.	17.	29.	65.	35.	19.	15.	4.	5.	19.	17.	10.	95.	
.95 C.I.	75.	36.	65.	139.	75.	42.	34.	10.	12.	40.	35.	21.	190.	
.90 C.I.	61.	30.	53.	114.	61.	34.	28.	8.	10.	33.	29.	17.	158.	
BLACK BULLHEAD	0	0	0	0	18	0	0	0	0	0	0	0	18	<0.1
S.E.	0.	0.	0.	0.	18.	0.	0.	0.	0.	0.	0.	0.	18.	
.95 C.I.	0.	0.	0.	0.	38.	0.	0.	0.	0.	0.	0.	0.	35.	
.90 C.I.	0.	0.	0.	0.	31.	0.	0.	0.	0.	0.	0.	0.	30.	
YELLOW BULLHEAD	13	20	0	66	21	4	64	102	271	254	136	68	999	<0.1
S.E.	13.	17.	0.	34.	18.	4.	29.	46.	105.	66.	54.	21.	153.	
.95 C.I.	30.	38.	0.	74.	38.	9.	62.	99.	230.	141.	113.	45.	307.	
.90 C.I.	24.	29.	0.	61.	31.	8.	51.	81.	188.	116.	94.	37.	256.	
BROWN BULLHEAD	45	4	0	0	0	0	14	13	0	0	10	10	96	<0.1
S.E.	26.	4.	0.	0.	0.	0.	14.	13.	0.	0.	10.	10.	36.	
.95 C.I.	59.	9.	0.	0.	0.	0.	31.	29.	0.	0.	21.	21.	71.	
.90 C.I.	48.	7.	0.	0.	0.	0.	25.	24.	0.	0.	17.	17.	59.	
CHANNEL CATFISH	56	169	194	975	91	145	1193	245	670	128	131	39	4031	0.1
S.E.	38.	44.	56.	304.	28.	65.	563.	42.	230.	41.	38.	20.	672.	
.95 C.I.	85.	95.	124.	653.	61.	140.	1227.	90.	506.	88.	80.	43.	1385.	
.90 C.I.	69.	78.	101.	536.	50.	115.	1003.	74.	413.	72.	66.	35.	1157.	
TROUT-PERCH	7401	898	1013	313	347	176	172	2077	3153	7097	7996	213	30056	0.7
S.E.	2293.	230.	577.	77.	113.	59.	118.	560.	707.	2102.	2282.	58.	4015.	
.95 C.I.	5188.	493.	1287.	164.	245.	127.	256.	1210.	1557.	4479.	4815.	123.	8035.	
.90 C.I.	4204.	405.	1046.	135.	201.	104.	210.	992.	1271.	3684.	3970.	101.	6714.	
WHITE BASS	658	130330	123329	72019	6872	1603	1616	318	259	235	264	184	337697	7.2
S.E.	229.	41749.	23530.	13494.	1855.	336.	346.	114.	70.	88.	62.	36.	49825.	
.95 C.I.	519.	89551.	52425.	28946.	4006.	725.	754.	247.	154.	187.	131.	77.	99699.	
.90 C.I.	421.	73520.	42637.	23764.	3284.	595.	617.	202.	126.	154.	108.	63.	83307.	
ROCK BASS	473	178	348	262	58	23	72	0	82	333	151	111	2091	<0.1
S.E.	248.	74.	127.	88.	27.	13.	58.	0.	41.	110.	24.	34.	332.	
.95 C.I.	560.	158.	286.	188.	57.	29.	126.	0.	89.	234.	50.	73.	664.	
.90 C.I.	454.	130.	231.	154.	47.	23.	103.	0.	73.	192.	41.	60.	555.	
SUNFISH	342	341	207	478	366	313	953	269	245	267	108	90	4057	0.1
S.E.	117.	101.	109.	138.	105.	85.	135.	93.	83.	56.	37.	26.	335.	
.95 C.I.	265.	218.	244.	297.	226.	184.	295.	201.	184.	119.	77.	55.	671.	
.90 C.I.	215.	177.	198.	244.	185.	151.	241.	165.	150.	98.	64.	45.	560.	

SMALL-MOUTH BASS	132	0	21	14	73	139	0	49	0	0	2	6	436	<0.1
S.E.	132.	0.	21.	8.	39.	76.	0.	37.	0.	0.	2.	4.	163.	
.95 C.I.	299.	0.	46.	17.	85.	165.	0.	80.	0.	0.	4.	9.	327.	
.90 C.I.	242.	0.	37.	14.	70.	135.	0.	65.	0.	0.	4.	7.	273.	
LARGE-MOUTH BASS	33	0	21	0	3	4	72	0	0	4	0	18	155	<0.1
S.E.	33.	0.	21.	0.	3.	4.	58.	0.	0.	4.	0.	10.	71.	
.95 C.I.	75.	0.	46.	0.	7.	8.	126.	0.	0.	8.	0.	22.	142.	
.90 C.I.	60.	0.	37.	0.	5.	7.	103.	0.	0.	7.	0.	18.	118.	
WHITE CRAPPIE	14	50	209	237	108	41	318	79	86	4	117	36	1379	<0.1
S.E.	9.	36.	141.	82.	40.	17.	100.	43.	43.	4.	45.	13.	214.	
.95 C.I.	21.	77.	313.	176.	86.	36.	218.	93.	95.	8.	94.	27.	428.	
.90 C.I.	17.	63.	255.	145.	71.	29.	178.	76.	77.	7.	77.	22.	357.	
YELLOW PERCH	171671	124179	183364	63807	13647	6616	4898	10051	21169	7971	17073	5134	625580	13.3
S.E.	52168.	41498.	48507.	13888.	1952.	1388.	2210.	2617.	8355.	2732.	4560.	180.	84288.	
.95 C.I.	118094.	89013.	109063.	29793.	4216.	2998.	4815.	5654.	18390.	5821.	9621.	383.	188551.	
.90 C.I.	95624.	73078.	87886.	24457.	3457.	2458.	3938.	4636.	15006.	4788.	7934.	315.	140930.	
WALLEYE	0	3279	3746	566	135	138	48	0	186	50	127	39	8316	0.2
S.E.	0.	1015.	1028.	132.	71.	135.	35.	0.	57.	28.	45.	15.	1461.	
.95 C.I.	0.	2177.	2289.	284.	156.	291.	77.	0.	125.	59.	94.	32.	2923.	
.90 C.I.	0.	1707.	1862.	233.	126.	239.	63.	0.	102.	48.	78.	26.	2443.	
LOGPERCH	1670	1009	1935	657	935	889	118	51	0	36	355	341	7976	0.2
S.E.	564.	265.	570.	222.	163.	189.	67.	22.	0.	14.	73.	81.	917.	
.95 C.I.	1275.	569.	1270.	475.	353.	408.	146.	47.	0.	30.	154.	174.	1836.	
.90 C.I.	1033.	467.	1033.	390.	289.	334.	120.	39.	0.	25.	127.	143.	1534.	
FRESHWATER DRUM	22180	19278	100229	94864	20912	10175	9288	1082	1277	693	1356	1418	290752	6.2
S.E.	6426.	4273.	26306.	20142.	3782.	4628.	1844.	173.	327.	165.	182.	233.	34564.	
.95 C.I.	14535.	9058.	58611.	43204.	8169.	9996.	4018.	373.	719.	352.	384.	497.	69207.	
.90 C.I.	11779.	7436.	47667.	35470.	6698.	8195.	3286.	306.	586.	290.	316.	409.	57028.	
TOTALS	297315	856471	997018	409478	162113	322207	429740	209623	610572	187489	132328	75145	4689499	
S.E.	55618.	166835.	134219.	40593.	17774.	99246.	97089.	49476.	212858.	24144.	16374.	18781.	365170.	
.95 C.I.	125808.	357860.	299039.	87072.	38393.	214372.	211556.	106868.	468500.	51494.	34550.	40022.	690686.	
.90 C.I.	100780.	292461.	241057.	71160.	31301.	174773.	171946.	87127.	379312.	42191.	28393.	32791.	577125.	

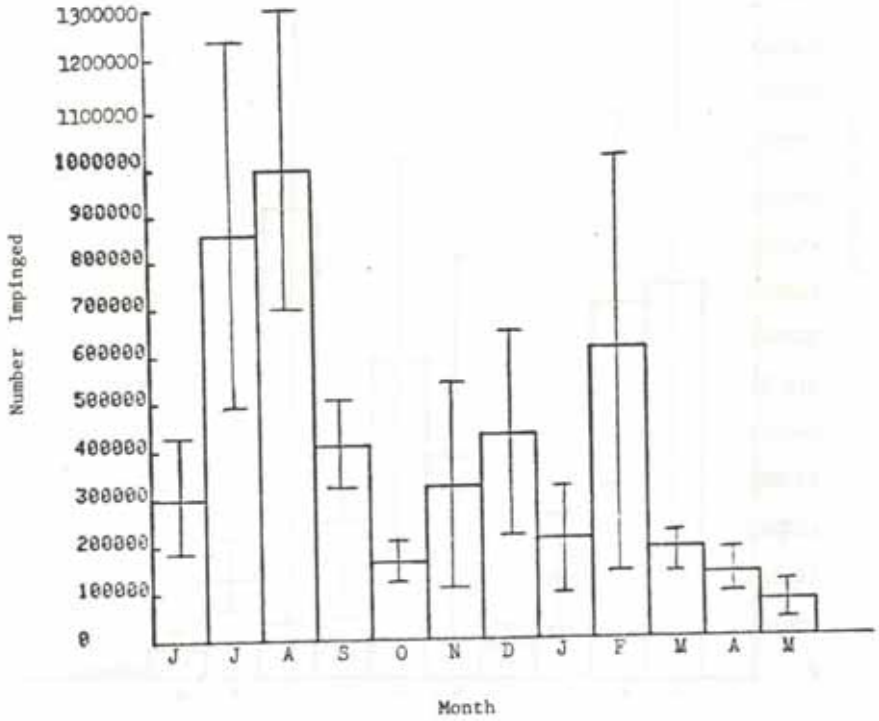

Figure 4. Impingement by month for all species combined (June 1975-May 1976), showing 95% confidence intervals.

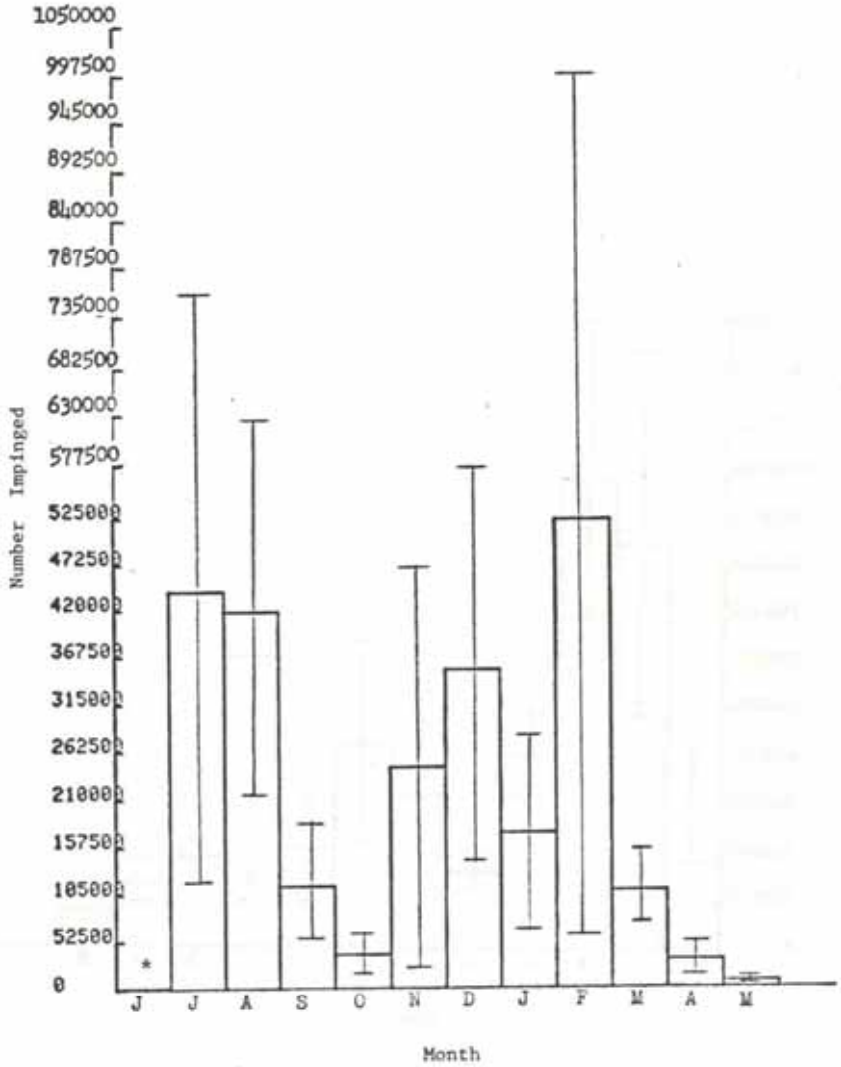

Figure 5. Impingement by month for gizzard shad (June 1975-May 1976), showing 95% confidence intervals. * = <500.

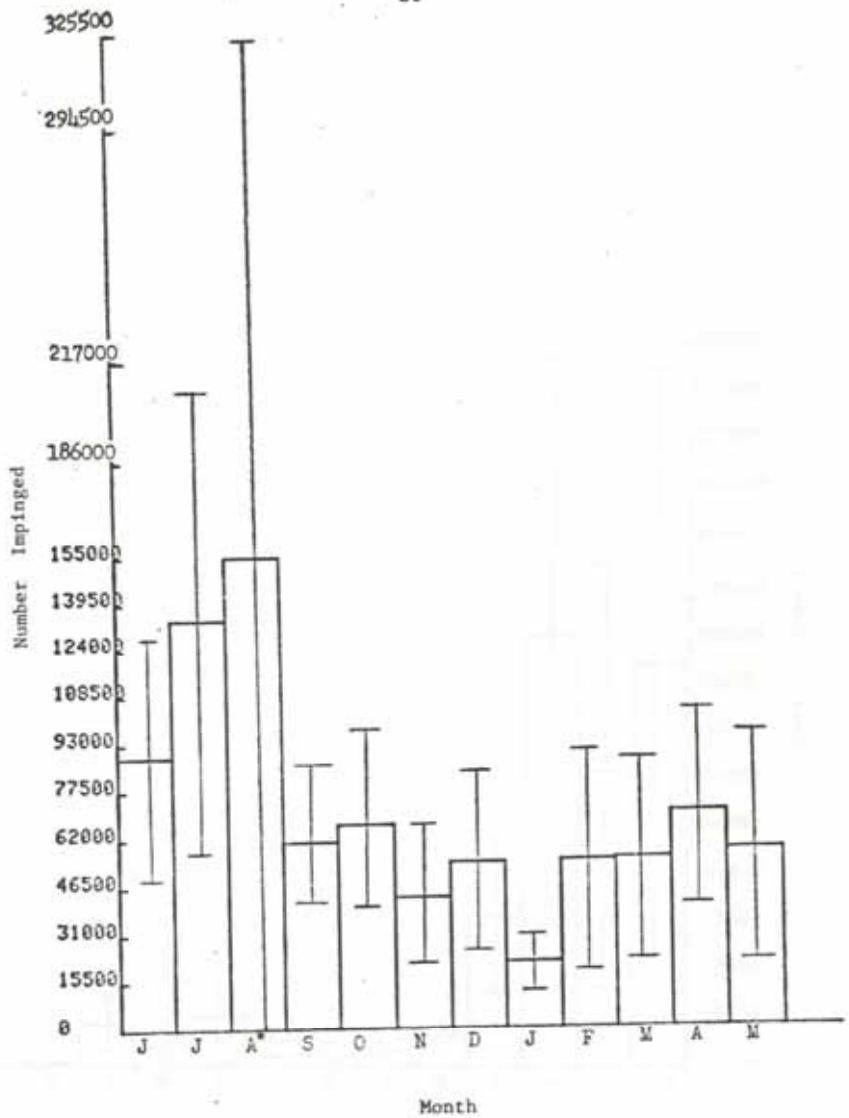

Figure 6. Impingement by month for shiners (June 1975-May 1976), showing 95% confidence intervals. *The sampling error for the August estimate is 109% of the estimate and the CI includes zero.

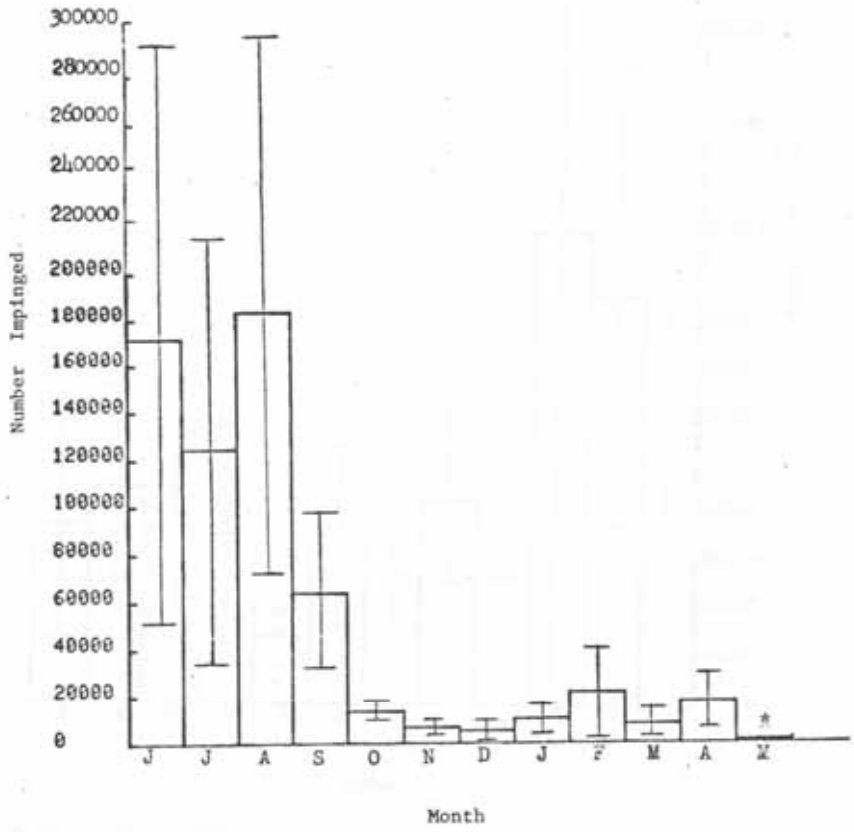

Figure 7. Impingement by month for yellow perch (June 1975-May 1976), showing 95% confidence intervals. * = <1500.

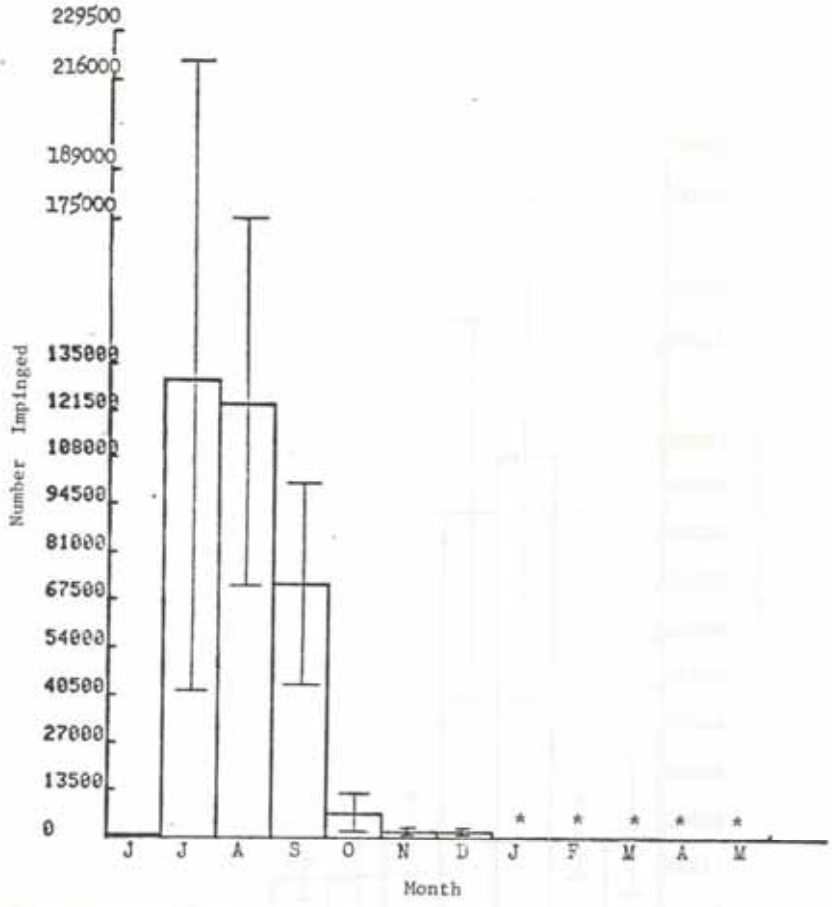

Figure 8. Impingement by month for white bass (June 1975-May 1976), showing 95% confidence intervals. * = <500.

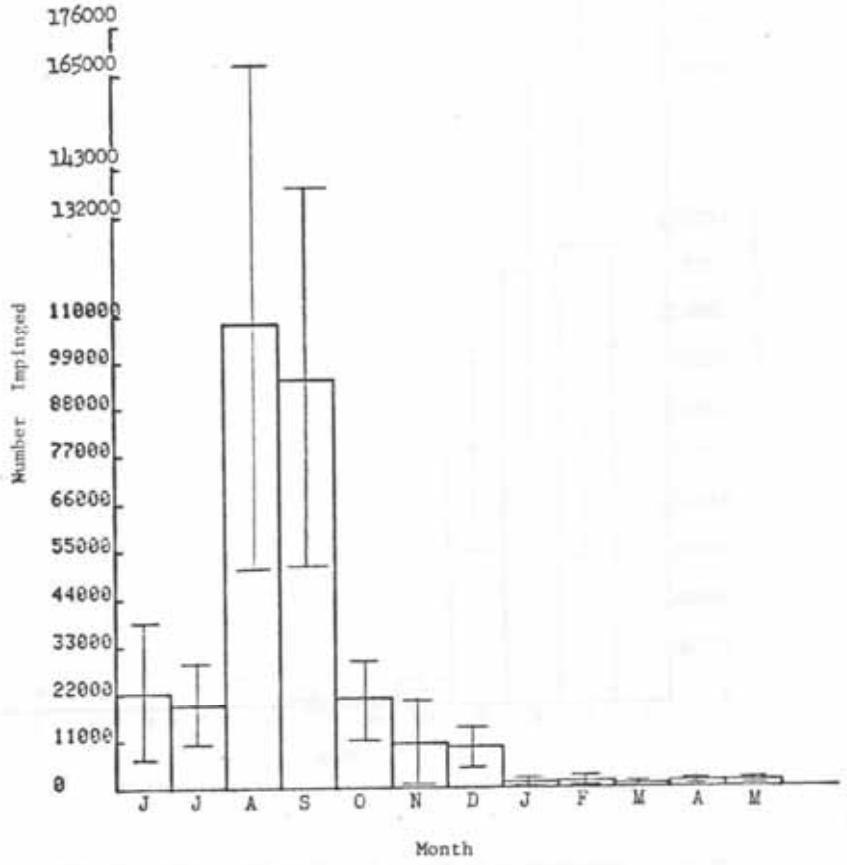

Figure 9. Impingement by month for freshwater drum (June 1975-May 1976), showing 95% confidence intervals.

of the monthly impingement estimates for all species combined is approximately 50% or less of the estimate, except for November (67%) and February (77%). The sampling error is 15% of the annual estimate (Table 4). The sampling errors for the annual estimates of the commonly impinged species (Table 4) are also relatively small (26% for gizzard shad, 22% for shiners, 27% for yellow perch, 30% for white bass, and 24% for drum); however, the sampling errors for the monthly estimates are at times quite large (109% for shiners in August and 98% for yellow perch in December; Table 3, Figures 6 and 7).

For infrequently impinged species such as coho and chinook salmon, the sampling errors are greater than 100% of the annual estimates and include zero (Table 4); thus, based on the data as obtained by Detroit Edison, the numbers of these species impinged are not significantly different from zero. However, we do not believe that impingement of these species has been adequately estimated because of the limitations of the sampling methods (see Section II-A).

c. Correlation of impingement estimates with intake temperatures and flow. Based on 316(b) Figure 4.3-1 (below), Detroit Edison states that "there does not appear to be a strong correlation between the total numbers of fish impinged and the intake water flows or intake water temperatures" (p. 4.3-6).

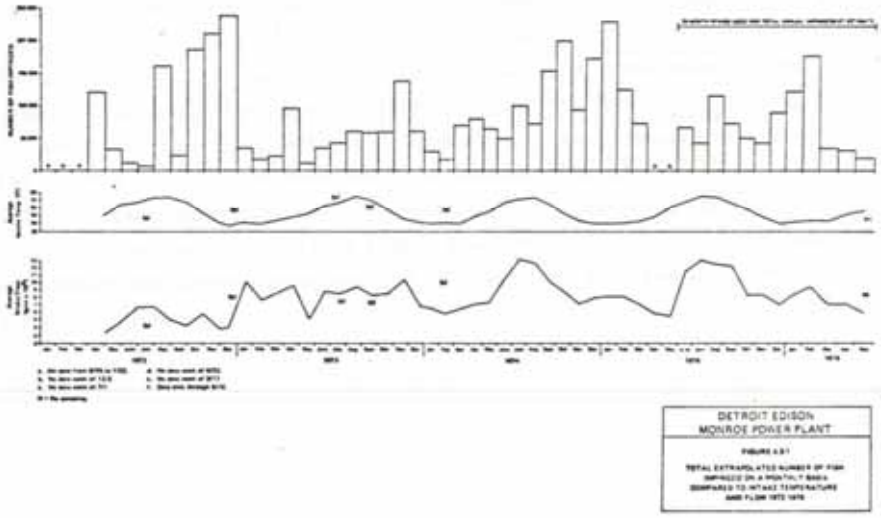

Table 5. Correlation matrices for daily impingement estimates [transformed by $\log_{10}(x + 1)$] vs. intake temperature and intake flow components. DEST = daily impingement estimate, IFLOW = intake flow, TEMP = intake temperature, RFLOW = river flow, LKCOMP = lake component of intake flow.

CORRELATE SYSTBATA V=1,2-5 L=.05,.01 S1=SPEC 30,100,506,801,133,134
CASES=ALL

CORRELATION MATRIX 1 ALL SPECIES

N= 168 DF= 166 R .0500= .1513 R .0100= .1982

VARIABLE	1. DEST	2. IFLOW	3. TEMP	4. RFLOW	5. LKCOMP
1.DEST	1.0000				
2.IFLOW	.5439	1.0000			
3.TEMP	.2031	.6841	1.0000		
4.RFLOW	.0367	-.2097	-.4650	1.0000	
5.LKCOMP	.2343	.6469	.6933	-.8813	1.0000

CORRELATION MATRIX 2 GIZZARD SHAD

N= 168 DF= 166 R .0500= .1513 R .0100= .1982

VARIABLE	1. DEST	2. IFLOW	3. TEMP	4. RFLOW	5. LKCOMP
1.DEST	1.0000				
2.IFLOW	.8152	1.0000			
3.TEMP	-.2842	.6841	1.0000		
4.RFLOW	.1642	-.2097	-.4650	1.0000	
5.LKCOMP	-.0933	.6469	.6933	-.8813	1.0000

CORRELATION MATRIX 3 BROOKLINE

N= 168 DF= 166 R .0500= .1513 R .0100= .1982

VARIABLE	1. DEST	2. IFLOW	3. TEMP	4. RFLOW	5. LKCOMP
1.DEST	1.0000				
2.IFLOW	.1615	1.0000			
3.TEMP	.4300	.6841	1.0000		
4.RFLOW	-.3356	-.2097	-.4650	1.0000	
5.LKCOMP	.4442	.6469	.6933	-.8813	1.0000

CORRELATION MATRIX 4 YELLOW PERCH

N= 168 DF= 166 R .0500= .1513 R .0100= .1982

VARIABLE	1. DEST	2. IFLOW	3. TEMP	4. RFLOW	5. LKCOMP
1.DEST	1.0000				
2.IFLOW	.7473	1.0000			
3.TEMP	.6819	.6841	1.0000		
4.RFLOW	-.5069	-.2097	-.4650	1.0000	
5.LKCOMP	.7566	.6469	.6933	-.8813	1.0000

CORRELATION MATRIX 5 WHITE BASS

N= 168 DF= 166 R .0500= .1513 R .0100= .1982

VARIABLE	1. DEST	2. IFLOW	3. TEMP	4. RFLOW	5. LKCOMP
1.DEST	1.0000				
2.IFLOW	.6232	1.0000			
3.TEMP	.6124	.6841	1.0000		
4.RFLOW	-.3546	-.2097	-.4650	1.0000	
5.LKCOMP	.5622	.6469	.6933	-.8813	1.0000

CORRELATION MATRIX 6 FRESHWATER DRUM

N= 168 DF= 166 R .0500= .1513 R .0100= .1982

VARIABLE	1. DEST	2. IFLOW	3. TEMP	4. RFLOW	5. LKCOMP
1.DEST	1.0000				
2.IFLOW	.6328	1.0000			
3.TEMP	.6613	.6841	1.0000		
4.RFLOW	-.4996	-.2097	-.4650	1.0000	
5.LKCOMP	.6955	.6469	.6933	-.8813	1.0000

The 316(b) does not discuss the effects on impingement of this deliberate recirculation, which returned up to 20% of the plant discharge directly to the river during the winter to prevent icing of the intake screens. However, according to Detroit Edison representatives, the recirculation of heated effluent was discontinued because gizzard shad were being impinged in such large numbers when this practice was employed during the winter that operation of the plant was being impeded.

The 316(b) also does not consider the effects on impingement of the unintentional recirculation of plant effluent (from the discharge canal back to the plant intake via Lake Erie). The effects of residual chlorine in the discharge or of supersaturation of the discharge waters during the winter could increase the vulnerability of fish in the intake area to impingement.

3. Length and age of impinged fish

The 316(b) data base does not contain the information on the lengths and ages of the impinged fish required for a description of the segment of the population impinged, an assessment of the sampling methods, and an evaluation of the impact of impingement losses. According to the impingement sampling methods described on p. 6 of this report, "representative specimens" from the collection basket were measured and weighed, but these data are not presented in the 316(b). Instead, only general statements are made, such as the following examples from p. 4.3-4 of the 316(b):

> . . . In general, the majority of rainbow smelt impinged during the spring and summer were young-of-the-year (5-8 cm).
>
> . . . Goldfish impinged during the late winter and early spring were generally large adults (30 cm or longer) or smaller juveniles (5 to 10 cm).

A few length data (for 7-14 individuals each month) were included with the monthly impingement summary sheets. According to a representative of Detroit Edison, the fish from which these data were taken were collected primarily to determine their state of sexual maturity. We did not find any length information for fish collected from the nontest screens. Some measurements were recorded by Detroit Edison on length data sheets for fish

pumped from the test screenwells, but sufficient data with which to formulate even provisional length-frequency distributions are available only for yellow perch (458 length measurements for June 1975-May 1976). According to a Detroit Edison representative, these perch were selected randomly from the holding pool into which fish from the test screenwells were pumped and these were the only length measurements taken during the year. The length-frequency distribution for these yellow perch (Fig. 10) shows that 51% were in the 7-8 in. (18-20 cm) range. This does not agree with the statement on p. 4.3-5 of the 316(b) that:

> . . . In general, small young-of-the-year yellow perch (5 to 8 cm) were collected during the warm summer months, while those impinged during the spring were small adults (15 to 20 cm).

The data available to us do not demonstrate such a seasonal difference. Only one of the 458 perch represented in Figure 10 was in the 5-8 cm range, and this fish was collected in May. The mean length of measured perch from the holding pool was in the 16-20 cm range for every month. The absence of length-frequency data for perch just large enough to be retained on the 3/8-in. mesh screens indicates that few of these were measured despite the fact that Table 1 suggests that many were impinged.

No evidence was found in the 316(b) that any fish were aged according to the scale method. Consequently, we assigned ages to the yellow perch in Figure 10 on the basis of the following age-length relation for Lake Erie yellow perch obtained from W. L. Hartman (personal communication); Hartman, Van Meter, Wolfert, and Busch (1974); and Hartman, Nepszy, and Scholl (1977):

YOY = $\leq$3.9 in. (approximately 10 cm)

Yearlings = 4.0-6.9 in. (approximately 10-17.9 cm)

Adults = $\geq$7 in. (approximately 18 cm)

Thus, according to our calculations, the perch represented in Figure 10 were <1% young-of-the-year (YOY), 29% yearlings, and 70% older individuals.

4. Biomass estimate of impinged fish

The 316(b) presents no estimate of the biomass of fish impinged at the Monroe plant, and, because Detroit Edison did not collect sufficient

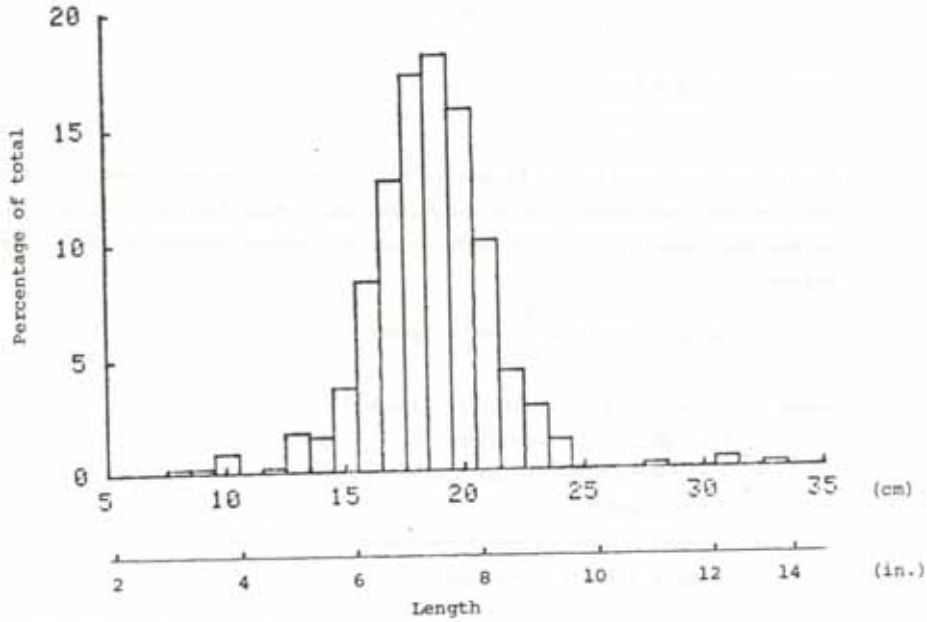

Figure 10. Length-frequency distribution of yellow perch. This distribution is based on measurements from Detroit Edison's length data sheets for fish pumped from the two test screenwells at the Monroe Power Plant (June 1975-May 1976).

weight or length data for all species of fish in their impingement samples, we cannot estimate the total biomass of fish that were impinged.

We were, however, able to develop an estimate of the biomass of yellow perch impinged using the length-frequency data presented in Figure 10 and the following length-weight relationship (Lake Erie Committee on Yellow Perch, 1976)[3/]:

$$W = 0.3729 \times 10^{-2} L^{3.2826} \qquad (4)$$

where W = weight (oz)
L = length (in)

The length distribution in Figure 10 was assumed to be representative of the impinged population, and a weight was calculated for each length class in the distribution. A total biomass was determined according to the equation below:

$$\text{Perch Biomass} = \sum_{L=3}^{13} [W_L \times (N \times \%_L)] \qquad (5)$$

where L = length of perch (in) in Figure 10
W_L = weight of an average perch of length L
$\%_L$ = percentage of impinged perch composed of individuals of length L
N = total number of perch impinged = 625,580 (refer to Table 3 of this report)

The estimate of the annual biomass of impinged yellow perch is 108,992 lb, with a 95% CI of 79,607-138,377 lb. This estimate, however, is based solely on Detroit Edison's measurements recorded on the length data sheets, which

---

[3/] The weights recorded on Detroit Edison's length data sheets could not be used because they were usually reported for groups of 10 fish (regardless of their lengths), instead of for individual fish, and because we do not know that these groups were representative of the impinged population.

we believe are biased toward the larger fish as discussed in Section II-B-3. The biomass estimate might therefore be high.

C. Evaluation of 316(b) Impact Analysis

1. Verification of trawl data used in the 316(b) for population estimates

The trawl data presented in 316(b) Tables 4.2-8 through 4.2-16 were taken directly by Detroit Edison from three sources: 1) an Ohio Department of Natural Resources (ODNR) report (Van Vooren, Davies, and Emond 1975), 2) unpublished MDNR index station computer printouts (MDNR 1970-75), and 3) a Michigan State University technical report (Cole 1976). Numerous minor disagreements (listed in Appendix F) exist, however, between the data presented in 316(b) Tables 4.2-8 through 4.2-16 and the data as presented in the original works cited above. One major error is incorrectly labeling a spring gillnet catch as a trawl catch in Table 4.2-10 and later including these gillnet data in the total column for trawl catch, thus making all of the values for total catch and catches per unit of effort (CPE) incorrect. The effect of these errors is discussed in Section II-C-2.

2. Verification of 316(b) population estimates

Population estimates in the 316(b) were derived by Detroit Edison from the MDNR and ODNR trawl data (discussed above) using a calculation described by the following equation:

$$\frac{\text{catch/trawl}}{\text{area/trawl}} \times \text{area of available habitat} = \text{population estimate} \qquad (6)$$

or

$$\text{catch/unit area} \times \text{area of available habitat} = \text{population estimate}$$

Although this equation permits calculation of an acceptable approximation of population size and was used consistently in the 316(b), inconsistent and erroneous descriptions of the calculation occur in the 316(b) text and tables:

(1) Indices of total population size of the major fish species in western Lake Erie were derived from trawl survey data (Michigan DNR, unpublished data; Van Vooren et al. 1975). Trawl catches were converted to catch per unit area trawled, which was then multiplied by the area of available habitat in the western basin to estimate total population size.

(p. 4.2-23)

(2) The population estimates were determined in the following manner. The trawl catch data were first expressed in terms of catch per unit area. The area covered by one unit of effort was determined by multiplying the width of the tow, calculated from the boat speed (6.4 kph or 4 mph) and the length of time of the tow. The population size was then determined from the product of the catch per unit area and the ratio of the area of the total available habitat (943 km^2 or 364 mi^2) to the area covered by one unit of trawl effort.

(p. 4.2-23)

(3) Estimates derived by multiplying catch per hour (Table 4.2-8) by the area covered in one hour of trawling (35-ft wide trawl by 4 mph) and dividing this into the area of habitat in Lake Erie (364 mi^2 or 30% of the western basin).

(Table 4.2-17;
Table 4.2-18 is similar)

(4) Estimates derived by multiplying catch per effort (Tables 4.2-9 through 4.2-15) by ratio of area of total available habitat (364 mi^2 or 30% of western basin) to area covered by one unit of trawl effort (33-ft wide trawl towed for 10 minutes).

(Table 4.2-19)

Examples 1 and 4 are correct descriptions and result in total catch; examples 2 and 3, however, yield $\frac{\text{catch}}{\text{area per effort}}$ and $\frac{h^2}{\text{catch}}$, respectively.

Despite the above inconsistencies, all but one of the population estimates, or population size indexes, presented in Tables 4.2-17 through 4.2-20 appear to have been correctly calculated. The one calculation error we found (in Table 4.2-18) overestimates the YOY shiner population by an order of magnitude (40,633,000 instead of 4,063,000).

The mislabeling in Table 4.2-10 (discussed in Section II-C-1) results in erroneous 1970 estimates in Table 4.2-19. Most of the 1970-75 mean estimates presented in Table 4.2-19 are thus also in error but by no more than 5%. Several other errors, most of which arise from errors made in Tables 4.2-8 through 4.2-16 are listed in Appendix F.

Although most of Detroit Edison's population estimates were calculated according to the correct formula using the data presented in the 316(b) and are free of arithmetic error, we believe that the estimates are biased in several ways:

a) The use of trawl catch data as the basis for population estimates is questionable and likely results in underestimates of true population size. The trawl data gathered by the MDNR (and probably also those collected by ODNR) were intended only as indexes of year-to-year relative abundance (R. C. Haas, MDNR, personal communication, August 10, 1977). Although we believe trawl catch data could have been adequate for estimating the population of age I and older yellow perch, we do not believe its use results in accurate estimates for all species. Detroit Edison acknowledges some of the limitations of using trawl catch data for population estimates on p. 4.2-23 of the 316(b):

> . . . Use of this type of data as a management tool is highly questionable because of natural variability in the data and the selective nature of the sampling gear. Since gill net and trapnet data cannot be quantified, these catch data could not be used in standing crop estimates. However, using conservative assumptions, such estimates can be used to predict minimal or conservative total population size for comparison with power plant fish impingement/entrainment data.
>
> The key conservative elements of this estimating technique are (1) the sampling gear was assumed to collect all of the fish in the area covered, and (2) the area covered was only a portion of the available habitat. Trawling, like most fish collection gear, is highly selective; that is, many fish are able to avoid or escape the net. The trawls used in these studies sampled only a small proportion of the water column near the bottom. Thus, use of trawl data to estimate density of fish-per-water-body area results in a significant underestimate of true population size.

b) The values used to calculate "area per trawl" (area of lake bottom covered per trawl tow) are incorrect and underestimate the standing stock of fish. The width given in the 316(b) for the MDNR trawl (33 ft) is the length of the trawl headrope (R. C. Haas, MDNR, personal communication, August 10, 1977). The width of the trawl opening while it is being fished would be smaller than the length of the headrope. The 316(b) calculations thus overestimate the area trawled and underestimate the population size (refer to Equation 6). The population estimates based on the ODNR data are probably similarly biased.

c) The value used in the 316(b) for "area of available habitat," stated to be 30% of the western basin area, or 364 square mi, also results in an underestimate of population size. Our planimetry readings of Lake Survey Chart No. 39 (National Oceanic and Atmospheric Administration 1974) for the west end of Lake Erie indicate that the area between 6 and 24 ft, defined in the 316(b) as available habitat, is approximately 40% of the basin area, or 485 square mi.

d) The manner in which Detroit Edison used the MDNR trawl data results in overestimates of the abundances of some species impinged at the Monroe plant. The 316(b) calculates mean CPE using data from two MDNR stations (Monroe and Sterling State Park) close to the Monroe plant site. Discussion with an MDNR official (W. Bryant, personal communication, August 17, 1977) revealed that during 1970-75 trawling by the MDNR could have been conducted at as many as three other stations in the Michigan waters of Lake Erie, in addition to the two used in the 316(b). During 1975 (the year considered in the impact analysis), trawling was conducted by the MDNR at a third station, near the Woodtick Peninsula approximately 10 mi south of the Monroe plant, but these data were not used in the 316(b). Inclusion of the data from this station would have lowered the 1975 mean CPE and population estimates for species including yellow perch, walleyes, shiners, alewife, smelt, trout-perch, and logperch.

3. Impingement impact as assessed in the 316(b) by percentage of source population lost

The 316(b) annual impingement impact assessment (Table 5.2-3) assumes 100% mortality of impinged fish and is based on the simple ratio of the number of fish impinged of a given species (Table 4.3-1) to the number of individuals of that species in the source population (Tables 4.2-17 through 4.2-20, Table 5.2-2). This approach requires that the impinged population be representative of the source population with which the comparison is being made (i.e., have the same size, age, and sex composition, etc.). In the 316(b), the values used for the numbers of fish impinged and the population estimates include fish of different combinations of age classes. Detroit Edison evidently made the assumption that the age distributions of the impinged population and the source population were identical, but this is not demonstrated in the 316(b). The age classes used in the population estimates are also not consistent (refer to Table 5.2-2). For example, the 316(b) population estimate for gizzard shad is the mean of the ODNR estimate which includes only YOY and the MNDR estimate which combines YOY and yearlings. The alewife population estimate is the mean of the MDNR estimate which combines YOY, yearling, and adults and the ODNR estimate which includes only YOY.

In addition to the concerns expressed above and in Section II-B-2 regarding the reliability of the values presented in Tables 5.2-2 and 5.2-3 of the 316(b), these tables also contain some values (transferred from Tables 4.2-17 - 4.2-20) that were previously identified as incorrect (refer to Appendix F).

Because Detroit Edison underestimated the numbers of fish impinged and failed to compare age-equivalent segments of the impinged and source populations, we do not believe that the effect of impingement losses at the Monroe plant is adequately assessed in the 316(b).

III. ENTRAINMENT AT MONROE POWER PLANT

A. Sampling Methods Used by Detroit Edison

The methods used by Detroit Edison for entrainment sampling are stated on p. 4.4-1 of the 316(b) as follows:

> **Samples of fish eggs and larvae were collected during a 58-week period: April 1975 through May 1976. The annual entrainment estimate is based upon the last 52 weeks of sampling.**
>
> Samples were collected at two depths (1 m and 3 m) at each of three stations in 1975 and at seven of the nine stations sampled in 1976 (Figure 4.4-1 and Table 4.4-1). Samples were collected using high capacity, Kenco Model 139 submersible sump pumps. The pumps were fitted with 5.1-cm flexible hoses, and water was pumped through a 1-x-3 m oceanographic plankton net with a mesh size of 571 μ. A five-foot head was usually maintained, and provided a measured flow of approximately 530 l/min. This flow yielded a 763,200-liter sample for the 24-hour collecting period. Flow was occasionally reduced when the pump became clogged with fish, and sample periods were started again if flows were significantly impeded. Since no inhose measuring device could be used, it was impossible to continuously monitor flow, and thus the assumption was made that all samples collected were based on the rated flow of 530 l/min.

1. *Gear*

The Michigan Water Resources Commission (MWRC) recommends a pump system for sampling nonscreenable organisms because such a system can be automated for continuous operation and the filtering of large, readily quantified sample volumes of cooling water (MWRC 1975a). Despite their usefulness, pump systems, like other sampling systems, have inherent disadvantages (MWRC 1975a; Brooks et al. 1975; U.S. EPA 1977),none of which was mentioned in the 316(b). One major disadvantage is the possible destruction of fragile organisms or life stages causing them to be undetected in the samples. Cole (1977) found that 40% of fish larvae collected by the Kenco[4/] pump were damaged and that 10% were so badly damaged that they could not be identified. A high incidence of damaged organisms would perhaps indicate some specimens were also lost and not counted.

Cole (1977) found that the Kenco pump is less effective for sampling fish larvae in the vicinity of the Monroe plant than either a 1-m plankton

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[4/] Reference to trade names or manufacturer's names in this report does not constitute endorsement of any commercial product.

net (571 μ) or a high speed plankton sampler. The lower efficiency of the pump system suggests that organisms are possibly being destroyed and not counted. It could also be due to avoidance of the pump intake by larger, more motile organisms or life stages, thus leading to an underestimate of the abundance of these forms. To prevent avoidance by fish larvae, the Lake Michigan Cooling Water Intake Technical Committee (1973) recommends that the sampling pump capacity be 100-200 gpm. The capacity of the pumps used by Detroit Edison (approximately 530 l/min or 140 gpm) was within this recommended range.

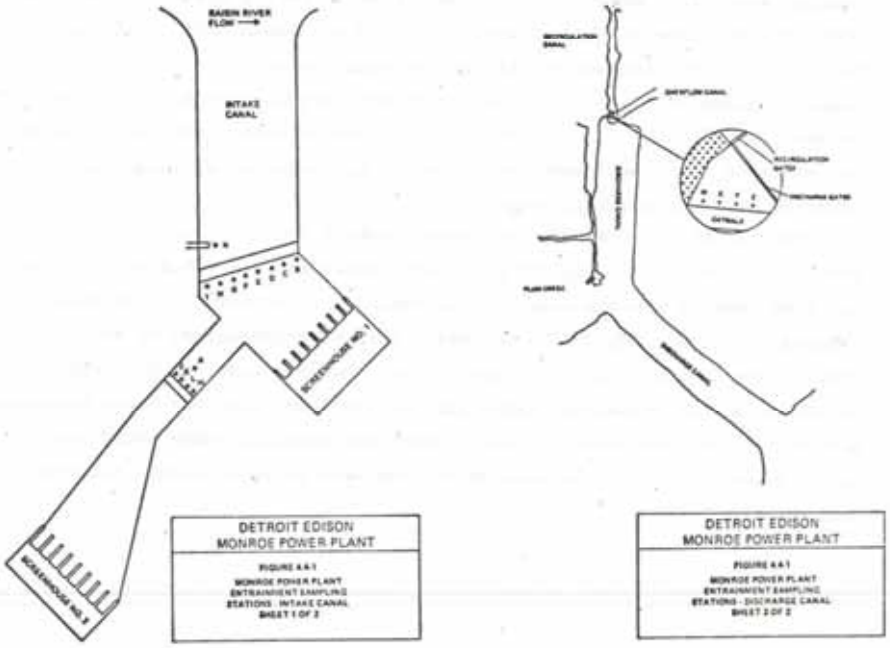
The 316(b) does not demonstrate, however, that the volume of water that passed through the Kenco sampling pumps was large enough to provide a reliable estimate of the target populations. When the Monroe plant was operating at full capacity (cooling water flow of 3,248 cfs) and eight sampling pumps were operating simultaneously (the maximum number used for sampling the cooling water flow in the main intake canal), 0.08% of the cooling water flow passed through these pumps. During periods of minimum cooling water flow (listed in Table 3.3-1 of the 316(b) as 870 cfs on May 1, 1975), the portion of the cooling water passing through the eight sampling pumps increased to 0.3%. Although the pump system used at the Monroe plant sampled a relatively large volume of water, the sample volume may not have been sufficient to adequately estimate the cooling water densities of less abundant organisms.

Detroit Edison states in the above excerpt from p. 4.4-1 of the 316(b) that flow through the sampling pumps was occasionally reduced by clogging and that "sample periods were started again if flows were significantly impeded." Detroit Edison did not state what they considered to be a significant reduction in flow, and samples therefore may not have been collected at the continuous rated flow of 530 l/min upon which the estimates are based. Any reduction in flow through the sampling pumps would result in an underestimate of the numbers of organisms being entrained through the plant.

The 571-μ mesh used in the plankton nets was probably satisfactory for the collection of eggs of any Lake Erie fish species. However, 351-μ mesh is approximately the largest that will permit collection of the smallest Great Lakes fish larvae (Brooks et al. 1975), and the youngest larvae of some species may therefore have been lost through the 571-μ net. The 571-μ mesh is also too coarse to provide adequate sampling of the smaller zooplankton, such as rotifers and copepod nauplii. Brooks et al. (1975) recommend a maximum mesh size of 160 μ for sampling zooplankton and also entrainable benthos. Netting of 76 μ has previously been used to concentrate zooplankton from west-central Lake Erie (Heberger and Reynolds 1977).

2. Location

During the period of April 1975 through May 1976, entrainment sampling was conducted at stations A-M in the intake canals and stations W-Z in the discharge canal, as shown below in Figure 4.4-1 of the 316(b).



These sampling locations do not permit an accurate estimate of the kinds and numbers of organisms entrained by the Monroe plant as discussed below.

a. Sampling depths. According to Table 4.4-1 (below) of the 316(b), entrainment samples were taken only at 1 m (3 ft) and 3 m (10 ft), although Figure 3.2-2 of the 316(b) shows that the canal is 7 m (23 ft) deep at normal high water and 5 m (17 ft) deep at normal low water.

TABLE 4.4-1 ENTRAINMENT SAMPLING SCHEDULE AT THE MONROE POWER PLANT WITH REFERENCE TO STATION LOCATION

Station[a]	Location and Depth	Sampling Schedule	
		Commencement	Termination
A	(Intake -1 and 3m)	05/01/75	12/13/75
B	(Intake north extra - 3m)	12/19/75	05/15/76[b]
C	(Intake north - 1m)	12/12/75	05/15/76
D	(Intake north - 3m)	12/12/75	05/15/76
E	(Intake center - 1m)	12/12/75	05/15/76
F	(Intake center - 3m)	12/12/75	05/15/76
G	(Intake south - 1m)	12/12/75	05/15/76
H	(Intake south - 3m)	12/12/75	05/15/76
I	(Intake south extra - 1m)	12/19/75	05/15/76
J	(Secondary west - 3m)	12/12/75	05/15/76
K	(Secondary west - 1m)	12/12/75	05/15/76
L	(Secondary east - 1m)	12/12/75	05/15/76
M	(Secondary east - 3m)	12/12/75	05/15/76
N	(Fish pump pool discharge)[c]	11/13/75	05/15/76
W	(Discharge west - 3m)	04/15/75	12/15/75
		04/15/76	05/15/76
X	(Discharge west - 1m)	04/15/75	12/15/75
		04/15/76	05/15/76
Y	(Discharge east - 1m)	04/15/75	12/15/75
		04/15/76	05/15/76
Z	(Discharge east - 3m)	04/15/75	12/15/75
		04/15/76	05/15/76

a. Corresponds to sampling stations on Figure 4.4-1.
b. May 15, 1976, is last day of data used for period of record.
c. Data not used in entrainment estimate.

The depths at which these samples were taken are of concern because the available evidence shows that most entrainable organisms are more abundant near the bottom of the water column than near the surface. Collections by Cole (1977) with a 571-μ mesh net fished near the bottom included many more larvae of important fishes than did collections nearer the surface.

One-way analyses of variance (ANOVA) were conducted on data from Detroit Edison's daily entrainment data sheets [transformed by $\log_{10}$ (x + 1) to help normalize the data[5/]] to determine whether daily entrainment estimates based on samples collected at a depth of 1 m were significantly different from estimates based on samples collected from 3 m in the main intake canal. The mean number of fish larvae entrained from 3 m was higher than that from 1 m (except for smelt), although our ANOVA's show no significant differences at P = 0.05 (Table 6).

The mean number of fish eggs entrained (all species combined) was higher based on collections made from 1 m than from 3 m, although the difference was not significant at the P = 0.05 level (Table 7). The presence of large numbers of eggs at the 1- and 3-m depths is surprising because most species in western Lake Erie have demersal or semi-demersal eggs (Scott and Crossman 1973). Many of these eggs could have been drum eggs, which are pelagic (Davis 1959, refer to p. 104 of this report), or burbot eggs, which are semi-pelagic (Scott and Crossman 1973), but this cannot be stated with certainty because less than 1 percent of the eggs collected during the period of the ANOVA (December 1975-May 1976; refer to Table 4.4-1 on p. 43) were identified to taxon.

Cole (1977) found in studies at the Monroe plant that cladocerans, copepods, and chironomids are also more abundant near bottom. Our ANOVA's carried out for the most commonly entrained macrozoobenthic organisms show that significantly higher numbers (P = 0.05) of Chironomidae and all species combined were entrained from 3 m than from 1 m (Table 8). For Simuliidae, Hydropsyche, and Gammarus mean entrainment estimates based on 3-m samples were much higher than those based on 1-m samples, although the difference was not significant at the P = 0.05 level.

[5/] Although our $\log_{10}$ (x + 1) transformation did help to normalize much of the Detroit Edison entrainment data, the ANOVA tables indicate that in some cases this transformation did not make the variances completely homogeneous and that the requirements for parametric statistics tests might not have been met.

Table 6. ANOVA tables showing differences between daily entrainment estimates for fish larvae from 1-m depth and from 3-m depth in the main intake canal; calculated from counts on Detroit Edison's daily entrainment data sheets [transformed by $\log_{10}(x + 1)$].

UNIVARIATE 1-WAY ANOVA CASES+SPEC 900+DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 1.LARV N= 98 OUT OF 98 LARVAE - ALL SPECIES COMBINED

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.15449 +9	.15449 +9	.26322	.6754
WITHIN	96	.45587+11	.47511 +9		
TOTAL	97	.51427+11	(RANDOM EFFECTS STATISTICS)		

ETA= .0521 ETA-SQR= .0025 (VAR COMP= -.67034 +7 VAR AMONG= -0.1

STA	N	MEAN	VARIANCE	STD DEV
1 =	49	7541.9	.23934 +9	15450.
2 =	49	9847.5	.62734 +9	25047.
GRAND	98	8614.5	.42936 +9	20731.

UNIVARIATE 1-WAY ANOVA CASES+SPEC 801+DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 1.LARV N= 98 OUT OF 98 PERCH LARVAE

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.17151 +9	.17151 +9	.91761	.3405
WITHIN	96	.17943+11	.18691 +9		
TOTAL	97	.18115+11	(RANDOM EFFECTS STATISTICS)		

ETA= .0973 ETA-SQR= .0095 (VAR COMP= -.31429 +8 VAR AMONG= -0.1

STA	N	MEAN	VARIANCE	STD DEV
1 =	49	2325.8	.66733 +8	8167.4
2 =	49	4971.6	.30709 +9	17524.
GRAND	98	3648.7	.18675 +9	13666.

UNIVARIATE 1-WAY ANOVA CASES+SPEC 100+DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 1.LARV N= 98 OUT OF 98 CLUPEID LARVAE

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.17073 +8	.17073 +8	1.6573	.2011
WITHIN	96	.96594 +9	.10301 +8		
TOTAL	97	.10068+10	(RANDOM EFFECTS STATISTICS)		

ETA= .1303 ETA-SQR= .0170 (VAR COMP= .13619 +8 VAR AMONG= 1.321

STA	N	MEAN	VARIANCE	STD DEV
1 =	49	711.07	.30122 +7	1735.4
2 =	49	1548.4	.17591 +8	4194.1
GRAND	98	1131.1	.10371 +8	3220.4

UNIVARIATE 1-WAY ANOVA CASES+SPEC 1100+DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 1.LARV N= 98 OUT OF 98 CRYPTIN LARVAE

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.12453 +7	.12453 +7	2.6428	.1073
WITHIN	96	.45248 +8	.47133 +6		
TOTAL	97	.58693 +8	(RANDOM EFFECTS STATISTICS)		

ETA= .1637 ETA-SQR= .0268 (VAR COMP= 13795. VAR AMONG= 3.241

STA	N	MEAN	VARIANCE	STD DEV
1 =	49	82.918	.13286 +6	364.50
2 =	49	324.37	.80761 +6	899.69
GRAND	98	195.64	.61931 +6	892.32

UNIVARIATE 1-WAY ANOVA CASES+SPEC 1500+DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 1.LARV N= 98 OUT OF 98 FRESHWATER DRUM LARVAE

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.19300 +6	.19300 +6	1.3034	.2564
WITHIN	96	.14215 +8	.14807 +6		
TOTAL	97	.15509 +8	(RANDOM EFFECTS STATISTICS)		

ETA= .1157 ETA-SQR= .0134 (VAR COMP= 916.92 VAR AMONG= .621

STA	N	MEAN	VARIANCE	STD DEV
1 =	49	32.347	25159.	158.62
2 =	49	121.10	.27248 +6	522.36
GRAND	98	76.724	.14853 +6	385.60

UNIVARIATE 1-WAY ANOVA CASES+SPEC 1800+DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 1.LARV N= 98 OUT OF 98 SMELT LARVAE

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.59438 +6	.59438 +6	.26172 -1	.6718
WITHIN	96	.21924+10	.22734 +9		
TOTAL	97	.21921+10	(RANDOM EFFECTS STATISTICS)		

ETA= .0165 ETA-SQR= .0003 (VAR COMP= -.45181 +6 VAR AMONG= -0.1

STA	N	MEAN	VARIANCE	STD DEV
1 =	49	1429.3	.22130 +9	4729.4
2 =	49	1252.5	.23137 +8	4810.1
GRAND	98	1330.4	.22505 +8	4744.0

Table 7. ANOVA table showing difference between daily entrainment estimates for fish eggs from 1-m depth and from 3-m depth in the main intake canal; calculated from counts on Detroit Edison's daily entrainment data sheets [transformed by $\log_{10}$ (x +1)].

UNIVARIATE 1-WAY ANOVA CASES=SPEC 900*DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 2.EGGS N= 98 OUT OF 98 EGGS - ALL SPECIES COMBINED

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.13455 +9	.13455 +9	2.0962	.1509
WITHIN	96	.61617+10	.64184 +8		
TOTAL	97	.62962+10	(RANDOM EFFECTS STATISTICS)		

ETA= .1462 ETA-SQR= .0214 (VAR COMP= .14359 +7 VAR AMONG= 2.19)

STA	N	MEAN	VARIANCE	STD DEV
1 m	49	3708.7	.10106 +9	10053.
3 m	49	1365.3	.27304 +8	5225.4
GRAND	98	2537.0	.64910 +8	8056.7

Table 8. ANOVA tables showing differences between daily entrainment estimates for macrozoobenthos from 1-m depth and from 3-m depth in the main intake canal; calculated from counts on Detroit Edison's daily entrainment data sheets [transformed by $\log_{10}(x + 1)$].

UNIVARIATE 1-WAY ANOVA CASES+SPEC 900+DAY 369-399,401-500

ANALYSIS OF VARIANCE OF Z.EST N= 98 OUT OF 98 MACROZOOBENTHOS - ALL SPECIES COMBINED

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.75678+10	.75678+10	4.2481	.0420
WITHIN	96	.17167+12	.17562+10		
TOTAL	97	.17906+12	(RANDOM EFFECTS STATISTICS)		

ETA= .2358 ETA-SQR= .0424 (VAR COMP= .11848 +9 VAR AMONG= 8.221

STA	N	MEAN	VARIANCE	STD DEV
1 M	49	.17117.	.66508 +9	25999.
3 M	49	34715.	.29273+10	54105.
GRAND	98	25916.	.18480+10	42985.

UNIVARIATE 1-WAY ANOVA CASES+SPEC 412+DAY 369-399,401-500

ANALYSIS OF VARIANCE OF Z.EST N= 98 OUT OF 98 CHIRONOMIDAE

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.59398+10	.59398+10	4.4892	.0347
WITHIN	96	.12648+12	.13009+10		
TOTAL	97	.13072+12	(RANDOM EFFECTS STATISTICS)		

ETA= .2214 ETA-SQR= .0447 (VAR COMP= .92631 +8 VAR AMONG= 8.651

STA	N	MEAN	VARIANCE	STD DEV
1 M	49	13425.	.42083 +9	20709.
3 M	49	28664.	.21329+10	46614.
GRAND	98	21145.	.13477+10	36719.

UNIVARIATE 1-WAY ANOVA CASES+SPEC 414+DAY 369-399,401-500

ANALYSIS OF VARIANCE OF Z.EST N= 98 OUT OF 98 OLIGOCHAETA

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.25248 +7	.25248 +7	2.8179	.0969
WITHIN	96	.86015 +8	.87237 +6		
TOTAL	97	.9050+ +8	(RANDOM EFFECTS STATISTICS)		

ETA= .1689 ETA-SQR= .0285 (VAR COMP= 51241. VAR AMONG= 3.581

STA	N	MEAN	VARIANCE	STD DEV
1 M	49	87.673	76854.	277.13
3 M	49	389.69	.17179 +7	1310.7
GRAND	98	222.16	.91279 +6	955.40

UNIVARIATE 1-WAY ANOVA CASES+SPEC 470+DAY 369-399,401-500

ANALYSIS OF VARIANCE OF Z.EST N= 98 OUT OF 98 ENCHYTRAEIDAE

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.49666 +6	.49666 +6	1.0658	.3043
WITHIN	96	.43795 +8	.45620 +6		
TOTAL	97	.44292 +8	(RANDOM EFFECTS STATISTICS)		

ETA= .1346 ETA-SQR= .0110 (VAR COMP= 621.69 VAR AMONG= .142

STA	N	MEAN	VARIANCE	STD DEV
1 M	49	85.714	30139.	100.23
3 M	49	225.49	.83226 +6	904.78
GRAND	98	155.18	.45651 +6	675.68

UNIVARIATE 1-WAY ANOVA CASES+SPEC 205+DAY 369-399,401-500

ANALYSIS OF VARIANCE OF Z.EST N= 98 OUT OF 98 GAMMARIDS

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.35744 +7	.35744 +7	1.5425	.2173
WITHIN	96	.22156 +9	.23175 +7		
TOTAL	97	.22613 +9	(RANDOM EFFECTS STATISTICS)		

ETA= .1258 ETA-SQR= .0158 (VAR COMP= 25655. VAR AMONG= 1.101

STA	N	MEAN	VARIANCE	STD DEV
1 M	49	315.22	.49205 +6	701.49
3 M	49	697.18	.41429 +7	2035.3
GRAND	98	506.20	.23402 +7	1526.9

Cole (1976, 1977) also found that most fish larvae concentrate at the bottom at least during the day. Larvae of some species move towards the surface at night, while others, such as yellow perch and shiners, tend to always remain near the bottom. During the routine 316(b) entrainment monitoring, Detroit Edison conducted diurnal sampling (12-h day and night collections) at four stations in the main intake canal on 5 days during April and May of 1976 (Tables 9 and 10). Paired t-tests conducted on the counts in Tables 9 and 10 [transformed by $\log_{10}(x + 1)$] show that significantly more ($P = 0.01$) fish larvae (of all species combined) and invertebrates (of all species combined) were collected at night than during the day. The larger catches of fish larvae at night may reflect increased sampling effectiveness due to reduced gear avoidance and to migration of the larvae toward the surface where more of them became vulnerable to capture in the sampling gear; the larger catches at night may also indicate that greater numbers of larvae were entrained at night. Samples taken in only the upper strata of the intake canal, especially during the daylight hours, were therefore probably not representative of the kinds and numbers of organisms that were actually being entrained.

b. Stratification of intake water. The difficulty in obtaining representative entrainment samples in the intake canal because of incomplete mixing of river and lake water in the canal is discussed by Cole (1976) as follows:

> The intake was particularly difficult to sample at the Monroe Power Plant because the actual intake canal was too short to allow complete mixing of Raisin River and lake waters before the water passed into the condensers (see Figure 3-2). Depending on the variation in river discharge, the intake water would have imperfectly mixed portions of river and lake water which would be difficult to sample representatively with a reasonable sampling intensity.

Both the vertical and horizontal stratification in the intake canal can vary seasonally as the portions of river and lake water in the intake flow change. The problem of vertical stratification may be accentuated by the presence of skimmer walls in both screenhouses, which extend from the surface to approximately mid-depth in the water column.

Table 9. Diurnal variations in numbers of total fish larvae collected during 12-h periods at stations in main intake canal (actual counts from Detroit Edison's daily entrainment data sheets). IC = intake center, IN = intake north, IS = intake south.

DATE	STATION AND DEPTH	DAY	NIGHT
4/09/76	IC - 1m	1	1
4/20/76	IN - 3m	0	0
"	IC - 1m	0	3
"	IC - 3m	0	2
"	IS - 1m	0	2
4/27/76	IN - 3m	11	9
"	IC - 1m	3	24
"	IC - 3m	9	8
"	IS - 1m	1	5
5/04/76	IN - 3m	6	30
"	IC - 1m	11	2
"	IC - 3m	9	25
"	IS - 1m	1	16
5/11/76	IN - 3m	3	0
"	IC - 1m	0	3
"	IC - 3m	0	3
"	IS - 1m	1	3

Table 10. Diurnal variations in numbers of total macrozoobenthic organisms collected during 12-h periods at stations in main intake canal (actual counts from Detroit Edison's daily entrainment data sheets). IC = intake center, IN = intake north, IS = intake south.

DATE	STATION AND DEPTH	DAY	NIGHT
4/09/76	IC - 1m	4	10
4/20/76	IN - 3m	1	5
"	IC - 1m	0	2
"	IC - 3m	4	9
"	IS - 1m	2	5
4/27/76	IN - 3m	3	20
"	IC - 1m	3	13
"	IC - 3m	12	16
"	IS - 1m	4	11
5/04/76	IN - 3m	30	40
"	IC - 1m	15	2
"	IC - 3m	19	27
"	IS - 1m	2	25
5/11/76	IN - 3m	15	45
"	IC - 1m	12	16
"	IC - 3m	26	40
"	IS - 1m	7	18

c. Location of sampling pumps in relation to intake screens. Most or all of the problems associated with the vertical stratification of flow and organisms probably could have been avoided by locating the pump intakes behind the traveling screens as suggested by R. S. Benda (1975):

> Comment of R.S. Benda, Aquinas College, Grand Rapids, Michigan:
>
> Pump Location - Pumps should be located behind the traveling screens if at all possible to avoid the problem of pumping adult fish in the collecting nets. We have experienced several pump cloggings when numerous adult fish inhabit the intake bays.

The location of the sampling pumps in front of the screenhouses probably accounts for much of the clogging problem discussed in Section III-A-1 of this report because of the pumping of adult fish, primarily shiners. The Monroe data base often lists adult fish as being found in the entrainment samples (see Table 11). Locating the sampling pump intakes in the turbulent areas immediately behind the intake screens would also probably result in reduced gear avoidance and more effective sampling of entrained organisms.

d. Sampling in the secondary intake canal. The reason for conducting sampling in the secondary intake canal at stations A and J-M (refer to Figure 4.4-1) is not explained in the 316(b). One-way ANOVA's [based on Detroit Edison's counts transformed by $\log_{10}(x + 1)$] show that for fish larvae of all species combined there is a significant difference ($P = 0.05$) between daily entrainment estimates based on samples from the main intake canal and those based on samples from the secondary canal (Table 12). Mean estimates for the entrainment of larvae of other commonly entrained species, except catfish (Table 12), and for the entrainment of eggs of all species combined (Table 13) were also considerably greater from the main intake, although the differences were not significant at the $P = 0.05$ level. For macrozoobenthos, the mean estimate from the secondary canal was higher than that from the main intake, but this difference was also not significant at $P = 0.05$ (Table 14). The differences in the kinds and numbers of organisms collected in the two intake canals may have been due to the horizontal stratification of the intake water previously discussed.

Table 11. Example of Detroit Edison's daily entrainment data sheets showing adult fish collected in samples.

Monroe Plant Pump Sample Data

# of Pumps A

Dates 12/3-4/75 Time 8AM-8AM # of Hours 24 Location Intake Level Surface

INVERTEBRATES

Organism	Total Number	Organism	Total Number	Organism	Total Number	Organism	Total Number
Order Acarina		Order Diptera		Order Gastropoda		Order Oligochaeta	
Order Amphipoda		Ceratopogonidae		Order Gordiida		Order Pelecypoda	
Pontoporeia affinis		Bezzia		Order Hemiptera		Order Plecoptera	
Gammarus		Chironomidae		Corixidae		Arcynopteryx	
Order Coleoptera		Larvae		Nebridae		Order Tricoptera	
Curculionidae		Pupae		Notonectidae		Hydropsyche	
Elmidae		Culicidae		Order Hirudinea		Nemerclipsis	
		Chaoborus		Order Isopoda		Phylocentropus	
Order Copepoda		Order Ephemeroptera		Order Hyalidacea		Psychomyia	
Argulus		Baetisca		Hyalella pelicta		Order Trichadida	
Order Decapoda		Hexagenia		Order Odonata		Order Diptera	
				Anisogrion		Simuliidae	2

Diversity Index (Based on Orders) Lowest Number of Groups 1 Number of Individuals 2

FISH

Species	# of Eggs	# of Egg Larvae	# of Yolk Sac Larvae	# of Larvae	# of Prejuvenile	# of Juvenile	# of Adult	Notes
Emerald Shiner							5	

Table 12. ANOVA tables showing differences between daily entrainment estimates for fish larvae from the main intake canal (1) and from the secondary intake canal (2); calculated from counts on Detroit Edison's daily entrainment data sheets [transformed by $\log_{10}(x + 1)$].

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UNIVARIATE 1-WAY ANOVA  CASES+SPEC 800+DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 3.LARV  N= 98 OUT OF 98   (WHITE - ALL SPECIES COMBINED)

SOURCE              DF SUM OF SQRS  MEAN SQR  F-STATISTIC SIGNIF

BETWEEN              1   .55720 +9  .55720 +9  3.9186      .0500
WITHIN              96   .13581+11  .14147 +9
TOTAL               97   .14137+11  (RANDOM EFFECTS STATISTICS)

ETA= .1985  ETA-SQR= .3996  (VAR COMP= .84843 +7   VAR AMONG= 5.661

STA          N   MEAN    VARIANCE   STD DEV

(1)         49  7320.5    .25816 +9  16067.
(2)         49  2551.9    .24790 +8  4979.0

GRAND       98  4936.0    .14576 +9  12079.
```

```
UNIVARIATE 1-WAY ANOVA  CASES+SPEC 100+DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 3.LARV  N= 98 OUT OF 98   (CARPSUCKERS)

SOURCE              DF SUM OF SQRS  MEAN SQR  F-STATISTIC SIGNIF

BETWEEN              1   .59114 +7  .59114 +7  1.4782      .2270
WITHIN              96   .38330 +9  .39959 +7
TOTAL               97   .39101 +9  (RANDOM EFFECTS STATISTICS)

ETA= .1231  ETA-SQR= .0152  (VAR COMP= 39050.   VAR AMONG= .973

STA          N   MEAN    VARIANCE   STD DEV

(1)         49  1022.4    .60551 +7  2457.9
(2)         49  531.20    .15487 +7  1396.0

GRAND       98  776.81    .40187 +7  2004.7
```

```
UNIVARIATE 1-WAY ANOVA  CASES+SPEC 800+DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 3.LARV  N= 98 OUT OF 98   (PERCH)

SOURCE              DF SUM OF SQRS  MEAN SQR  F-STATISTIC SIGNIF

BETWEEN              1   .15763 +9  .15763 +9  3.2040      .0765
WITHIN              96   .47231+10  .49187 +8
TOTAL               97   .48777+10  (RANDOM EFFECTS STATISTICS)

ETA= .1796  ETA-SQR= .0323  (VAR COMP= .22135 +7   VAR AMONG= 4.311

STA          N   MEAN    VARIANCE   STD DEV

(1)         49  2723.5    .96551 +8  9718.1
(2)         49  392.98    .38928 +7  1973.0

GRAND       98  1461.2    .50249 +8  7091.2
```

```
UNIVARIATE 1-WAY ANOVA  CASES+SPEC 100+DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 3.LARV  N= 98 OUT OF 98   (WHITE)

SOURCE              DF SUM OF SQRS  MEAN SQR  F-STATISTIC SIGNIF

BETWEEN              1   .21275 +8  .21275 +8  1.7919      .1859
WITHIN              96   .11872+10  .11872 +8
TOTAL               97   .11610+10  (RANDOM EFFECTS STATISTICS)

ETA= .1354  ETA-SQR= .0183  (VAR COMP= .19186 +6   VAR AMONG= 1.593

STA          N   MEAN    VARIANCE   STD DEV

(1)         49  1319.4    .21703 +9  4658.6
(2)         49  364.02    .20410 +7  1428.6

GRAND       98  841.93    .11968 +8  3459.6
```

```
UNIVARIATE 1-WAY ANOVA  CASES+SPEC 1100+DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 3.LARV  N= 98 OUT OF 98   (CATFISH)

SOURCE              DF SUM OF SQRS  MEAN SQR  F-STATISTIC SIGNIF

BETWEEN              1   .13471 +7  .13471 +7  2.0669      .1538
WITHIN              96   .62573 +8  .65183 +6
TOTAL               97   .63920 +8  (RANDOM EFFECTS STATISTICS)

ETA= .1452  ETA-SQR= .0211  (VAR COMP= 14191.   VAR AMONG= 2.131

STA          N   MEAN    VARIANCE   STD DEV

(1)         49  193.24    .31772 +6  563.67
(2)         49  414.73    .98587 +6  992.91

GRAND       98  302.49    .65897 +6  811.77
```

```
UNIVARIATE 1-WAY ANOVA  CASES+SPEC 1300+DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 3.LARV  N= 98 OUT OF 98   (FRESHWATER DRUM)

SOURCE              DF SUM OF SQRS  MEAN SQR  F-STATISTIC SIGNIF

BETWEEN              1   87274.     87274.     1.4709      .1656
WITHIN              96   .57343 +7  .52224.
TOTAL               97   .61177 +7  (RANDOM EFFECTS STATISTICS)

ETA= .1428  ETA-SQR= .0201  (VAR COMP= 832.66   VAR AMONG= 1.943

STA          N   MEAN    VARIANCE   STD DEV

(1)         49  73.551    72415.     269.10
(2)         49  15.408    11613.     107.86

GRAND       98  44.480    42449.     206.02
```

Table 13. ANOVA tables showing differences between daily entrainment estimates for fish eggs from the main intake canal (1) and from the secondary intake canal (2); calculated from counts on Detroit Edison's daily entrainment data sheets [transformed by $\log_{10}$ (x + 1)].

UNIVARIATE 1-WAY ANOVA CASES=SPEC 900*DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 2.EGGS N= 98 OUT OF 98 EGGS - ALL SPECIES COMBINED

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.22923 +8	.22923 +8	2.0637	.1541
WITHIN	96	.10664+10	.11108 +8		
TOTAL	97	.10893+10	(RANDOM EFFECTS STATISTICS)		

ETA= .1451 ETA-SQR= .0210 (VAR COMP= .24113 +6 VAR AMONG= 2.12)

STA	N	MEAN	VARIANCE	STD DEV
(1)	49	1698.0	.15193 +8	3897.8
(2)	49	730.76	.70230 +7	2650.1
GRAND	98	1214.4	.11230 +8	3351.1

Table 14. ANOVA tables showing differences between daily entrainment estimates for macrozoobenthos from the main intake canal (1) and from the secondary intake canal (2); calculated from counts on Detroit Edison's daily entrainment data sheets [transformed by $\log_{10}(x + 1)$].

```
UNIVARIATE 1-WAY ANOVA  CASES=SPEC 900=DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 2.EST  N= 98 OUT OF 98   MACROZOOBENTHOS - ALL SPECIES COMBINED

SOURCE              DF SUM OF SQRS  MEAN SQR  F-STATISTIC SIGNIF

BETWEEN              1   .19038+10  .19038+10  .92256      .3392
WITHIN              96   .19821+12  .20637+10
TOTAL               97   .20001+12  (RANDOM EFFECTS STATISTICS)

ETA= .0976  ETA-SQR= .0095  (VAR COMP= -.32616 +7   VAR AMONG= -0.1

STA          N   MEAN     VARIANCE    STD DEV

(1)         49  23654.    .12611+10   35512.
(2)         49  32469.    .28662+10   53537.

GRAND       98  28062.    .20620+10   45439.
```

```
UNIVARIATE 1-WAY ANOVA  CASES=SPEC 412=DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 2.EST  N= 98 OUT OF 98   CHIRONOMIDAE

SOURCE              DF SUM OF SQRS  MEAN SQR  F-STATISTIC SIGNIF

BETWEEN              1   .47934 +8  .47934 +8  .30218      .5826
WITHIN              96   .11784+12  .12222+10
TOTAL               97   .11781+12  (RANDOM EFFECTS STATISTICS)

ETA= .0438  ETA-SQR= .0041  (VAR COMP= -.15161 +8   VAR AMONG= -0.1

STA          N   MEAN     VARIANCE    STD DEV

(1)         49  19139.    .87475 +8   29576.
(2)         49  23559.    .15497+10   39370.

GRAND       98  21347.    .12164+10   34851.
```

```
UNIVARIATE 1-WAY ANOVA  CASES=SPEC 4(1=DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 2.EST  N= 98 OUT OF 98   EDMUNDINE

SOURCE              DF SUM OF SQRS  MEAN SQR  F-STATISTIC SIGNIF

BETWEEN              1   .16925 +7  .16925 +7  .84135      .3479
WITHIN              96   .18228 +9  .19928 +7
TOTAL               97   .18238 +9  (RANDOM EFFECTS STATISTICS)

ETA= .0959  ETA-SQR= .0092  (VAR COMP= -4210.3   VAR AMONG= -0.1

STA          N   MEAN     VARIANCE    STD DEV

(1)         49  202.20    .41672 +6   645.82
(2)         49  445.04    .33909 +7   1838.7

GRAND       98  323.62    .18947 +7   1377.2
```

```
UNIVARIATE 1-WAY ANOVA  CASES=SPEC 4(1=DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 2.EST  N= 98 OUT OF 98   HYDROPTICHE

SOURCE              DF SUM OF SQRS  MEAN SQR  F-STATISTIC SIGNIF

BETWEEN              1   .11602 +6  .11602 +6  .21761      .6419
WITHIN              96   .51134 +8  .53317 +6
TOTAL               97   .51305 +8  (RANDOM EFFECTS STATISTICS)

ETA= .0476  ETA-SQR= .0023  (VAR COMP= -8513.1   VAR AMONG= -0.3

STA          N   MEAN     VARIANCE    STD DEV

(1)         49  132.10    .26227 +6   512.13
(2)         49  231.92    .80406 +6   896.69

GRAND       98  172.51    .57287 +6   727.23
```

```
UNIVARIATE 1-WAY ANOVA  CASES=SPEC 2(4=DAY 365-399,401-500

ANALYSIS OF VARIANCE OF 2.EST  N= 98 OUT OF 98   CONGURE

SOURCE              DF SUM OF SQRS  MEAN SQR  F-STATISTIC SIGNIF

BETWEEN              1   .64013 +8  .64013 +8  2.7755      .0990
WITHIN              96   .22160+10  .23062 +8
TOTAL               97   .22760+10  (RANDOM EFFECTS STATISTICS)

ETA= .1676  ETA-SQR= .0281  (VAR COMP= .83546 +6   VAR AMONG= 3.501

STA          N   MEAN     VARIANCE    STD DEV

(1)         49  427.73    .15326 +7   1236.0
(2)         49  2044.1    .44572 +8   6677.7

GRAND       98  1283.9    .23484 +8   4846.1
```

e. Sampling in the discharge canal. Sampling for entrained organisms in the discharge was done by Detroit Edison at stations W-Z, which were approximately 305 m (1,000 ft) downstream from the point of condenser discharge at the junction of the overflow canal with the discharge canal (see Figure 4.4-1). No reason was given in the 316(b) for selecting this sampling location. The 316(b) assumes 100% mortality of entrained organisms; discharge samples therefore were not necessary for estimating mortality through the plant. If discharge samples were taken to estimate the kinds and numbers of organisms entrained, the samples should have been taken close to the point of condenser discharge before the organisms in the discharge water began to stratify vertically. This is especially critical because, as discussed previously, the greatest depth at which 316(b) samples were collected was 3 m (10 ft); but according to Cole (undated (a) and Detroit Edison 1976(b)), depths in the upper discharge canal vary from approximately 5 m (15 ft) to 8 m (25 ft). Cole (1977) calculated that at full plant operation the passage time through the overflow canal is 20 min. At a mean plant capacity of 55.8% (Table 3.3-2 of the 316(b)), the passage time is approximately 36 min. An organism that was discharged into the surface waters at the head of the overflow canal would only need to settle at a rate of approximately 0.3 ft/min (10 ft/36 min) to be below the 3-m (10-ft) depth at the end of the overflow canal and to be invulnerable to collection in the entrainment samples.

Counts from Detroit Edison's daily entrainment data sheets for the 12 days in April and May 1976 when all four discharge stations were sampled simultaneously (Table 15) show that the average number of fish larvae collected from 3 m was higher than that collected from 1 m. This suggests that vertical stratification may have occurred in the overflow canal upstream from the sampling stations, and a paired t-test (one-tailed) conducted on the counts [transformed by $\log_{10}(x + 1)$] supported this interpretation at $P = 0.07$, but not at $P = 0.05$.

3. Schedule

The entrainment data in the 316(b) is based on samples taken from mid-April 1975 through mid-May 1976 (refer to 316(b) Table 4.4-1 presented

Table 15. Variations in numbers of fish larvae collected at 1-m and 3-m depths in discharge canal (actual counts from Detroit Edison's daily entrainment data sheets).

Date	Depth	
	1 m	3 m
4/20/76	20	30
4/27/76	13	11
4/28/76	5	20
4/30/76	8	43
5/04/76	3	105
5/05/76	0	8
5/07/76	2	34
5/08/76	73	16
5/09/76	12	8
5/11/76	7	8
5/12/76	6	3
5/15/76	2	0

on p. 43). Detroit Edison's daily entrainment data sheets show that an average of four samples (range of 1-6) were taken each week from April to December 1975; an average of two samples (range of 1-4) each week from December 1975 to mid-April 1976; and an average of three each week (range of 1-5) during the month of mid-April to mid-May 1976. No samples were collected during the weeks of December 7-13, 1976, and February 15-21, 1976.

A major concern with the 316(b) entrainment sampling schedule shown in Table 4.4-1 is the nonsystematic manner in which the sampling effort was distributed among the stations: from April to December 1975, samples were collected only in the discharge canal (stations W, X, Y, Z) and at one station (A) in the secondary intake canal (see Figure 4.4-1 on p. 42 for station locations); from December 1975 to April 1976, samples were collected in both the main and secondary intake canals; and from April 15 to May 15, 1976, sampling was conducted simultaneously in both intake canals and the discharge canal.

One-way ANOVA's of daily estimates calculated from the daily entrainment data sheets [counts transformed by $\log_{10}(x + 1)$] show that estimates based on discharge samples differed significantly ($P = 0.05$) from those based on intake samples for many of the taxa considered (Tables 16-18) and that the direction of the variation differed among groups of organisms. Entrainment estimates for the larvae of perch and freshwater drum are significantly higher from the intake samples than from the discharge samples, while estimates for catfish larvae are significantly higher from the discharge (Table 16). The mean estimates for the larvae of smelt, clupeids, and all species combined were lower from the discharge than from the intake, but the differences were not significant at $P = 0.05$. The mean estimate for the eggs of all species combined was significantly higher from the discharge samples at the $P = 0.06$ level but not at the $P = 0.05$ level (Table 17). All of the commonly entrained benthic organisms except Hydropsyche were significantly more abundant ($P = 0.05$) in samples from the intake (Table 18).

Table 16. ANOVA tables showing differences between daily entrainment estimates for fish larvae from the main intake canal and from the discharge canal; calculated from counts on Detroit Edison's daily entrainment data sheets [transformed by $\log_{10}$ (x + 1)].

```
UNIVARIATE 1-WAY ANOVA  CASES=SPEC 900*DAY 476-498

ANALYSIS OF VARIANCE OF 3.LARV  N= 26 OUT OF 26   LAMPRE - ALL SPECIES COMBINED
SOURCE              DF SUM OF SQRS  MEAN SQR  F-STATISTIC SIGNIF

BETWEEN              1   .19207 +8  .19207 +8  .44985 -1  .8338
WITHIN              24   .10267+11  .42807 +9
TOTAL               25   .10267+11  (RANDOM EFFECTS STATISTICS)

ETA= .0433  ETA-SQR= .0019  (VAR COMP= -.31367 +8   VAR AMONG= -5.1

STA          N   MEAN    VARIANCE   STD DEV

INTAKE      13  28057.   .53728 +9  23180.
DISCHARGE   13  25332.   .31669 +9  17795.

GRAND       26  26697.   .41766 +9  20265.

UNIVARIATE 1-WAY ANOVA  CASES=SPEC 104*DAY 476-498

ANALYSIS OF VARIANCE OF 3.LARV  N= 26 OUT OF 26   CARPSUC
SOURCE              DF SUM OF SQRS  MEAN SQR  F-STATISTIC SIGNIF

BETWEEN              1   .66560 +6  .66560 +6  .40190 -1  .8428
WITHIN              24   .39747 +9  .16561 +8
TOTAL               25   .39814 +9  (RANDOM EFFECTS STATISTICS)

ETA= .0409  ETA-SQR= .0017  (VAR COMP= -.12227 +7   VAR AMONG= -0.1

STA          N   MEAN    VARIANCE   STD DEV

INTAKE      13  3762.6   .13011 +8  3607.1
DISCHARGE   13  3442.4   .20111 +8  4484.8

GRAND       26  3602.4   .15429 +8  3930.7

UNIVARIATE 1-WAY ANOVA  CASES=SPEC 400*DAY 476-498

ANALYSIS OF VARIANCE OF 3.LARV  N= 26 OUT OF 26   YELLOW PERCH
SOURCE              DF SUM OF SQRS  MEAN SQR  F-STATISTIC SIGNIF

BETWEEN              1   .73976 +8  .73976 +8  5.2449    .0311
WITHIN              24   .33450+10  .13104 +9
TOTAL               25   .41248+10  (RANDOM EFFECTS STATISTICS)

ETA= .4239  ETA-SQR= .1793  (VAR COMP= .44055 +8   VAR AMONG= 24.621

STA          N   MEAN    VARIANCE   STD DEV

INTAKE      13  11014.   .28138 +9  16774.
DISCHARGE   13  848.00   .71065 +6  843.00

GRAND       26  5685.1   .16499 +9  12845.

UNIVARIATE 1-WAY ANOVA  CASES=SPEC 109*DAY 476-498

ANALYSIS OF VARIANCE OF 3.LARV  N= 26 OUT OF 26   SMELT
SOURCE              DF SUM OF SQRS  MEAN SQR  F-STATISTIC SIGNIF

BETWEEN              1   .57318 +8  .57318 +8  1.5410    .2269
WITHIN              24   .89269 +9  .37195 +8
TOTAL               25   .95010 +9  (RANDOM EFFECTS STATISTICS)

ETA= .2456  ETA-SQR= .0603  (VAR COMP= .15479 +7   VAR AMONG= 4.081

STA          N   MEAN    VARIANCE   STD DEV

INTAKE      13  4767.6   .68792 +8  8294.1
DISCHARGE   13  1819.1   .55980 +7  2366.0

GRAND       26  3307.8   .38030 +8  6164.4

UNIVARIATE 1-WAY ANOVA  CASES=SPEC 119*DAY 476-498

ANALYSIS OF VARIANCE OF 3.LARV  N= 26 OUT OF 26   CRAPPIE
SOURCE              DF SUM OF SQRS  MEAN SQR  F-STATISTIC SIGNIF

BETWEEN              1   .84950 +9  .84950 +9  10.501    .0035
WITHIN              24   .19444+10  .81052 +8
TOTAL               25   .21339+10  (RANDOM EFFECTS STATISTICS)

ETA= .5517  ETA-SQR= .3044  (VAR COMP= .45204 +8   VAR AMONG= 47.223

STA          N   MEAN    VARIANCE   STD DEV

INTAKE      13  870.46   .91316 +8  955.42
DISCHARGE   13  1064.7   .12779 +9  11041.

GRAND       26  966.9    .85358 +8  9238.9

UNIVARIATE 1-WAY ANOVA  CASES=SPEC 134*DAY 476-498

ANALYSIS OF VARIANCE OF 3.LARV  N= 26 OUT OF 26   FRESHWATER DRUM
SOURCE              DF SUM OF SQRS  MEAN SQR  F-STATISTIC SIGNIF

BETWEEN              1   .49957 +6  .49957 +6  4.3728    .0473
WITHIN              24   .27415 +7  .11425 +6
TOTAL               25   .32414 +7  (RANDOM EFFECTS STATISTICS)

ETA= .3926  ETA-SQR= .1541  (VAR COMP= 2640.  VAR AMONG= 20.601

STA          N   MEAN    VARIANCE   STD DEV

INTAKE      13  277.23   .22268 +6  470.01
DISCHARGE   13  0.       0.         0.

GRAND       26  138.62   .12966 +6  360.04
```

Table 17. ANOVA table showing difference between daily entrainment estimates for fish eggs from the main intake canal and from the discharge canal; calculated from counts on Detroit Edison's daily entrainment data sheets [transformed by $\log_{10}(x + 1)$].

UNIVARIATE 1-WAY ANOVA CASES=SPEC 900*DAY 476-498

ANALYSIS OF VARIANCE OF 7.EGGS N= 26 OUT OF 26 EGGS - ALL SPECIES COMBINED

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.96623+14	.96623+14	3.8681	.0609
WITHIN	24	.59950+15	.24979+14		
TOTAL	25	.69612+15	(RANDOM EFFECTS STATISTICS)		

ETA= .3726 ETA-SQR= .1388 (VAR COMP= .55111+13 VAR AMONG= 18.07)

STA	N	MEAN	VARIANCE	STD DEV
INTAKE	13	4423.8	.40720 +8	6381.2
DISCHARGE	13	.38599 +7	.49958+14	.70681 +7
GRAND	26	.19322 +7	.27845+14	.52768 +7

Table 18. ANOVA tables showing differences between daily entrainment estimates for macrozoobenthos from the main intake canal and from the discharge canal; calculated from counts on Detroit Edison's daily entrainment data sheets [transformed by $\log_{10}(x + 1)$].

UNIVARIATE 1-WAY ANOVA CASES=SPEC BY=DAY 476-498

ANALYSIS OF VARIANCE OF 2.FST N= 26 OUT OF 26 MACROINVERTEBRATE - ALL SPECIES COMBINED

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.83944+10	.83944+10	11.419	.0025
WITHIN	24	.17642+11	.73515+9		
TOTAL	25	.26033+11	(RANDOM EFFECTS STATISTICS)		

ETA= .5678 ETA-SQR= .3224 (VAR COMP= .50917 +9 VAR AMONG= 69.49)

STA	N	MEAN	VARIANCE	STD DEV
INTAKE	13	53547.	.13514+10	36786.
DISCHARGE	13	27661.	.11959 +9	10890.
GRAND	26	41579.	.10419+10	32272.

UNIVARIATE 1-WAY ANOVA CASES=SPEC BY=DAY 476-498

ANALYSIS OF VARIANCE OF 2.EST N= 26 OUT OF 26 CHIRONOMIDAE

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.55507+10	.55507+10	9.1726	.0058
WITHIN	24	.14500+11	.58334 +9		
TOTAL	25	.19951+11	(RANDOM EFFECTS STATISTICS)		

ETA= .5758 ETA-SQR= .2765 (VAR COMP= .56672 +9 VAR AMONG= 38.60)

STA	N	MEAN	VARIANCE	STD DEV
INTAKE	13	69621.	.10461+10	32344.
DISCHARGE	13	20430.	.12052 +9	10978.
GRAND	26	35275.	.77403 +9	27821.

UNIVARIATE 1-WAY ANOVA CASES=SPEC BY=DAY 476-498

ANALYSIS OF VARIANCE OF 2.EST N= 26 OUT OF 26 SIMULIIDAE

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.59177 +6	.33177 +6	4.4158	.0463
WITHIN	24	.18032 +7	75133.		
TOTAL	25	.21350 +7	(RANDOM EFFECTS STATISTICS)		

ETA= .3942 ETA-SQR= .1554 (VAR COMP= 19741. VAR AMONG= 20.81)

STA	N	MEAN	VARIANCE	STD DEV
INTAKE	13	225.92	.13327 +6	367.65
DISCHARGE	13	0.	0.	0.
GRAND	26	112.96	85394.	292.23

UNIVARIATE 1-WAY ANOVA CASES=SPEC BY=DAY 476-498

ANALYSIS OF VARIANCE OF 2.EST N= 26 OUT OF 26 HYDROPSYCHE

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.49311 +6	.49311 +6	.91596	.3481
WITHIN	24	.12135 +8	.53861 +6		
TOTAL	25	.12594 +8	(RANDOM EFFECTS STATISTICS)		

ETA= .1917 ETA-SQR= .0368 (VAR COMP= -3768.6 VAR AMONG= -0.1)

STA	N	MEAN	VARIANCE	STD DEV
INTAKE	13	362.54	.89236 +6	944.65
DISCHARGE	13	99.615	.11885 +6	344.75
GRAND	26	231.08	.50390 +6	709.86

UNIVARIATE 1-WAY ANOVA CASES=SPEC BY=DAY 476-498

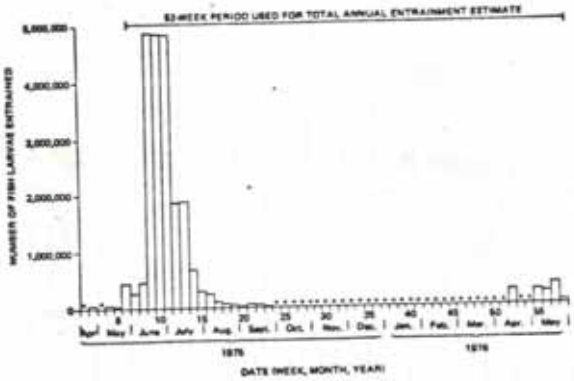
ANALYSIS OF VARIANCE OF 2.EST N= 26 OUT OF 26 GAMMARUS

SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
BETWEEN	1	.11017 +8	.11012 +8	5.0633	.0334
WITHIN	24	.52193 +8	.21749 +7		
TOTAL	25	.63211 +8	(RANDOM EFFECTS STATISTICS)		

ETA= .4174 ETA-SQR= .1742 (VAR COMP= .67980 +6 VAR AMONG= 23.81)

STA	N	MEAN	VARIANCE	STD DEV
INTAKE	13	1500.3	.41239 +7	2030.7
DISCHARGE	13	294.69	.22601 +6	475.41
GRAND	26	949.53	.25284 +7	1590.1

During the period of April to December 1975 when the main intake canal was not sampled (refer to Table 4.4-1), Detroit Edison based entrainment estimates on samples from the secondary intake canal and the discharge canal. As discussed above, entrainment estimates for several species of fish larvae based on samples from the secondary intake and the discharge are lower than those from the main intake (Tables 12 and 16). Thus, when only these two groups of stations are used, entrainment is underestimated. Even when the main intake canal was sampled during spring 1976, the monitoring ended in mid-May. Available evidence, including 316(b) Figure 4.4-2 shown below[6/], indicates that the larvae of most western Lake Erie fishes are



* = < 10,000

DETROIT EDISON
MONROE POWER PLANT

FIGURE 4.4-2
TOTAL EXTRAPOLATED NUMBERS OF FISH LARVAE ENTRAINED ON A WEEKLY BASIS AT THE MONROE POWER PLANT

6/ The data in Figure 4.4-2 are displaced to the right by 2 weeks. For example, Table 4.4-2 of the 316(b) (shown on the following page) and the daily entrainment data sheets indicate that peak larval entrainment occurred during the first 3 weeks of June 1975; whereas Figure 4.4-2 shows that peak entrainment occurred during the last 2 weeks of June and the first week of July 1975.

TABLE B.B-2 EXTRAPOLATED PEAK WEEKLY ENTRAINMENT OF FISH EGGS AND LARVAE AT THE MONROE POWER PLANT[a]

Week No.	Weekly Sampling Period	Clupeidae Eggs	Clupeidae Larvae	Anchoa Eggs	Anchoa Larvae	Bay anchovy Eggs	Bay anchovy Larvae	Trout-perch Eggs	Trout-perch Larvae	Cyprinodon Eggs	Cyprinodon Larvae	Menidia Eggs	Menidia Larvae	Yellow perch Eggs	Yellow perch Larvae	White bass Eggs	White bass Larvae	Channel catfish Eggs	Channel catfish Larvae	Freshwater drum Eggs	Freshwater drum Larvae	Carp Eggs	Carp Larvae	Notropis Eggs	Notropis Larvae	Moxostoma Eggs	Moxostoma Larvae	Sucker Eggs	Sucker Larvae
	1973																												
1.	Apr. 08-14																												
2.	15-21																												
3.	22-28																												
4.	29-May 05																												
5.	May 06-12																												
6.	13-19																												
7.	20-26																												
8.	27-Jun 02																												
9.	Jun 03-09																												
10.	10-16																												
11.	17-23																												
12.	24-30																												
13.	Jul 01-07																												
14.	08-14																												
15.	15-21																												
16.	22-28																												
17.	29-Aug 04																												
18.	Aug 05-11																												
19.	12-18																												
20.	19-25																												
21.	26-Sep 01																												
22.	Sep 02-08																												
23.	09-15																												
24.	16-22																												
25.	23-29																												
26.	30-Oct 06																												
27.	Oct 07-13																												
28.	14-20																												
29.	21-27																												
30.	28-Nov 03																												
31.	Nov 04-10																												
32.	11-17																												
33.	18-24																												
34.	25-Dec 01																												
35.	Dec 02-08																												
36.	09-15																												
37.	16-22																												
38.	23-29																												
	1974																												
39.	Dec 30-Jan 05																												
40.	Jan 06-12																												
41.	13-19																												
42.	20-26																												
43.	Jan 27-Feb 02																												
44.	Feb 03-09																												
45.	10-16																												
46.	17-23																												
47.	24-Mar 02																												
48.	Mar 03-09																												
	Sum of weeks																												

[a] Based on data from samples collected between April 18, 1971, and May 15, 1974.

most abundant after mid-May and therefore would not be adequately represented by samples taken according to the 316(b) schedule (Cole 1977, Cole, undated (b); Patterson, undated; Herdendorf et al. 1976).

The reliability of the 316(b) estimates of egg entrainment is also in question. Detroit Edison stated that they only used data from intake stations in the calculation of egg entrainment (refer to Section III-B-2) because they were concerned that spawning may have taken place in the discharge canal. Therefore, during the period of peak egg abundance, the 316(b) estimates of egg entrainment are based on samples from only Station A in the secondary intake canal (refer to Figure 4.4-1 on p. 42 and Table 4.4-1 on p. 43). We consider this to be inadequate because the mean daily estimate of egg entrainment from the secondary canal was lower than that from the main intake canal, even though the ANOVA (Table 13) failed to support this argument at the P = 0.05 level. The 316(b), however, did not demonstrate that collections made at the one location in the secondary canal accurately represented the entrainment of fish eggs.

B. Data Analysis

1. Fish larvae

a. Verification of 316(b) estimates. The method used for calculating the numbers of larvae entrained is given on 316(b) p. 4.4-1 as follows:

> In order to accurately describe larval fish entrainment, numbers collected for all species and for selected individual species at each station were graphed against time. Variability from station to station was such that trends were obscured. It was therefore decided that a mean density of all sampling stations would best describe actual entrainment within a particular sampling week. Therefore, numbers of fish larvae collected at each station for each 24-hour sampling period were pooled to calculate a total for each sampling week. The total was divided by the number of collections and by the volume of water filtered. Plant flow for the sampling week was then multiplied by the density to give total entrainment for each week. This procedure was repeated for each species.

This reduces to the following formula:

$$\frac{\text{Number of fish larvae entrained}}{\text{week}} = \frac{\text{Number of larvae collected}}{\text{Number of stations sampled X (volume sampled/station)}} \quad (7)$$

$$\text{X plant flow for week}$$

Our estimates of the numbers of fish larvae entrained, based on the 316(b) calculation above and on counts from the entrainment data sheets (Table 19), agree closely with those in Table 4.4-2 of the 316(b), shown on page 62 of this report.[7/] Differences between the two sets of weekly estimates in Table 19 and Table 4.4-2 are minor, and the annual estimates differ by only 0.7 million, or approximately 3% (Table 20). Any discrepancies between the two sets of estimates in Table 20 are probably due to illegibility of the daily entrainment data sheets or to a minor difference in the method used to calculate weekly plant flow. To determine the weekly flow, we calculated the mean plant flow (cfs) for the sample days in the given week and extrapolated that value to a weekly total flow, whereas the manner in which Detroit Edison calculated its plant flow value is not given in the 316(b). The estimates, however, presented by week in Figure 11, show the same general pattern as that in Figure 4.4-2 of the 316(b). The most apparent difference occurs in the second week of June, when our estimate is 19% lower than the 316(b) estimate. The 316(b) shows the entrainment peak in the first week in June (refer to Table 4.4-2), whereas our estimates show the greatest entrainment occurring during the third week in June.

Cole's (1977) estimate of annual larval entrainment at the Monroe plant during 1975 (144.5 million larvae with 95% confidence limits of 59.4 million and 232.2 million) is almost seven times the 316(b) estimate for May 1975-May 1976. Cole's estimate may be higher because it is based on samples collected throughout the entire water column rather than only in the upper 3 m (refer to discussion of Detroit Edison's sampling depths in Section III-A-2).

[7/] In most cases, the daily entrainment data for all groups of organisms (fish larvae, fish eggs, and macrozoobenthos) could be normalized by a $\log_{10}(x + 1)$ transformation (refer to Appendix D). However, in order to verify the 316(b) estimates, which were based only on the untransformed arithmetic data, entrainment estimates in the present report are also based on the untransformed counts for comparison. Larval entrainment estimates based on the $\log_{10}(x + 1)$ transformation are presented in Appendix E, Table E-2. The transformation reduces the annual estimates by approximately 60%.

Table 19. Weekly estimates of entrainment of fish eggs and larvae at the Monroe Power Plant for April 1975-May 1976, based on counts from Detroit Edison's daily entrainment data sheets. S.E. = standard error, s_v; CI = absolute value of ts_v.

WEEK OF	CLUPEIDAE (unid.) EGGS	CLUPEIDAE (unid.) LARVAE	ALEWIFE EGGS	ALEWIFE LARVAE	GIZZARD SHAD EGGS	GIZZARD SHAD LARVAE	SMELT EGGS	SMELT LARVAE	NORTHERN PIKE EGGS	NORTHERN PIKE LARVAE	CHANNEL CAT EGGS	CHANNEL CAT LARVAE
4/ 6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) *	0. N (LARVAE)*	1.										
4/13	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) *	0. N (LARVAE)*	1.										
4/20	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) *	1. N (LARVAE)*	3.										
4/27	0.	5232.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	5232.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	16457.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	12310.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) *	0. N (LARVAE)*	4.										
5/ 4	0.	0.	0.	0.	0.	0.	524598.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	524598.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	6465565.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	3312313.	0.	0.	0.	0.	0.
N (EGGS) *	0. N (LARVAE)*	3.										
5/11	192475.	11665.	48119.	0.	0.	0.	0.	8749.	0.	23330.	0.	90605.
S.E.	192475.	4880.	48119.	0.	0.	0.	0.	8749.	0.	23330.	0.	41448.
.95 CI	612550.	10972.	153115.	0.	0.	0.	0.	19692.	0.	51927.	0.	92357.
.90 CI	452896.	8047.	113224.	0.	0.	0.	0.	15853.	0.	42275.	0.	75104.
N (EGGS) *	4. N (LARVAE)*	11.										
5/18	109891.	68460.	0.	0.	0.	0.	0.	10175.	0.	0.	0.	16293.
S.E.	109891.	20164.	0.	0.	0.	0.	0.	5590.	0.	0.	0.	12148.
.95 CI	369823.	45382.	0.	0.	0.	0.	0.	12304.	0.	0.	0.	26722.
.90 CI	258574.	36715.	0.	0.	0.	0.	0.	10040.	0.	0.	0.	21619.
N (EGGS) *	4. N (LARVAE)*	12.										
5/25	0.	75535.	0.	0.	0.	0.	0.	4443.	0.	0.	0.	66550.
S.E.	0.	27027.	0.	0.	0.	0.	0.	4443.	0.	0.	0.	33934.
.95 CI	0.	67325.	0.	0.	0.	0.	0.	10246.	0.	0.	0.	83352.
.90 CI	0.	55279.	0.	0.	0.	0.	0.	8264.	0.	0.	0.	63211.
N (EGGS) *	3. N (LARVAE)*	9.										
6/ 1	4197976.	1150031.	4237210.	0.	0.	0.	0.	313867.	0.	0.	0.	61533.
S.E.	4197976.	554069.	4237229.	0.	0.	0.	0.	254649.	0.	0.	0.	36003.
.95 CI	13357956.	1221222.	13482798.	0.	0.	0.	0.	560581.	0.	0.	0.	83653.
.90 CI	9877636.	996509.	9970151.	0.	0.	0.	0.	457349.	0.	0.	0.	62234.
N (EGGS) *	4. N (LARVAE)*	12.										

6/ 8	0.	2658925.	0.	0.	0.	0.	0.	136498.	0.	0.	0.	49557.
S.E.	0.	697549.	0.	0.	0.	0.	0.	88065.	0.	0.	0.	26607.
.95 CI	0.	1535305.	0.	0.	0.	0.	0.	193032.	0.	0.	0.	58362.
.90 CI	0.	1252748.	0.	0.	0.	0.	0.	158145.	0.	0.	0.	47786.
N (EGGS) =	4.	N (LARVAE)=	12.									
6/15	0.	1861426.	0.	0.	0.	0.	0.	30632.	0.	0.	0.	136944.
S.E.	0.	880666.	0.	0.	0.	0.	0.	21756.	0.	0.	0.	74612.
.95 CI	0.	1516524.	0.	0.	0.	0.	0.	48673.	0.	0.	0.	166235.
.90 CI	0.	1233367.	0.	0.	0.	0.	0.	39423.	0.	0.	0.	135197.
N (EGGS) =	3.	N (LARVAE)=	11.									
6/22	0.	854227.	0.	0.	0.	0.	0.	51151.	0.	0.	0.	86957.
S.E.	0.	339543.	0.	0.	0.	0.	0.	27067.	0.	0.	0.	48558.
.95 CI	0.	681394.	0.	0.	0.	0.	0.	59574.	0.	0.	0.	105777.
.90 CI	0.	555940.	0.	0.	0.	0.	0.	48612.	0.	0.	0.	86313.
N (EGGS) =	4.	N (LARVAE)=	12.									
6/29	0.	1323833.	0.	0.	0.	0.	0.	0.	0.	0.	0.	52061.
S.E.	0.	601567.	0.	0.	0.	0.	0.	0.	0.	0.	0.	39296.
.95 CI	0.	1397211.	0.	0.	0.	0.	0.	0.	0.	0.	0.	82286.
.90 CI	0.	1116914.	0.	0.	0.	0.	0.	0.	0.	0.	0.	71211.
N (EGGS) =	3.	N (LARVAE)=	9.									
7/ 6	0.	474632.	0.	0.	0.	0.	0.	12170.	0.	0.	0.	43833.
S.E.	0.	216322.	0.	0.	0.	0.	0.	12170.	0.	0.	0.	36205.
.95 CI	0.	451966.	0.	0.	0.	0.	0.	27115.	0.	0.	0.	80656.
.90 CI	0.	391976.	0.	0.	0.	0.	0.	22052.	0.	0.	0.	65603.
N (EGGS) =	3.	N (LARVAE)=	11.									
7/13	0.	124301.	0.	0.	0.	21618.	0.	0.	0.	0.	0.	10809.
S.E.	0.	66050.	0.	0.	0.	21618.	0.	0.	0.	0.	0.	7237.
.95 CI	0.	165325.	0.	0.	0.	62420.	0.	0.	0.	0.	0.	16339.
.90 CI	0.	110625.	0.	0.	0.	38825.	0.	0.	0.	0.	0.	13068.
N (EGGS) =	4.	N (LARVAE)=	12.									
7/20	0.	82768.	0.	5173.	0.	15519.	0.	0.	0.	0.	0.	15519.
S.E.	0.	38459.	0.	5173.	0.	15519.	0.	0.	0.	0.	0.	8105.
.95 CI	0.	65648.	0.	11386.	0.	34157.	0.	0.	0.	0.	0.	17833.
.90 CI	0.	69072.	0.	9291.	0.	27872.	0.	0.	0.	0.	0.	14556.
N (EGGS) =	4.	N (LARVAE)=	12.									
7/27	0.	16734.	0.	0.	0.	50201.	0.	0.	0.	0.	0.	11156.
S.E.	0.	12011.	0.	0.	0.	29849.	0.	0.	0.	0.	0.	7521.
.95 CI	0.	26435.	0.	0.	0.	65608.	0.	0.	0.	0.	0.	16555.
.90 CI	0.	21571.	0.	0.	0.	53609.	0.	0.	0.	0.	0.	13508.
N (EGGS) =	4.	N (LARVAE)=	12.									
8/ 3	0.	25302.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	16921.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	38276.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	31017.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	10.									
8/10	0.	20288.	0.	0.	0.	0.	0.	5072.	0.	0.	0.	0.
S.E.	0.	15550.	0.	0.	0.	0.	0.	5072.	0.	0.	0.	0.
.95 CI	0.	34655.	0.	0.	0.	0.	0.	11300.	0.	0.	0.	0.
.90 CI	0.	28177.	0.	0.	0.	0.	0.	9190.	0.	0.	0.	0.
N (EGGS) =	3.	N (LARVAE)=	11.									

8/17	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
8/24	0.	16734.	0.	0.	0.	0.	0.	5578.	0.	0.	0.	0.
S.E.	0.	12011.	0.	0.	0.	0.	0.	5578.	0.	0.	0.	0.
.95 CI	0.	26535.	0.	0.	0.	0.	0.	12277.	0.	0.	0.	0.
.90 CI	0.	21571.	0.	0.	0.	0.	0.	10018.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
8/31	0.	25191.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	12244.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	28366.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	23210.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=	8.										
9/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
9/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
9/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
9/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
10/ 5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
10/12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2. N (LARVAE)=	6.										
10/19	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	10.										

10/26	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
11/ 2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2.	N (LARVAE)=	11.									
11/ 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	5.	N (LARVAE)=	15.									
11/16	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
11/23	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
11/30	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	10.									
12/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0.	N (LARVAE)=	0.									
12/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	13.	N (LARVAE)=	13.									
12/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3.	N (LARVAE)=	3.									
12/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	11.	N (LARVAE)=	11.									

1/ 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 20. N (LARVAE)= 20.												
1/11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 31. N (LARVAE)= 31.												
1/18	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 35. N (LARVAE)= 35.												
1/25	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 22. N (LARVAE)= 22.												
2/ 1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 22. N (LARVAE)= 22.												
2/ 8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 36. N (LARVAE)= 36.												
2/15	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 0. N (LARVAE)= 0.												
2/22	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 21. N (LARVAE)= 21.												
2/29	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 17. N (LARVAE)= 17.												
3/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 22. N (LARVAE)= 22.												

3/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 35. N (LARVAE) = 35.												
3/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 32. N (LARVAE) = 32.												
3/28	0.	0.	0.	0.	0.	0.	0.	8691.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	5467.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	11338.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	9386.	0.	0.	0.	0.
N (EGGS) = 23. N (LARVAE) = 23.												
4/4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 32. N (LARVAE) = 32.												
4/11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	5150.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3487.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	7595.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	6213.
N (EGGS) = 32. N (LARVAE) = 13.												
4/18	0.	24866.	0.	0.	0.	0.	0.	6865.	0.	0.	0.	18579.
S.E.	0.	13168.	0.	0.	0.	0.	0.	3725.	0.	0.	0.	5597.
.95 CI	0.	26353.	0.	0.	0.	0.	0.	7659.	0.	0.	0.	13201.
.90 CI	0.	22017.	0.	0.	0.	0.	0.	6228.	0.	0.	0.	11031.
N (EGGS) = 30. N (LARVAE) = 37.												
4/25	0.	26731.	0.	0.	0.	0.	0.	131213.	0.	6530.	0.	27425.
S.E.	0.	8576.	0.	0.	0.	0.	0.	17511.	0.	4661.	0.	16626.
.95 CI	0.	17153.	0.	0.	0.	0.	0.	35339.	0.	9327.	0.	33254.
.90 CI	0.	14439.	0.	0.	0.	0.	0.	29278.	0.	7794.	0.	27796.
N (EGGS) = 35. N (LARVAE) = 47.												
5/2	0.	86173.	0.	0.	0.	0.	0.	13465.	0.	421.	0.	95526.
S.E.	0.	16573.	0.	0.	0.	0.	0.	4524.	0.	421.	0.	37730.
.95 CI	0.	33175.	0.	0.	0.	0.	0.	9053.	0.	842.	0.	75432.
.90 CI	0.	27770.	0.	0.	0.	0.	0.	7564.	0.	704.	0.	63025.
N (EGGS) = 47. N (LARVAE) = 63.												
5/9	0.	20945.	0.	0.	0.	0.	0.	3937.	0.	0.	0.	20460.
S.E.	0.	4157.	0.	0.	0.	0.	0.	1901.	0.	0.	0.	5559.
.95 CI	0.	8313.	0.	0.	0.	0.	0.	3805.	0.	0.	0.	11205.
.90 CI	0.	6950.	0.	0.	0.	0.	0.	3178.	0.	0.	0.	9362.
N (EGGS) = 47. N (LARVAE) = 63.												
TOTALS	4500342.	8958439.	4285429.	5173.	0.	87338.	524598.	710047.	0.	30281.	0.	810486.
S.E.	4203821.	1330702.	4237542.	5173.	0.	39989.	526599.	272373.	0.	23795.	0.	133372.
.95 CI	8411644.	2662735.	8479199.	10351.	0.	80018.	1049721.	546219.	0.	47614.	0.	268077.
.90 CI	7034749.	2224934.	7045069.	8649.	0.	68862.	877126.	456411.	0.	39785.	0.	222935.

LAST

52											
WEEKS	4307867.	8461542.	4237210.	5173.	0.	87338.	0.	701318.	0.	6951.	0. 720681.
S.E.	4199412.	1330683.	4237209.	5173.	0.	39989.	0.	272833.	0.	4680.	0. 126765.
.95 CI	8633922.	2662676.	8478652.	10351.	0.	80018.	0.	545938.	0.	9365.	0. 253663.
.90 CI	7021417.	2224902.	7084612.	8649.	0.	66862.	0.	456177.	0.	7825.	0. 211956.

WEEK OF	GOLDFISH EGGS	GOLDFISH LARVAE	CARP EGGS	CARP LARVAE	SUCKER EGGS	SUCKER LARVAE	EMERALD SHINER EGGS	EMERALD SHINER LARVAE	SPOTTAIL SHINER EGGS	SPOTTAIL SHINER LARVAE	LEPOMIS SP. EGGS	LEPOMIS SP. LARVAE
4/6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0.	N (LARVAE)=	1.									
4/13	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0.	N (LARVAE)=	1.									
4/20	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	1.	N (LARVAE)=	3.									
4/27	0.	0.	0.	5232.	0.	15695.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	5232.	0.	15695.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	16462.	0.	49361.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	12310.	0.	36930.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2.	N (LARVAE)=	4.									
5/4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2.	N (LARVAE)=	5.									
5/11	0.	0.	0.	8749.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	8749.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	13672.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	15853.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	11.									
5/18	0.	0.	0.	4070.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	2744.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	8050.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	4928.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
5/25	0.	0.	0.	0.	0.	0.	0.	71092.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	71092.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	163937.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	132231.	0.	0.	0.	0.
N (EGGS) =	3.	N (LARVAE)=	9.									
6/1	0.	41030.	0.	13078.	0.	0.	0.	4359.	0.	4359.	0.	4359.
S.E.	0.	61533.	0.	13378.	0.	0.	0.	4359.	0.	4359.	0.	4359.
.95 CI	0.	134326.	0.	20704.	0.	0.	0.	9595.	0.	9595.	0.	9595.
.90 CI	0.	109609.	0.	23488.	0.	0.	0.	7829.	0.	7829.	0.	7829.
N (EGGS) =	4.	N (LARVAE)=	12.									

6/ 8	0.	36211.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	30399.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	65228.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	55674.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE) =	12.									
6/15	0.	76080.	0.	5072.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	72481.	0.	5072.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	157678.	0.	11300.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	128074.	0.	9190.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3.	N (LARVAE) =	11.									
6/22	0.	5115.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	5115.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	11258.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	9147.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE) =	12.									
6/29	0.	74372.	0.	7437.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	50443.	0.	7437.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	136769.	0.	17150.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	108704.	0.	13833.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3.	N (LARVAE) =	9.									
7/ 6	0.	30425.	0.	0.	0.	0.	0.	6085.	0.	0.	0.	0.
S.E.	0.	13876.	0.	0.	0.	0.	0.	6085.	0.	0.	0.	0.
.95 CI	0.	30316.	0.	0.	0.	0.	0.	13557.	0.	0.	0.	0.
.90 CI	0.	25143.	0.	0.	0.	0.	0.	11026.	0.	0.	0.	0.
N (EGGS) =	3.	N (LARVAE) =	11.									
7/13	0.	5404.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	5404.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	11895.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	9706.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE) =	12.									
7/20	0.	0.	0.	0.	0.	0.	0.	15519.	0.	0.	0.	5173.
S.E.	0.	0.	0.	0.	0.	0.	0.	11139.	0.	0.	0.	5173.
.95 CI	0.	0.	0.	0.	0.	0.	0.	24516.	0.	0.	0.	11325.
.90 CI	0.	0.	0.	0.	0.	0.	0.	20005.	0.	0.	0.	9291.
N (EGGS) =	4.	N (LARVAE) =	12.									
7/27	0.	0.	0.	0.	0.	0.	0.	16734.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	12011.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	26435.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	21571.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE) =	12.									
8/ 3	0.	0.	0.	0.	0.	0.	0.	12691.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	8461.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	19138.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	15509.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE) =	10.									
8/10	0.	0.	0.	0.	0.	0.	0.	10144.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	6805.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	15161.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	12330.	0.	0.	0.	0.
N (EGGS) =	3.	N (LARVAE) =	11.									

8/17	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
8/24	0.	0.	0.	0.	0.	0.	0.	22312.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	17151.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	37750.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	30803.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
8/31	0.	16734.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	16734.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	39575.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	31711.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3.	N (LARVAE)=	8.									
9/ 7	0.	0.	0.	0.	0.	0.	0.	10925.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	10925.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	26055.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	19621.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
10/ 5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
10/12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2.	N (LARVAE)=	6.									
10/19	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	10.									

10/26	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE) =		12.									
11/ 2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2. N (LARVAE) =		11.									
11/ 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	5. N (LARVAE) =		15.									
11/16	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE) =		12.									
11/23	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE) =		12.									
11/30	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE) =		10.									
12/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0. N (LARVAE) =		0.									
12/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	13. N (LARVAE) =		13.									
12/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE) =		3.									
12/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	11. N (LARVAE) =		11.									

1/ 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 20. N (LARVAE) = 20.												
1/11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 31. N (LARVAE) = 31.												
1/18	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 35. N (LARVAE) = 35.												
1/25	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 22. N (LARVAE) = 22.												
2/ 1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 22. N (LARVAE) = 22.												
2/ 8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 36. N (LARVAE) = 36.												
2/15	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 0. N (LARVAE) = 0.												
2/22	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 21. N (LARVAE) = 21.												
2/29	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 17. N (LARVAE) = 17.												
3/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 22. N (LARVAE) = 22.												

3/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 35. N (LARVAE)= 35.												
3/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 32. N (LARVAE)= 32.												
3/28	0.	0.	0.	241135.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	105405.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	218610.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	180980.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 23. N (LARVAE)= 23.												
4/ 4	0.	0.	0.	6975.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	3097.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	6197.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	5178.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 32. N (LARVAE)= 32.												
4/11	0.	0.	0.	2575.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	2575.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	5611.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	4589.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 12. N (LARVAE)= 13.												
4/18	0.	0.	0.	145026.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	32233.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	66598.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	53843.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 30. N (LARVAE)= 39.												
4/25	0.	3918.	7892.	45709.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	2740.	7892.	9029.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	5603.	15792.	17667.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	4581.	13195.	16434.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 35. N (LARVAE)= 47.												
5/ 2	0.	0.	0.	8037.	0.	421.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	3059.	0.	421.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	6171.	0.	842.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	5115.	0.	704.	0.	0.	0.	0.	0.	0.
N (EGGS) = 47. N (LARVAE)= 63.												
5/ 9	0.	0.	0.	487.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	487.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	975.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	815.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 47. N (LARVAE)= 63.												
TOTALS	0.	309289.	7892.	494382.	0.	16116.	0.	169861.	0.	4359.	0.	9532.
S.E.	0.	116758.	7892.	112606.	0.	15701.	0.	76975.	0.	4359.	0.	6765.
.95 CI	0.	233632.	15792.	224925.	0.	31417.	0.	153827.	0.	8723.	0.	13536.
.90 CI	0.	195219.	13195.	187943.	0.	26251.	0.	128535.	0.	7289.	0.	11313.

LAST 52 WEEKS												
	0.	309239.	7892.	480601.	0.	421.	0.	169861.	0.	4359.	0.	9532.
S.E.	0.	116755.	7892.	111943.	0.	421.	0.	76875.	0.	4359.	0.	6765.
.95 CI	0.	233632.	15792.	223998.	0.	842.	0.	153827.	0.	8723.	0.	13536.
.90 CI	0.	195719.	13195.	187169.	0.	704.	0.	128535.	0.	7289.	0.	11311.

WEEK OF	BRINDLED MADTOM EGGS	BRINDLED MADTOM LARVAE	GUNSHOT EGGS	GUNSHOT LARVAE	TROUT-PERCH EGGS	TROUT-PERCH LARVAE	WHITE BASS EGGS	WHITE BASS LARVAE	FRESHWATER DRUM EGGS	FRESHWATER DRUM LARVAE	BROOK SILVERSIDE EGGS	BROOK SILVERSIDE LARVAE
4/ 6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0.	N (LARVAE)=	1.									
4/13	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0.	N (LARVAE)=	1.									
4/20	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	1.	N (LARVAE)=	3.									
4/27	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2.	N (LARVAE)=	4.									
5/ 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2.	N (LARVAE)=	5.									
5/11	0.	0.	0.	0.	0.	2916.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	2916.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	6497.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	5284.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	11.									
5/18	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
5/25	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3.	N (LARVAE)=	9.									
6/ 1	0.	0.	0.	0.	0.	4359.	0.	0.	0.	792071.	0.	0.
S.E.	0.	0.	0.	0.	0.	4359.	0.	0.	0.	236977.	0.	0.
.95 CI	0.	0.	0.	0.	0.	9595.	0.	0.	0.	521586.	0.	0.
.90 CI	0.	0.	0.	0.	0.	7829.	0.	0.	0.	425610.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									

6/ 8	0.	0.	0.	0.	0.	0.	0.	93114.	0.	5173.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	82119.	0.	5173.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	180744.	0.	11386.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	147485.	0.	9291.	0.	0.
N (EGGS) =	4.	N (LARVAE) =	12.									
6/15	0.	0.	0.	0.	0.	0.	0.	121728.	0.	1125985.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	49227.	0.	655444.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	109478.	0.	1460328.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	89200.	0.	1187663.	0.	0.
N (EGGS) =	3.	N (LARVAE) =	11.									
6/22	0.	0.	0.	0.	0.	0.	0.	56266.	0.	276217.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	45621.	0.	199830.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	100412.	0.	439825.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	81935.	0.	358894.	0.	0.
N (EGGS) =	4.	N (LARVAE) =	12.									
6/29	0.	0.	0.	0.	0.	0.	0.	0.	0.	44623.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	44623.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	102202.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	83000.	0.	0.
N (EGGS) =	3.	N (LARVAE) =	9.									
7/ 6	0.	0.	0.	0.	0.	12170.	0.	6085.	0.	12170.	0.	0.
S.E.	0.	0.	0.	0.	0.	8164.	0.	6085.	0.	12170.	0.	0.
.95 CI	0.	0.	0.	0.	0.	18189.	0.	13557.	0.	27115.	0.	0.
.90 CI	0.	0.	0.	0.	0.	14793.	0.	11026.	0.	22052.	0.	0.
N (EGGS) =	3.	N (LARVAE) =	11.									
7/13	0.	5404.	0.	0.	0.	0.	0.	32426.	0.	59448.	0.	5404.
S.E.	0.	5404.	0.	0.	0.	0.	0.	14935.	0.	53823.	0.	5404.
.95 CI	0.	11835.	0.	0.	0.	0.	0.	32871.	0.	118863.	0.	11835.
.90 CI	0.	9706.	0.	0.	0.	0.	0.	26822.	0.	96665.	0.	9706.
N (EGGS) =	4.	N (LARVAE) =	12.									
7/20	0.	0.	0.	0.	0.	0.	0.	51730.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	25153.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	55355.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	45169.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE) =	12.									
7/27	0.	0.	0.	0.	0.	0.	0.	5578.	0.	5578.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	5578.	0.	5578.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	12277.	0.	12277.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	10018.	0.	10018.	0.	0.
N (EGGS) =	4.	N (LARVAE) =	12.									
8/ 3	0.	0.	0.	0.	0.	0.	0.	12691.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	12691.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	28707.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	23263.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE) =	10.									
8/10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3.	N (LARVAE) =	11.									

8/17	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
8/24	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
8/31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3.	N (LARVAE)=	8.									
9/7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
10/5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
10/12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2.	N (LARVAE)=	6.									
10/19	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	10.									

10/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
11/ 2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	7. N (LARVAE)=	11.										
11/ 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	5. N (LARVAE)=	15.										
11/16	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
11/23	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
11/30	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	10.										
12/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0. N (LARVAE)=	0.										
12/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	13. N (LARVAE)=	13.										
12/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=	3.										
12/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	11. N (LARVAE)=	11.										

1/ 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 20. N (LARVAE)= 20.												
1/11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 31. N (LARVAE)= 31.												
1/18	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 35. N (LARVAE)= 35.												
1/25	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 22. N (LARVAE)= 22.												
2/ 1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 22. N (LARVAE)= 22.												
2/ 8	0.	0.	17358.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	17358.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	36736.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	29023.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 36. N (LARVAE)= 36.												
2/15	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 0. N (LARVAE)= 0.												
2/22	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 21. N (LARVAE)= 21.												
2/29	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 17. N (LARVAE)= 17.												
3/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 22. N (LARVAE)= 22.												

3/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	35.	N (LARVAE) =	35.										
3/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	32.	N (LARVAE) =	32.										
3/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	23.	N (LARVAE) =	23.										
4/ 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	32.	N (LARVAE) =	32.										
4/11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	12.	N (LARVAE) =	13.										
4/18	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	30.	N (LARVAE) =	39.										
4/25	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	35.	N (LARVAE) =	47.										
5/ 2	0.	0.	0.	0.	0.	1683.	0.	0.	0.	3787.	0.	0.	
S.E.	0.	0.	0.	0.	0.	1017.	0.	0.	0.	1571.	0.	0.	
.95 CI	0.	0.	0.	0.	0.	2035.	0.	0.	0.	3143.	0.	0.	
.90 CI	0.	0.	0.	0.	0.	1700.	0.	0.	0.	2627.	0.	0.	
N (EGGS) =	47.	N (LARVAE) =	63.										
5/ 9	0.	0.	0.	0.	0.	1461.	0.	0.	0.	974.	0.	0.	
S.E.	0.	0.	0.	0.	0.	1082.	0.	0.	0.	683.	0.	0.	
.95 CI	0.	0.	0.	0.	0.	2166.	0.	0.	0.	1367.	0.	0.	
.90 CI	0.	0.	0.	0.	0.	1810.	0.	0.	0.	1143.	0.	0.	
N (EGGS) =	47.	N (LARVAE) =	63.										
TOTALS	0.	5404.	17358.	0.	0.	27589.	0.	379618.	0.	1826026.	0.	5404.	
S.E.	0.	5434.	17358.	0.	0.	9816.	0.	111053.	0.	228556.	0.	5404.	
.95 CI	0.	10614.	34734.	0.	0.	19443.	0.	222216.	0.	1457839.	0.	10614.	
.90 CI	0.	8934.	29029.	0.	0.	16413.	0.	185681.	0.	1218145.	0.	9036.	

LAST

52												
W2=45	0.	5404.	17358.	0.	0.	19673.	0.	379618.	0.	1826026.	1.	5404.
S.E.	0.	5404.	17358.	0.	0.	9373.	0.	111053.	0.	728556.	0.	5404.
.95 CI	0.	10814.	34734.	0.	0.	18750.	0.	222218.	0.	1457839.	0.	10814.
.90 CI	0.	9036.	29023.	0.	0.	15672.	0.	185681.	0.	1218145.	0.	9036.

WEEK OF	JUMPING DARTER EGGS	JUMPING DARTER LARVAE	LOGPERCH EGGS	LOGPERCH LARVAE	YELLOW PERCH EGGS	YELLOW PERCH LARVAE	WALLEYE EGGS	WALLEYE LARVAE	UNIDENTIFIED EGGS	UNIDENTIFIED LARVAE	TOTAL EGGS	TOTAL LARVAE
4/6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 0. N (LARVAE)= 1.												
4/13	0.	0.	0.	0.	0.	0.	0.	0.	0.	33468.	0.	33468.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.
N (EGGS) = 0. N (LARVAE)= 1.												
4/20	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 1. N (LARVAE)= 3.												
4/27	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	26159.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	17351.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	55712.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	46826.
N (EGGS) = 2. N (LARVAE)= 4.												
5/4	0.	0.	0.	0.	0.	0.	167425.	22323.	0.	0.	692023.	22323.
S.E.	0.	0.	0.	0.	0.	0.	167425.	22323.	0.	0.	550467.	22323.
.95 CI	0.	0.	0.	0.	0.	0.	2122301.	61970.	0.	0.	6896778.	61970.
.90 CI	0.	0.	0.	0.	0.	0.	1057121.	47593.	0.	0.	3476912.	47593.
N (EGGS) = 2. N (LARVAE)= 5.												
5/11	0.	0.	0.	0.	0.	329541.	0.	11665.	104257.	8749.	344851.	495769.
S.E.	0.	0.	0.	0.	0.	202028.	0.	11665.	104257.	6255.	224124.	286640.
.95 CI	0.	0.	0.	0.	0.	628398.	0.	25990.	331767.	13930.	713143.	638433.
.90 CI	0.	0.	0.	0.	0.	511035.	0.	21137.	245318.	11334.	527364.	519392.
N (EGGS) = 4. N (LARVAE)= 11.												
5/18	0.	0.	0.	2035.	256413.	172977.	0.	0.	0.	8140.	366304.	262517.
S.E.	0.	0.	0.	2035.	256413.	56353.	0.	0.	0.	8140.	276969.	61963.
.95 CI	0.	0.	0.	4479.	815905.	124032.	0.	0.	0.	17916.	887678.	136373.
.90 CI	0.	0.	0.	3655.	603339.	101209.	0.	0.	0.	14620.	656413.	111279.
N (EGGS) = 4. N (LARVAE)= 12.												
5/25	0.	0.	0.	0.	0.	217718.	0.	4443.	0.	4443.	0.	444322.
S.E.	0.	0.	0.	0.	0.	111745.	0.	4443.	0.	4443.	0.	139591.
.95 CI	0.	0.	0.	0.	0.	257685.	0.	10246.	0.	10259.	0.	321677.
.90 CI	0.	0.	0.	0.	0.	207846.	0.	8264.	0.	8284.	0.	259639.
N (EGGS) = 3. N (LARVAE)= 9.												
6/1	0.	0.	0.	0.	0.	2558891.	0.	226682.	0.	65389.	8435186.	4799555.
S.E.	0.	0.	0.	0.	0.	1472837.	0.	98147.	0.	56548.	5944640.	1617408.
.95 CI	0.	0.	0.	0.	0.	3241647.	0.	216022.	0.	124483.	18979678.	3550030.
.90 CI	0.	0.	0.	0.	0.	2645161.	0.	176273.	0.	101561.	14034795.	2905008.
N (EGGS) = 4. N (LARVAE)= 12.												

6/ 8	0.	0.	0.	0.	0.	377629.	0.	108633.	0. 342110.	0. 3822657.
S.E.	0.	0.	0.	0.	0.	272031.	0.	92367.	0. 140631.	0. 766655.
.95 CI	0.	0.	0.	0.	0.	598241.	0.	203209.	0. 307570.	0. 1730172.
.90 CI	0.	0.	0.	0.	0.	480568.	0.	165893.	0. 324414.	0. 1411808.
N (EGGS) =	4. N (LARVAE) =	12.								
6/15	0.	0.	0.	0.	0.	897744.	0.	15216.	0. 654289.	0. 4924916.
S.E.	0.	0.	0.	0.	0.	470561.	0.	10878.	0. 387788.	0. 1130629.
.95 CI	0.	0.	0.	0.	0.	1068609.	0.	26237.	0. 853571.	0. 2519262.
.90 CI	0.	0.	0.	0.	0.	852656.	0.	19711.	0. 702671.	0. 2049700.
N (EGGS) =	3. N (LARVAE) =	11.								
6/22	0.	0.	0.	20681.	0.	398980.	0.	25576.	0. 76727.	0. 1651672.
S.E.	0.	0.	0.	15728.	0.	249962.	0.	15953.	0. 48453.	0. 454125.
.95 CI	0.	0.	0.	34615.	0.	550156.	0.	35113.	0. 106645.	0. 959527.
.90 CI	0.	0.	0.	24243.	0.	448932.	0.	28652.	0. 87021.	0. 815607.
N (EGGS) =	4. N (LARVAE) =	12.								
6/29	0.	0.	0.	7437.	0.	14974.	0.	0.12539198.	356988.12539198.	1281522.
S.E.	0.	0.	0.	7437.	0.	14974.	0.	0.12539197.	231602.12539197.	656174.
.95 CI	0.	0.	0.	17150.	0.	34301.	0.	0.53956159.	534014.53956157.	1459302.
.90 CI	0.	0.	0.	13833.	0.	27667.	0.	0.36614444.	430779.36614443.	1209324.
N (EGGS) =	3. N (LARVAE) =	9.								
7/ 6	0.	0.	0.	0.	0.	24340.	0.	0.	0. 48680.	0. 675437.
S.E.	0.	0.	0.	0.	0.	16328.	0.	0.	0. 30058.	0. 223396.
.95 CI	0.	0.	0.	0.	0.	36328.	0.	0.	0. 66369.	0. 492225.
.90 CI	0.	0.	0.	0.	0.	29986.	0.	0.	0. 54465.	0. 404793.
N (EGGS) =	3. N (LARVAE) =	11.								
7/13	0.	0.	0.	0.	0.	16213.	0.	0.	0. 21616.	0. 332645.
S.E.	0.	0.	0.	0.	0.	11637.	0.	0.	0. 14575.	0. 91682.
.95 CI	0.	0.	0.	0.	0.	25613.	0.	0.	0. 32079.	0. 202185.
.90 CI	0.	0.	0.	0.	0.	20900.	0.	0.	0. 26176.	0. 164981.
N (EGGS) =	4. N (LARVAE) =	12.								
7/20	0.	0.	0.	0.	0.	5123.	0.	0.	0. 61384.	0. 237358.
S.E.	0.	0.	0.	0.	0.	5173.	0.	0.	0. 23344.	0. 56260.
.95 CI	0.	0.	0.	0.	0.	11386.	0.	0.	0. 51320.	0. 123.72.
.90 CI	0.	0.	0.	0.	0.	9291.	0.	0.	0. 41925.	0. 131278.
N (EGGS) =	4. N (LARVAE) =	12.								
7/27	0.	0.	0.	0.	0.	0.	0.	0.	0. 0.	0. 105581.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0. 0.	0. 36332.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0. 0.	0. 79305.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0. 0.	0. 64713.
N (EGGS) =	4. N (LARVAE) =	12.								
8/ 3	0.	0.	0.	0.	0.	12691.	0.	0.	0. 6346.	0. 69801.
S.E.	0.	0.	0.	0.	0.	12691.	0.	0.	0. 6346.	0. 26639.
.95 CI	0.	0.	0.	0.	0.	26202.	0.	0.	0. 14356.	0. 82703.
.90 CI	0.	0.	0.	0.	0.	23263.	0.	0.	0. 11631.	0. 49145.
N (EGGS) =	4. N (LARVAE) =	10.								
8/10	0.	0.	0.	0.	0.	5072.	0.	0.	0. 5072.	0. 45646.
S.E.	0.	0.	0.	0.	0.	5072.	0.	0.	0. 5072.	0. 19113.
.95 CI	0.	0.	0.	0.	0.	11300.	0.	0.	0. 11300.	0. 42581.
.90 CI	0.	0.	0.	0.	0.	9190.	0.	0.	0. 9190.	0. 34832.
N (EGGS) =	3. N (LARVAE) =	11.								

8/17	0.	0.	0.	5289.	0.	0.	0.	0.	0.	5289.	0.	10578.
S.E.	0.	0.	0.	5289.	0.	0.	0.	0.	0.	5289.	0.	7479.
.95 CI	0.	0.	0.	11640.	0.	0.	0.	0.	0.	11640.	0.	16462.
.90 CI	0.	0.	0.	9499.	0.	0.	0.	0.	0.	9499.	0.	13433.
N (EGGS) =	4.	N (LARVAE)=	12.									
8/24	0.	0.	0.	0.	0.	5578.	0.	0.	0.	5578.	0.	55780.
S.E.	0.	0.	0.	0.	0.	5578.	0.	0.	0.	5578.	0.	23660.
.95 CI	0.	0.	0.	0.	0.	12277.	0.	0.	0.	12277.	0.	50755.
.90 CI	0.	0.	0.	0.	0.	10018.	0.	0.	0.	10018.	0.	41415.
N (EGGS) =	4.	N (LARVAE)=	12.									
8/31	0.	0.	0.	8367.	0.	0.	0.	0.	0.	0.	0.	50202.
S.E.	0.	0.	0.	8367.	0.	0.	0.	0.	0.	0.	0.	27361.
.95 CI	0.	0.	0.	19788.	0.	0.	0.	0.	0.	0.	0.	52645.
.90 CI	0.	0.	0.	15855.	0.	0.	0.	0.	0.	0.	0.	42375.
N (EGGS) =	3.	N (LARVAE)=	8.									
9/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	10925.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	10925.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	26065.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	19621.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
10/ 5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
10/12	0.	0.	0.	0.	0.	0.	0.	0.	0.	6510.	0.	6510.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	6510.	0.	6510.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	16736.	0.	16736.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	13117.	0.	13117.
N (EGGS) =	2.	N (LARVAE)=	4.									
10/19	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	10.									

10/26	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE) =	12.									
11/ 2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2.	N (LARVAE) =	11.									
11/ 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	5.	N (LARVAE) =	15.									
11/16	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE) =	12.									
11/23	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE) =	12.									
11/30	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE) =	10.									
12/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0.	N (LARVAE) =	0.									
12/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	13.	N (LARVAE) =	13.									
12/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3.	N (LARVAE) =	3.									
12/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	11.	N (LARVAE) =	11.									

1/ 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 20. N (LARVAE)= 20.												
1/11	0.	0.	0.	0.	0.	0.	0.	0.	10798.	0.	10798.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	5771.	0.	5771.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	11567.	0.	11567.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	9649.	0.	9649.	0.
N (EGGS) = 31. N (LARVAE)= 31.												
1/18	0.	0.	0.	0.	0.	0.	0.	0.	16739.	0.	16739.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	16739.	0.	16739.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	33424.	0.	33424.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	27987.	0.	27987.	0.
N (EGGS) = 35. N (LARVAE)= 35.												
1/25	0.	0.	0.	0.	0.	0.	0.	0.	9194.	0.	9194.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	9194.	0.	9194.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	19124.	0.	19124.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	15823.	0.	15823.	0.
N (EGGS) = 22. N (LARVAE)= 22.												
2/ 1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 22. N (LARVAE)= 22.												
2/ 8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	17358.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	17358.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	34734.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	29023.	0.
N (EGGS) = 36. N (LARVAE)= 36.												
2/15	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 0. N (LARVAE)= 0.												
2/22	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 21. N (LARVAE)= 21.												
2/29	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 17. N (LARVAE)= 17.												
3/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 22. N (LARVAE)= 22.												

3/14	0.	0.	0.	0.	0.	0.	0.	0.	4543539.	0.	4543539.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	4542499.	0.	4542497.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	9089533.	0.	9089534.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	7595053.	0.	7595055.	0.
N (EGGS) = 35. N (LARVAE) = 35.												
3/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 32. N (LARVAE) = 32.												
3/28	0.	0.	0.	0.	0.	0.	0.	3396.	45850.	0.	45850.	253022.
S.E.	0.	0.	0.	0.	0.	0.	0.	3396.	40694.	0.	40694.	105801.
.95 CI	0.	0.	0.	0.	0.	0.	0.	7044.	86603.	0.	86603.	215017.
.90 CI	0.	0.	0.	0.	0.	0.	0.	5831.	69872.	0.	69872.	181318.
N (EGGS) = 23. N (LARVAE) = 23.												
4/ 4	0.	0.	0.	0.	0.	0.	0.	0.	65100.	0.	65100.	6975.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	51753.	0.	51753.	3097.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	103558.	0.	103558.	6197.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	86531.	0.	86531.	5178.
N (EGGS) = 32. N (LARVAE) = 32.												
4/11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	7725.
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	4335.
.95 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	9665.
.90 CI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	7724.
N (EGGS) = 12. N (LARVAE) = 11.												
4/18	0.	0.	0.	858.	0.	45492.	0.	0.	0.	0.	0.	241995.
S.E.	0.	0.	0.	858.	0.	17722.	0.	0.	0.	0.	0.	39696.
.95 CI	0.	0.	0.	1717.	0.	35862.	0.	0.	0.	0.	0.	75532.
.90 CI	0.	0.	0.	1435.	0.	29965.	0.	0.	0.	0.	0.	66706.
N (EGGS) = 30. N (LARVAE) = 39.												
4/25	0.	0.	0.	0.	0.	39179.	0.	0.	425282.	1959.	433174.	254664.
S.E.	0.	0.	0.	0.	0.	13150.	0.	0.	261582.	1447.	261701.	30946.
.95 CI	0.	0.	0.	0.	0.	26329.	0.	0.	523625.	2896.	523863.	61923.
.90 CI	0.	0.	0.	0.	0.	22000.	0.	0.	437365.	2420.	437564.	51742.
N (EGGS) = 35. N (LARVAE) = 47.												
5/ 2	0.	0.	0.	2104.	0.	163753.	0.	421.	2256.	1683.	2256.	357275.
S.E.	0.	0.	0.	1381.	0.	38924.	0.	421.	2256.	1324.	2256.	57018.
.95 CI	0.	0.	0.	2764.	0.	77887.	0.	842.	4515.	2650.	4515.	114092.
.90 CI	0.	0.	0.	2310.	0.	65051.	0.	704.	3773.	2214.	3773.	95333.
N (EGGS) = 47. N (LARVAE) = 63.												
5/ 9	0.	0.	0.	974.	0.	10239.	0.	0.	1043480.	1461.	1043480.	80892.
S.E.	0.	0.	0.	974.	0.	2548.	0.	0.	829433.	830.	828432.	7906.
.95 CI	0.	0.	0.	1950.	0.	5200.	0.	0.	1657693.	1661.	1657693.	15820.
.90 CI	0.	0.	0.	1629.	0.	4345.	0.	0.	1385139.	1388.	1385139.	13219.
N (EGGS) = 47. N (LARVAE) = 63.												
TOTALS	0.	0.	0.	47525.	256413.	5293065.	167425.	418355.	18605693.	1715803.	28565353.	21319192.
S.E.	0.	0.	0.	23239.	256413.	1620233.	167425.	138575.	13365560.	494115.	14650385.	2308668.
.95 CI	0.	0.	0.	40438.	513081.	3242086.	335017.	277289.	26744319.	988724.	29315412.	4619644.
.90 CI	0.	0.	0.	33789.	428722.	2709030.	279934.	231698.	22347082.	826161.	24495643.	3860093.

LAST 52 WEEKS	0.	0.	0.	47525.	256413.	4963524.	0.	384367.	18701436.	1673666.	27528176.	20741473.
S.E.	0.	0.	0.	20209.	256413.	1595499.	0.	136267.	13365074.	494076.	14638317.	2290630.
.95 CI	0.	0.	0.	40438.	513081.	3192592.	0.	272671.	26743505.	988665.	29291263.	4503550.
.90 CI	0.	0.	0.	33789.	428722.	2667674.	0.	227839.	22346403.	826094.	24475264.	3829934.

Table 20. Comparison of weekly and annual estimates of entrainment of fish larvae, as shown in Table 4.4-2 of the 316(b) and Table 19 of the present report. N.S. = no sampling.

SAMPLING WEEK		Number of fish larvae entrained: 316(b)	Present report	± sampling error
April	06-12	0	0	
	13-19	33,472	33,468±	0
	20-26	0	0	
	27-03	31,889	26,159±	55,212
May	04-10	22,326	22,323±	61,970
	11-17	431,131	495,769±	638,635
	18-24	265,763	262,517±	136,373
	25-31	442,901	444,322±	321,897
June	01-07	4,854,107	4,799,555±	3,560,090
	08-14	4,723,214	3,822,850±	1,730,172
	15-21	4,620,997	4,924,916±	2,519,042
	22-28	1,851,750	1,851,677±	999,528
	29-05	1,881,883	1,881,622±	1,499,302
July	06-12	667,522	675,437±	497,725
	13-19	301,297	302,645±	202,185
	20-26	241,408	237,958±	123,872
	27-02	105,995	105,981±	79,305
Aug.	03-09	71,015	69,801±	60,709
	10-16	46,961	45,648±	42,583
	17-23	10,628	10,578±	16,462
	24-30	55,788	55,780±	50,755
	31-06	50,208	50,202±	52,885
Sept.	07-13	10,893	10,925±	24,045
	14-20	0	0	
	21-27	0	0	
	28-04	0	0	
Oct.	05-11	0	0	
	12-18	5,980	6,510±	16,736
	19-25	0	0	
	26-01	0	0	
Nov.	02-08	0	0	
	09-15	0	0	
	16-22	0	0	
	23-29	0	0	
	30-06	0	0	
Dec.	07-13	N.S.	-	
	14-20	0	0	
	21-27	0	0	
	28-03	0	0	
Jan.	04-10	0	0	
	11-17	0	0	
	18-24	0	0	
	25-31	0	0	
Feb.	01-07	0	0	
	08-14	0	0	
	15-21	N.S.	-	
	22-28	0	0	
	29-06	0	0	
March	07-13	0	0	
	14-20	0	0	
	21-27	0	0	
	28-03	258,282	253,022±	219,017
April	04-10	7,026	6,975±	6,197
	11-17	6,439	7,725±	9,445
	18-24	242,888	241,996±	79,832
	25-01	238,804	254,664±	61,923
May	02-08	369,239	357,275±	114,092
	09-15	61,691	60,892±	15,820
Total		21,911,497	21,319,192±	4,619,644
Last 52 weeks		21,392,679	20,741,473±	4,583,550

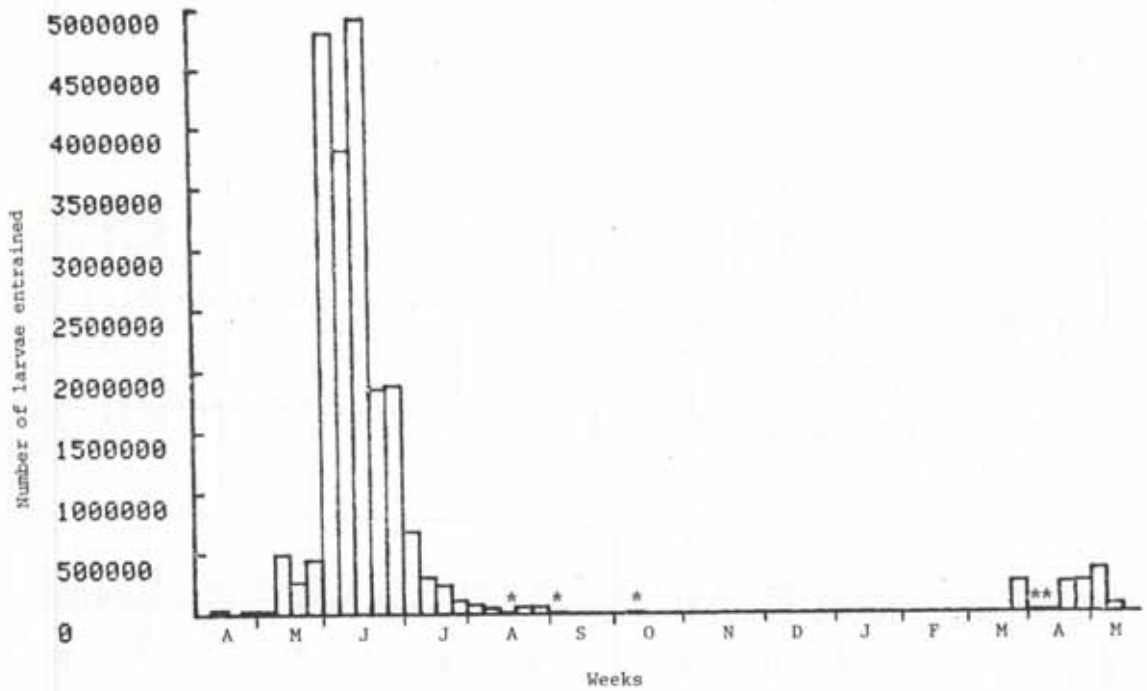


Figure 11. Entrainment of fish larvae (all species combined) by week for April 1976-May 1976, as calculated from Detroit Edison's daily entrainment data sheets. * = <20,000. No sampling was conducted during the weeks of December 7 and February 15.

b. Statistical analysis of larval entrainment estimates. According to our annual estimates for May 1975-May 1976, approximately 44% of the fish larvae entrained were clupeids, 24% were yellow perch, 9% were freshwater drum, and 8% were unidentified (Table 21).

Although the 95% CI's for many of the weekly larval entrainment estimates include zero (refer to Tables 19 and 20), the annual estimates for many taxa show a fairly high degree of precision. Sampling errors (at P = 0.05) as percentages of the annual entrainment estimates for total larvae and for clupeids, carp, and channel catfish (sampling errors of 22, 29, 47, and 35%, respectively; Table 22) meet the EPA (1977) recommendation that such estimates have sampling errors that are no larger than 50% of the estimate. For all other taxa, shown in Table 22, the sampling errors are larger than 50% of the estimate, and several exceed 100%.

The confidence intervals indicate that the portions of the population of entrained larvae (all species combined) present at 1-m and 3-m depths in the intake water were sampled intensively enough to provide reliable estimates of the numbers entrained from these strata. However, we do not believe that these samples are representative of the population entrained at depths greater than 3 m in the intake canal (refer to Section III-A-2).

Correlation analyses were conducted to compare our daily entrainment estimates for fish larvae [based on counts from the daily entrainment data sheets transformed by $\log_{10}(x + 1)$] with the river and lake components of intake flow (Table 23). The only significant (P = 0.05) correlations found were those of clupeid larvae and the larvae of all species combined with the lake component of intake flow.

2. Fish eggs

a. Verification of 316(b) estimates. The method used by Detroit Edison for calculating the numbers of eggs entrained was similar to that used for larvae (Eq. 7), as stated on 316(b) p. 4.4-1:

> Identical calculations were made for fish eggs, with one exception: fish egg samples included in the analyses were from the intake sampling only. The exclusion of discharge samples was necessary because of probable contamination of these samples by fish decomposition at the intake and sluiceway baskets and by the spawning of certain species in the discharge canal.

Table 21. Percentage composition by taxon of fish larvae entrained annually.

Taxon	Composition of entrained larvae (percent)
Clupeidae	43.6
Smelt	3.4
Northern pike	<0.1
Goldfish	1.5
Carp	2.3
Emerald shiner	0.8
Spottail shiner	<0.1
White sucker	<0.1
Channel catfish	3.5
Brindled madtom	<0.1
Brook silverside	<0.1
Trout-perch	0.1
White bass	1.8
Lepomis sp.	<0.1
Yellow perch	23.9
Walleye	1.8
Logperch	0.2
Freshwater drum	8.8
Unidentified	8.1

Table 22. Sampling errors for annual fish larvae entrainment estimates, expressed as percentages of those estimates. Sampling error = absolute value of ts_v at P = 0.05 significance level, where t = Student's t-statistic, s_v = standard error.

Taxon	Sampling error (percent)
Clupeidae	29
Smelt	78
Northern pike	135
Goldfish	76
Carp	47
Emerald shiner	91
Spottail shiner	200
White sucker	200
Channel catfish	35
Brindled madtom	200
Brook silverside	200
Trout-perch	95
White bass	59
Lepomis sp.	142
Logperch	85
Yellow perch	64
Walleye	71
Freshwater drum	80
Unidentified	59
Total larvae	22

Table 23. Correlation matrices for daily estimates of fish larvae entrained vs. intake flow components based on counts from Detroit Edison's daily entrainment data sheets [transformed by $\log_{10}(x + 1)$]. LARV = larval entrainment estimate, RFLOW = river flow, LKCOMP = lake component of intake flow.

CORRELATION MATRIX 1 SPEC 900 LARVAE - ALL SPECIES COMBINED

N= 180 DF= 178 R .0500= .1463 R .0100= .1915

VARIABLE	3. LARV	4. RFLOW	5. LKCOMP
3.LARV	1.0000		
4.RFLOW	-.0491	1.0000	
5.LKCOMP	.1602	-.8901	1.0000

CORRELATION MATRIX 2 SPEC 801 YELLOW PERCH

N= 180 DF= 178 R .0500= .1463 R .0100= .1915

VARIABLE	3. LARV	4. RFLOW	5. LKCOMP
3.LARV	1.0000		
4.RFLOW	-.0293	1.0000	
5.LKCOMP	.0768	-.8901	1.0000

CORRELATION MATRIX 3 SPEC 119 CATFISH

N= 180 DF= 178 R .0500= .1463 R .0100= .1915

VARIABLE	3. LARV	4. RFLOW	5. LKCOMP
3.LARV	1.0000		
4.RFLOW	-.0258	1.0000	
5.LKCOMP	.0761	-.8901	1.0000

CORRELATION MATRIX 4 SPEC 134 FRESHWATER DRUM

N= 180 DF= 178 R .0500= .1463 R .0100= .1915

VARIABLE	3. LARV	4. RFLOW	5. LKCOMP
3.LARV	1.0000		
4.RFLOW	-.0160	1.0000	
5.LKCOMP	.0926	-.8901	1.0000

CORRELATION MATRIX 5 SMELT

N= 180 DF= 178 R .0500= .1463 R .0100= .1915

VARIABLE	3. LARV	4. RFLOW	5. LKCOMP
3.LARV	1.0000		
4.RFLOW	.0082	1.0000	
5.LKCOMP	.0288	-.8901	1.0000

CORRELATION MATRIX 6 SPEC 108 CLUPEID

N= 180 DF= 178 R .0500= .1463 R .0100= .1915

VARIABLE	3. LARV	4. RFLOW	5. LKCOMP
3.LARV	1.0000		
4.RFLOW	-.0460	1.0000	
5.LKCOMP	.1527	-.8901	1.0000

In many cases, the estimates of the numbers of eggs entrained (Table 19), as calculated in the present report from the daily entrainment data sheets by the method described in the above 316(b) excerpt, differ considerably from the estimates in Table 4.4-2 of the 316(b). For example, as shown in Table 24, the estimate for the last week in June is three times the 316(b) estimates and the estimate of annual egg entrainment (27.5 million eggs) is more than twice the 316(b) estimate (13.1 million eggs)[8/]. The disagreement between the two estimates has been traced to an apparent error in the sample volume used by Detroit Edison to calculate mean egg density in the intake water. Detroit Edison conducted entrainment sampling in both the intake and discharge canals (refer to Section III-A-2), but because of concern that spawning in the discharge canal might have contaminated the discharge samples, only samples from the intake canal were used in estimating egg entrainment (refer to above excerpt from p. 4.4-1). The data in Table 25 suggest, however, that Detroit Edison calculated mean egg density by dividing the number of eggs found in samples from the intake stations by the volume of water collected at all stations (intake plus discharge stations). When entrainment is computed in this manner, the results obtained correspond closely to those presented in the 316(b), as shown by the examples in Table 25. The 316(b) estimates are thus serious underestimates of egg entrainment. For the weeks when the estimates are fairly similar, no data were collected at the discharge stations, and the error did not occur.

Detroit Edison's assumption that the entrainment samples collected at the head of the discharge canal were contaminated by spawning in the discharge canal does not seem to be supported by the Monroe data base. Although ripe, spawning, and spent fish and large numbers of fish larvae have been observed in the upper discharge canal (Cole 1976; Nelson 1975), none have been reported for the overflow canal upstream from the point where the discharge entrainment samples were taken (refer to discussion of sampling locations in Section III-A-2).

[8/] Estimates are based on Detroit Edison's untransformed counts in order to verify the 316(b) estimates. Egg entrainment estimates based on the counts transformed by $\log_{10}(x + 1)$ are presented in Appendix E, Table E-2.

Table 24. Comparison of weekly and annual estimates of entrainment of fish eggs as shown in Table 4.4-2 of 316(b) and Table 19 of the present report. N.S. = no sampling.

SAMPLING WEEK		Number of fish larvae entrained: 316(b)	Present report ± sampling error	
April	06-12	0	0	
	13-19	0	0	
	20-26	0	0	
	27-03	0	0	
May	04-10	276,847	692,023±	6,996,778
	11-17	109,051	344,851±	713,163
	18-24	123,611	366,304±	887,678
	25-31	0	0	
June	01-07	2,828,274	8,435,186±	18,979,478
	08-14	0	0	
	15-21	0	0	
	22-28	0	0	
	29-05	4,180,309	12,539,198±	53,956,157
July	06-12	0	0	
	13-19	0	0	
	20-26	0	0	
	27-02	0	0	
Aug.	03-09	0	0	
	10-16	0	0	
	17-23	0	0	
	24-30	0	0	
	31-06	0	0	
Sept.	07-13	0	0	
	14-20	0	0	
	21-27	0	0	
	28-04	0	0	
Oct.	05-11	0	0	
	12-18	0	0	
	19-25	0	0	
	26-01	0	0	
Nov.	02-08	0	0	
	09-15	0	0	
	16-22	0	0	
	23-29	0	0	
	30-06	0	0	
Dec.	07-13	N.S.	-	
	14-20	0	0	
	21-27	0	0	
	28-03	0	0	
Jan.	04-10	0	0	
	11-17	10,413	10,798±	11,547
	18-24	16,399	16,739±	33,494
	25-31	8,878	9,194±	19,124
Feb.	01-07	0	0	
	08-14	16,740	17,358±	34,734
	15-21	N.S.	-	
	22-28	0	0	
	29-06	0	0	
March	07-13	0	0	
	14-20	4,684,200	4,543,539±	9,089,534
	21-27	0	0	
	28-03	58,990	45,850±	84,400
April	04-10	65,573	65,100±	103,558
	11-17	0	0	
	18-24	0	0	
	25-01	295,604	433,174±	523,663
May	02-08	5,507	2,256±	4,515
	09-15	788,633	1,043,480±	1,657,693
Total		13,469,029	28,565,050±	29,315,412
Last 52 weeks		13,083,131	27,528,176±	29,291,263

Table 25. Examples comparing egg entrainment estimates calculated in the present report with those calculated in the 316(b). Estimates were calculated using the equation below*, where sample volume is intake volume only (V_I) or intake volume plus discharge volume (V_{I+D}).

Week of (1975)	Number of eggs collected at intake	Number of stations sampled		Volume sampled per station	Plant flow as calculated in present report (ft^3/week)	Egg entrainment estimates		
		Intake	Discharge			Present report using V_I	Present report using V_{I+D}	316(b)
May 4-10	62	2	3	530 liter/min (26,953.2 ft^3/day)	601,685,280	692,023	276,809	276,847
May 18-24	60	4	8	"	658,203,840	366,304	122,101	123,611
June 1-7	645	4	8	"	1,409,955,120	8,435,186	2,811,729	2,828,274

$$\frac{\text{Number of eggs entrained}}{\text{week}} = \frac{\text{Number of eggs collected at intake stations}}{\text{Sample volume}} \times \text{plant flow for week} \qquad (8)$$

where sample volume = number of stations sampled X volume sampled per station

The ANOVA conducted to compare the total numbers of eggs collected at the intake and discharge stations showed more eggs at the discharge than at the intake, with the difference significant at $P = 0.06$ but not at $P = 0.05$ (refer to Section III-A-3 and Table 17). The data presented in Table 26 as average numbers of eggs collected for each station at the intake and discharge demonstrate the greater numbers of eggs found at the discharge stations. If spawning occurred in the discharge canal, however, eggs should have been collected when the temperature of the water in the discharge canal was within the range for spawning of the given species and that spawning temperature would occur earlier in the discharge canal than in the intake canal. Clupeid eggs, however, were not found earlier at the discharge (Table 26). When they did appear in the discharge collections the water temperatures were 83-89°F, which are above the maximum spawning temperatures for either alewife (82°F) or gizzard shad (73°F), while intake temperatures during this period were within the normal spawning range for these species (Edsall 1970; Bodola 1966). Smelt and yellow perch eggs were collected first in the discharge; however, water temperatures in the discharge canal were 80°F and above, while maximum spawning temperatures for perch and smelt are approximately 55°F and 65°F, respectively (Cole 1976; MWRC 1975a; Scott and Crossman 1973). The intake temperatures listed in Table 26 for 1975 were also above the maximum spawning temperature for perch and in late May were also above that for smelt. Intake temperatures, however, may have been measured at a point where warmer river water had mixed with lake water from which the perch and smelt eggs would have originated.

Although some species undoubtedly spawned in some portions of the discharge canal downstream from the discharge sampling locations, the evidence in Table 26 suggests that the eggs observed in the discharge samples are not the result of spawning upstream from the sampling points. More eggs may have been collected at the discharge stations because the water mass at the sampling stations in the discharge canal was more thoroughly mixed and therefore a greater portion of the entrained eggs was in the upper 3 m of the water column where they could be collected (refer to Section III-A-2). If the samples taken at the head of the discharge canal

Table 26. Number of eggs collected per station at intake (I) and discharge (D), from Detroit Edison's daily entrainment data sheets. Dashes = temperature not reported in Table 3.3-1.

Date	Water temperature (°F)		Number of eggs					
			Clupeids		Yellow perch		Smelt	
	I[a]	D[b]	I	D	I	D	I	D
1975								
May 1	56	80	0	0	0	0	0	2400
6	-	-	0	0	0	0	0	0
7	62	87	0	0	0	0	47	230
13	-	-	6	0	0	4	0	0
14	-	-	0	0	0	0	0	0
15	-	-	24	0	0	0	0	0
16	63	83	0	0	0	171	0	243
20	64	84	0	270	0	143	0	0
21	64	87	0	0	0	0	0	0
22	64	89	0	867	42	170	0	0
23	64	89	18	7	0	0	0	0
28	70	83	0	317	0	120	0	0
29	72	85	0	19	0	0	0	0
30	73	86	0	105	0	2	0	0
June 3	69	81	321	0	0	205	0	825
4	69	83	324	270	0	240	0	0
5	70	83	0	310	0	392	0	0
1976								
April 30	54	71	0	0	0	0	0	270
May 4	56	77	0	0	0	0	0	675

[a] From Table 3.3-1

[b] Discharge temperatures are actually temperatures at the condenser outlet. Figures 3.7-4 through 3.7-6 of the Thermal Discharge Demonstration for the Monroe plant (Detroit Edison 1976b) show that there is little temperature decay between the point of condenser outlet and the sampling locations at the head of the discharge canal.

(see Figure 4.4-1 on p. 42) were used in addition to those taken at the intake stations in order to calculate egg entrainment, the annual estimate for total egg entrainment would increase from 27.5 million to 96.9 million. The larger number of eggs in the discharge may have also been due, in part, to decomposition of fish in the screenwells as mentioned on p. 4.4-1 of the 316(b) and to the release of eggs from impinged fish.

b. Statistical analysis of egg entrainment estimates. Of the approximately 27.5 million fish eggs entrained during May 1975-May 1976, about 18.7 million or 68% of the total were not identified taxonomically (Tables 19 and 27). One large group of unidentified eggs (about 4.7 million) were entrained during January-March 1976 (Table 19) and, as indicated in the 316(b), may have been the eggs of burbot, smelt, or walleyes. A second, larger group of unidentified eggs (about 12.5 million) was entrained during the last week of June 1975 (Table 19); many of these may have been the eggs of freshwater drum. Although no drum eggs were identified, approximately 9% of the entrained larvae were drum (Table 21), suggesting that drum eggs may have been present in the Monroe area. Because drum eggs are buoyant (Davis 1959), they are probably quite vulnerable to entrainment and to capture by the sampling methods used by Detroit Edison.

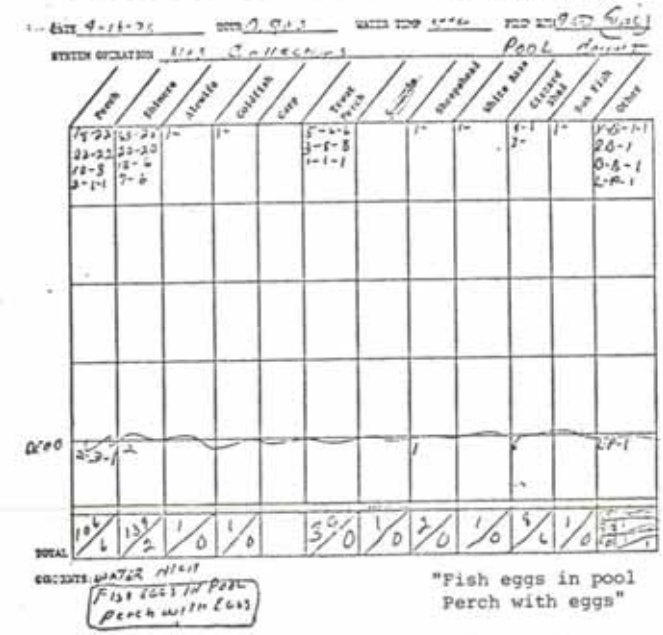
Based on calculations from Detroit Edison's daily entrainment data sheets, 31% of the annual total number of eggs entrained were identified as clupeid eggs (Table 27). Yellow perch eggs comprised only 1% of the total and were collected at the intake on only 1 day (May 22, 1975) during the sampling period (Table 19; 316(b) Table 4.4-2). Because perch eggs are demersal and embedded in large, gelatinous masses that help anchor them to the substrate, none were likely to be in the upper 3 m of water where the intake samples were collected. However, several notations on the test screenwell tally sheets (for April 1976) indicate that ripe perch and eggs (presumably yellow perch) were found on the traveling screens and in the collecting pool (see examples in Table 28). Entrainment of perch eggs could probably be estimated from the number of egg masses impinged on the intake screens.

Table 27. Percentage composition by taxon of fish eggs entrained annually.

Taxon	Composition of eggs entrained (percent)
Clupeidae	31.0
Carp	<0.1
Burbot	0.1
Yellow perch	0.9
Unidentified	67.9

Table 28. Examples of Detroit Edison's test screenwell tally sheets showing eggs observed on test screens and in holding pool. * = correction made by GLFL.

"Eggs on screens in screen house 1-2 Perch with eggs"



"Fish eggs in pool Perch with eggs"

All of the 95% CI's for the weekly entrainment estimates for total fish eggs (refer to Tables 19 and 24) and for the annual estimates for each taxon (Table 29) include zero and do not meet the EPA (1977) criterion of a maximum sampling error of 50%. The great variability in the estimates of weekly numbers of eggs entrained is further illustrated by Figure 12. These measures of precision are based on Detroit Edison's data which are subject to a degree of error due to the limitations of the collection methods (see Section III-A).

Correlation analyses conducted to compare daily estimates of total egg entrainment [based on $\log_{10}(x + 1)$ transformation] with the river and lake components of intake flow showed no significant correlations with either component ($P = 0.05$).

3. Macrozoobenthos

a. Verification of 316(b) estimates. The 316(b) presents daily estimates only for the period of April-September 1975 (Table 4.4-3). The method used by Detroit Edison to calculate the estimates apparently was similar to that used for fish larvae (Eq. 7), except it was based on daily, instead of weekly, counts. In most cases, the estimates, based on the counts from the daily entrainment data sheets, agree closely with the 316(b) estimates (Table 30). Both sets of estimates, however, are subject to the limitations of the sampling methods discussed in Section III-A. The greatest number of discrepancies between our estimates and those of the 316(b) occurs in the estimates for chironomids, where only 74% of our daily estimates are within 5% of the 316(b) estimates. The remaining estimates are up to 136% higher than the 316(b) estimates. Also, in some cases where Detroit Edison shows that no organisms were entrained, the daily entrainment data sheets revealed that organisms actually were collected in the entrainment samples (refer to Table 30, August 12-13).

The 316(b) presents no monthly or annual estimates for the entrainment of macrozoobenthos. These estimates were calculated for 1975-76 (Table 31) using the following equation:

$$\frac{\text{Sum of daily estimates/month}}{\text{Number of sampling days/month}} \times \text{Number of days in month} = \frac{\text{Number entrained}}{\text{month}} \qquad (9)$$

Table 29. Sampling errors for annual fish egg entrainment estimates, expressed as percentages of those estimates. Sampling error = absolute value of ts_v at P = 0.05 significance level, where t = Student's t-statistic, s_v = standard error.

Taxon	Sampling error (percent)
Clupeidae	136
Carp	200
Burbot	200
Yellow perch	200
Unidentified	143
Total eggs	106

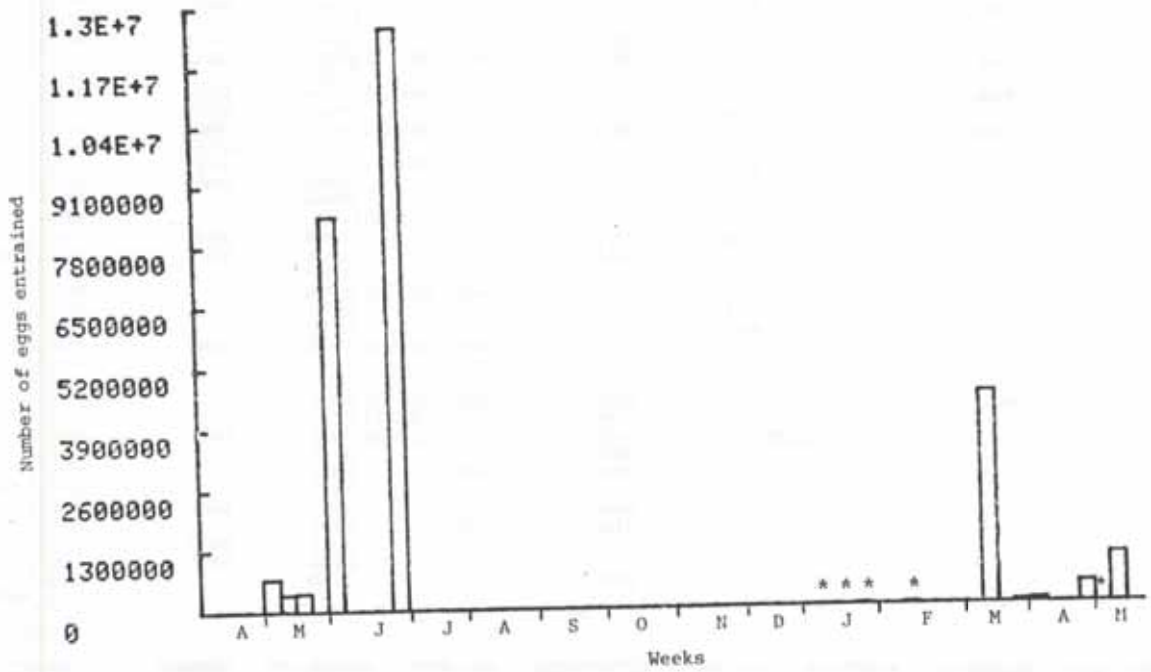


Figure 12. Entrainment of fish eggs (all species combined) by week for April 1975-May 1976, as calculated from Detroit Edison's daily entrainment data sheets. * = < 20,000. No sampling was conducted during the weeks of December 7 and February 15.

Table 30. Comparison of Detroit Edison's 24-h estimates of macrozoobenthos entrainment at the Monroe Power Plant (as presented in Table 4.4-3 of the 316(b)) with 24-h estimates from the present report. Numbers in parentheses are estimates from the present report which differ by 5% or more from the 316(b) estimates; the remaining estimates differ from the 316(b) estimates by less than 5%.

Period	Gammarus	Chironomidae	Chaoborus	Ephemeroptera	Stenonema	Gastropoda	Hydropsyche	Simuliidae	Others**
1975									
Apr. 10-11							4781		4781
14-15		124327		9562					4781
21-22	4781	124327							4781
24-25	10356	69906			10356				12945
29-30		27108	1594	7973	19135				9567
30-May 01	5575	4181		1393	19512				2787
May 05-06		6378			6378				1594
06-07		27636	1062	1062	7440		6377		2125
12-13		65345		3187	7968				9561
13-14	1593	27092 (41437)		6374	3187 (4781)				1593
14-15		138666 (162559)		9562	9562				7172
15-16		90557 (97036)	2658	2658	9304		2658		3987
19-20		130256 (164828)			1329				
20-21		54991	1195						5976
21-22	1062	107364 (127570)	3188						2125
22-23		52085		1062	1062				2125
27-28		191205	4248	2124	2124				
28-29		801067 (844391)	1858						
29-30		479881							6904
June 02-03	4248	367541		2124					2124
03-04	2256	279856		2256	9027				2256
04-05		82313 (90331)							10620
05-06		409025							
09-10	5842	148999			5842				2921
10-11	37978	163612 (187070)			11685				14607
11-12	14607	90564					(6111)		9161
12-13	3053	174083 (198592)		(6111)					2921
16-17	8764	277554			5842				5310
17-18	18585	103553 (244426)					2655		7965
18-19		35845							14335
19-20	14335	90800 (121922)	2389	7167			4778		2921 (5846)
23-24	26292	470381		2921					23371
24-25	2921	117040							14607
25-26	40900	146083			5842		5842		11685
26-27	5842	93491							19114 (22311)
30-July 01	6371	136976 (184871)							12743
July 01-02	3185	223019			3185				28672
02-03	15929	137002 (146622)		3185			6371		31877
07-08	15938	736405				6375	9563		31858
08-09		366387							

Period	Gammarus	Chironomidae	Chaoborus	Ephemeroptera	Stenonema	Gastropoda	Hydropsyche	Simuliidae	Others
July 09-10	12743	(458991)			6371				12743
10-11		143378				19115			9557
14-15	29214	403188	5842 (8769)	2921		8764 (2923)			8764 (15408)
15-16	12215	1017007			3053	3053			15269
16-17	3185	286741		3185		12743			6371
17-18	6371	38229 (86061)				12743	3185		
21-22	15269	867355				18323			6107
22-23	14607	575564	26292						8764
23-24	20450	969976	37978	2921		2921	32135		11685
24-25	23371	388575					26292		17528
28-29	28672	917570	22300			6371	9557		12743
29-30		63716		3185		6371			3185
30-31	3185	245320				3185			
31-Aug. 01		57344					6371		15929
Aug. 04-05	41415	76459		3185		3185			6371
05-06	52585	350599 (372571)					4382		4382
06-07	14607	87649					17528		
07-08	32063	480986	64127				27483		4580
11-12	5310	63727	2655			2655	7965		7965
12-13	(2657)	(579183)	(138154)			(10627)	(5314)		
13-14	3982	87623	3982			7965			3982
14-15		106208 (143467)	2655			26550	18585		2655
18-19	2921	81806 (102304)	2921			2921	2921		5842
19-20	14607	113942	20450			20450			2921
20-21		97730 (103879)	79406			6107	9161	3053	3053
21-22	3185	159303	28672			6371	12743		
25-26	12743	175232	28672			6371	6371		12743
26-27	9557	152925 (258183)	12743			6371			
27-28	3185	175225	15929		3185	25486	6371		6371
28-29		213461	6371	3185		12743			3185
Sept. 02-03	9557	76652 (111560)	3185	31858		12743	6371		9557
03-04	267641	492271		28673			28673		109916
04-05		101952			3185		12743		15929
08-09		159296	3185			3185	6371		6371 (3187)
09-10	3185	289927				6371			6371
10-11		116053				6107	(6110)		9161
11-12		116053	12215		3053		9161		6107
15-16		181141	2921	5842	2921		26292		2921
16-17	5578	136667	8367			2789	8367		
17-18	2655	225693				5310	5310		
18-19							17528		5842
19-20	5842	163612	2921			2921	5842		
22-23	5842	75963	5842			5842	35057		17528
23-24		140235							

Table 31. Monthly entrainment estimates for macrozoobenthos, May 1975-April 1976, based on counts from Detroit Edison's daily entrainment data sheets. S.E. = standard error, s_v; CI = absolute value of ts_v.

		MAY	JUNE	JULY	AUGUST	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	TOTALS	PC.OF TOTA
	N	14	16	18	17	16	17	18	9	10	8	11	12		
Tricladida		2354.	0.	0.	11384.	20425.	44875.	10851.	6406.	2842.	3732.	1430.	0.	104294.	0.2
	S.E.	2354.	0.	0.	8051.	15918.	14687.	6267.	6406.	2027.	2651.	1430.	0.	25159.	
	.95 C.I.	5085.	0.	0.	17069.	33921.	31150.	13224.	14773.	4584.	6270.	3185.	0.	50344.	
	.90 C.I.	4169.	0.	0.	14050.	27904.	25646.	10905.	11916.	3715.	5074.	2590.	0.	42067.	
Nematoda		0.	5681.	0.	0.	0.	3877.	0.	0.	0.	0.	0.	0.	9356.	<0.1
	S.E.	0.	5681.	0.	0.	0.	3877.	0.	0.	0.	0.	0.	0.	6713.	
	.95 C.I.	0.	11679.	0.	0.	0.	8217.	0.	0.	0.	0.	0.	0.	13633.	
	.90 C.I.	0.	9607.	0.	0.	0.	6769.	0.	0.	0.	0.	0.	0.	11225.	
Bryozoa		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2325.	2325.	<0.1
	S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2325.	2325.	
	.95 C.I.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	5117.	4652.	
	.90 C.I.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	4175.	3837.	
Oligochaeta		0.	0.	0.	0.	5976.	0.	6250.	1647.	3047.	0.	3235.	1087.	21247.	<0.1
	S.E.	0.	0.	0.	0.	5976.	0.	4428.	1647.	2158.	0.	2339.	1087.	8328.	
	.95 C.I.	0.	0.	0.	0.	12735.	0.	9354.	3798.	4881.	0.	5212.	2393.	16664.	
	.90 C.I.	0.	0.	0.	0.	10477.	0.	7706.	3063.	3956.	0.	4239.	1953.	13924.	
Hirudinea		22946.	60782.	0.	7267.	17929.	2544.	9762.	0.	0.	1686.	1123.	7895.	131909.	0.2
	S.E.	9451.	35557.	0.	7267.	17924.	2544.	5679.	0.	0.	1686.	1123.	2440.	47151.	
	.95 C.I.	20413.	75773.	0.	15406.	38207.	5393.	11984.	0.	0.	3986.	2502.	5370.	84344.	
	.90 C.I.	16737.	62332.	0.	12680.	31433.	4441.	9882.	0.	0.	3194.	2035.	4382.	70476.	
Mysis		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	894.	853.	<0.1
	S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	894.	854.	
	.95 C.I.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1873.	1724.	
	.90 C.I.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1533.	1428.	
Anostraca		0.	0.	0.	0.	0.	0.	0.	0.	0.	2047.	0.	0.	2046.	<0.1
	S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2047.	0.	0.	2047.	
	.95 C.I.	0.	0.	0.	0.	0.	0.	0.	0.	0.	4840.	0.	0.	4395.	
	.90 C.I.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3878.	0.	0.	3622.	
Argulus		0.	0.	5487.	0.	5727.	11145.	0.	6406.	2472.	0.	0.	0.	31240.	0.1
	S.E.	0.	0.	5489.	0.	5727.	8661.	0.	6406.	1648.	0.	0.	0.	13554.	
	.95 C.I.	0.	0.	11583.	0.	12203.	17942.	0.	14773.	3728.	0.	0.	0.	25722.	
	.90 C.I.	0.	0.	9557.	0.	10362.	14777.	0.	11916.	3021.	0.	0.	0.	22328.	
Isopoda		0.	0.	0.	17437.	5681.	8238.	2656.	1647.	0.	0.	2777.	767.	38973.	0.1
	S.E.	0.	0.	0.	12997.	5681.	5835.	2656.	1647.	0.	0.	1964.	767.	15722.	
	.95 C.I.	0.	0.	0.	27553.	11679.	12370.	5605.	3798.	0.	0.	4177.	1644.	31463.	
	.90 C.I.	0.	0.	0.	22693.	9657.	10188.	4622.	3063.	0.	0.	3560.	1342.	26278.	
Amphipoda		0.	0.	0.	0.	0.	2544.	0.	0.	0.	0.	0.	0.	2543.	<0.1
	S.E.	0.	0.	0.	0.	0.	2544.	0.	0.	0.	0.	0.	0.	2544.	
	.95 C.I.	0.	0.	0.	0.	0.	5393.	0.	0.	0.	0.	0.	0.	5393.	
	.90 C.I.	0.	0.	0.	0.	0.	4441.	0.	0.	0.	0.	0.	0.	4253.	
Gammarus		18238.	348249.	363061.	362711.	610123.	1580876.	113585.	67267.	42165.	108082.	51409.	17502.	2259262.	4.1
	S.E.	13063.	92294.	94707.	131691.	467410.	23317.	24613.	19234.	8029.	28536.	12110.	4655.	506022.	
	.95 C.I.	28216.	196679.	200843.	279185.	996050.	49437.	51933.	44355.	18161.	67487.	27233.	10247.	1012953.	
	.90 C.I.	23134.	161792.	164364.	229933.	819369.	40711.	42827.	35776.	14716.	54076.	21958.	8361.	836069.	
Pontoporeia		0.	0.	15102.	0.	0.	0.	5977.	1647.	1606.	0.	0.	0.	24323.	<0.1
	S.E.	0.	0.	15102.	0.	0.	0.	5977.	1647.	1606.	0.	0.	0.	16464.	
	.95 C.I.	0.	0.	31865.	0.	0.	0.	12611.	3798.	3633.	0.	0.	0.	32824.	
	.90 C.I.	0.	0.	26278.	0.	0.	0.	10399.	3063.	2944.	0.	0.	0.	27427.	
Decapoda		0.	14945.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14944.	<0.1
	S.E.	0.	8628.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	8628.	
	.95 C.I.	0.	18237.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	17265.	
	.90 C.I.	0.	15125.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14426.	
Acarina		0.	38364.	75714.	11625.	8965.	7269.	0.	0.	0.	0.	0.	0.	141934.	0.3
	S.E.	0.	30519.	31263.	11625.	8965.	5151.	0.	0.	0.	0.	0.	0.	46374.	

.95 C.I.	0.	85227.	85966.	24645.	19104.	10920.	0.	0.	0.	0.	0.	0.	92795.	
.90 C.I.	0.	53492.	54398.	20297.	15715.	8994.	0.	0.	0.	0.	0.	0.	77538.	
Diptera (unid.)	0.	4234.	22737.	5812.	0.	0.	0.	0.	0.	0.	0.	0.	33782.	0.1
S.E.	0.	4234.	15615.	5812.	0.	0.	0.	0.	0.	0.	0.	0.	17141.	
.95 C.I.	0.	9024.	32947.	12322.	0.	0.	0.	0.	0.	0.	0.	0.	34399.	
.90 C.I.	0.	7423.	27169.	10148.	0.	0.	0.	0.	0.	0.	0.	0.	28743.	
Ceratopogonidae	0.	0.	0.	0.	0.	0.	0.	0.	0.	2233.	2994.	0.	5226.	<0.1
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2233.	1981.	0.	2985.	
.95 C.I.	0.	0.	0.	0.	0.	0.	0.	0.	0.	5280.	6413.	0.	5372.	
.90 C.I.	0.	0.	0.	0.	0.	0.	0.	0.	0.	4231.	3589.	0.	4990.	
Chironomidae	5136901.	6176604.	14086688.	5971365.	5077658.	1059279.	217520.	404026.	280696.	1206065.	1808138.	1252122.	42672064.	76.7
S.E.	1308043.	790870.	2429022.	1367868.	594324.	146396.	32743.	45987.	33597.	193439.	136253.	69881.	3247689.	
.95 C.I.	2825372.	1685344.	5125235.	2899879.	1266504.	310359.	69088.	106046.	75996.	457413.	303573.	153809.	6498623.	
.90 C.I.	2316544.	1386395.	4226497.	2388296.	1041869.	255607.	56973.	85536.	61583.	366511.	246891.	125507.	5430135.	
Chaoborus	11685.	6482.	166277.	741938.	77963.	7995.	3543.	46220.	0.	0.	11333.	12281.	1110514.	2.0
S.E.	12362.	4482.	78838.	257876.	29814.	5677.	3543.	10877.	0.	0.	5088.	5616.	272026.	
.95 C.I.	26702.	9552.	166348.	546698.	63533.	12035.	7477.	25082.	0.	0.	11337.	12362.	544323.	
.90 C.I.	21893.	7858.	137178.	450252.	52263.	9912.	6166.	20231.	0.	0.	9220.	10087.	454927.	
Simuliidae	0.	0.	0.	5571.	0.	0.	0.	349558.	15080.	475736.	1957063.	28925.	3031911.	5.4
S.E.	0.	0.	0.	5571.	0.	0.	0.	73073.	5519.	143218.	187181.	10102.	247085.	
.95 C.I.	0.	0.	0.	11811.	0.	0.	0.	168507.	12484.	338710.	417039.	22215.	496418.	
.90 C.I.	0.	0.	0.	9728.	0.	0.	0.	135916.	10116.	271398.	339171.	18143.	413127.	<0.1
Tabanidae	0.	0.	0.	0.	8965.	0.	0.	0.	0.	0.	0.	0.	8964.	
S.E.	0.	0.	0.	0.	8965.	0.	0.	0.	0.	0.	0.	0.	8965.	
.95 C.I.	0.	0.	0.	0.	19134.	0.	0.	0.	0.	0.	0.	0.	17338.	
.90 C.I.	0.	0.	0.	0.	15715.	0.	0.	0.	0.	0.	0.	0.	14989.	
Plecoptera	0.	0.	0.	0.	0.	0.	0.	0.	0.	6698.	6551.	2325.	15573.	<0.1
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3459.	4354.	1644.	5798.	
.95 C.I.	0.	0.	0.	0.	0.	0.	0.	0.	0.	8180.	9730.	3618.	11603.	
.90 C.I.	0.	0.	0.	0.	0.	0.	0.	0.	0.	6555.	7809.	2952.	9695.	
Ephemeroptera (unid.)	24266.	24160.	5489.	0.	17929.	0.	0.	89243.	1854.	199301.	836517.	107997.	1306753.	2.3
S.E.	7195.	13608.	5489.	0.	17929.	0.	0.	27460.	1854.	43971.	74823.	12222.	94969.	
.95 C.I.	15541.	28892.	11583.	0.	38201.	0.	0.	63322.	4193.	103872.	166706.	26901.	190073.	
.90 C.I.	12742.	23855.	9552.	0.	31430.	0.	0.	51075.	3397.	83229.	135580.	21951.	158822.	
Baetisca	32943.	5481.	5489.	0.	0.	0.	0.	0.	1347.	0.	3369.	4741.	53368.	0.1
S.E.	8766.	5481.	5489.	0.	0.	0.	0.	0.	1347.	0.	2418.	2169.	12222.	
.95 C.I.	18934.	11679.	11553.	0.	0.	0.	0.	0.	3048.	0.	5387.	4774.	24456.	
.90 C.I.	15524.	9607.	9552.	0.	0.	0.	0.	0.	2470.	0.	4381.	3896.	20435.	
Caenis	3529.	0.	15558.	5812.	37670.	0.	0.	0.	0.	0.	0.	0.	122518.	0.2
S.E.	3529.	0.	8390.	5812.	50035.	0.	0.	0.	0.	0.	0.	0.	91269.	
.95 C.I.	7623.	0.	18963.	12322.	106675.	0.	0.	0.	0.	0.	0.	0.	102829.	
.90 C.I.	6750.	0.	15642.	10148.	87711.	0.	0.	0.	0.	0.	0.	0.	85755.	
Hexagenia	0.	8965.	0.	5812.	8965.	0.	0.	20595.	1441.	15751.	69449.	49748.	183722.	0.3
S.E.	0.	8965.	0.	5812.	8965.	0.	0.	0.	1441.	11687.	11633.	13019.	25259.	
.95 C.I.	0.	19104.	0.	12322.	19104.	0.	0.	0.	3260.	27639.	25918.	28855.	50542.	
.90 C.I.	0.	15715.	0.	10148.	15715.	0.	0.	0.	2642.	22146.	21078.	23393.	42232.	
Stenonema	153857.	71743.	21730.	5812.	17186.	11388.	13065.	120998.	10442.	109899.	257629.	74670.	866807.	1.6
S.E.	53165.	26253.	13355.	5812.	9928.	5314.	6573.	15845.	4390.	28217.	35606.	10402.	76761.	
.95 C.I.	108356.	55518.	28173.	12322.	21157.	11266.	13869.	36539.	9348.	66733.	74875.	23295.	153598.	
.90 C.I.	88842.	45670.	23233.	13148.	17404.	9270.	11437.	29972.	8061.	53471.	60495.	19580.	128344.	
Calopteryx	25300.	21318.	53326.	18650.	34368.	10903.	3543.	0.	0.	18100.	15305.	3013.	205158.	0.4
S.E.	8927.	10294.	19302.	11004.	20299.	6299.	3543.	0.	0.	10252.	4458.	1569.	35651.	
.95 C.I.	19282.	21336.	43723.	23334.	43256.	13345.	7477.	0.	0.	24266.	9932.	3453.	71338.	
.90 C.I.	15809.	18045.	35586.	19217.	35583.	10991.	6166.	0.	0.	19428.	8077.	2818.	57969.	
Curculionidae	18969.	5481.	31516.	15502.	17882.	4361.	11292.	8865.	0.	0.	3088.	1162.	121911.	0.2
S.E.	8656.	5481.	13174.	11297.	13255.	4361.	11292.	6865.	0.	0.	2264.	1162.	27864.	
.95 C.I.	18896.	11679.	27796.	23956.	28256.	9245.	23826.	15830.	0.	0.	5043.	2553.	55957.	
.90 C.I.	15379.	9807.	22924.	19728.	23236.	7614.	19848.	12769.	0.	0.	4102.	2084.	46756.	
Dytiscidae	2943.	0.	0.	0.	8965.	0.	0.	8406.	0.	0.	1347.	0.	17660.	<0.1
S.E.	2943.	0.	0.	0.	8965.	0.	0.	8406.	0.	0.	1347.	0.	11484.	

.95 C.I.	6358.	0.	0.	0.	19104.	0.	0.	14773.	0.	0.	3002.	0.	22980.	
.90 C.I.	5213.	0.	0.	0.	15715.	0.	0.	11916.	0.	0.	2462.	0.	19231.	
Elmidae	12155.	44837.	26703.	0.	82231.	0.	0.	1647.	0.	0.	1123.	4462.	157330.	0.3
S.E.	4412.	22858.	18412.	0.	62992.	0.	0.	1647.	0.	0.	1123.	2034.	63692.	
.95 C.I.	9531.	48711.	38850.	0.	136235.	0.	0.	3198.	0.	0.	2502.	4427.	139454.	
.90 C.I.	7814.	40370.	32037.	0.	110474.	0.	0.	3063.	0.	0.	2035.	3653.	116526.	
Hemiptera	3389.	0.	21047.	5812.	5481.	4361.	3764.	0.	0.	0.	0.	0.	43550.	0.1
S.E.	3089.	0.	9119.	5812.	5481.	4361.	3764.	0.	0.	0.	0.	0.	13773.	
.95 C.I.	6672.	0.	19242.	12322.	11679.	9245.	7962.	0.	0.	0.	0.	0.	27561.	
.90 C.I.	5470.	0.	15860.	10148.	9607.	7614.	6549.	0.	0.	0.	0.	0.	23029.	
Corixidae	5003.	5481.	38426.	28580.	61761.	44204.	9740.	0.	0.	6857.	7486.	0.	227533.	0.4
S.E.	3543.	5481.	23928.	15202.	28617.	44577.	7063.	0.	0.	3806.	3590.	0.	61070.	
.95 C.I.	7654.	11679.	50488.	32229.	60984.	94503.	14903.	0.	0.	9332.	7999.	0.	122231.	
.90 C.I.	6275.	9607.	41635.	26543.	50166.	77831.	12290.	0.	0.	7213.	6506.	0.	102109.	
Hebridae	0.	0.	42096.	0.	5976.	3392.	0.	0.	0.	0.	0.	0.	51460.	0.1
S.E.	0.	0.	26170.	0.	5976.	3392.	0.	0.	0.	0.	0.	0.	27057.	
.95 C.I.	0.	0.	55219.	0.	12736.	7190.	0.	0.	0.	0.	0.	0.	54142.	
.90 C.I.	0.	0.	45536.	0.	10477.	5922.	0.	0.	0.	0.	0.	0.	45240.	
Notonectidae	0.	0.	0.	0.	0.	0.	0.	0.	1441.	0.	0.	0.	1441.	<0.1
S.E.	0.	0.	0.	0.	0.	0.	0.	0.	1441.	0.	0.	0.	1441.	
.95 C.I.	0.	0.	0.	0.	0.	0.	0.	0.	3260.	0.	0.	0.	2884.	
.90 C.I.	0.	0.	0.	0.	0.	0.	0.	0.	2642.	0.	0.	0.	2410.	
Odonata (undif.)	5293.	10462.	0.	0.	22911.	7511.	0.	0.	0.	0.	3982.	2574.	52731.	0.1
S.E.	5293.	7506.	0.	0.	9811.	5314.	0.	0.	0.	0.	2222.	1533.	14651.	
.95 C.I.	11435.	15783.	0.	0.	20207.	11266.	0.	0.	0.	0.	4951.	3375.	29317.	
.90 C.I.	9375.	12983.	0.	0.	17198.	9278.	0.	0.	0.	0.	4027.	2754.	24497.	
Amphipoda	7649.	27651.	42405.	8357.	62757.	3877.	0.	0.	7297.	13528.	4211.	8935.	193665.	0.3
S.E.	5475.	14253.	17359.	8357.	21607.	3877.	0.	0.	3218.	6869.	2527.	3272.	35921.	
.95 C.I.	11717.	38830.	36528.	17717.	46046.	8213.	0.	0.	7280.	16246.	5630.	7202.	71879.	
.90 C.I.	9607.	31998.	30205.	14591.	37878.	6769.	0.	0.	5899.	13017.	4579.	5877.	60061.	
Trichoptera (undif.)	0.	0.	15558.	15905.	28395.	28592.	0.	0.	0.	0.	0.	0.	88048.	0.2
S.E.	0.	0.	11667.	8961.	18687.	8239.	0.	0.	0.	0.	0.	0.	24428.	
.95 C.I.	0.	0.	28104.	18996.	39396.	17565.	0.	0.	0.	0.	0.	0.	49882.	
.90 C.I.	0.	0.	19193.	15645.	32408.	14384.	0.	0.	0.	0.	0.	0.	41880.	
Hydrozoa	20011.	36365.	150086.	228412.	459809.	295491.	82582.	12354.	8210.	81174.	32676.	20525.	1426659.	2.6
S.E.	7141.	18884.	46507.	70984.	73914.	95150.	19419.	8790.	3680.	16811.	9837.	5623.	123225.	
.95 C.I.	15667.	40251.	98129.	150443.	157510.	76519.	40975.	20269.	8323.	39757.	21917.	12376.	246572.	
.90 C.I.	12682.	33103.	80922.	129903.	129571.	61372.	33790.	16349.	6745.	31856.	17825.	10049.	206031.	
Gastropoda	0.	0.	152180.	251425.	109936.	38283.	53109.	68070.	56948.	27526.	36273.	45180.	853124.	1.5
S.E.	0.	0.	42032.	59489.	34555.	12125.	13108.	9020.	12618.	11252.	9565.	9904.	85879.	
.95 C.I.	0.	0.	58097.	126117.	73637.	25704.	27658.	20800.	28543.	26611.	21310.	21798.	171845.	
.90 C.I.	0.	0.	73135.	103868.	60575.	21169.	22808.	16777.	23130.	21322.	17331.	17787.	143590.	
Pelecypoda	0.	0.	5034.	0.	5729.	0.	0.	0.	0.	0.	0.	0.	10762.	<0.1
S.E.	0.	0.	5034.	0.	5729.	0.	0.	0.	0.	0.	0.	0.	7626.	
.95 C.I.	0.	0.	13622.	0.	12208.	0.	0.	0.	0.	0.	0.	0.	15260.	
.90 C.I.	0.	0.	8759.	0.	10042.	0.	0.	0.	0.	0.	0.	0.	12751.	

TOTALS	5527170.	6915669.	1538356.	7724783.	6864403.	1776912.	551168.	1210993.	434864.	2478490.	5121035.	1656321.	5565444.	
S.E.	1339337.	799212.	2433878.	1401688.	767812.	161189.	51192.	96372.	38074.	249402.	246819.	75155.	337857C.	
.95 C.I.	2808528.	1694329.	5113577.	2957562.	1627762.	340108.	107554.	217993.	84828.	575122.	543248.	163764.	[illegible]	
.90 C.I.	2305743.	1395623.	4220342.	2438939.	1340599.	280468.	88767.	176650.	68989.	463889.	443286.	133927.	[illegible]	

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Estimates, based on counts from Detroit Edison's daily entrainment data sheets, show that 55.6 million organisms were entrained from May 1975-April 1976[9/]. Of these, 77% (42.7 million) were chironomids. Chironomid entrainment was highest in July (14 million) and lowest in November (0.2 million).

Cole (1977) estimated chironomid entrainment at 700,000 a day or 255.5 million a year, which is six times our estimate based on Detroit Edison's data. Cole's estimate is probably higher because he sampled deeper in the water column than Detroit Edison did (refer to Section III-A-2 of this report). Cole states that even his estimate is low because his deepest samples, in which most of the chironomids were collected, were still 2 m or more above the bottom.

b. Statistical analysis of macrozoobenthos entrainment estimates. The annual totals for the most commonly entrained taxa can be estimated with fairly high degrees of precision (Table 32). For example, the sampling error for the total of all species combined is only 12% of the estimate and that for chironomids is 15% of the annual estimate. However, for uncommon organisms, such as Pelecypoda, the 95% CI's include zero (Table 31). These confidence intervals, however, apply only to the population sampled at the 1-m and 3-m depths and, considering the sampling deficiencies discussed in Section III-A, are probably not representative of the entire entrained population.

Correlation analyses were conducted to compare daily estimates of the macrozoobenthos commonly entrained [based on $\log_{10}$ (x + 1) transformation] with the river and lake components of the intake flow (Table 33). Simuliidae (black flies) show a highly significant (P = 0.01) positive correlation with river flow and a highly significant negative correlation with the lake component. This suggests that the black fly larvae, filter feeders which

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[9/] The estimates are based on untransformed data. The estimates based on counts transformed by $\log_{10}$ (x + 1) are presented in Appendix E, Table E-3 and are approximately 30% lower than those based on untransformed data.

Table 32. Sampling errors for annual macrozoobenthos entrainment estimates, expressed as percentages of those estimates. Sampling error = absolute value of ts_v, at P = 0.05 significance level, where t = Student's t-statistic, s_v = standard error.

Taxon	Sampling error (percent)
Gammarus	44.8
Chironomidae	15.2
Chaoborus	49.0
Simuliidae	16.3
Ephemeroptera	14.5
Hydropsyche	17.3
Total macrozoobenthos	11.9

Table 33. Correlation matrices for daily estimates of macrozoobenthos entrained vs. intake components, based on counts from Detroit Edison's daily entrainment data sheets [transformed by $\log_{10}(x + 1)$]. EST = daily estimate, RFLOW = river flow, LKCOMP = lake component of intake flow.

CORRELATION MATRIX 1 SPEC 205 GAMMARUS

N= 180 DF= 178 R .0500= .1463 R .0100= .1915

VARIABLE	2. EST	3. RFLOW	4. LKCOMP
2.EST	1.0000		
3.RFLOW	-.0159	1.0000	
4.LKCOMP	.1585	-.8901	1.0000

CORRELATION MATRIX 2 SPEC 412 CHIRONOMIDAE

N= 180 DF= 178 R .0500= .1463 R .0100= .1915

VARIABLE	2. EST	3. RFLOW	4. LKCOMP
2.EST	1.0000		
3.RFLOW	-.0936	1.0000	
4.LKCOMP	.2998	-.8901	1.0000

CORRELATION MATRIX 3 SPEC 414 SIMULIIDAE

N= 180 DF= 178 R .0500= .1463 R .0100= .1915

VARIABLE	2. EST	3. RFLOW	4. LKCOMP
2.EST	1.0000		
3.RFLOW	.6363	1.0000	
4.LKCOMP	-.5528	-.8901	1.0000

CORRELATION MATRIX 4 SPEC 471 HYDROPSYCHE

N= 180 DF= 178 R .0500= .1463 R .0100= .1915

VARIABLE	2. EST	3. RFLOW	4. LKCOMP
2.EST	1.0000		
3.RFLOW	-.1111	1.0000	
4.LKCOMP	.2321	-.8901	1.0000

CORRELATION MATRIX 5 SPEC 900 MACROZOOBENTHOS - ALL SPECIES COMBINED

N= 180 DF= 178 R .0500= .1463 R .0100= .1915

VARIABLE	2. EST	3. RFLOW	4. LKCOMP
2.EST	1.0000		
3.RFLOW	-.0164	1.0000	
4.LKCOMP	.2410	-.8901	1.0000

anchor themselves to the substrate in areas of strong current (Pennak 1953), became detached from the substrate during periods of high river flow and were thus vulnerable to entrainment. The other taxa examined show significant positive correlations with the lake portion of the intake flow (total macrozoobenthos, chironomids, and Hydropsyche at P = 0.01; Gammarus at P = 0.05). The only surprising result is the highly significant correlation between the lake component of intake flow and the entrainment of the caddisfly Hydropsyche, a genus usually classified as an obligate stream form (Hynes 1970; Wiggins 1977; Borror and DeLong 1964). Detroit Edison did not identify the particular species of Hydropsyche entrained; however, according to Wiggins (1977), one species (H. retrocurva) has been found along the shore of Lake Michigan, and H. retrocurva is possibly the species that was entrained.

4. Zooplankton

The 316(b) presents no data on the entrainment of zooplankton by the Monroe plant. However, Detroit Edison's daily entrainment data sheets indicate that Leptodora was frequently observed in the samples collected from mid-June to mid-October 1975, but no quantitative information is given on the entrainment of any zooplankton species.

The zooplankton present in the vicinity of the Monroe plant (Cole 1976, 1977) and probably entrained are listed in Table 34. Rotifers were 9 of the 12 most abundant taxa listed by Cole (1976). The most recent quantitative density data for the intake site are 1975 estimates from Cole (1977) which show that the zooplankton were composed of 77% rotifers, 12% cladocerans, and 11% copepods (Table 35). These data are in reasonable agreement with 1974 data, presented in Detroit Edison's Thermal Discharge Demonstration for the Monroe Power Plant (Detroit Edison 1976b), which show that the zooplankton was 73% rotifers, 19% copepods, and 8% cladocerans. Although rotifers were numerically dominant in the zooplankton, cladocerans comprised 74% of the biomass (Table 35).

An estimate of the biomass of total zooplankton entrained annually, made on the basis of a mean biomass of 85.5 μg/l at the plant intake (Table 35) and the mean cooling water use rate of 2,086 cfs during

Table 34. Zooplankton species collected in the vicinity of the Monroe plant between 1970 and 1975. Compiled from Table 3-40 of Cole (1976) and Table B23 of Cole (1977). Numbers in parentheses indicate order of relative abundance as listed in Table 3-40 (Cole, 1976).

CLADOCERA	COPEPODA	ROTIFERA
Alona sp.	(41) *Canthocamptus robertcookeri*	*Ascomorpha ecaudis*
(7) *Bosmina* sp.	(34) *Cyclops bicuspidatus*	*A. sultans*
(30) { *Ceriodaphnia lacustris*	(32) *C. vernalis*	*A.* sp.
C. sp.	(35) *Diaptomus ashlandi*	*Ascomorphella volvocicola*
(29) *Chydorus sphaericus*	(39) *D. minutus*	(12) { *Asplanchna priodonta*
(15) *Daphnia galeata mendotae*	(38) *D. oregonensis*	*A.* sp.
D. pulex	(36) *D. sicilis*	(9) *Brachionus angularis*
(8) *D. retrocurva*	(37) *D. siciloides*	(21) *B. bidenta*
(31) *Diaphanosoma leuchtenbergiana*	(42) *Eurytemora affinis*	*B. budapestinensis*
(40) *Leptodora kindtii*	(33) *Tropocyclops prasinus*	(3) *B. calyciflorus*
Macrothrix sp.	(5) Nauplii	(10) *B. caudatus*
	(13) Juvenile cyclopoid	(22) *B. diversicornis*
	(14) Juvenile diaptomid	(6) *B. havanaensis*
		(11) *B. plicatilis*
		(23) *B. quadridentata*
		(26) *B. rubens*
		(25) *B. urceolaris*
		Cephalodella sp.
		Chromogaster sp.
		(24) *Conochilus unicornis*
		Eosphora sp.
		Epiphanes sp.
		(20) { *Euchlanis dilatata*
		E. sp.
		(19) *Filinia brachiata*
		F. longiseta
		Gastropus sp.
		(27) *Kellicottia longicornis*
		K. longispina
		(1) *Keratella cochlearis*
		K. earlinae
		K. hiemalis
		(4) *K. quadrata*
		K. serrulata
		K. vulga
		Lecane sp.
		Lepadella sp.
		Monostyla sp.
		(28) *Notholca acuminata*
		Platyias sp.
		Ploesoma sp.
		(2) { *Polyarthra vulgaris*
		P. sp.
		(18) *Pomphalyx sulcata*
		Rotaria neptunia
		R. sp.
		(17) *Synchaeta stylata*
		(16) { *Trichocerca cylindrica*
		T. multicrinis
		Trichotria sp.

Table 35. Mean annual abundance of zooplankton at the Monroe plant intake in 1975. Data from station 18 of Cole (1977).

Taxon	Number/ liter	Percentage of total	µg/ liter	Percentage of total
Rotifera	109.0	76.9	10.2	11.9
Cladocera	16.5	11.6	63.4	74.2
Copepoda	16.2	11.5	11.9	13.9
Total	141.7		85.5	

April 1975-May 1976 (Table 3.3-1 of the 316(b)), is approximately 159,000 kg (175 tons). At the maximum cooling water use rate of 3,248 cfs, approximately 247,000 kg (273 tons) of zooplankton would be entrained.

Zooplankton density is negligible in the winter, and nearly all entrainment occurs from April to November (Nalepa 1972; Cole 1977). Most of the entrainment would occur during summer and early fall when the population peaks (Nalepa 1972; Cole 1977) and when intake flows are highest (316(b) Table 3.3-1).

According to Cole (1977), the zooplankton entrained by the Monroe plant could originate anywhere in the western basin, but the majority is probably drawn from the southwestern corner.

C. Evaluation of 316(b) Impact Analysis

1. Fish larvae

Detroit Edison used two approaches for analyzing entrainment impact in the 316(b).

a. The first approach assumes 100% mortality of entrained larvae and estimates the percentage of the larval population entrained by the following equation:

$$\text{percentage entrained} = \frac{\text{annual number entrained}}{\text{standing stock estimate}} \qquad (10)$$

The standing stock estimates of fish larvae were calculated in the 316(b) using data from CLEAR, the Center for Lake Erie Area Research (Herdendorf et al. 1976), and from MDNR (MWRC 1975b, MWRC undated[10/]). We compared the data in 316(b) Tables 4.2-21 through 4.2-31 with that in the above references, and the few discrepancies found are listed in

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10/ The MDNR data are referenced in the 316(b) as 1976 unpublished data from the Institute for Fisheries Research. The Institute, however, has no record of these data, and the report forwarded to us by the MDNR as the source of these data (in addition to the computer printouts) is undated.

Appendix F. These discrepancies result in only minor errors in the population estimates presented in Tables 4.2-21, 4.2-29, and 5.3-1 of the 316(b). Four points of concern, however, were uncovered in relation to the 316(b) standing stock estimates:

1) MDNR and CLEAR used nets with different mesh sizes (471-μ and 760-μ , respectively) for collecting larval samples (MWRC undated; C. E. Herdendorf, personal communication, August 31, 1977), and these nets may have sampled the populations of larvae with different efficiencies.

2) Detroit Edison compared its entrainment data, which were collected with Kenco pumps, to the MDNR and CLEAR data, which were collected with plankton nets. Because Kenco pumps have been found less effective than nets for collecting fish larvae (refer to p. 40), the percentage of the larval population entrained is probably underestimated.

3) The 316(b) used data from only six stations (Stations 8-10 on a transect north of the plant and Stations 11-13 south of the plant) of the 17 offshore stations sampled by the MDNR. Figure 13 shows the six stations considered in the 316(b) in relation to all of the stations used in the MDNR larval fish survey. The transect south of the plant included all three depth zones sampled by the DNR (0-12, 12-24, and 24-30 ft). The northern transect, however, includes one station (10) in the 24-30 ft zone and two stations (8 and 9) in the 12-24 ft zone, but not Station 7 in the 0-12 ft zone. The lake volumes for the areas represented by MDNR Stations 7 and 8 were probably combined to yield the Station 8 volume in 316(b) Figure 4.2-5. The densities of larvae at MDNR Station 7, however, were not included in the data presented in 316(b) Tables 4.2-22 through 4.2-27. If the data from Station 7 had been used to estimate larval densities at 316(b) Station 8 (mean of densities at MDNR Stations 7 and 8), the densities and therefore the abundances in that quadrant would have been lower for all the species considered except yellow perch, which would have increased very slightly. The maximum reduction would be for the larvae of freshwater drum, none of which were collected at MDNR Station 7.

DETROIT EDISON
MONROE POWER PLANT

FIGURE 4.2-6

SELECTED MICHIGAN DEPARTMENT OF NATURAL RESOURCES ICHTHYOPLANKTON STATIONS FROM MICHIGAN DOR 1976 AND CALCULATED VOLUMES FOR EACH SAMPLING QUADRANT

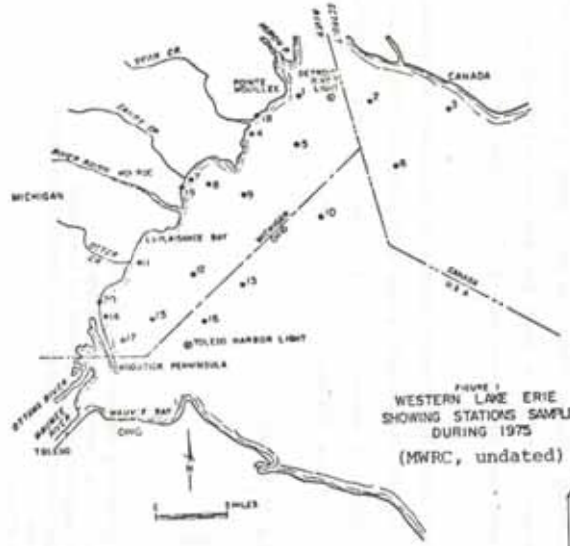


FIGURE 1
WESTERN LAKE ERIE
SHOWING STATIONS SAMPLED
DURING 1975
(MWRC, undated)

Station Number	Depth Zone (ft)
1	0-12
2	12-24
3	24-30
4	0-12
5	12-24
6	24-30
7	0-12
8	12-24
9	12-24
10	24-30
11	0-12
12	12-24
13	24-30
14	0-12
15	12-24
16	12-24
17	0-12
18	Beach Area
19	Beach Area
20	Beach Area

(from Table 2, MWRC, undated)

Figure 13. Comparison of stations sampled in 1975 MDNR larval fish survey with stations selected by Detroit Edison for use in the 316(b).

4) Detroit Edison presents data on larval fish densities from Cole (1976) in Tables 4.2-30 and 4.2-31. Cole's survey was the only one to include stations in the Raisin River and the mesh of the collection net used by Cole (541-μ) was more similar in size to that used in Detroit Edison's entrainment monitoring (571-μ) than the mesh used by either MDNR or CLEAR. Cole's data, however, were not used for estimating standing stocks or entrainment impact, and no reason was given in the 316(b) for excluding his data.

b. The second approach used by Detroit Edison to evaluate entrainment impact assumes 100% mortality of entrained larvae and projects this loss to an equivalent loss of adults by means of the following fecundity-based model presented on p. 5.3-2 of the 316(b):

$$LA = \frac{F \times (1.00 - M)}{2}$$

$$SA = \frac{LE}{LA}$$

where:

LA = larvae producing one spawning adult
F = fecundity of a species (see Section 4.2)
M = percent egg mortality expressed as a decimal
SA = spawning adults potentially lost through entrainment of larvae
LE = larvae entrained.

The above model, a variation of the Horst equivalent adult model (Horst 1975), is very simplistic and considers only egg mortality. LA, which is calculated from fecundity and egg mortality values, is in fact only the proportion of eggs hatching and thus represents only the youngest larval stage. LA is then compared to the number of larvae entrained, which includes all larval classes. Because the mortality of larvae between the time of hatching and the time of entrainment is not considered, the analysis is not valid, and SA is likely to be an extreme underestimate of the number of adults lost due to the entrainment of larvae.

Detroit Edison does not describe how the fecundity (F) values used in its model were derived. The fecundity value should be equal to the total number of eggs produced by an average adult female throughout her lifetime (Goodyear 1977, Horst 1975). Apparently, the fecundity value used in the 316(b) calculations represents only the number of eggs spawned by an average adult female in 1 year. Also, because fecundity values are specific to a given population, some of the values apparently used in the 316(b), which were taken from the literature and presented on pp. 4.2-1 through 4.2-15 of the 316(b), might not be representative of the fish populations in western Lake Erie.

2. Fish eggs

Detroit Edison evaluates the impact of egg entrainment by considering the estimated numbers of eggs entrained as the equivalent number of adult females required to produce the eggs according to the following equation:

$$\text{equivalent number of spawning females} = \frac{\text{number of eggs entrained}}{\text{number of eggs/spawning female}} \tag{11}$$

The 316(b) estimates of the numbers of spawning females are low for two reasons. First, the error made by Detroit Edison in calculating the numbers of eggs entrained resulted in an underestimate of egg entrainment (refer to Section III-B-2); and secondly, the natural mortality of the eggs from the time of spawning to the time of entrainment was not considered. Also, the 316(b) does not give the source of the fecundity values used in the calculation (refer to Section III-C-1-b above).

3. Macrozoobenthos

Although the 316(b) presents daily estimates of macrozoobenthos entrainment for April-September 1975 (see Table 30), it does not discuss the impact upon the macrozoobenthos community. Significant mortalities of some benthic organisms can occur as a result of exposure to chlorine, elevated temperatures, and mechanical stresses during entrainment (Nalco Environmental Sciences 1976, King and Mancini 1976, Ginn et al. 1974, Lauer et al. 1974). Mortality can be quite high for mayfly larvae, which comprised 5% of the

macrozoobenthos entrained at the Monroe plant (Table 31) and are important food organisms for some fish species in Lake Erie (Price 1963). For example, Stenonema sp., a mayfly entrained at Monroe, has been found to suffer 25% entrainment mortality (King and Mancini 1976). The amphipods Gammarus sp. and Pontoporeia affinis, which together comprised about 4% of the macrozoobenthos entrained at the Monroe plant, are also killed by exposure to high cooling system temperatures and to chlorine in the cooling water (Ginn et al. 1974, Lauer et al. 1974, Nalco Environmental Sciences 1976).

Of the 18 most abundant benthic organisms in the vicinity of the Monroe plant, 14 were oligochaetes of the order Tubificidae, as shown below in Table 3-46 from Cole 1976.

Table 3-46.[a] List of zoobenthic animals in order of relative abundance.

Taxonomic category	Classification[b] Phylum: Class, Order
Limnodrilus hoffmeisteri	Annelida: Oligochaeta, Tubificidae
Chironomus sp.	Arthropoda: Insecta, Diptera
Limnodrilus cervix variant	Annelida: Oligochaeta, Tubificidae
Limnodrilus maumeensis	Annelida: Oligochaeta, Tubificidae
Procladius sp.	Arthropoda: Insecta, Diptera
Limnodrilus cervix	Annelida: Oligochaeta, Tubificidae
Limnodrilus udekemianus	Annelida: Oligochaeta, Tubificidae
Limnodrilus claparedianus	Annelida: Oligochaeta, Tubificidae
Coelotanypus sp.	Arthropoda: Insecta, Diptera
Branchiura sowerbyi	Annelida: Oligochaeta, Tubificidae
Limnodrilus profundicola	Annelida: Oligochaeta, Tubificidae
Potamothrix moldaviensis	Annelida: Oligochaeta, Tubificidae
Cryptochironomus sp.	Arthropoda: Insecta, Diptera
Aulodrilus pluriseta	Annelida: Oligochaeta, Tubificidae
Potamothrix vejdovskyi	Annelida: Oligochaeta, Tubificidae
Aulodrilus americanus	Annelida: Oligochaeta, Tubificidae
Aulodrilus pigueti	Annelida: Oligochaeta, Tubificidae
Rhyacodrilus coccineus	Annelida: Oligochaeta, Tubificidae
Glossiphoniidae	Annelida: Hirudinea, Rhynchobdellida
Sphaeriidae	Mollusca: Pelecypoda, Eulamellibranchia
Gammaridae	Arthropoda: Crustacea, Amphipoda
Hexagenia sp.	Arthropoda: Insecta, Ephemeroptera
Elmidae	Arthropoda: Insecta, Coleoptera
Asellidae	Arthropoda: Crustacea, Isopoda
Unionidae	Mollusca: Pelecypoda, Eulamellibranchia
Bulimidae	Mollusca: Gastropoda, Mesogastropoda

[a] Table 3-46 from Cole, 1976.
[b] Classification added by GLFL.

The oligochaetes comprised over 70% of the standing stock of macrozoobenthos in the vicinity of the Monroe plant (Table 36) but less than 0.1% of the total organisms entrained (Table 31) and were not used as food by any of the fish examined by Kenega and Cole (1975).

On the other hand, comparison of our annual entrainment estimates (Table 31) with the most recent density estimates for macrozoobenthos in the vicinity of the Monroe plant (Table 36) shows that, although chironomids make up less than 30% of the organisms in the area, they comprise 77% of the total macrozoobenthos entrained, which indicates that they are particularly vulnerable to entrainment. Chironomids are a major food for older fish (Pennak 1953, Price 1963), and in western Lake Erie juveniles (longer than 30 mm) specifically select two larger chironomids, Chironomus and Procladius (Cole 1977, Kenega and Cole 1975). The chironomids in the 316(b) were not identified to genus; therefore, we cannot determine what proportions of these two genera were entrained. Mortality of chironomids at the Monroe plant could reduce the amount of food available locally to fish; however, chironomid mortality due to entrainment appears to be minimal (Jensen et al. 1969; King and Mancini 1976).

4. Zooplankton

The 316(b) includes no discussion of the impact of zooplankton entrainment at the Monroe plant (refer to Section III-B-4). Under some operating conditions, mortality of entrained zooplankton is size related, with a greater proportion of the large organisms, such as cladocerans, being killed than the smaller forms (Cole 1977, Commonwealth Edison 1976). Cole (1977) found that only cladocerans were measurably affected by passage through the plant. The largest cladocerans, such as Leptodora kindtii, were most severely affected because of their greater susceptibility to mechanical damage and relatively long regeneration time. Cole (1977) found that 60% of the Leptodora in the Monroe discharge were dead, while only 10% were dead at the intake. This mortality estimate was based on samples taken during July 6-9, 1976, when the discharge temperature was probably higher than 90°F. Temperature data for the Monroe plant in 1975 (316(b) Table 3.3-1) shows that on July 31-August 1, 1975, the temperature of the cooling water

Table 36. Density of benthic invertebrates in the vicinity of the Monroe plant (Kelly and Cole 1976).

	Mean Density (number/m^2)	
	1974	1970-74
Oligochaeta	214.3 (76.5%)	324.2 (70.8%)
Chironomidae	65.9 (23.5%)	133.9 (29.2%)
Pelecypoda	0.05	0.03
Hirudinea	0.02	0.03
Elmidae	0.04	0.01
Gammaridae	0.01	0.01
Asellidae	0.00	0.01
Total	280.3/m^2	458.2/m^2

reached a maximum of 99°F. Zooplankton mortality at temperatures near 100°F can approach 100% (Carlson 1974, Benda and Gulvas 1976, Storr 1974). The time of the year when cooling water temperatures rise to acutely lethal levels coincides with the time when most zooplankton are entrained (refer to Section III-B-4); therefore the mortality of zooplankton due to elevated temperature alone is high. At other times, when temperatures are not acutely lethal, mortality of entrained zooplankton may be due primarily to mechanical and hydraulic stresses (Commonwealth Edison 1976, Carpenter et al. 1974); however high mortalities due to chlorination of the cooling water have also been observed (Polgar et al. 1976, Davies and Jensen 1974).

The large cladocerans, such as Leptodora, Diaphanosoma leuchtenbergiana, and Ceriodaphnia sp., are relatively rare among the zooplankton (refer to Table 34). According to Hubschman (1960), Leptodora comprised only 1% or less by number of the zooplankton in western Lake Erie on 31 of 52 sampling days during June-August 1959 and more than 5% (maximum of 7%) on only 2 days. Reutter and Reutter (1975) found that Leptodora was even less abundant during 1973-74, when it comprised less than 0.1% of the mean zooplankton density in the summer and fall months when it was collected. Although they are not common in western Lake Erie, the large cladocerans, especially Leptodora, are highly favored as food by fishes in the area, such as yellow perch and white bass (Nalepa 1972; Kenaga and Cole 1975). According to Cole (1977), 60-95% of the food volume of fishes over 30 mm long was composed of Leptodora and the two chironomids Procladius and Chironomus (refer to Section III-C-3 above). The high susceptibility of the large cladocerans to destruction in the cooling system could have an adverse impact on the food supply of fishes in the area of the Monroe plant.

IV. ENDANGERED OR THREATENED SPECIES

The 316(b) does not specifically discuss the potential impact of the Monroe plant intake on threatened or endangered species. No species of fish appearing on the federal endangered or threatened species list (U.S. Fish and Wildlife Service 1977) were reported in Detroit Edison's impingement and entrainment records, but muskellunge and burbot, classified by the MWRC (1975a) as threatened in Zone 8, which includes Lake Erie, were reported in the records. Our extrapolations show that an estimated 89 muskellunge were impinged at the Monroe plant during June 1975-May 1976 (Table 3), and that 17,358 burbot eggs were entrained by the plant during February 13-14, 1976 (Table 19).

V. IMPACT OF MONROE POWER PLANT INTAKE ON RAISIN RIVER

The entire flow of the Raisin River is diverted through the Monroe plant for cooling water, except during periods of very high runoff when some flow can escape through the old river mouth (Cole, 1976). Yet, the 316(b) contains no discussion of the impact of the plant on the river.

A detailed evaluation of the impact of the Monroe plant operation on the aquatic resources of the Raisin River is probably not possible until more information becomes available on these resources. Although resident fish populations in the upper river would be little affected by the Monroe plant, those populations that required access to both the upper river and to Lake Erie would be denied this access by the Monroe plant. Fish attempting to migrate downstream to Lake Erie would be drawn into the plant's intake canal, and those attempting to migrate from the lake to the upper river would probably enter the plant's discharge canal (rather than the river mouth) and be blocked by the plant from reaching the upper river. During periods when river flow exceeds the plant's cooling water requirements and excess river water enters the lake via the lower river channel, some movement of fish between lake and river could occur. However, USGS records for the years 1975 and 1976 show that flows in the Raisin River in excess of the maximum 3,248 cfs cooling water requirement of the Monroe plant occur in late winter when little movement of fish would be expected between the lake and the river.

Plans for the management of the fishery in the Raisin River were not available at the time of this writing, but MDNR has constructed a fishway on a dam above the City of Monroe and has stocked Pacific salmon smolts in the river above the Monroe plant.

VI. IMPACT OF THE MONROE POWER PLANT ON YELLOW PERCH IN WESTERN LAKE ERIE

The 316(b) report for Detroit Edison's Monroe plant appears to greatly underestimate the impingement and entrainment losses of some groups of organisms (refer to Sections II-B and III-B) and therefore also underestimates the impacts of plant operation on the source populations in western Lake Erie (refer to Sections II-C and III-C). An example of a more satisfactory approach to estimating the impact of plant operation on these source populations is the one developed by Patterson (1977) for the U.S. Environmental Protection Agency (EPA). Patterson's approach, which involves the use of a population model, projects the annual loss in potential yield of yellow perch to commercial and sport fisheries of western Lake Erie due to impingement and entrainment losses of that species at the Monroe plant. Patterson estimated an annual loss in yield of approximately 98,000 pounds to the yellow perch fisheries of western Lake Erie but based this estimate on the impingement and entrainment losses of yellow perch reported in the 316(b) for the Monroe plant. Consequently, EPA provided us with the following formula (Nelson Thomas, personal communication, September 2, 1977) to calculate the increased annual loss in potential yield resulting primarily from the higher estimated impingement losses of yellow perch given in the present report (Table 3):

$$\text{Loss in yield (number of fish)} = 0.766639\,(I_N) + 0.529527\,(I_{A1}) + 0.132382\,(I_y + E_y) + 0.010591\,(E_\ell) \qquad (12)$$

where: I_N = number of adults impinged

I_{A1} = number of yearlings impinged

I_y = number of YOY impinged

E_y = number of YOY entrained

E_ℓ = number of larvae entrained

This equation applies under the "average" conditions of:

survival fraction of larvae (ε) = 0.08

survival fraction of YOY (s) = 0.25

reproductive potential of adult (γ) = 25.0

natural mortality rate (m) = 0.37

fishing mortality rate (f) = 0.37

The division of the calculated loss in numbers by 3.5 fish per pound (the weight used by Patterson 1977) gives the loss in yield in pounds.

The values for the variables in Equation 12 were determined from the impingement and entrainment estimates of Tables 3 and 19 for 1975-76. The total estimated impingement of 625,580 yellow perch (Table 3) was divided into age classes according to the distribution calculated in Section II-B-3. Thus, I_N = 441,159; I_{A1} = 181,668; and I_y = 2,753. The age-class components of the total number of yellow perch entrained (4,963,524 from Table 19), calculated from Detroit Edison's daily entrainment data sheets, are: E_y = 3,611,638; E_ℓ = 1,351,886.

The above values may still be underestimates of the numbers of yellow perch impinged and entrained by the Monroe plant because of the deficiencies of the sampling methods used by Detroit Edison to collect the data (refer to Sections II-A and III-A) and the biases present in the length distribution of the impinged perch (refer to Section II-B-3); these values, however, are the best available for use at this time.

According to Equation 12 and the above impingement and entrainment estimates, the additional loss in potential yield of yellow perch to the fisheries is:

$$\begin{aligned}\text{Loss (numbers)} &= 0.766639\ (441{,}159) + 0.529527\ (181{,}668) \\ &\quad + 0.132382\ (2{,}753 + 3{,}611{,}638) \\ &\quad + 0.010591\ (1{,}351{,}886) \\ &= 927{,}206 \text{ yellow perch}\end{aligned}$$

$$\begin{aligned}\text{Loss (lb)} &= 927{,}206/3.5 \text{ fish per lb} \\ &= 264{,}916 \text{ lb}\end{aligned}$$

Patterson's model and Equation 12 assume that 70% of the entrained larvae will be killed during passage through the plant. If 100% mortality of entrained larvae is assumed, as in the 316(b), the annual loss in potential yield of yellow perch to the fisheries increases to 266,669 pounds.

ACKNOWLEDGMENTS

Credit for assistance with the statistical analysis in the evaluation goes to Paul M. Haack, Chief, Section of Biometrics and Computer Services, Great Lakes Fishery Laboratory, and to his staff for the computer analysis of the data. Credit also is given to the National Power Plant Team of the Office of Biological Services for advice and comments and for the use of its Tektronix 4051 graphic calculator.

LITERATURE CITED

Benda, R. S. 1975. Comments of members and participants of the panel related to Report Number 1. Pages 349-382 in C. D. Meyers and K. E. Bremer, eds. A Statement of Concerns and Suggested Ecological Research. Lake Michigan Cooling Water Studies Panel, Report No. 1.

Benda, R. S., and J. Gulvas. 1976. Effects of the Palisades Nuclear Power Plant on Lake Michigan. Pages 243-250 in G. W. Esch and R. W. McFarlane, eds. Thermal Ecology II, Energy Res. and Dev. Admin., CONF-750425, Tech. Inform. Center.

Bodola, A. 1966. Life history of the gizzard shad, Dorosoma cepedianum (Le Sueur), in western Lake Erie. U.S. Natl. Mar. Fish. Serv. Fish. Bull. 65(2): 391-425.

Borror, D. J., and D. M. DeLong. 1964. An Introduction to the Study of Insects. Holt, Rinehart, and Winston, New York. 819 pp.

Brooks, A. S., J. G. Truchan, J. Z. Reynolds, J. R. Gammon, and T. A. Edsall. 1975. Measurement of the effects of cooling water use on entrapped and entrained organisms. Pages 307-341 in C. D. Meyers and K. E. Bremer, eds. A Statement of Concerns and Suggested Ecological Research. Lake Michigan Cooling Water Studies Panel, Report No. 1.

Carlson, D. M. 1974. Responses of planktonic cladocerans to heated waters. Pages 186-206 in J. W. Gibbons and R. R. Sharitz, eds. Thermal Ecology. U.S. A.E.C., Tech. Inform. Center, CONF-730505.

Carpenter, E. J., B. B. Peck, and S. J. Anderson. 1974. Summary of entrainment research at the Millstone Point Nuclear Power Station, 1970 to 1972. Pages 31-35 in L. D. Jensen, ed. Proc. of Second Workshop on Entrainment and Intake Screening, Cooling Water Discharge Research Project Rep. No. 15, Electric Research Instit. Publ. No. 74-049-00-05.

Cole, R. A. Undated (a). An ecological evaluation of a thermal discharge: Summary of early postoperational studies. Mich. State Univ. Inst. Water Res. Report No. 32.0. 43 pp.

_____. Undated (b). Larval fish distributions in southwestern Lake Erie near the Monroe power plant. U.S. Environ. Prot. Agency Rep. R804517010. 71 pp.

Cole, R. A. 1976. The impact of thermal discharge from the Monroe Power Plant on the aquatic community in western Lake Erie. Mich. State Univ. Inst. Water Res. Report No. 32.6. 660 pp. [est.]. Presented as Vol. 2, Monroe Power Plant Thermal Discharge Demonstration, Detroit Edison Co.

_____. 1977. Entrainment at a once-through cooling system on western Lake Erie, Vol. 1. Draft. 165 pp. U.S. Environ. Prot. Agency, Grosse Ile, MI.

Commonwealth Edison Co. 1976. Summary Report, Zion 316(b) studies. 54 pp. in Compilation of Reports Relating to Entrainment and Impingement Studies at Zion Generating Station, 1976, Vol. I, Nalco Environmental Sciences.

Davies, R. M., and L. D. Jensen. 1974. Entrainment of zooplankton at three mid-Atlantic power plants. Pages 131-155 in L. D. Jensen, ed. Proc. of the Second Workshop on Entrainment and Intake Screening, Cooling Water Discharge Research Project Rep. No. 15, Electric Research Instit. Publ. No. 74-049-00-5.

Davis, C. C. 1959. A planktonic fish egg from fresh water. Limnol. and Oceanogr. 4(3): 352-355.

Detroit Edison Company. Undated. Progress report on the best available technology for the Monroe Power Plant. Prepared for submission to Mich. Water Resour. Comm. 55 pp.

_____. 1976a. Monroe Power Plant--Study Report on Cooling Water Intake. Detroit Edison Co., Detroit. 164 pp.

_____. 1976b. Monroe Power Plant Thermal Discharge Demonstration. Vol. 1. Detroit Edison Co., Detroit. 520 pp. [est.].

Edsall, T. A. 1970. The effect of temperature on the rate of development and survival of alewife eggs and larvae. Trans. Amer. Fish. Soc. 99(2): 376-380.

Ginn, T. C., W. T. Waller, and G. J. Lauer. 1974. The effects of power plant condenser cooling water entrainment on the amphipod Gammarus sp. Water Res. 8(11): 937-945.

Goodyear, C. P. 1977. Entrainment impact estimates using the equivalent adult approach. U.S. Fish Wildl. Serv., Natl. Power Plant Team. Unpubl. manuscript. 16 pp.

Hartman, W. L., H. Van Meter, D. Wolfert, and D. Busch. 1974. Research report on the fishery resources of Lake Erie--1973. Appendix IV, minutes of Great Lakes Fishery Commission Lake Erie Committee Meeting, March 12-13, 1974. pp. 83-88.

Hartman, W. L., S. J. Nepszy, and R. Scholl. 1977. Minimum size limits for yellow perch (Perca flavescens) of western Lake Erie. Manuscript for presentation at AFS Annual Meeting, September 14-17, 1977. 11 pp.

Heberger, R. F., and J. B. Reynolds. 1977. Abundance, composition, and distribution of crustacean zooplankton in relation to hypolimnetic oxygen depletion in west-central Lake Erie. U.S. Fish Wildl. Serv. Tech. Paper 93. 17 pp.

Herdendorf, C. E., C. L. Cooper, M. R. Heniken, and F. L. Snyder. 1976. Western Lake Erie fish larvae study--1975 preliminary data report. Ohio State Univ., Center for Lake Erie Area Research, CLEAR Tech. Rep. No. 47. 93 pp.

Horst, T. J. 1975. The assessment of impact due to entrainment of ichthyoplankton. Pages 107-118 in S. B. Saila, ed. Fisheries and Energy Production: A Symposium. Lexington Books, Lexington, Mass.

Hubschman, J. H. 1960. Relative daily abundance of planktonic crustacea in the island region of western Lake Erie. Ohio J. Sci. 60(6): 335-340.

Hynes, H. B. N. 1970. The ecology of running waters. Univ. of Toronto Press, Toronto. 555 pp.

Jensen, L. D., R. M. Davies, A. S. Brooks, and C. D. Meyers. 1969. The effects of elevated temperature upon aquatic invertebrates. Edison Electric Instit. Report No. 4, Research Project No. 49. 232 pp.

Kelly, J. E., and R. A. Cole. 1976. The distribution and abundance of benthic macroinvertebrates near the western shore of Lake Erie. Mich. State Univ. Inst. Water Res. Report No. 32.7. 77 pp.

Kenaga, D. E., and R. A. Cole. 1975. Food and feeding relationships of yellow perch Perca flavescens (Mitchell), white bass Morone chrysops (Rafinesque), freshwater drum Aplodinotus grunniens (Rafinesque), and goldfish Carrasius auratus (Linneaus) in western Lake Erie. Mich. State Univ. Inst. Water Res. Report No. 32.5. 50 pp. Presented as Appendix A in Vol. II of Entrainment at a Once-Through Cooling System on Western Lake Erie by R. A. Cole, 1977.

King, J. R., and E. R. Mancini. 1976. Effects of power-plant cooling-water entrainment on the drifting macroinvertebrates of the Wabash River (Indiana). Pages 368-372 in G. W. Esch and R. W. McFarlane, eds. Thermal Ecology II, Energy Res. and Dev. Admin., CONF-750425, Tech. Inform. Center.

Lake Erie Technical Committee on Yellow Perch. 1976. Technical rationale for adjusting the minimum commercial size limit for yellow perch in western Lake Erie. 30 pp.

Lake Michigan Cooling Water Intake Technical Committee. 1973. Lake Michigan intakes: Report on the best technology available. 147 pp.

Lauer, G. J., W. T. Waller, D. W. Barth, W. Meeks, R. Heffner, T. Ginn, L. Zubarik, P. Bibko, and P. C. Storm. 1974. Entrainment studies on Hudson River organisms. Pages 37-82 in L. D. Jensen, ed. Proc. of the Second Workshop on Entrainment and Intake Screening, Cooling Water Discharge Research Project Rep. No. 15, Electric Research Instit. Publ. No. 74-049-00-05.

Michigan Department of Natural Resources. 1970-1975. Michigan index station trawl data computer printouts (unpublished).

Michigan Water Resources Commission. 1975a. Thermal and intake studies--Guidance manual. 237 pp.

_____. 1975b. Computer printouts of larval fish survey data, June 2-September 5, 1975. 178 pp.

_____. Undated. Larval fish survey in Michigan waters of Lake Erie, 1975. Prepared by W. Hemmick, J. Schaeffer, and R. Waybrant. Mich. Dep. Nat. Resour. 9 pp.

Nalco Environmental Sciences. 1976. The effects of entrainment on *Pontoporeia affinis* in the vicinity of Zion and Waukegan Generating Stations. 132 pp. *in* Compilation of Reports Relating to Entrainment and Impingement Studies at Zion Generating Station, 1976, Vol. II, Nalco Environmental Sciences.

Nalepa, T. F. 1972. An ecological evaluation of a thermal discharge. Part III: The distribution of zooplankton along the western shore of Lake Erie. Mich. State Univ. Inst. Water Res. Report No. 15. 112 pp.

Nelson, D. D. 1975. The distribution and abundance of larval fishes along the western shore of Lake Erie at Monroe, Michigan. M.S. Thesis, Mich. State Univ. 66 pp.

Patterson, R. L. Undated. Production, mortality, and condensor cooling water entrainment of larval perch in Michigan-Ohio waters of the western basin of Lake Erie in 1975. Univ. of Mich., School of Nat. Resour. 90 pp.

_____. 1977. Analysis of losses in standing crop and fishery yields of yellow perch in the western basin of Lake Erie due to entrainment and impingement mortality at the Detroit Edison Monroe Power Plant. U.S. Environ. Prot. Agency, Grosse Ile, MI. 32 pp.

Paul, J. F., and R. L. Patterson. 1977. Hydrodynamic simulation of movement of larval fishes in western Lake Erie and their vulnerability to power plant entrainment. Presented at 1977 Winter Simulation Conference, Natl. Bur. Stand., Gaithersburg, Md., December 5-7, 1977. 12 pp.

Pennak, R. W. 1953. Freshwater Invertebrates of the United States. Ronald Press Co., New York. 769 pp.

Polgar, T. T., L. H. Bongers, and G. M. Krainak. 1976. Pages 358-367 *in* G. W. Esch and R. W. McFarlane, eds. Thermal Ecology II, Energy Res. and Dev. Admin., CONF-750425, Tech. Inform. Center.

Price, J. W. 1963. A study of the food habits of some Lake Erie fish. Bull. Ohio Biol. Surv. II(1): 89 pp.

Ray, S. S., R. L. Snipes, and D. A. Tomljanovich. 1976. A state-of-the-art report on intake technologies. U.S. Environ. Prot. Agency Rep. EPA-600/7-76-020. 82 pp.

Reutter, V. M., and J. M. Reutter. 1975. Zooplankton of western Lake Erie at Put-in-Bay: A quantitative study, April 1973-March 1974. Ohio J. Sci. 75(5): 256-262.

Scott, W. B., and E. J. Crossman. 1973. Freshwater Fishes of Canada. Fish. Res. Board Can. Bull. 184. 966 pp.

Storr, J. F. 1974. Plankton entrainment by the condenser system of nuclear power stations on Lake Ontario. Pages 291-295 in J. W. Gibbons and R. R. Sharitz, eds. Thermal Ecology. U.S. A.E.C., Tech. Inform. Center, CONF-730505.

U.S. Environmental Protection Agency. 1977. Guidance for evaluating the adverse impact of cooling water intake structures on the aquatic environment: Section 316(b) P.L. 92-500. Draft. 59 pp.

U.S. Fish and Wildlife Service. 1977. Republication of list of species, endangered and threatened wildlife and plants. Federal Register 42(135): 36420-36431.

U.S. Geological Survey. 1976. Water Resources Data for Michigan, Water Year 1975. U.S. Geological Survey Water-Data Report MI-75-1. 574 pp.

_____. 1977. Water Resources Data for Michigan, Water Year 1976. U.S. Geological Survey Water-Data Report MI-76-1. 615 pp.

U.S. National Oceanic and Atmospheric Administration. 1974. Lake Erie Chart No. 39, West end of the lake including the islands.

Van Vooren, A. R., D. H. Davies, and G. A. Emond. 1975. Survey of fish species in Ohio waters of Lake Erie. Ohio Dep. of Nat. Resour., Lake Erie Fishery Research Federal Aid Project No. F-35-R-13. 65 pp.

Wiggins, G. B. 1977. Larvae of the North American caddisfly genera (Trichoptera). Univ. of Toronto Press, Toronto. 401 pp.

APPENDIX A

Work Agreement

OPTIONAL FORM NO. 10
JULY 1973 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

TO : Director, Great Lakes Fishery Laboratory

DATE: APR 5 1977

FROM : Acting Regional Director, FWS, Twin Cities (AE-LWR)

SUBJECT: 316(b) Work Agreement

This agreement is to establish the respective roles and responsibilities of each party with regard to the 316(b) contract between the East Lansing Field Office (ELFO), Ecological Services, Region III, and the Great Lakes Fishery Laboratory (GLFL), U.S. Fish and Wildlife Service.

A copy of the 316(b) contract, including a description of the work to be performed, is included in Appendix A attached to this agreement.

The East Lansing Field Office shall provide the materials and/or access to the materials associated with the 316(b) review for the GLFL Review Team. This includes the Monroe 316(a) and (b) demonstration reports which have previously been delivered to the GLFL. Mr. Vern Lang has been designated as the ELFO Project Investigator.

The Great Lakes Fishery Laboratory shall review and analyze selected 316(b) demonstration studies as described under the Scope of Work of this contract in Appendix A. The Monroe 316(b) demonstration study shall be the first 316(b) to be reviewed under the terms of this contract. Mr. Thomas Edsall has been designated as the Laboratory Project Leader.

The results of the analysis performed on each 316(b) shall be submitted to the ELFO for review in draft form prior to being finalized by the GLFL. The report shall contain the data analysis as described under the Scope of Work. The format shall contain the necessary information in a narrative form as well as appropriate tables, graphs etc.

Payment for work completed under the terms of this agreement will be submitted as monthly billings not to exceed $50,000 total. Each billing should include a description of the work or progress completed and a breakdown of the man-hours of effort expended. The ELFO then will complete a PFMIS redistribution data sheet to shift dollars and man-days from the Laboratory account to the ELFO station account.

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

An interim report shall be furnished to the EIFO by the GLFL, with a copy to the Regional Office, by June 1, 1977, for purposes of evaluating procedures utilized by this contractual approval which shall consist of:

1. Criteria based on confidence levels, sampling, computations, design, and methodologies.

2. Preliminary findings and additional information needed, if any.

3. Problems associated with implementing the methodology.

The final report shall be prepared and submitted to the East Lansing Field Office by December 15, 1977, with a copy to the Regional Office. If you concur with the terms of this agreement, please sign in the appropriate block and return a conformed copy to this office.

Charles A. Hughlett 4-5-77
Signed Regional Director, Region III

Joseph H. Leitzke 4/7/77
Signed Director, Great Lakes Fishery Laboratory

FY-77 CONTRACT PROPOSAL

INTRODUCTION

The FY-77 Annual Work Plan Advice for the East Lansing Field Office-Ecological Services contained a specific commitment requiring this station to test and analyze contract methodologies in the permits and licenses program. After considerable discussion among the East Lansing Field Office staff, it was decided that 316(b) demonstration studies should be the target project. Both Section 10 and NPDES programs are directly affected and, to a lesser degree, Nuclear Regulatory Commission projects are related to the proposed contract.

STATEMENT OF WORK

Utilities in the Great Lakes Region, as in the rest of the United States, are required under Section 316 of the Federal Water Pollution Control Act Amendments of 1972 to conduct 316(b) demonstration studies on cooling water intake structures. Section 316(b) requires that cooling water intake structures reflect the best available technology for minimizing adverse environmental impacts. These adverse impacts generally result from entrainment of small aquatic organisms such as macrobenthos and larval fish and impingement of larger organisms, usually adult fish. The objective of conducting intake studies is to obtain the most accurate quantitative estimate of entrainment and impingement losses or damages occurring at a plant. It is then possible to determine what, if any, better technologies exist to minimize adverse impacts at a particular steam electric generating station recognizing that certain impacts may be acceptable to the long-term maintenance and productivity of the aquatic ecosystem in question. Obviously, the real problems are twofold: (1) quantifying intake impacts and (2) predicting the associated impacts on the water body from which cooling water is withdrawn. If the U.S. Fish and Wildlife Service can demonstrate that items 1 and 2 above are adversely impacting the fishery and other aquatic resources by reviewing a particular 316(b) demonstration study and associated data, it may be possible to recommend that a utility provide "better technology" at one or more plants utilizing the Section 10 and NPDES routes. The objective now becomes clear. Is it possible to build a sound case out of a Section 316(b) demonstration study given our statutory responsibilities?

SCOPE OF WORK

The scope of work for this contract includes the review and analysis of selected 316(b) demonstration studies on steam electric power plant intake structures conducted pursuant to PL 92-500, the Federal Water Pollution Act Amendments of 1972. Work under this contract shall be performed as described below:

Phase I

Phase I involves the review and analysis of the sampling techniques employed by the utility to gather the entrainment and impingement data presented in the 316(b) report. Sampling design and methodologies for fish including eggs, larva, fry, young-of-the-year and other small fish, adult or large fish, macrobenthos, and zooplankton shall be given a detailed scientific analysis to determine if appropriate methods were employed to gather unbiased data and if the sampling program sought answers to the right questions. In each instance cited above, the contractor shall specify if the methods employed by the applicant (utility) are scientifically valid. If the methods employed contain biases, these shall be described. The effects or influences that these biases have on the results (data) shall also be defined.

Phase II

Phase II involves the review and analysis of the data obtained by the applicant (utility) and presented in or as a part of the 316(b) study. Functions to be performed include the verification of the accuracy of the data presented, calculation of and/or verification of confidence intervals or limits of the data presented. Appropriate statistical testing methods shall be utilized to verify accuracy of results and to determine the magnitude of the sampling variation. The analysis conducted in this phase should determine the real value of the data in terms of biological and statistical significance. Do these data accurately reflect the magnitude of the losses involved due to impingement and entrainment? Delayed or latent mortalities and sublethal effects as a result of entrainment or impingement should be fully discussed.

Phase III

Phase III involves the analysis of data to determine or predict the impact of the cooling water intake on the fish, macrobenthos, and zooplankton populations of the cooling water source(s). The contractor will, in most instances, need to utilize data sources in addition to the 316(b) study to verify these predictions if made by the applicant and/or to predict the impacts if not done by the applicant.

It will be necessary to determine both the local and far-field effects on the water body from which cooling water is withdrawn. In some instances, two or more cooling water sources such as a river and a lake must be considered. The contractor should determine if the intake is located in a sensitive biological area such as an important spawning or nursery area for any species affected by the intake. Entrainment and impingement impacts caused by the intake under study should be related in a total manner to impacts caused by other power plant intakes on the same body or region of water on sensitive or otherwise important fish stocks if sufficient data is available to permit meaningful predictions.

REPORT

The results of the analysis performed shall be provided to the East Lansing Field Office and the Regional Office in draft form for review prior to being accepted as a final product. The report shall contain the data analysis as described under the Scope of Work. The format shall contain the necessary information in a narrative form as well as appropriate tables, graphs, etc.

Time frames for the report are:

Date Project Initiated:	9/1/76
Date of Interim Report:	6/1/77
Date of Final Report:	12/15/77

APPENDIX B

Errors found on Detroit Edison's daily impingement data sheets (IDS) and test screenwell tally sheets (listed by sampling date).

This is not an exhaustive list. All the daily impingement data sheets for the nontest screens were checked, but the tally sheets (for the fish on the test screens and the fish pumped into the holding pool) were checked for only 20 of the 164 test screenwell sampling days. On these 20 days, we found 22 discrepancies between the data recorded on the tally sheets and the data summarized on the daily impingement data sheets.

Data sheets for 9-24-75, 11-26-75, 4-1-76, and 4-2-76 are included as examples. * = corrections made by GLFL.

6-19-75: 4 channel catfish are not entered in total column on IDS for non-test screens.

6-24-75: 4 shad are not recorded in total column on IDS for non-test screens; 2 alewives counted in pool were not recorded on IDS for test screens.

6-26-75: Shiner total on IDS for non-test screens equals 328, not 344.

7-8-75: The number of shiners counted in pool equals 419, not 424.

7-16-75: The IDS for non-test screens should list 1 logperch in the total column instead of 1 rock bass. 1 trout perch counted in pool was not recorded on IDS. 3 trout-perch and 1 sunfish counted on test screens were not recorded on IDS. The shad counted in pool equal 1020, not 1050; those counted on test screens equal 345 not 245.

8-14-75: Shad total on IDS for non-test screens equals 796, not 836.

9-9-75: 1 trout-perch was counted on test screens, not 2 as recorded on IDS; 1 logperch was counted on test screens, but it was not recorded on IDS; white bass counted on test screens total 358, not 338.

9-23-75: White bass total on IDS for non-test screens is 373, not 353.

9-24-75: Yellow perch total on IDS for non-test screens is 147, not 113; white bass total for non-test screens is 220, not 202.

9-25-75: White bass total on IDS for non-test screens is 326 instead of 361; shad total for non-test screens is 279, not 259.

9-26-75: White bass counted on test screens total 52, not 51.

10-7-75: Drum counted on test screens total 28, not 27.

10-14-75: Yellow perch total on IDS for non-test screens equals 81, not 80; shad total equals 291, not 651.

10-29-75: Drum total on IDS for non-test screens equals 98, not 88.

11-4-75: Perch total on IDS for non-test screens is 37, not 36; alewife total is 89, not 88; shad total is 357, not 362.

11-11-75: 10 channel catfish and 1 smallmouth bass were not recorded in total column on IDS for non-test screens; smelt total is 9, not 56; walleye total is 34, not 11; logperch total is 17, not 5.

11-13-75: 1 gar and 19 smallmouth bass were not entered in total column on IDS for non-test screens; white bass total equals 13 instead of 16; smelt total is 204, not 222.

11-14-75: Smallmouth total on IDS for non-test screens is 7, not 4.

11-18-75: Shad total on IDS for non-test screens is 189, not 269.

11-26-75: Shad total on IDS for non-test screens is 398 instead of 298.

12-3-75: Perch total on IDS for non-test screens equals 340, not 190; northern pike total equals 4, not 1; crappie total equals 4, not 1; and shad total equals 8860, not 6940.

12-11-75: 1 channel catfish was not recorded in total column on IDS for non-test screens.

1-23-76: Shiner total on IDS for non-test screens is 560, not 520.

1-27-76: 1 northern pike was not recorded in total column on IDS for non-test screens.

2-12-76: 2 smelt were not recorded in total column on IDS for non-test screens.

3-10-76: Goldfish total on IDS for non-test screens is 26, not 27.

3-23-76: Perch total on IDS for non-test screens is 52, not 50.

4-1-76: 85 trout perch counted in pool and 39 counted on test screens were not recorded on IDS for test screens; the number of shiners counted in pool equals 652, not 552.

4-2-76: 1 bowfin counted in pool was not recorded on IDS for test screens; the number of shad counted in pool equals 273, not 43.

4-7-76: 1 lamprey counted in pool and 1 white bass counted on screens were not recorded on IDS for test screens.

4-8-76: Alewife total on IDS for non-test screens is 182, not 184; 2 sunfish were not recorded in total column on IDS for non-test screens.

4-9-76: 155 shad were not recorded in total column on IDS for non-test screens.

4-14-76: 445 shiners were counted in the pool, not 425.

4-15-76: 28 trout-perch were counted in the pool, not 30.

4-16-76: 34 shad were counted on the test-screens, not 25.

4-20-76: Smelt total on IDS for non-test screens is 41, not 9.

4-21-76: 63 perch were counted in pool, not 64 as recorded on IDS for test screens.

5-4-76: Alewife total on IDS for non-test screens (Screenhouse 1) is 44 not 43; 1 walleye was not recorded in total column (Screenhouse 2).

5-25-76: Alewife total on IDS for non-test screens is 22, not 21.

5-27-76: Shad total on IDS for non-test screens (Screenhouse 2) is 65, not 60.

Detroit Edison
9/24/75

Daily Impingement Data Sheet for Non-Test Screens

DATE 9-24-75 TOUR _____ DATA TYP [illegible] TYP OF [illegible]

SYSTEM OPERATION Boat + Circ Sil #1 - 7 wells (21 [illegible])

	Perch	Shiners	Alewife	Goldfish	Carp	Trout Perch	Crappie	Sheepshead	White Bass	Gizzard Shad	Sea Lamp	Other
	7-65 5-13 6-18 24-10	10-25 50-25 5-10 10-20 5-10 3-10	1-1	1	1	1-1-1 1-1		2-[illegible] 75-25 25-15 20- 25-[illegible] 50-10	5-35 40-5 10-5 7-10 10-5 7-10	20-[illegible] 20-[illegible] 15-10 10-15 20-5 10	1-1	W-1-1 LP-1-1
	4-1 5	2-15 3-2 5-5						5-15 5-10 5-16 17-15 10-10	10-5 5-3 3-25 2-3 5-10	10-5 35-4 5-5 10		
								15-25				
	↓*								↓**			
TOTAL	113	27	2	1	1	5		445	202	249	2	W 2 LP 2

COMMENTS:

SCREEN COUNT: 1 - _____
2 - _____
3 - _____
4 - _____

AIR TEMP - _____ C
TURBIDITY - _____ cm
BAR. PRESS. - _____
WIND - _____
WEATHER CONDITIONS -

CIRC. PUMPS ON:

UNIT 1	UNIT 2	UNIT 3	UNIT 4
3	2	3	3

* Yellow perch total = 147, not 113.

** White bass total = 220, not 202.

Detroit Edison
11/26/75

Daily Impingement Data Sheet for Non-Test Screens

DATE 11-26-75 HOUR _____ WATER TEMP _____ FLOW RATE _____

SYSTEM CONDITION SAMPLE HOUR #1 BASKET ANALYT

	Perch	Shiners	Alewife	Goldfish	Carp	[illegible]	[illegible]	Sheepshead	White Bass	Gizzard Shad	[illegible]	[illegible]
	5-2	3-1-3 5-6-10 6-2-6 5-1	1					1-1-1 1-1-1	1-5	10-25 55-25 50-30 30-45 45-12	1	[illegible]
										75		[illegible]
										↓*		
						40 PLUS	CC					[illegible]
TOTAL	7	50	1			1	1	7	4	298	1	[illegible]

COMMENTS:

SCREEN COUNT: 1 - _____
2 - _____
3 - _____
4 - _____

AIR TEMP - _____ C
TURBIDITY - _____ cm
BAR. PRESS. - _____
WIND - _____
WEATHER CONDITIONS -

CIRC. PUMPS ON:

UNIT 1	UNIT 2	UNIT 3	UNIT 4
0	2	2	2

* Shad total = 398, not 298

Detroit Edison
4/1/76

9-1-76
N&S collectors
9.50 RPM

Daily Impingement Data Sheet for Test Screens

Species	Number Dead	Number Survival	Total	Percent Survival	Est. Million Per Million Water	Weight (Grams)
Yellow Perch	81	12	93	87.1	6	3069
Alewife	134	47	211	51.7	13	5.11
Shiners *	552	78	530	85.5	2	5322
Goldfish	23	4	29	85.1	4	7241
Bluegill	3	2	5	100	0	1410
White Bass	3	0	3	100	0	100
Smelt						
White Crappie	0	2				
Burbfish	1	1	2	50.0	0	5000
Carp						
Alewife	9	0	9	100.0	1	8888
Rock Bass	1	0	1	100	0	100
Sea Perch	1	0	1	100	0	100
[illegible]	1	0	1	100	1	0
[illegible]	1	0	1	100	0	100
[illegible]	3	0	3	100	0	100
[illegible]	0	1	1	0	0	0
[illegible]	1	0	1	0	1	0
Totals	811	145	1011	85.1	22	17721

Pool Tally Sheet

DATE 9-1-76 TIME 0800 WATER TEMP 15°C FLOW 9.50 RPM
SEASON OCCURRENCE N&S Collectors Peak Impingement

	Perch	Shiners	Alewife	Goldfish	Carp	Trout Perch	Stickleback	Bluegill	White Bass	Crystal Smelt	Rock Bass	[illegible]
	7-6 3-1 2-5 4-5 10-4	46-120 23-12 82-26 32-12 32-12	1-1 1-1 1-1 1-1	1-1 1-2 4-4 2-1 2-1		4-3 8-5 12-16 3-10 7-2		1-1 1-	1-1 1-	4-26 32-10 3-6 5-10 1-5	1-	5-1 [illegible]
	1-3 4-4	47-16 13-43		1-		3-1 1-1				3-2		
End	4-1 1-	2-	1-	1-1 1-1		**	[illegible]			3-10		[illegible]
Total	72/6	456/2	8/1	[illegible]		85/0	[illegible]	3/0	3/0	12/13	0	[illegible]

*Tally sheet shows that the number of shiners counted in pool totals 652, not 552

**85 trout perch counted in pool are not recorded on daily impingement data sheet for test screens.

Detroit Edison
4/2/76

156

9-2-76

NES Collectors
950 R.P.M.

Daily Impingement Data Sheet for Test Screens

Species	Number Dead	Number Survival	Total	Percent Survival	No. Killed by Previous	Percent Total	
Yellow Perch	10 6	16	116	91.37	9	87.92	2.77
Gizzard Shad* →	43	83	126	39.12	9	23.77	15.40
Shiners	1536	192	1698	91.53	2	91.41	1.70
Goldfish	13	9	17	76.47	0	76.47	
Sheepshead	5	2	7	71.43	0	71.43	
White Bass	1	0	1	100	0	100	
Smelt	2	0	2	100	0	100	
White Crappie							
Bowfish	2	0	2	100	0	100	
Carp	1	0	1	100	0	100	
Alewife	6	7	13	46.15	2	30.76	23.33
Black Bass							
Log Perch	1	1	2	50	0	50	
Trout Perch	33	44	132	66.66	0	66.66	
Channel Cat	4	1	5	80	0	80	
Yellow Bullhead	1	0	1	100	0	100	
Totals	1809	300	2103	85.71	16	85.23	0.77

DATE 9-2-76 DO 0.900 WATER TEMP 15 °C FLOW RATE 9.00

SYSTEM OPERATED NES Collectors Pool Area

Pool Tally Sheet

	Perch	Shiners	Alewife	Goldfish	Carp	Trout Perch		Sheepshead	White Bass	Gizzard Shad	Sun Fish	
	5-10 7-10 5-6 6-5 6-12	125-25 25-30 20-10 15-15 15-20	1-1 1-1	1-1 1-1 1-1 1-1 1-	1	5-10 5-6 6-7 6-15 5-1		1-1 1-1 1	1-	25-5 25-20 20-5 20-20 25-15 2-25	1	1-1 1-1 2-1 2-1 2-1
	5-6 3-6 2	30-16 24-10 5				2				10-3		
XAD	3-1	2-	1-							8-		
TOTAL	105/4	159/2	9/2	13/0	1/0	65/0	2/0	7/0	1/0	85/8	1/0	76/0

*Tally sheet shows that the number of shad counted in pool totals 273, not 43.

**1 bowfin counted in pool is not recorded on daily impingement data sheet.

APPENDIX C

Detroit Edison daily impingement data sheets for the Monroe plant for August 1975.

Detroit Edison
8/1/75

8-1-75 TM, JM

590 rpm Actual
NE S Collectors
w/ Illuminator

Species	Number Pumped	+ Number Screened	= Total	Percent Pumped	No. Killed by Pumping	Percent Saved	% MORT.
Yellow Perch	434	38	472	91.9	8	90.7	1.8
Gizzard Shad	1938	360	2298	84.6	108	79.6	5.6
Shiners	3373	195	3568	94.5	73	92.5	2.2
Goldfish							
Sheepshead	287	59	346	82.9	19	77.5	6.6
White Bass	808	148	956	84.6	42	80.1	5.2
Smelt							
White Crappie							
Sunfish	1	1	2	50.0		50.0	
Carp							
Alewife							
Rock Bass							
Log Perch	10	5	15	66.7		66.7	
Walleye	17	5	22	77.2		77.2	
Rd Perch	5	0	5	100.0		100.0	
Totals	6873	811	7684	89.4	250	86.2	5.6

8-5-75
N(lighted) & S Collectors
590 RPM
G.M. & T.M.

Detroit Edison
8/5/75

Species	Number Pumped +	Number Screened =	Total	Percent Pumped	No. Killed by Pumping	Percent Saved	
Yellow Perch	2102	149	2251	93.38	18		.85
Gizzard Shad	2611	1671	4282	100.97	21		.8
Shiners	719	140	859	83.7	5		.69
Goldfish	2	1	3	66.66	1		50
Sheepshead	478	300	778	61.43	3		.6
White Bass	691	131	822	84.06	9		1.3
Smelt							
White Crappie	2	1	3	66.66	0		—
Sunfish	4	—	4	100	0		
Carp							
Alewife	1	—	1	100	0		
Rock Bass	2	2	4	50	0		
Log Perch	7	4	11	63.63	0		
WALLEYE	41	5	46	89.13	3		7.3
SUCKER	1	—	1	100	0		
TROUT PERCH	17	9	26	65.38	0		
Totals	6678	2413	9091	73.45	60		.89

Detroit Edison
8/6/75

8-6-75
N. (Lighted) & S. Collectors
590 RPM
G.M. & TM.

Species	Number Pumped	+ Number Screened	= Total	Percent Pumped	No. Killed by Pumping	Percent Saved	
Yellow Perch	477	84	561	85.02	12		2.51
Gizzard Shad	1621	328	1949	83.17	18		1.11
Shiners	142	79	221	64.25	17		11.97
Goldfish	1	1	2	50	0		
Sheepshead	195	267	462	42.2	2		1.02
White Bass	333	112	445	74.83	3		.9
Smelt	—	—					
White Crappie							
Sunfish							
Carp							
Alewife							
Rock Bass	4	0	4	100	0		
Log Perch	22	3	25	88	0		
TROUT PERCH	2	3	5	40	0		
WALLEYE	18	2	20	90	1		5.5
BROWNBL CAT	0	1	1	0	0		
Totals	2815	880	3695	76.18	53		1.88

Detroit Edison
8/7/75

8-7-75
W. (lighted) & S. Collectors
590 R.P.M.
GM & T.M

Species	Number Pumped +	Number Screened =	Total	Percent Pumped	No. Killed by Pumping	Percent Saved	
Yellow Perch	135	59	194	69.58	2		1.48
Gizzard Shad	287	244	531	54.04	27		9.4
Shiners	82	95	177	46.32	2		2.43
Goldfish	3	0	3	100	3		100
Sheepshead	98	223	321	30.52	0		0
White Bass	146	117	263	55.5	1		.68
Smelt							
White Crappie	1	1	2	50	1		100
Sunfish	1	2	3	33.33	0		
Carp							
Alewife	0	1	1	0			
Rock Bass	1	1	2	50	0		
Ice Perch	12	5	17	70.58	0		
Walleye	5	2	7	71.42	0		
Sucker	1	0	1	100	0		
Small Mouth Bass	0	1	1	0	0		
Large Mouth Bass	0	1	1	0	0		
Totals	772	752	1524	50.65	36		4.66

Detroit Edison
8/8/75

8-8-75
N. (lighted) & S. Collectors
590 R.P.M
G.M. & T.M.

Species	Number Pumped +	Number Screened =	Total	Percent Pumped	No. Killed by Pumping	Percent Saved	
Yellow Perch	542	164	706	76.77	3		.55
Gizzard Shad	1764	1458	3222	54.74	149		8.4
Shiners	346	372	718	48.18	3		.86
Goldfish		—					
Sheepshead	139	290	429	32.4	5		3.59
White Bass	425	407	832	51.08	0		
Smelt	1	0	1	100	0		
White Crappie							
Sunfish	0	3	3	0			
Carp							
Alewife	0	1	1	0	0		
Rock Bass	1	0	1	100	0		
Log Perch	7	4	11	63.63	1		4.28
WALLEYE	32	2	34	94.1	0		
TROUT PERCH	4	4	8	50	0		
CHANNEL CAT	1	0	1	100	0		
Totals	3262	2705	5967	54.6%	161		4.9

Detroit Edison
8/14/75

DATE 8-14-75 HOUR 0900 WATER TEMP 77°C PUMP RTN Pump Test

SYSTEM OPERATION Basket Count Screen House #1 (all walls)

	Perch	Shiners	Alewife	Goldfish	Carp	Trout Perch	Crappie	Sheepshead	White Bass	Gizzard Shad	Sun Fish	Other
	50-26 50-20 50-12 40-13 2-20	10-20 20-25 (75)						5-5-10 15-25 (60)	16-17 26-5 (52)	20 10-30 25-20 25-50 15		
	(253)									(209)*		
TOTAL	(1133)	(300)						(240)	(208)	836		

COMMENTS:
Happy Anniversary Tony!
* Totals are times 4

SCREEN COUNT: 1 - _____
2 - _____
3 - _____
4 - _____

AIR TEMP - _____ C
TURBIDITY - _____ cm
BAR. PRESS. - _____
WIND - 25 mph. N.

PUMP LOST PRIME 23:30 8-13-75
HAS BEEN DOWN

WEATHER CONDITIONS -
Clear & Sunny

CIRC. PUMPS ON:

UNIT 1	UNIT 2	UNIT 3	UNIT 4
3	3	3	1

*Error found by GLFL: Gizzard shad counted = 199, not 209; total = 796, not 836.

Detroit Edison
8/21/75

DATE 8-21-75 HOUR _____ WATER TEMP ____ PUMP RPM _____

SYSTEM OPERATION BASKET PLANT SCREEN HOUSE #1 (ALL SCREENS)

Perch	Shiners	Alewife	Goldfish	Carp	Trout Perch	Crappie	Sheephead	White Bass	Gizzard Shad	Sun Fish	Other
12-25 25-11 25-20 25-15 20-23	20-50 25-		12-2				5-10 18 25-27 30-17 13-25	10-15 20-30 15-25 50-	10 25 30-50 50-50 75-40 50-100 30-50	1-	W-1
11-13 30-20 28-17 25-20 19-18									50-55		
22- 137-											LP-1
											CC2-1
					MISSING 2 GIZZ	1 PERCH					WALLEYE
TOTAL 545	95		4		3	1	170	165	665	1	1

COMMENTS:

SCREEN COUNT: 1 - _____
2 - _____
3 - _____
4 - _____

AIR TEMP - _____C

TURBIDITY - _____ cm

BAR. PRESS. - _____

WIND - _____

WEATHER CONDITIONS -

CIRC. PUMPS ON:

UNIT 1	UNIT 2	UNIT 3	UNIT 4
3	3	3	3

Detroit Edison
8/26/75

8-26-75
590 R.P.M.
TM & A.K.
N(illegible) & S Collectors

Species	Number Pumped	+	Number Screened	=	Total	Percent Pumped	No. Killed by Impingement	Percent Killed	
Yellow Perch	301		364		665	45.4	53		13.65
Gizzard Shad	1132		1062		2194	51.6	97		8.52
Shiners	361		281		642	56.3	11		3.04
Goldfish	1		1		2	50.0	—		[illegible]
Sheepshead	270		241		511	52.9	18		6.66
White Bass	282		310		592	47.7	5		1.77
Smelt	1		—		1	100.0	—		
White Crappie									
Sunfish			—						
Carp	1		—		1	100.0	—		
Alewife	3		—		3	100.0	1		33.33
Rock Bass									
Lon Perch	4		—		4	100.0	—		
WU	9		4		13	72.9	1		11.11
CC	2		—		2	100.0	2		100
Totals	2368		2263		4630	51.1	176		7.45

Detroit Edison
8/27/75

8-27-75
590 P.M.
N&S Collectives
TM & A.K.

Species	Number Pumped	+ Number Screened	= Total	Percent Pumped	No. Killed by Pumping	Percent Stun	
Yellow Perch	107	502	609	17.6	9		5.41
Gizzard Shad	483	1311	1,794	26.9	48		9.93
Shiners	119	270	389	30.6	7		5.88
Goldfish	3	1	4	75.0			
Sheepshead	131	160	291	45.0	19		14.5
White Bass	145	535	680	21.3			
Smelt							
White Crappie	—	1	1	0			
Sunfish							
Carp							
Alewife							
Rock Bass	—	1	1	0			
Log Perch	1	2	3	33.4			
T.P	1	1	2	50.0			
W	3	7	10	30.0			
CC	—	2	2	0			
Totals	993	2793	3786	26.2	83		8.4%

8-28-75
590 R.P.M
N&S
TM&A.K

Detroit Edison
8/28/75

Species	Number Pumped	+ Number Screened	= Total	Percent Pumped	No. Killed by Pumping	Percent Saved	
Yellow Perch	217	553	770	28.2	15		6.9%
Gizzard Shad	323	900	1223	26.4	25		7.73
Shiners	59	80	139	42.4	7		11.86
Goldfish	—	1	1	0			
Sheepshead	143	223	366	39.1	7		4.87
White Bass	85	188	273	31.1	3		3.52
Smelt							
White Crappie	—	6	6	—	—		
Sunfish							
Carp							
Alewife							
Rock Bass							
Log Perch	—	1	1	—	—		
W	5	4	9	59.0	—		
CC	—	1	1	—	—		
Totals	832	1957	2789	29.8	57		6.85

8-29-75

Detroit Edison
8/29/75

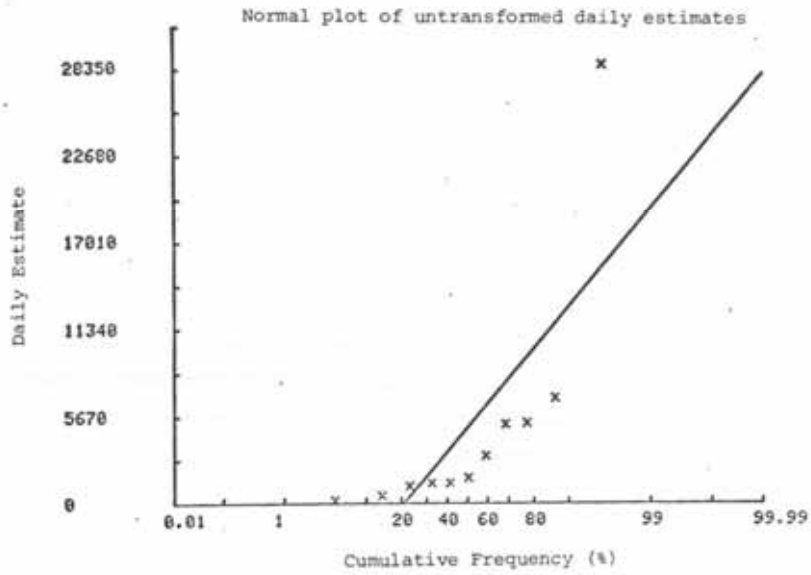
590 RPM
A K & TM

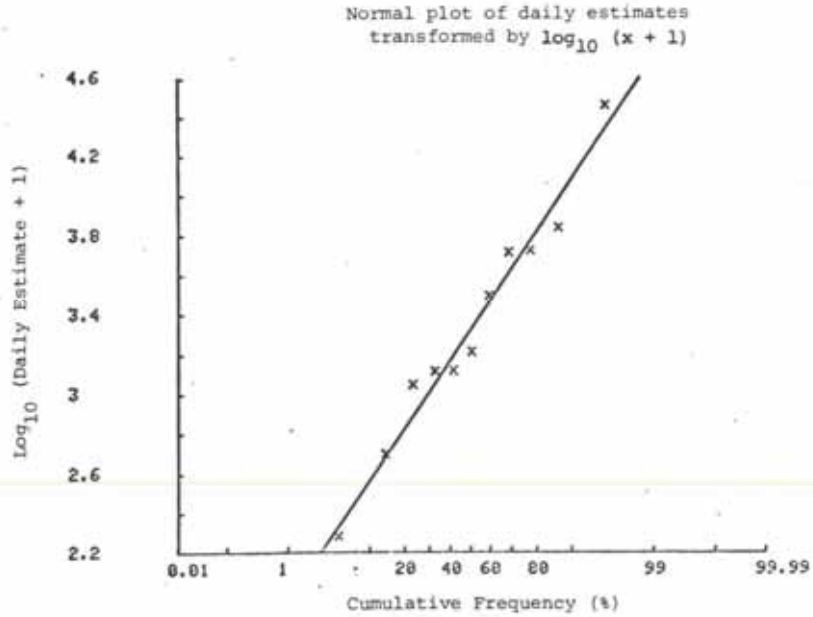
N & S Collectors

Species	Number Pumped	+ Number Screened	= Total	Percent Pumped	No. Killed by Pumping	Percent Saved	
Yellow Perch	806	848	1654	48.73	43		5.33
Gizzard Shad	849	374	1223	69.41	32		3.76
Shiners	81	82	163	49.69	5		6.17
Goldfish	0	2	2	0			
Sheepshead	842	463	1305	64.52	15		1.78
White Bass	360	291	651	55.29	8		2.22
Smelt							
White Crappie	1	0	1	100			
Sunfish	1	0		100	1		100
Carp							
Alewife							
Rock Bass	2	2	4	50			
Log Perch	1	2	3	33.33			
C C	0	1	1	0			
W	10	0	10	100			
Totals	2,952	2,065	5,017	58.85	104		3.52

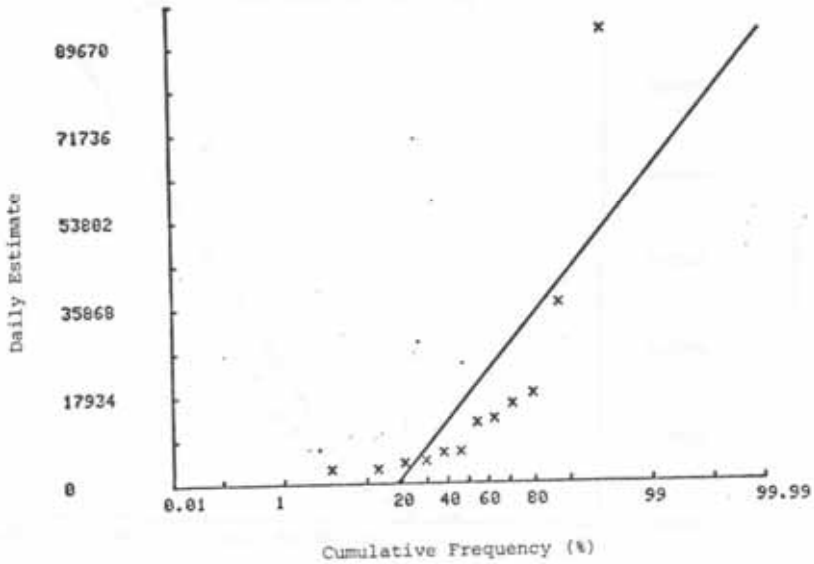
APPENDIX D

Examples of effect of $\log_{10}(x + 1)$ transformation on the normality of estimates based on counts from Detroit Edison's daily impingement and entrainment data sheets. Plots computed by Tektronix 4051 graphic calculator.

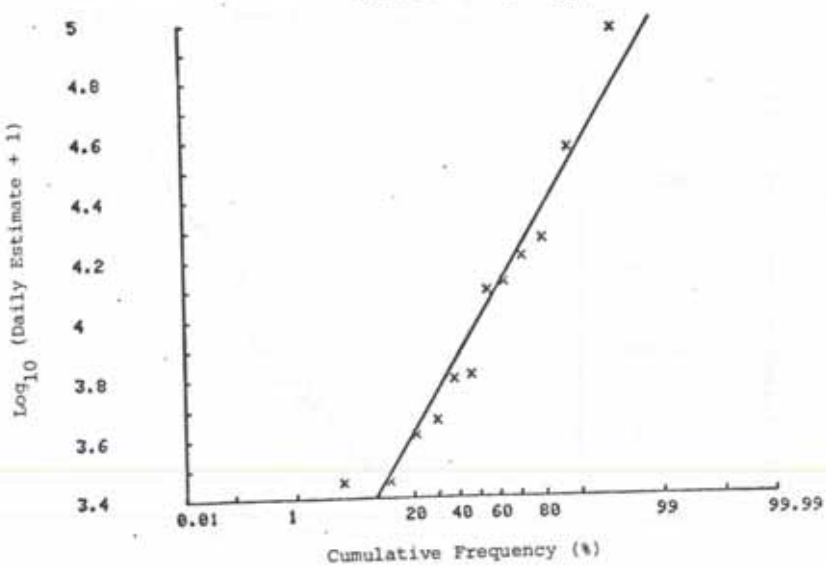

Normal plot of untransformed daily estimates
Daily Estimate
28350
22680
17010
11340
5670
0
0.01
1
20
40
60
80
99
99.99
Cumulative Frequency (%)


Normal plot of daily estimates
transformed by log10 (x + 1)
Log10 (Daily Estimate + 1)
4.6
4.2
3.8
3.4
3
2.6
2.2
0.01
1
20
40
60
80
99
99.99
Cumulative Frequency (%)

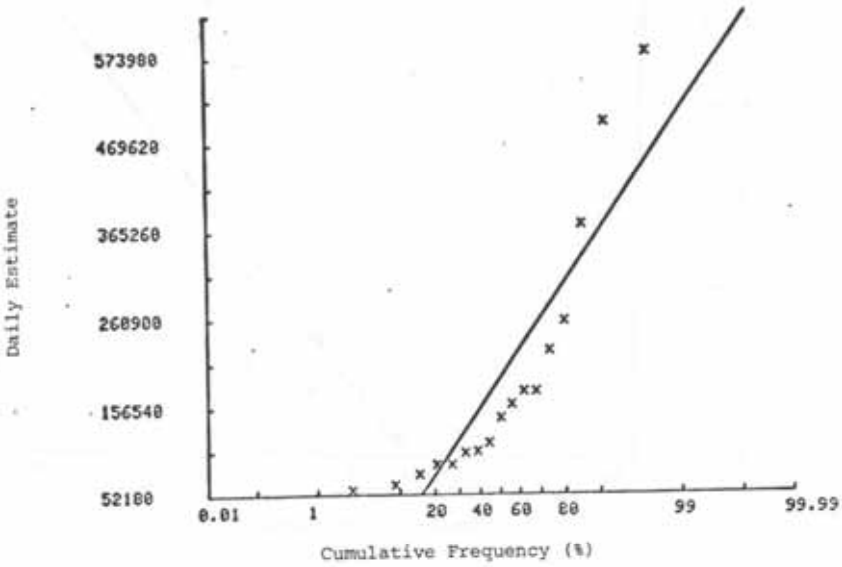
Normal plot of untransformed daily estimates



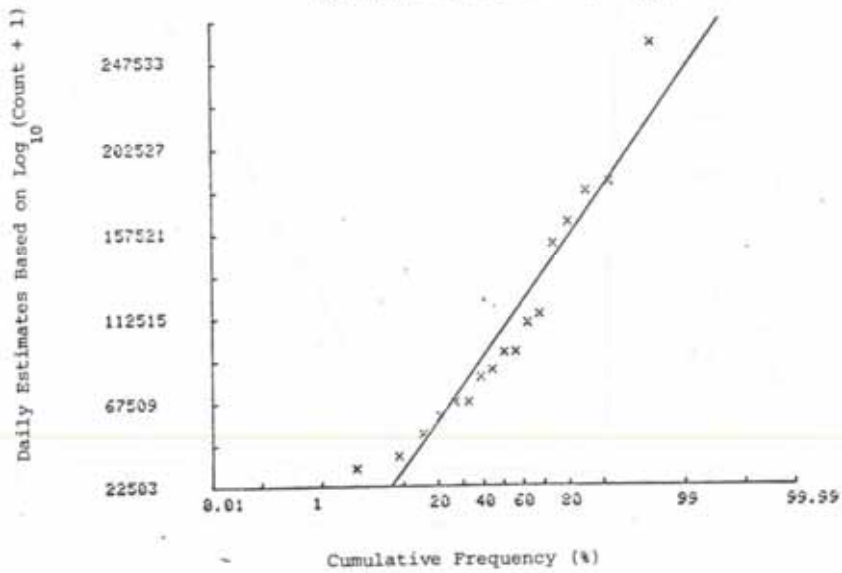
Normal plot of daily estimates transformed by $\log_{10}$ (x + 1)



Normal plot of daily estimates based on untransformed counts



Normal plot of daily estimates based on counts transformed by $\log_{10}(x + 1)$



APPENDIX E

Impingement and entrainment estimates for the Monroe Power Plant based on $\log_{10}(x + 1)$ transformation and counts from Detroit Edison's daily impingement and entrainment data sheets.

Table E-1. Estimates of impingement at the Monroe Power Plant for June 1975-May 1976 based on $\log_{10}$ (x + 1) transformation of daily estimates calculated from Detroit Edison's daily impingement data sheets.

Table E-2. Estimates of entrainment of fish eggs and larvae at the Monroe Power Plant for April 1975-May 1976 based on $\log_{10}$ (x + 1) transformation of counts from Detroit Edison's daily entrainment data sheets.

Table E-3. Estimates of entrainment of macrozoobenthos at the Monroe Power Plant for May 1975-April 1976 based on $\log_{10}$ (x + 1) transformation of counts from Detroit Edison's daily entrainment data sheets.

Table E-1. Estimates of impingement at the Monroe Power Plant for June 1975-May 1976 based on $\log_{10}(x + 1)$ transformation of daily estimates calculated from Detroit Edison's daily impingement data sheets.

	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	TOTALS	PC OF TOTAL
NO.OF SAMPLE DAY	10	15	11	15	14	14	13	14	12	16	18	16		
LAMPREY	8	0	0	2	0	5	5	3	0	5	8	3	39	<0.1
S.E.(LO)	8.	0.	0.	2.	0.	5.	5.	3.	0.	5.	6.	2.	14.	
S.E.(HI)	11.	0.	0.	2.	0.	6.	6.	3.	0.	6.	7.	2.	17.	
.95 LCI	19.	0.	0.	5.	0.	12.	11.	5.	0.	11.	12.	5.	29.	
.95 UCI	25.	0.	0.	5.	0.	14.	13.	6.	0.	13.	15.	5.	35.	
.90 LCI	16.	0.	0.	4.	0.	9.	9.	4.	0.	9.	10.	4.	24.	
.90 UCI	20.	0.	0.	4.	0.	11.	10.	5.	0.	11.	12.	4.	29.	
LONGNOSE GAR	0	0	0	6	35	12	5	0	0	11	10	2	81	<0.1
S.E.(LO)	0.	0.	0.	4.	15.	7.	5.	0.	0.	7.	5.	2.	20.	
S.E.(HI)	0.	0.	0.	5.	20.	9.	6.	0.	0.	8.	6.	2.	25.	
.95 LCI	0.	0.	0.	9.	33.	16.	11.	0.	0.	14.	11.	4.	43.	
.95 UCI	0.	0.	0.	10.	44.	19.	13.	0.	0.	17.	13.	4.	51.	
.90 LCI	0.	0.	0.	7.	27.	13.	9.	0.	0.	12.	9.	3.	34.	
.90 UCI	0.	0.	0.	8.	36.	16.	10.	0.	0.	14.	10.	4.	42.	
BOWFIN	4	0	0	2	0	0	0	0	0	0	3	0	9	<0.1
S.E.(LO)	4.	0.	0.	2.	0.	0.	0.	0.	0.	0.	3.	0.	5.	
S.E.(HI)	4.	0.	0.	2.	0.	0.	0.	0.	0.	0.	3.	0.	6.	
.95 LCI	8.	0.	0.	5.	0.	0.	0.	0.	0.	0.	6.	0.	10.	
.95 UCI	9.	0.	0.	5.	0.	0.	0.	0.	0.	0.	6.	0.	11.	
.90 LCI	7.	0.	0.	4.	0.	0.	0.	0.	0.	0.	5.	0.	9.	
.90 UCI	8.	0.	0.	4.	0.	0.	0.	0.	0.	0.	5.	0.	10.	
ALEWIFE	2396	74	44	32	138	808	12	5	0	299	1133	2584	7525	0.3
S.E.(LO)	410.	33.	23.	14.	75.	301.	9.	5.	0.	135.	254.	707.	921.	
S.E.(HI)	494.	49.	34.	19.	135.	471.	11.	6.	0.	229.	325.	968.	1258.	
.95 LCI	928.	71.	52.	31.	162.	651.	20.	11.	0.	288.	537.	1506.	1844.	
.95 UCI	1117.	104.	76.	40.	292.	1017.	25.	12.	0.	488.	687.	2063.	2518.	
.90 LCI	752.	59.	43.	25.	133.	534.	16.	9.	0.	237.	442.	1239.	1541.	
.90 UCI	905.	86.	62.	33.	240.	834.	20.	10.	0.	401.	566.	1897.	2104.	
GIZZARD SHAD	155	68526	281983	75627	27914	102866	212944	129123	289434	88645	20980	4608	1302805	48.5
S.E.(LO)	75.	34976.	79705.	16498.	5250.	29292.	57120.	21585.	74165.	13261.	4097.	956.	135858.	
S.E.(HI)	127.	71406.	111108.	21098.	6465.	40949.	78054.	25916.	103362.	15593.	5089.	1205.	193199.	
.95 LCI	170.	74024.	177584.	35388.	11341.	63270.	124464.	46624.	167639.	28260.	8645.	2038.	271851.	
.95 UCI	287.	153166.	247548.	45256.	13964.	88450.	170079.	55979.	227499.	33229.	10739.	2568.	386591.	
.90 LCI	138.	61593.	144426.	29052.	9298.	51876.	101787.	38227.	136792.	23247.	7129.	1677.	227154.	
.90 UCI	233.	125746.	201327.	37154.	11449.	72521.	139092.	45898.	185638.	27335.	8856.	2112.	323028.	
COHO SALMON	10	0	0	0	0	0	0	0	0	0	0	0	10	<0.1
S.E.(LO)	10.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	10.	
S.E.(HI)	13.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	13.	
.95 LCI	22.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	20.	
.95 UCI	30.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	26.	
.90 LCI	18.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	16.	
.90 UCI	24.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	22.	
CHINOOK SALMON	8	0	0	0	5	2	3	0	0	1	0	0	19	<0.1
S.E.(LO)	8.	0.	0.	0.	5.	2.	3.	0.	0.	1.	0.	0.	11.	

	S.E.(HI)	11.	0.	0.	0.	6.	3.	4.	0.	0.	1.	0.	0.	13.	
	.95 LCI	19.	0.	0.	0.	11.	5.	8.	0.	0.	3.	0.	0.	22.	
	.95 UCI	25.	0.	0.	0.	12.	6.	8.	0.	0.	3.	0.	0.	26.	
	.90 LCI	16.	0.	0.	0.	9.	4.	6.	0.	0.	2.	0.	0.	18.	
	.90 UCI	20.	0.	0.	0.	10.	5.	7.	0.	0.	3.	0.	0.	22.	
SMELT		77	82	15	25	3800	7515	829	193	229	3	172	516	13455	0.5
	S.E.(LO)	39.	35.	11.	13.	1666.	1500.	328.	61.	103.	3.	53.	125.	2402.	
	S.E.(HI)	62.	50.	14.	18.	2948.	2364.	530.	83.	171.	4.	72.	162.	3825.	
	.95 LCI	89.	74.	24.	29.	3598.	3888.	715.	131.	227.	7.	112.	266.	4966.	
	.95 UCI	141.	107.	31.	38.	6367.	5106.	1156.	180.	377.	8.	152.	345.	7654.	
	.90 LCI	72.	61.	19.	24.	2950.	3188.	585.	108.	185.	6.	93.	219.	4149.	
	.90 UCI	114.	88.	25.	31.	5220.	4187.	945.	148.	308.	6.	125.	284.	6396.	
NORTHERN PIKE		16	5	0	10	10	2	11	4	10	6	13	7	94	<0.1
	S.E.(LO)	12.	3.	0.	7.	8.	2.	8.	4.	8.	4.	7.	5.	22.	
	S.E.(HI)	15.	4.	0.	9.	10.	2.	11.	4.	10.	5.	8.	5.	28.	
	.95 LCI	26.	7.	0.	16.	17.	5.	18.	8.	18.	9.	14.	10.	45.	
	.95 UCI	35.	8.	0.	19.	21.	5.	23.	8.	23.	11.	17.	11.	56.	
	.90 LCI	21.	6.	0.	13.	14.	4.	15.	6.	15.	8.	12.	8.	37.	
	.90 UCI	28.	7.	0.	16.	17.	4.	19.	7.	19.	9.	14.	9.	47.	
MUSKELLUNGE		8	18	0	5	0	2	3	0	0	0	0	0	36	<0.1
	S.E.(LO)	8.	9.	0.	4.	0.	2.	3.	0.	0.	0.	0.	0.	13.	
	S.E.(HI)	10.	11.	0.	4.	0.	2.	4.	0.	0.	0.	0.	0.	16.	
	.95 LCI	18.	20.	0.	8.	0.	5.	8.	0.	0.	0.	0.	0.	27.	
	.95 UCI	23.	24.	0.	9.	0.	5.	8.	0.	0.	0.	0.	0.	33.	
	.90 LCI	15.	16.	0.	8.	0.	4.	6.	0.	0.	0.	0.	0.	22.	
	.90 UCI	19.	20.	0.	7.	0.	4.	7.	0.	0.	0.	0.	0.	27.	
GOLDFISH		209	215	212	291	158	177	2180	1043	1870	4212	887	184	11638	0.4
	S.E.(LO)	75.	81.	83.	91.	46.	40.	329.	214.	631.	815.	206.	41.	1137.	
	S.E.(HI)	110.	120.	125.	127.	61.	49.	387.	266.	946.	1009.	266.	51.	1507.	
	.95 LCI	170.	174.	184.	195.	99.	86.	717.	461.	1390.	1737.	435.	88.	2274.	
	.95 UCI	269.	258.	279.	273.	131.	106.	843.	576.	2082.	2149.	561.	108.	3015.	
	.90 LCI	138.	142.	150.	160.	81.	70.	587.	378.	1134.	1429.	359.	72.	1900.	
	.90 UCI	202.	212.	227.	224.	107.	87.	669.	472.	1677.	1768.	462.	83.	2519.	
CARP		0	15	7	44	2	5	64	23	182	233	9	2	586	<0.1
	S.E.(LO)	0.	10.	7.	23.	2.	4.	30.	12.	92.	72.	5.	2.	124.	
	S.E.(HI)	0.	12.	8.	33.	2.	4.	44.	15.	164.	100.	5.	2.	201.	
	.95 LCI	0.	20.	15.	49.	4.	8.	65.	26.	703.	154.	10.	4.	249.	
	.95 UCI	0.	26.	19.	71.	5.	9.	95.	33.	360.	213.	11.	4.	401.	
	.90 LCI	0.	17.	12.	40.	4.	6.	53.	21.	165.	127.	8.	3.	208.	
	.90 UCI	0.	21.	15.	59.	4.	7.	78.	27.	294.	175.	9.	3.	335.	
SHINER		74749	85708	67008	48189	55257	27734	36514	17758	32521	22989	50245	30930	549502	20.5
	S.E.(LO)	13159.	14596.	22663.	8305.	8085.	6819.	8425.	2891.	9471.	7897.	9282.	7626.	40343.	
	S.E.(HI)	15969.	25401.	34249.	10034.	9470.	9039.	10950.	3451.	13358.	12022.	11383.	10117.	55063.	
	.95 LCI	29765.	42033.	50505.	17815.	17464.	14729.	18359.	6244.	20846.	16829.	19584.	16250.	80726.	
	.95 UCI	36121.	54486.	76307.	21522.	20455.	19276.	23860.	7455.	29601.	25618.	24018.	21580.	110182.	
	.90 LCI	24120.	34508.	41075.	14626.	14319.	12077.	15014.	5119.	17010.	13844.	16150.	13368.	67453.	
	.90 UCI	29270.	44732.	62060.	17669.	16771.	16008.	19517.	6112.	23991.	21074.	19806.	17730.	92066.	
WHITE SUCKER		14	11	15	18	13	8	9	3	3	15	6	11	126	<0.1
	S.E.(LO)	10.	6.	11.	11.	9.	6.	6.	3.	3.	8.	5.	5.	26.	
	S.E.(HI)	13.	8.	14.	15.	12.	7.	8.	3.	3.	10.	5.	6.	33.	
	.95 LCI	23.	14.	24.	24.	20.	13.	14.	5.	7.	17.	10.	11.	52.	
	.95 UCI	30.	16.	31.	32.	26.	16.	17.	6.	7.	20.	11.	12.	66.	

.90 LCI	19.	11.	19.	20.	17.	11.	12.	4.	5.	14.	8.	9.	44.	
.90 UCI	24.	13.	25.	26.	21.	13.	14.	5.	6.	17.	9.	10.	55.	
BLACK BULLHEAD	0	0	0	0	5	0	0	0	0	0	0	0	5	<0.1
S.E.(LO)	0.	0.	0.	0.	5.	0.	0.	0.	0.	0.	0.	0.	5.	
S.E.(HI)	0.	0.	0.	0.	6.	0.	0.	0.	0.	0.	0.	0.	6.	
.95 LCI	0.	0.	0.	0.	11.	0.	0.	0.	0.	0.	0.	0.	11.	
.95 UCI	0.	0.	0.	0.	13.	0.	0.	0.	0.	0.	0.	0.	12.	
.90 LCI	0.	0.	0.	0.	9.	0.	0.	0.	0.	0.	0.	0.	9.	
.90 UCI	0.	0.	0.	0.	11.	0.	0.	0.	0.	0.	0.	0.	10.	
YELLOW BULLHEAD	6	7	0	25	8	2	27	37	100	136	52	25	425	<0.1
S.E.(LO)	6.	6.	0.	12.	6.	2.	14.	18.	45.	43.	20.	10.	71.	
S.E.(HI)	7.	7.	0.	16.	7.	3.	18.	24.	68.	58.	26.	12.	101.	
.95 LCI	12.	12.	0.	26.	13.	5.	30.	38.	98.	92.	42.	21.	143.	
.95 UCI	15.	14.	0.	34.	15.	6.	40.	52.	150.	124.	55.	26.	201.	
.90 LCI	10.	10.	0.	21.	10.	4.	25.	31.	80.	75.	35.	18.	119.	
.90 UCI	12.	12.	0.	28.	12.	5.	32.	43.	122.	102.	46.	21.	168.	
BROWN BULLHEAD	20	2	0	0	0	0	5	5	0	0	3	4	39	<0.1
S.E.(LO)	12.	2.	0.	0.	0.	0.	5.	5.	0.	0.	3.	4.	15.	
S.E.(HI)	16.	3.	0.	0.	0.	0.	6.	5.	0.	0.	4.	4.	19.	
.95 LCI	27.	5.	0.	0.	0.	0.	11.	10.	0.	0.	7.	8.	30.	
.95 UCI	35.	5.	0.	0.	0.	0.	13.	11.	0.	0.	8.	9.	37.	
.90 LCI	22.	4.	0.	0.	0.	0.	9.	8.	0.	0.	6.	6.	25.	
.90 UCI	29.	4.	0.	0.	0.	0.	10.	9.	0.	0.	7.	7.	31.	
CHANNEL CATFISH	16	90	105	515	48	58	744	182	227	61	67	19	2134	0.1
S.E.(LO)	13.	30.	41.	153.	19.	24.	97.	45.	102.	22.	22.	8.	226.	
S.E.(HI)	18.	40.	59.	213.	24.	32.	111.	58.	169.	29.	28.	10.	314.	
.95 LCI	29.	65.	92.	329.	40.	51.	212.	98.	224.	47.	46.	18.	440.	
.95 UCI	40.	88.	132.	458.	53.	69.	242.	125.	372.	62.	59.	21.	628.	
.90 LCI	24.	53.	75.	270.	33.	42.	173.	81.	183.	39.	38.	15.	374.	
.90 UCI	32.	70.	108.	376.	43.	57.	198.	102.	303.	51.	49.	18.	525.	
TROUT-PERCH	4828	466	153	163	147	91	34	1211	2396	2405	3321	137	15152	0.6
S.E.(LO)	1396.	145.	87.	55.	57.	31.	20.	370.	496.	987.	1392.	35.	2130.	
S.E.(HI)	1994.	205.	166.	77.	84.	42.	28.	527.	624.	1659.	1619.	44.	3179.	
.95 LCI	3158.	311.	194.	118.	123.	68.	43.	799.	1092.	2103.	2304.	75.	4262.	
.95 UCI	4510.	440.	369.	165.	181.	91.	62.	1139.	1373.	3535.	3417.	94.	6360.	
.90 LCI	2559.	256.	158.	97.	101.	55.	35.	655.	891.	1730.	1900.	61.	3561.	
.90 UCI	3655.	361.	330.	136.	148.	75.	51.	934.	1120.	2908.	2818.	78.	5315.	
WHITE BASS	419	13859	84901	52310	4842	1250	1003	131	133	73	141	143	159205	5.9
S.E.(LO)	134.	7953.	24369.	10644.	995.	240.	313.	51.	51.	32.	43.	29.	27777.	
S.E.(HI)	190.	18604.	34174.	13361.	1250.	295.	449.	74.	75.	46.	58.	34.	41164.	
.95 LCI	302.	17059.	54293.	22831.	2149.	518.	682.	110.	113.	68.	91.	61.	55581.	
.95 UCI	430.	39911.	76140.	28658.	2700.	637.	979.	160.	166.	98.	121.	73.	82369.	
.90 LCI	245.	14095.	44156.	18743.	1762.	474.	558.	90.	92.	56.	75.	50.	46443.	
.90 UCI	348.	32786.	61923.	23528.	2214.	522.	801.	131.	135.	80.	100.	60.	68826.	
ROCK BASS	181	57	171	105	25	11	15	0	34	162	114	57	882	<0.1
S.E.(LO)	79.	26.	58.	40.	12.	7.	11.	0.	16.	52.	25.	20.	127.	
S.E.(HI)	127.	37.	93.	57.	15.	8.	15.	0.	22.	72.	30.	26.	193.	
.95 LCI	179.	56.	129.	86.	26.	14.	24.	0.	36.	112.	52.	43.	255.	
.95 UCI	288.	79.	208.	122.	33.	17.	32.	0.	49.	154.	63.	56.	386.	
.90 LCI	145.	46.	105.	70.	21.	12.	20.	0.	29.	92.	43.	35.	213.	
.90 UCI	233.	65.	169.	100.	27.	14.	26.	0.	40.	126.	52.	46.	323.	
SUNFISH	157	167	101	235	168	192	724	121	112	156	51	54	2238	0.1

S.E.(LO)	68.	57.	48.	75.	62.	55.	189.	45.	45.	48.	18.	17.	256.	
S.E.(HI)	106.	83.	76.	104.	90.	73.	252.	64.	66.	64.	22.	21.	354.	
.95 LCI	153.	123.	107.	161.	134.	119.	412.	97.	98.	102.	37.	36.	512.	
.95 UCI	241.	172.	170.	224.	195.	158.	550.	139.	144.	136.	47.	46.	708.	
.90 LCI	124.	101.	87.	132.	110.	97.	337.	80.	80.	84.	31.	30.	422.	
.90 UCI	195.	141.	138.	184.	160.	130.	450.	114.	118.	112.	39.	38.	592.	
SMALL-MOUTH BASS	14	0	7	8	25	36	0	13	0	0	1	4	108	<0.1
S.E.(LO)	14.	0.	7.	5.	13.	19.	0.	9.	0.	0.	1.	3.	30.	
S.E.(HI)	20.	0.	8.	5.	17.	27.	0.	12.	0.	0.	1.	3.	51.	
.95 LCI	31.	0.	15.	10.	29.	41.	0.	20.	0.	0.	3.	6.	60.	
.95 UCI	46.	0.	18.	11.	38.	57.	0.	25.	0.	0.	3.	6.	82.	
.90 LCI	25.	0.	12.	8.	24.	34.	0.	16.	0.	0.	2.	5.	50.	
.90 UCI	37.	0.	14.	9.	31.	47.	0.	21.	0.	0.	3.	5.	68.	
LARGE-MOUTH BASS	8	0	7	0	2	2	15	0	0	2	0	10	46	<0.1
S.E.(LO)	8.	0.	7.	0.	2.	2.	11.	0.	0.	2.	0.	5.	17.	
S.E.(HI)	11.	0.	8.	0.	2.	2.	15.	0.	0.	2.	0.	6.	21.	
.95 LCI	19.	0.	15.	0.	4.	5.	24.	0.	0.	5.	0.	11.	34.	
.95 UCI	25.	0.	18.	0.	5.	5.	32.	0.	0.	5.	0.	13.	43.	
.90 LCI	16.	0.	12.	0.	4.	4.	20.	0.	0.	4.	0.	9.	28.	
.90 UCI	20.	0.	14.	0.	4.	4.	26.	0.	0.	4.	0.	11.	38.	
WHITE CRAPPIE	8	12	82	86	53	22	130	25	31	2	49	22	522	<0.1
S.E.(LO)	6.	9.	42.	35.	20.	10.	53.	14.	16.	2.	18.	8.	86.	
S.E.(HI)	7.	11.	68.	51.	27.	12.	80.	18.	23.	2.	24.	10.	127.	
.95 LCI	13.	19.	95.	76.	44.	21.	117.	30.	36.	5.	38.	18.	172.	
.95 UCI	15.	24.	151.	110.	58.	26.	175.	39.	50.	5.	50.	21.	255.	
.90 LCI	10.	16.	77.	62.	36.	17.	95.	24.	30.	4.	32.	15.	144.	
.90 UCI	12.	20.	123.	95.	47.	21.	143.	32.	41.	4.	41.	17.	213.	
YELLOW PERCH	106377	72174	132926	47020	11929	4908	2408	6834	5672	2606	11435	982	405271	19.1
S.E.(LO)	30917.	14673.	30239.	8931.	1634.	971.	648.	1429.	2555.	932.	2237.	125.	47397.	
S.E.(HI)	43579.	21680.	39141.	11023.	1833.	1209.	882.	1804.	4630.	1442.	2780.	143.	63742.	
.95 LCI	69934.	35765.	67373.	19156.	3530.	2098.	1412.	3088.	5674.	1987.	6721.	267.	94642.	
.95 UCI	98576.	46503.	87206.	23645.	4089.	2611.	1922.	3898.	10191.	3074.	5865.	304.	127548.	
.90 LCI	56671.	29362.	54793.	15727.	2894.	1720.	1154.	2531.	4589.	1635.	3893.	219.	79249.	
.90 UCI	79881.	38178.	70324.	19412.	3353.	2141.	1572.	3196.	8316.	2529.	4837.	250.	106577.	
WALLEYE	0	1773	1723	333	48	13	13	0	101	21	56	21	3602	0.1
S.E.(LO)	0.	487.	745.	95.	21.	11.	10.	0.	37.	10.	20.	9.	896.	
S.E.(HI)	0.	776.	1295.	173.	29.	15.	12.	0.	53.	12.	26.	11.	1516.	
.95 LCI	0.	1044.	1659.	204.	45.	24.	21.	0.	82.	21.	42.	19.	1793.	
.95 UCI	0.	1665.	2883.	276.	62.	33.	27.	0.	116.	26.	55.	23.	3033.	
.90 LCI	0.	857.	1349.	167.	37.	20.	17.	0.	67.	17.	35.	16.	1498.	
.90 UCI	0.	1367.	2344.	227.	51.	27.	22.	0.	94.	21.	45.	19.	2535.	
LOGPERCH	388	530	862	277	688	618	39	25	0	20	210	196	3853	0.1
S.E.(LO)	217.	171.	353.	98.	173.	145.	19.	11.	0.	8.	57.	57.	518.	
S.E.(HI)	452.	245.	584.	144.	228.	186.	26.	14.	0.	10.	74.	76.	852.	
.95 LCI	491.	366.	787.	210.	374.	312.	42.	25.	0.	18.	120.	121.	1037.	
.95 UCI	1023.	526.	1301.	307.	493.	402.	57.	31.	0.	21.	157.	161.	1704.	
.90 LCI	318.	301.	640.	173.	337.	256.	34.	20.	0.	14.	99.	99.	866.	
.90 UCI	829.	432.	1058.	254.	405.	329.	47.	25.	0.	17.	130.	133.	1424.	
FRESHWATER DRUM	15093	12606	75219	69324	17476	5040	7135	793	643	336	1198	1249	206097	7.7
S.E.(LO)	3927.	3025.	20094.	13291.	2621.	1320.	1433.	205.	249.	112.	135.	140.	24816.	
S.E.(HI)	5306.	3977.	27415.	16442.	3083.	1784.	1791.	273.	396.	162.	151.	157.	32895.	
.95 LCI	8883.	6489.	44773.	28510.	5662.	2851.	3122.	443.	548.	239.	284.	299.	49656.	
.95 UCI	12001.	8537.	61081.	35268.	6659.	3854.	3902.	589.	871.	344.	319.	335.	65823.	
.90 LCI	7198.	5327.	36411.	23406.	4642.	2337.	2553.	363.	447.	197.	234.	246.	41492.	
.90 UCI	9725.	7004.	49676.	28955.	5480.	3160.	3191.	483.	711.	283.	263.	276.	55001.	

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TOTALS           204961 255897 645491 204552 172776 151379 264866  157532  333698 122399  90164  41770  2685605
      S.E.(LO) 33862. 44250. 93699. 26663. 10310. 30176. 57762.  21830.  76799. 15517. 10453.  7722.   194054.
      S.E.(HI) 46763. 81098.110275. 33411. 12446. 42061. 78848.  26716. 104332. 19840. 12886. 10239.   217323.
       .95 LCI 76596. 94916.208762. 57192. 22269. 65181.125864.  47153. 169034. 33067. 22056. 16455.   308263.
       .95 UCI105779.173954.290252. 71667. 26884. 90851.171809.  56626. 229634. 42279. 27189. 21819.   434863.
       .90 LCI 61358. 77570.168284. 46740. 18155. 53141.102297.  38443. 136855. 27093. 18126. 13482.   257579.
       .95 UCI 85717.152813.236058. 58837. 22042. 74490.140507.  46428. 187379. 34779. 22421. 17949.   363364.
EXECUTION TERMINATED   13 59 18  1*6.772  RC*0      $2.70


$RUN *FTN SCARDS*IMPLOGS SPUNCH*IMPLOG
EXECUTION BEGINS   13 59 18
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Table E-2. Estimates of entrainment of fish eggs and larvae at the Monroe Power Plant for April 1975-May 1976 based on $\log_{10}$ (x + 1) transformation of counts from Detroit Edison's daily entrainment data sheets.

WEEK OF	CLUPEIDAE (UNID.)		ALEWIFE		GIZZARD SHAD		SMELT		NORTHERN PIKE		CHANNEL CAT	
	EGGS	LARVAE	EGGS	LARVAE	EGGS	LARVAE	EGGS	LARVAE	EGGS	LARVAE	EGGS	LARVAE
4/ 6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0.	N (LARVAE)=	1.									
4/13	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0.	N (LARVAE)=	1.									
4/20	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	1.	N (LARVAE)=	3.									
4/27	0.	3959.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	3953.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	4709.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	12593.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	14983.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	9317.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	11079.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2.	N (LARVAE)=	4.									
5/ 4	0.	0.	0.	0.	0.	0.	132337.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	132337.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	916857.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	1801475.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	11449581.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	933576.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	5789032.	0.	0.	0.	0.	0.
N (EGGS) =	2.	N (LARVAE)=	5.									
5/11	39652.	9178.	20100.	0.	0.	0.	0.	4309.	0.	7093.	0.	37181.
S.E. LO	39652.	4131.	23103.	0.	0.	0.	0.	4309.	0.	7093.	0.	19364.
S.E. HI	88665.	4539.	32696.	0.	0.	0.	0.	4887.	0.	8461.	0.	26879.
.95 LCI	126173.	9203.	63958.	0.	0.	0.	0.	9600.	0.	15802.	0.	43144.
.95 UCI	282131.	10226.	104033.	0.	0.	0.	0.	10889.	0.	19296.	0.	59987.
.90 LCI	93301.	7485.	47295.	0.	0.	0.	0.	7807.	0.	12852.	0.	35088.
.90 UCI	208628.	8317.	76930.	0.	0.	0.	0.	8854.	0.	15693.	0.	48706.
N (EGGS) =	4.	N (LARVAE)=	11.									

5/18	26564.	26123.	0.	0.	0.	0.	0.	6651.	0.	0.	0.	7816.
S.E. LO	26564.	11205.	0.	0.	0.	0.	0.	3262.	0.	0.	0.	5944.
S.E. HI	55461.	14387.	0.	0.	0.	0.	0.	4280.	0.	0.	0.	5980.
.95 LCI	84527.	24662.	0.	0.	0.	0.	0.	8279.	0.	0.	0.	11102.
.95 UCI	176476.	31651.	0.	0.	0.	0.	0.	9420.	0.	0.	0.	13162.
.90 LCI	62506.	20129.	0.	0.	0.	0.	0.	6756.	0.	0.	0.	9059.
.90 UCI	130499.	25827.	0.	0.	0.	0.	0.	7686.	0.	0.	0.	10740.
N (EGGS) =	4.	N (LARVAE)=	12.									
5/25	0.	51563.	0.	0.	0.	0.	0.	3252.	0.	0.	0.	35208.
S.E. LO	0.	19722.	0.	0.	0.	0.	0.	3202.	0.	0.	0.	18402.
S.E. HI	0.	25663.	0.	0.	0.	0.	0.	3458.	0.	0.	0.	24364.
.95 LCI	0.	45940.	0.	0.	0.	0.	0.	7383.	0.	0.	0.	42434.
.95 UCI	0.	58717.	0.	0.	0.	0.	0.	7974.	0.	0.	0.	56183.
.90 LCI	0.	37055.	0.	0.	0.	0.	0.	5955.	0.	0.	0.	34227.
.90 UCI	0.	47361.	0.	0.	0.	0.	0.	6432.	0.	0.	0.	45317.
N (EGGS) =	3.	N (LARVAE)=	9.									
6/ 1	169283.	424557.	169798.	0.	0.	0.	0.	39770.	0.	0.	0.	25200.
S.E. LO	169283.	165557.	169798.	0.	0.	0.	0.	29765.	0.	0.	0.	15673.
S.E. HI	717096.	253631.	720745.	0.	0.	0.	0.	43981.	0.	0.	0.	19645.
.95 LCI	538659.	366391.	540236.	0.	0.	0.	0.	65512.	0.	0.	0.	34495.
.95 UCI	2281800.	558178.	2294046.	0.	0.	0.	0.	96803.	0.	0.	0.	43238.
.90 LCI	398323.	297360.	399534.	0.	0.	0.	0.	53457.	0.	0.	0.	28148.
.90 UCI	1687328.	455467.	1696383.	0.	0.	0.	0.	78991.	0.	0.	0.	35282.
N (EGGS) =	4.	N (LARVAE)=	12.									
6/ 8	0.	1705781.	0.	0.	0.	0.	0.	47348.	0.	0.	0.	26573.
S.E. LO	0.	472970.	0.	0.	0.	0.	0.	26510.	0.	0.	0.	13925.
S.E. HI	0.	645727.	0.	0.	0.	0.	0.	34985.	0.	0.	0.	16520.
.95 LCI	0.	1041006.	0.	0.	0.	0.	0.	58348.	0.	0.	0.	30649.
.95 UCI	0.	1621246.	0.	0.	0.	0.	0.	77003.	0.	0.	0.	36360.
.90 LCI	0.	849454.	0.	0.	0.	0.	0.	47611.	0.	0.	0.	25010.
.90 UCI	0.	1159725.	0.	0.	0.	0.	0.	62834.	0.	0.	0.	29670.
N (EGGS) =	4.	N (LARVAE)=	12.									
6/15	0.	678356.	0.	0.	0.	0.	0.	15574.	0.	0.	0.	62354.
S.E. LO	0.	297772.	0.	0.	0.	0.	0.	11079.	0.	0.	0.	29581.
S.E. HI	0.	500965.	0.	0.	0.	0.	0.	13114.	0.	0.	0.	39462.
.95 LCI	0.	663436.	0.	0.	0.	0.	0.	24683.	0.	0.	0.	65907.
.95 UCI	0.	1116150.	0.	0.	0.	0.	0.	29219.	0.	0.	0.	87921.
.90 LCI	0.	539563.	0.	0.	0.	0.	0.	20074.	0.	0.	0.	53602.
.90 UCI	0.	907748.	0.	0.	0.	0.	0.	23763.	0.	0.	0.	71505.
N (EGGS) =	3.	N (LARVAE)=	11.									
6/22	0.	375350.	0.	0.	0.	0.	0.	28714.	0.	0.	0.	39272.
S.E. LO	0.	143374.	0.	0.	0.	0.	0.	14995.	0.	0.	0.	21178.
S.E. HI	0.	213444.	0.	0.	0.	0.	0.	17988.	0.	0.	0.	26421.
.95 LCI	0.	315566.	0.	0.	0.	0.	0.	33003.	0.	0.	0.	46613.
.95 UCI	0.	669734.	0.	0.	0.	0.	0.	39593.	0.	0.	0.	59034.
.90 LCI	0.	257500.	0.	0.	0.	0.	0.	26930.	0.	0.	0.	38036.
.90 UCI	0.	383349.	0.	0.	0.	0.	0.	32307.	0.	0.	0.	49171.
N (EGGS) =	4.	N (LARVAE)=	12.									
6/29	0.	419810.	0.	0.	0.	0.	0.	0.	0.	0.	0.	25349.
S.E. LO	0.	213084.	0.	0.	0.	0.	0.	0.	0.	0.	0.	18235.
S.E. HI	0.	379000.	0.	0.	0.	0.	0.	0.	0.	0.	0.	22725.
.95 LCI	0.	491372.	0.	0.	0.	0.	0.	0.	0.	0.	0.	42049.
.95 UCI	0.	873974.	0.	0.	0.	0.	0.	0.	0.	0.	0.	52403.

.90 LCI	0.	396336.	0.	0.	0.	0.	0.	0.	0.	0.	0.	33916.
.90 UCI	0.	704940.	0.	0.	0.	0.	0.	0.	0.	0.	0.	42268.
N (EGGS) =	3.	N (LARVAE)=	9.									
7/ 6	0.	189343.	0.	0.	0.	0.	0.	7030.	0.	0.	0.	23683.
S.E. LO	0.	83236.	0.	0.	0.	0.	0.	7033.	0.	0.	0.	15255.
S.E. HI	0.	173273.	0.	0.	0.	0.	0.	7769.	0.	0.	0.	18344.
.95 LCI	0.	185449.	0.	0.	0.	0.	0.	15664.	0.	0.	0.	33989.
.95 UCI	0.	274652.	0.	0.	0.	0.	0.	17309.	0.	0.	0.	40870.
.90 LCI	0.	150823.	0.	0.	0.	0.	0.	12739.	0.	0.	0.	27643.
.90 UCI	0.	223370.	0.	0.	0.	0.	0.	14077.	0.	0.	0.	33239.
N (EGGS) =	3.	N (LARVAE)=	11.									
7/13	0.	57858.	0.	0.	0.	9308.	0.	0.	0.	0.	0.	7942.
S.E. LO	0.	27565.	0.	0.	0.	9308.	0.	0.	0.	0.	0.	5455.
S.E. HI	0.	35518.	0.	0.	0.	10644.	0.	0.	0.	0.	0.	5896.
.95 LCI	0.	60625.	0.	0.	0.	20438.	0.	0.	0.	0.	0.	12026.
.95 UCI	0.	78174.	0.	0.	0.	23428.	0.	0.	0.	0.	0.	12978.
.90 LCI	0.	49471.	0.	0.	0.	16718.	0.	0.	0.	0.	0.	9796.
.90 UCI	0.	63790.	0.	0.	0.	19117.	0.	0.	0.	0.	0.	10590.
N (EGGS) =	4.	N (LARVAE)=	12.									
7/20	0.	47938.	0.	3691.	0.	7602.	0.	0.	0.	0.	0.	11745.
S.E. LO	0.	20533.	0.	3691.	0.	7602.	0.	0.	0.	0.	0.	6387.
S.E. HI	0.	25244.	0.	3911.	0.	8533.	0.	0.	0.	0.	0.	6992.
.95 LCI	0.	45193.	0.	8124.	0.	16732.	0.	0.	0.	0.	0.	14058.
.95 UCI	0.	55563.	0.	8608.	0.	18781.	0.	0.	0.	0.	0.	15390.
.90 LCI	0.	36877.	0.	6629.	0.	13653.	0.	0.	0.	0.	0.	11471.
.90 UCI	0.	45337.	0.	7024.	0.	15325.	0.	0.	0.	0.	0.	12558.
N (EGGS) =	4.	N (LARVAE)=	12.									
7/27	0.	10779.	0.	0.	0.	25708.	0.	0.	0.	0.	0.	8197.
S.E. LO	0.	7656.	0.	0.	0.	15552.	0.	0.	0.	0.	0.	5630.
S.E. HI	0.	8493.	0.	0.	0.	18542.	0.	0.	0.	0.	0.	6006.
.95 LCI	0.	16851.	0.	0.	0.	34010.	0.	0.	0.	0.	0.	12391.
.95 UCI	0.	18673.	0.	0.	0.	40810.	0.	0.	0.	0.	0.	13395.
.90 LCI	0.	13750.	0.	0.	0.	27352.	0.	0.	0.	0.	0.	10111.
.90 UCI	0.	15753.	0.	0.	0.	33301.	0.	0.	0.	0.	0.	10930.
N (EGGS) =	4.	N (LARVAE)=	12.									
8/ 3	0.	15593.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	10771.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	12470.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	24364.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	28708.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	19743.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	22858.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	10.									
8/10	0.	11619.	0.	0.	0.	0.	0.	3629.	0.	0.	0.	0.
S.E. LO	0.	8521.	0.	0.	0.	0.	0.	3629.	0.	0.	0.	0.
S.E. HI	0.	9754.	0.	0.	0.	0.	0.	3865.	0.	0.	0.	0.
.95 LCI	0.	18984.	0.	0.	0.	0.	0.	8085.	0.	0.	0.	0.
.95 UCI	0.	21731.	0.	0.	0.	0.	0.	8611.	0.	0.	0.	0.
.90 LCI	0.	15439.	0.	0.	0.	0.	0.	6575.	0.	0.	0.	0.
.90 UCI	0.	17673.	0.	0.	0.	0.	0.	7003.	0.	0.	0.	0.
N (EGGS) =	3.	N (LARVAE)=	11.									
8/17	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
8/24	0.	10779.	0.	0.	0.	0.	0.	3980.	0.	0.	0.	0.
S.E. LO	0.	7654.	0.	0.	0.	0.	0.	3480.	0.	0.	0.	0.
S.E. HI	0.	8493.	0.	0.	0.	0.	0.	4217.	0.	0.	0.	0.
.95 LCI	0.	16851.	0.	0.	0.	0.	0.	8760.	0.	0.	0.	0.
.95 UCI	0.	18673.	0.	0.	0.	0.	0.	9281.	0.	0.	0.	0.
.90 LCI	0.	13753.	0.	0.	0.	0.	0.	7148.	0.	0.	0.	0.
.90 UCI	0.	15253.	0.	0.	0.	0.	0.	7573.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
8/31	0.	19869.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	10340.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	11733.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	24454.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	27761.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	19594.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	22246.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3.	N (LARVAE)=	8.									
9/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									

10/ 5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
10/12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2. N (LARVAE)=	6.										
10/19	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	10.										
10/26	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
11/ 2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2. N (LARVAE)=	11.										
11/ 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	5. N (LARVAE)=	15.										
11/16	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
11/23	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
11/30	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	10.										
12/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0. N (LARVAE)=	0.										
12/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	13. N (LARVAE)=	13.										
12/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=	3.										
12/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	11. N (LARVAE)=	11.										
1/ 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 20. N (LARVAE)= 20.												
1/11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 31. N (LARVAE)= 31.												
1/18	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 35. N (LARVAE)= 35.												
1/25	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 22. N (LARVAE)= 22.												
2/ 1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 22. N (LARVAE)= 22.												
2/ 8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 36. N (LARVAE)= 36.												
2/15	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 0. N (LARVAE)= 0.												

2/22	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

N (EGGS) = 21. N (LARVAE)= 21.

2/29	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

N (EGGS) = 17. N (LARVAE)= 17.

3/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

N (EGGS) = 22. N (LARVAE)= 22.

3/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

N (EGGS) = 35. N (LARVAE)= 35.

3/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

N (EGGS) = 32. N (LARVAE)= 32.

3/28	0.	0.	0.	0.	0.	0.	0.	5034.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	3019.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	3241.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	6260.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	6721.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	5183.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	5564.	0.	0.	0.	0.

N (EGGS) = 23. N (LARVAE)= 23.

4/ 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) *	32. N (LARVAE)*	32.										
4/11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3767.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2574.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2788.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	5652.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	8076.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	4623.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	4969.
N (EGGS) *	12. N (LARVAE)*	13.										
4/18	0.	8999.	0.	0.	0.	0.	0.	3766.	0.	0.	0.	11609.
S.E. LO	0.	6004.	0.	0.	0.	0.	0.	1966.	0.	0.	0.	3345.
S.E. HI	0.	4420.	0.	0.	0.	0.	0.	2076.	0.	0.	0.	3613.
.95 LCI	0.	8311.	0.	0.	0.	0.	0.	3934.	0.	0.	0.	6693.
.95 UCI	0.	8845.	0.	0.	0.	0.	0.	4153.	0.	0.	0.	7230.
.90 LCI	0.	8674.	0.	0.	0.	0.	0.	3287.	0.	0.	0.	5593.
.90 UCI	0.	7391.	0.	0.	0.	0.	0.	3470.	0.	0.	0.	8041.
N (EGGS) *	30. N (LARVAE)*	39.										
4/25	0.	13557.	0.	0.	0.	0.	0.	62923.	0.	2412.	0.	7590.
S.E. LO	0.	4173.	0.	0.	0.	0.	0.	10687.	0.	1713.	0.	3404.
S.E. HI	0.	4604.	0.	0.	0.	0.	0.	12064.	0.	1807.	0.	3736.
.95 LCI	0.	8350.	0.	0.	0.	0.	0.	21385.	0.	3429.	0.	6812.
.95 UCI	0.	9213.	0.	0.	0.	0.	0.	24141.	0.	3616.	0.	7472.
.90 LCI	0.	6377.	0.	0.	0.	0.	0.	17869.	0.	2865.	0.	5692.
.90 UCI	0.	7678.	0.	0.	0.	0.	0.	20172.	0.	3021.	0.	6247.
N (EGGS) *	35. N (LARVAE)*	47.										
5/ 2	0.	32746.	0.	0.	0.	0.	0.	6586.	0.	293.	0.	21334.
S.E. LO	0.	8160.	0.	0.	0.	0.	0.	2072.	0.	293.	0.	5800.
S.E. HI	0.	8875.	0.	0.	0.	0.	0.	2211.	0.	297.	0.	6600.
.95 LCI	0.	12327.	0.	0.	0.	0.	0.	4147.	0.	587.	0.	11605.
.95 UCI	0.	13757.	0.	0.	0.	0.	0.	4424.	0.	593.	0.	13706.
.90 LCI	0.	10300.	0.	0.	0.	0.	0.	3465.	0.	492.	0.	9697.
.90 UCI	0.	11495.	0.	0.	0.	0.	0.	3697.	0.	498.	0.	11035.
N (EGGS) *	47. N (LARVAE)*	63.										
5/ 9	0.	13924.	0.	0.	0.	0.	0.	2306.	0.	0.	0.	11579.
S.E. LO	0.	2766.	0.	0.	0.	0.	0.	1069.	0.	0.	0.	2769.
S.E. HI	0.	2949.	0.	0.	0.	0.	0.	1105.	0.	0.	0.	2963.
.95 LCI	0.	5535.	0.	0.	0.	0.	0.	2140.	0.	0.	0.	5541.
.95 UCI	0.	5921.	0.	0.	0.	0.	0.	2211.	0.	0.	0.	5929.
.90 LCI	0.	4625.	0.	0.	0.	0.	0.	1788.	0.	0.	0.	4630.
.90 UCI	0.	4931.	0.	0.	0.	0.	0.	1848.	0.	0.	0.	4954.
N (EGGS) *	47. N (LARVAE)*	63.										
TOTALS	235499.	4128190.	189898.	3691.	0.	42209.	132337.	240792.	0.	9798.	0.	366405.
S.E. LO	175883.	644123.	170983.	3691.	0.	19576.	132337.	46801.	0.	7302.	0.	56925.
S.E. HI	724602.	949570.	721686.	3911.	0.	23020.	916857.	62989.	0.	8852.	0.	73130.
.95 LCI	351941.	1288840.	342137.	7386.	0.	39171.	264806.	93648.	0.	14612.	0.	113908.
.95 UCI	1450089.	1940109.	1444093.	7825.	0.	46062.	1836630.	126041.	0.	17713.	0.	146333.
.90 LCI	294076.	1076974.	285884.	6172.	0.	32730.	221268.	78251.	0.	12210.	0.	95178.
.90 UCI	1211669.	1621120.	1206659.	6539.	0.	38489.	1532984.	105318.	0.	14801.	0.	122274.

LAST
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WEEKS	145847.	4115035.	169798.	3691.	0.	42708.	0.	236483.	0.	2705.	0.	329224.
S.E. LO	171355.	644048.	169798.	3691.	0.	19574.	0.	46602.	0.	1738.	0.	53530.
.95 LCI	362881.	1288839.	339765.	7386.	0.	39171.	0.	93251.	0.	3479.	0.	107113.
.95 UCI	1439195.	1940064.	1442613.	7825.	0.	46062.	0.	125661.	0.	3664.	0.	136090.
.90 LCI	286505.	1076931.	283901.	6172.	0.	32730.	0.	77918.	0.	2907.	0.	89502.
.90 UCI	1202566.	1621083.	1205420.	6539.	0.	38489.	0.	105000.	0.	3062.	0.	113715.

WEEK OF	BRINDLED MADTON EGGS	BRINDLED MADTON LARVAE	MUDDOT EGGS	MUDDOT LARVAE	TROUT-PERCH EGGS	TROUT-PERCH LARVAE	WHITE BASS EGGS	WHITE BASS LARVAE	FRESHWATER DRUM EGGS	FRESHWATER DRUM LARVAE	BROOK SILVERSIDE EGGS	BROOK SILVERSIDE LARVAE
4/ 6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0.	N (LARVAE)=	1.									
4/13	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0.	N (LARVAE)=	1.									
4/20	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	1.	N (LARVAE)=	3.									
4/27	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2.	N (LARVAE)=	4.									
5/ 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2.	N (LARVAE)=	5.									
5/11	0.	0.	0.	0.	0.	2086.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	2086.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	2222.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	4649.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	4951.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	3781.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	4027.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	11.									

5/18	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
5/25	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=	9.										
6/ 1	0.	0.	0.	0.	0.	3111.	0.	0.	0.	58387.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	3111.	0.	0.	0.	33116.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	3296.	0.	0.	0.	47251.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	6846.	0.	0.	0.	72888.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	7254.	0.	0.	0.	104000.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	5587.	0.	0.	0.	59476.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	5919.	0.	0.	0.	84063.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
6/ 8	0.	0.	0.	0.	0.	0.	0.	26157.	0.	3691.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	18718.	0.	3691.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	23758.	0.	3711.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	41198.	0.	8174.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	52291.	0.	3608.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	33617.	0.	6629.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	42669.	0.	7024.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
6/15	0.	0.	0.	0.	0.	0.	0.	68110.	0.	194736.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	28695.	0.	105502.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	37344.	0.	183150.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	63933.	0.	235728.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	83203.	0.	408058.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	51936.	0.	191714.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	67647.	0.	331868.	0.	0.
N (EGGS) =	3. N (LARVAE)=	11.										
6/22	0.	0.	0.	0.	0.	0.	0.	22091.	0.	86061.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	14934.	0.	39883.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	18187.	0.	54672.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	32869.	0.	87783.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	40630.	0.	179313.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	26821.	0.	71630.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	32665.	0.	98190.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
6/29	0.	0.	0.	0.	0.	0.	0.	0.	0.	16156.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	16159.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	20055.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	37255.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	46248.	0.	0.

.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	30050.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	37333.	0.	0.
N (EGGS) =	3. N (LARVAE)=	9.										
7/ 6	0.	0.	0.	0.	0.	8990.	0.	4354.	0.	7030.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	6155.	0.	4354.	0.	7030.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	6690.	0.	4637.	0.	7769.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	13713.	0.	9700.	0.	15664.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	14923.	0.	10331.	0.	17309.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	11153.	0.	7859.	0.	12739.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	12137.	0.	8402.	0.	14027.	0.	0.
N (EGGS) =	3. N (LARVAE)=	11.										
7/13	0.	3856.	0.	0.	0.	0.	0.	22569.	0.	19054.	0.	3856.
S.E. LO	0.	3856.	0.	0.	0.	0.	0.	10621.	0.	15409.	0.	3856.
S.E. HI	0.	4086.	0.	0.	0.	0.	0.	12349.	0.	18875.	0.	4086.
.95 LCI	0.	8488.	0.	0.	0.	0.	0.	23817.	0.	33914.	0.	8488.
.95 UCI	0.	8993.	0.	0.	0.	0.	0.	27181.	0.	41543.	0.	8993.
.90 LCI	0.	6926.	0.	0.	0.	0.	0.	19434.	0.	27674.	0.	6926.
.90 UCI	0.	7338.	0.	0.	0.	0.	0.	22180.	0.	33899.	0.	7338.
N (EGGS) =	4. N (LARVAE)=	12.										
7/20	0.	0.	0.	0.	0.	0.	0.	30434.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	15260.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	16274.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	33587.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	40221.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	27497.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	32820.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
7/27	0.	0.	0.	0.	0.	0.	0.	3980.	0.	3980.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	3980.	0.	3980.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	4217.	0.	4217.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	8760.	0.	8760.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	9281.	0.	9281.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	7148.	0.	7148.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	7573.	0.	7573.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
8/ 3	0.	0.	0.	0.	0.	0.	0.	7369.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	7369.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	8224.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	16668.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	18603.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	13507.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	15075.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	10.										
8/10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=	11.										
8/17	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
8/24	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
8/31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3.	N (LARVAE)=	8.									
9/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									

10/ 5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		12.									
10/12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2. N (LARVAE)=		6.									
10/19	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		10.									
10/26	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		12.									
11/ 2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2. N (LARVAE)=		11.									
11/ 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	5. N (LARVAE)=		15.									
11/16	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
11/23	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
11/30	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	10.										
12/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0. N (LARVAE)=	0.										
12/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	13. N (LARVAE)=	13.										
12/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=	3.										
12/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	11. N (LARVAE)=	11.										
1/ 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	20.	N (LARVAE)=	20.									
1/11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	31.	N (LARVAE)=	31.									
1/18	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	35.	N (LARVAE)=	35.									
1/25	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	22.	N (LARVAE)=	22.									
2/ 1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	22.	N (LARVAE)=	22.									
2/ 8	0.	0.	3487.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	3487.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	3760.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	6978.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	7523.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	5931.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	6286.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	36.	N (LARVAE)=	36.									
2/15	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0.	N (LARVAE)=	0.									

2/22	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	21.	N (LARVAE)=	21.									
2/29	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	17.	N (LARVAE)=	17.									
3/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	22.	N (LARVAE)=	22.									
3/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	35.	N (LARVAE)=	35.									
3/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	32.	N (LARVAE)=	32.									
3/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	23.	N (LARVAE)=	23.									
4/ 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

.90 LCI	0.	7.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 32. N (LARVAE)= 32.												
4/11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 12. N (LARVAE)= 13.												
4/18	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 30. N (LARVAE)= 39.												
4/25	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 35. N (LARVAE)= 47.												
5/ 2	0.	0.	0.	0.	0.	1067.	0.	0.	0.	2361.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	628.	0.	0.	0.	274.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	642.	0.	0.	0.	1008.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	1256.	0.	0.	0.	1950.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	1285.	0.	0.	0.	2018.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	1049.	0.	0.	0.	1629.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	1074.	0.	0.	0.	1686.	0.	0.
N (EGGS) = 47. N (LARVAE)= 63.												
5/ 9	0.	0.	0.	0.	0.	885.	0.	0.	0.	683.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	640.	0.	0.	0.	480.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	653.	0.	0.	0.	488.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	1260.	0.	0.	0.	961.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	1307.	0.	0.	0.	976.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	1070.	0.	0.	0.	803.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	1092.	0.	0.	0.	816.	0.	0.
N (EGGS) = 47. N (LARVAE)= 63.												
TOTALS	0.	3856.	3487.	0.	0.	16139.	0.	185066.	0.	392139.	0.	3856.
S.E. LO	0.	3856.	3487.	0.	0.	7261.	0.	42847.	0.	120250.	0.	3856.
S.E. HI	0.	4086.	3760.	0.	0.	7842.	0.	53695.	0.	199045.	0.	4086.
.95 LCI	0.	7717.	6978.	0.	0.	14528.	0.	85734.	0.	240620.	0.	7717.
.95 UCI	0.	8175.	7523.	0.	0.	15692.	0.	107444.	0.	398288.	0.	8175.
.90 LCI	0.	6448.	5831.	0.	0.	12140.	0.	71840.	0.	201058.	0.	6448.
.90 UCI	0.	6831.	6286.	0.	0.	13112.	0.	89778.	0.	332803.	0.	6831.

LAST
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WEEKS	0.	3856.	3487.	0.	0.	14053.	0.	185064.	0.	392139.	0.	3856.
S.E. LO	0.	3856.	3487.	0.	0.	6954.	0.	42847.	0.	120250.	0.	3856.
.95 LCI	0.	7717.	6978.	0.	0.	13918.	0.	85738.	0.	240620.	0.	7717.
.95 UCI	0.	8175.	7523.	0.	0.	15049.	0.	107444.	0.	398288.	0.	8175.
.90 LCI	0.	6648.	5831.	0.	0.	11628.	0.	71640.	0.	201058.	0.	6648.
.90 UCI	0.	6831.	6286.	0.	0.	12575.	0.	89778.	0.	332803.	0.	6831.

WEEK OF	GOLDFISH EGGS	GOLDFISH LARVAE	CARP EGGS	CARP LARVAE	SUCKER EGGS	SUCKER LARVAE	EMERALD SHINER EGGS	EMERALD SHINER LARVAE	SPOTTAIL SHINER EGGS	SPOTTAIL SHINER LARVAE	LEPOMIS SP. EGGS	LEPOMIS SP. LARVAE
4/ 6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0. N (LARVAE)=		1.									
4/13	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0. N (LARVAE)=		1.									
4/20	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	1. N (LARVAE)=		3.									
4/27	0.	0.	0.	3959.	0.	8668.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	3959.	0.	8668.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	4709.	0.	12258.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	12599.	0.	27582.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	15983.	0.	39006.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	9317.	0.	20396.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	11079.	0.	28854.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2. N (LARVAE)=		4.									
5/ 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2. N (LARVAE)=		5.									
5/11	0.	0.	0.	4309.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	4339.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	4887.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	9600.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	10889.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	7807.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	8856.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		11.									

5/18	0.	0.	0.	2991.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	2056.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	2220.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	4521.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	4867.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	3689.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	3988.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		12.									
5/25	0.	0.	0.	0.	0.	0.	0.	14795.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	14795.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	20270.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	34118.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	46742.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	27520.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	37701.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=		9.									
6/ 1	0.	13243.	0.	6406.	0.	0.	0.	3111.	0.	3111.	0.	3111.
S.E. LO	0.	13243.	0.	6406.	0.	0.	0.	3111.	0.	3111.	0.	3111.
S.E. HI	0.	16576.	0.	7191.	0.	0.	0.	3296.	0.	3296.	0.	3296.
.95 LCI	0.	27148.	0.	14100.	0.	0.	0.	6846.	0.	6846.	0.	6846.
.95 UCI	0.	36528.	0.	15827.	0.	0.	0.	7254.	0.	7254.	0.	7254.
.90 LCI	0.	23705.	0.	11505.	0.	0.	0.	5587.	0.	5587.	0.	5587.
.90 UCI	0.	29836.	0.	12914.	0.	0.	0.	5919.	0.	5919.	0.	5919.
N (EGGS) =	4. N (LARVAE)=		12.									
6/ 8	0.	15267.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	11904.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	14067.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	26200.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	30965.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	21379.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	25268.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		12.									
6/15	0.	20715.	0.	3629.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	18691.	0.	3629.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	21387.	0.	3865.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	37187.	0.	8985.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	47651.	0.	8611.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	30244.	0.	6575.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	33754.	0.	7003.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=		11.									
6/22	0.	3650.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	3650.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	3867.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	8034.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	8511.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	6555.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	6945.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		12.									
6/29	0.	32738.	0.	5359.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	21747.	0.	5359.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	27816.	0.	5788.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	50148.	0.	12357.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	64143.	0.	13347.	0.	0.	0.	0.	0.	0.	0.	0.

.90 LCI	0.	40449.	0.	9967.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	51737.	0.	10765.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=	9.										
7/ 6	0.	22422.	0.	0.	0.	0.	0.	4354.	0.	0.	0.	0.
S.E. LO	0.	10532.	0.	0.	0.	0.	0.	4354.	0.	0.	0.	0.
S.E. HI	0.	11947.	0.	0.	0.	0.	0.	4637.	0.	0.	0.	0.
.95 LCI	0.	23466.	0.	0.	0.	0.	0.	9700.	0.	0.	0.	0.
.95 UCI	0.	26601.	0.	0.	0.	0.	0.	10331.	0.	0.	0.	0.
.90 LCI	0.	19084.	0.	0.	0.	0.	0.	7889.	0.	0.	0.	0.
.90 UCI	0.	21614.	0.	0.	0.	0.	0.	8402.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=	11.										
7/13	0.	3856.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	3858.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	4086.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	8483.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	8991.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	6924.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	7333.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
7/20	0.	0.	0.	0.	0.	0.	0.	9997.	0.	0.	0.	3691.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	7100.	0.	0.	0.	3691.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	7876.	0.	0.	0.	3911.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	15628.	0.	0.	0.	8124.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	17336.	0.	0.	0.	8608.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	12752.	0.	0.	0.	6629.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	14148.	0.	0.	0.	7024.
N (EGGS) =	4. N (LARVAE)=	12.										
7/27	0.	0.	0.	0.	0.	0.	0.	10779.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	7456.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	8493.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	16851.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	18693.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	13750.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	15253.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
8/ 3	0.	0.	0.	0.	0.	0.	0.	9436.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	6435.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	7058.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	14555.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	15964.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	11795.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	12937.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	10.										
8/10	0.	0.	0.	0.	0.	0.	0.	7494.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	5130.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	5583.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	11430.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	12439.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	9296.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	10116.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=	11.										
8/17	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) *	4.	N (LARVAE)*	12.									
8/24	0.	0.	0.	0.	0.	0.	0.	12665.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	9309.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	10542.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	20490.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	23203.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	16720.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	18934.	0.	0.	0.	0.
N (EGGS) *	4.	N (LARVAE)*	12.									
8/31	0.	9853.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	9953.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	11303.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	23307.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	26733.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	18672.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	21420.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) *	3.	N (LARVAE)*	8.									
9/ 7	0.	0.	0.	0.	0.	0.	0.	6284.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	6284.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	6887.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	13832.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	15158.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	11286.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	12368.	0.	0.	0.	0.
N (EGGS) *	4.	N (LARVAE)*	12.									
9/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) *	4.	N (LARVAE)*	12.									
9/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) *	4.	N (LARVAE)*	12.									
9/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) *	4.	N (LARVAE)*	12.									

10/ 5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		12.									
10/12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2. N (LARVAE)=		6.									
10/19	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		10.									
10/26	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		12.									
11/ 2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2. N (LARVAE)=		11.									
11/ 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	5. N (LARVAE)=		15.									
11/16	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
11/23	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
11/30	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	10.										
12/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0. N (LARVAE)=	0.										
12/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	13. N (LARVAE)=	13.										
12/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=	3.										
12/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	11. N (LARVAE)=	11.										
1/ 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	20.	N (LARVAE)=	20.									
1/11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	31.	N (LARVAE)=	31.									
1/18	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	35.	N (LARVAE)=	35.									
1/25	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	22.	N (LARVAE)=	22.									
2/ 1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	22.	N (LARVAE)=	22.									
2/ 8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	36.	N (LARVAE)=	36.									
2/15	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0.	N (LARVAE)=	0.									

2/22	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

N (EGGS) = 21. N (LARVAE)= 21.

2/29	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

N (EGGS) = 17. N (LARVAE)= 17.

3/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

N (EGGS) = 22. N (LARVAE)= 22.

3/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

N (EGGS) = 35. N (LARVAE)= 35.

3/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

N (EGGS) = 32. N (LARVAE)= 32.

3/28	0.	0.	0.	80482.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	23878.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	31417.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	47524.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	65155.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	40999.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	53947.	0.	0.	0.	0.	0.	0.	0.	0.

N (EGGS) = 23. N (LARVAE)= 23.

4/ 4	0.	0.	0.	4784.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	2119.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	2231.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	4240.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	4665.	0.	0.	0.	0.	0.	0.	0.	0.

.90 LCI	0.	0.	0.	3543.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	3731.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 32. N (LARVAE)= 32.												
4/11	0.	0.	0.	1833.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	1833.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	1934.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	3995.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	4714.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	3267.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	3446.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 12. N (LARVAE)= 13.												
4/18	0.	0.	0.	70245.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	16259.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	19280.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	32532.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	38580.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	27183.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	32237.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 30. N (LARVAE)= 39.												
4/25	0.	1865.	2087.	25436.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	1316.	2047.	5837.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	1371.	2229.	6515.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	2633.	4176.	11680.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	2744.	4460.	13036.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	2230.	3439.	9759.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	2293.	3727.	10892.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 35. N (LARVAE)= 47.												
5/ 2	0.	0.	0.	4836.	0.	293.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	1610.	0.	293.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	1698.	0.	297.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	3222.	0.	587.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	3397.	0.	593.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	2633.	0.	490.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	2838.	0.	496.	0.	0.	0.	0.	0.	0.
N (EGGS) = 47. N (LARVAE)= 63.												
5/ 9	0.	0.	0.	340.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	340.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	343.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	679.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	687.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	569.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	574.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 47. N (LARVAE)= 61.												
TOTALS	0.	123111.	2087.	194589.	0.	8961.	0.	70915.	0.	3111.	0.	6802.
S.E. LO	0.	36146.	2087.	31631.	0.	8673.	0.	23462.	0.	3111.	0.	4827.
S.E. HI	0.	44814.	2229.	39548.	0.	12262.	0.	28582.	0.	3296.	0.	5114.
.95 LCI	0.	72328.	4176.	63294.	0.	17355.	0.	46947.	0.	6224.	0.	9659.
.95 UCI	0.	89674.	4460.	79135.	0.	24536.	0.	57192.	0.	6594.	0.	10233.
.90 LCI	0.	60436.	3489.	52887.	0.	14501.	0.	39228.	0.	5201.	0.	8071.
.90 UCI	0.	74930.	3727.	66124.	0.	20502.	0.	47789.	0.	5510.	0.	8551.

LAST
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WEEKS	0.	123111.	2087.	186321.	0.	293.	0.	78915.	0.	3111.	0.	6807.
S.E. LO	0.	36146.	2087.	31085.	0.	293.	0.	23462.	0.	3111.	0.	4827.
.95 LCI	0.	72328.	4176.	62201.	0.	587.	0.	46947.	0.	6224.	0.	9659.
.95 UCI	0.	89674.	4460.	77961.	0.	593.	0.	57192.	0.	6594.	0.	10233.
.90 LCI	0.	60436.	3489.	51974.	0.	490.	0.	39228.	0.	5201.	0.	8071.
.90 UCI	0.	74930.	3727.	65143.	0.	496.	0.	47789.	0.	5510.	0.	8551.

WEEK OF	ROCK BASS		GREEN SUNFISH		PUMPKINSEED		BLUEGILL		SMALLMOUTH BASS		BLACK CRAPPIE	
	EGGS	LARVAE	EGGS	LARVAE	EGGS	LARVAE	EGGS	LARVAE	EGGS	LARVAE	EGGS	LARVAE
4/ 6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0. N (LARVAE)=		1.									
4/13	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0. N (LARVAE)=		1.									
4/20	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	1. N (LARVAE)=		3.									
4/27	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2. N (LARVAE)=		4.									
5/ 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	7. N (LARVAE)=		5.									
5/11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		11.									

5/18	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		12.									
5/25	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=		9.									
6/ 1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		12.									
6/ 8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		12.									
6/15	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=		11.									
6/22	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		12.									
6/29	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=	9.										
7/ 6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=	11.										
7/13	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
7/20	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
7/27	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
8/ 3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	10.										
8/10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=	11.										
8/17	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
8/24	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
8/31	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3.	N (LARVAE)=	8.									
9/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									
9/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4.	N (LARVAE)=	12.									

10/ 5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		12.									
10/12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2. N (LARVAE)=		6.									
10/19	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		10.									
10/26	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		12.									
11/ 2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2. N (LARVAE)=		11.									
11/ 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	5. N (LARVAE)=		15.									
11/16	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
11/23	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
11/30	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	13.										
12/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0. N (LARVAE)=	0.										
12/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	13. N (LARVAE)=	13.										
12/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=	3.										
12/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	11. N (LARVAE)=	11.										
1/ 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	20.	N (LARVAE)=	20.									
1/11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	31.	N (LARVAE)=	31.									
1/18	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	35.	N (LARVAE)=	35.									
1/25	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	22.	N (LARVAE)=	22.									
2/ 1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	22.	N (LARVAE)=	22.									
2/ 8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	36.	N (LARVAE)=	36.									
2/15	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0.	N (LARVAE)=	0.									

2/22	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	21.	N (LARVAE)=	21.									
2/29	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	17.	N (LARVAE)=	17.									
3/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	22.	N (LARVAE)=	22.									
3/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	35.	N (LARVAE)=	35.									
3/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	32.	N (LARVAE)=	32.									
3/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	23.	N (LARVAE)=	23.									
4/ 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 32. N (LARVAE)= 32.												
4/11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 12. N (LARVAE)= 13.												
4/18	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 30. N (LARVAE)= 39.												
4/25	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 35. N (LARVAE)= 47.												
5/ 2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 47. N (LARVAE)= 63.												
5/ 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 47. N (LARVAE)= 63.												
TOTALS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

LAST
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WEEKS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

WEEK OF	JOHNNY DARTER EGGS	JOHNNY DARTER LARVAE	LOGPERCH EGGS	LOGPERCH LARVAE	YELLOW PERCH EGGS	YELLOW PERCH LARVAE	WALLEYE EGGS	WALLEYE LARVAE	UNIDENTIFIED EGGS	UNIDENTIFIED LARVAE	TOTAL EGGS	TOTAL LARVAE
4/ 6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0.	N (LARVAE)=	1.									
4/13	0.	0.	0.	0.	0.	0.	0.	0.	0.	33468.	0.	33468.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0.	N (LARVAE)=	1.									
4/20	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	1.	N (LARVAE)=	3.									
4/27	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	16586.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	10319.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	13950.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	32836.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	44392.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	24281.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	32829.
N (EGGS) =	2.	N (LARVAE)=	4.									
5/ 4	0.	0.	0.	0.	0.	0.	86970.	9621.	0.	0.	199307.	9621.
S.E. LO	0.	0.	0.	0.	0.	0.	66970.	9621.	0.	0.	148317.	9621.
S.E. HI	0.	0.	0.	0.	0.	0.	267860.	13767.	0.	0.	955189.	13767.
.95 LCI	0.	0.	0.	0.	0.	0.	850920.	26707.	0.	0.	1834522.	26707.
.95 UCI	0.	0.	0.	0.	0.	0.	3403679.	38217.	0.	0.	12136629.	38217.
.90 LCI	0.	0.	0.	0.	0.	0.	422848.	20511.	0.	0.	936476.	20511.
.90 UCI	0.	0.	0.	0.	0.	0.	1691392.	29351.	0.	0.	6031062.	29351.
N (EGGS) =	2.	N (LARVAE)=	5.									
5/11	0.	0.	0.	0.	0.	55058.	0.	5054.	29973.	5675.	89725.	129461.
S.E. LO	0.	0.	0.	0.	0.	29933.	0.	5054.	29973.	4072.	53616.	37703.
S.E. HI	0.	0.	0.	0.	0.	45535.	0.	5851.	57977.	4501.	110968.	54815.
.95 LCI	0.	0.	0.	0.	0.	66693.	0.	11261.	95373.	8960.	170606.	84002.
.95 UCI	0.	0.	0.	0.	0.	101587.	0.	13035.	184684.	10029.	352762.	177129.
.90 LCI	0.	0.	0.	0.	0.	54238.	0.	9158.	70526.	7287.	126158.	68318.
.90 UCI	0.	0.	0.	0.	0.	82619.	0.	10601.	136421.	8156.	260872.	99325.
N (EGGS) =	4.	N (LARVAE)=	11.									

5/18	0.	0.	0.	1452.	38114.	91588.	0.	0.	0.	3505.	64678.	140326.
S.E. LO	0.	0.	0.	1452.	35114.	33256.	0.	0.	0.	3505.	46458.	35911.
S.E. HI	0.	0.	0.	1538.	97630.	46618.	0.	0.	0.	4508.	112257.	49573.
.95 LCI	0.	0.	0.	3196.	121278.	73193.	0.	0.	0.	7715.	147829.	79041.
.95 UCI	0.	0.	0.	3386.	310563.	102605.	0.	0.	0.	8822.	357202.	109109.
.90 LCI	0.	0.	0.	2608.	89602.	59725.	0.	0.	0.	6295.	109315.	64497.
.90 UCI	0.	0.	0.	2763.	229653.	83725.	0.	0.	0.	7199.	264141.	89032.
N (EGGS) =	4. N (LARVAE)=		12.									
5/25	0.	0.	0.	0.	0.	96772.	0.	3202.	0.	3202.	0.	237944.
S.E. LO	0.	0.	0.	0.	0.	43231.	0.	3202.	0.	3202.	0.	53423.
S.E. HI	0.	0.	0.	0.	0.	63212.	0.	3458.	0.	3458.	0.	75395.
.95 LCI	0.	0.	0.	0.	0.	99670.	0.	7383.	0.	7383.	0.	123194.
.95 UCI	0.	0.	0.	0.	0.	165762.	0.	7974.	0.	7974.	0.	173662.
.90 LCI	0.	0.	0.	0.	0.	80409.	0.	5955.	0.	5955.	0.	99367.
.90 UCI	0.	0.	0.	0.	0.	117575.	0.	6432.	0.	6432.	0.	140739.
N (EGGS) =	3. N (LARVAE)=		9.									
6/ 1	0.	0.	0.	0.	0.	531534.	0.	95422.	0.	19116.	339081.	1226139.
S.E. LO	0.	0.	0.	0.	0.	251659.	0.	42429.	0.	14699.	239767.	308611.
S.E. HI	0.	0.	0.	0.	0.	442276.	0.	59524.	0.	18508.	1016852.	518393.
.95 LCI	0.	0.	0.	0.	0.	553901.	0.	93385.	0.	32352.	762937.	879253.
.95 UCI	0.	0.	0.	0.	0.	973449.	0.	131012.	0.	40735.	3235624.	1149982.
.90 LCI	0.	0.	0.	0.	0.	451979.	0.	76202.	0.	26399.	566171.	554265.
.90 UCI	0.	0.	0.	0.	0.	794328.	0.	106905.	0.	33239.	2392653.	931033.
N (EGGS) =	4. N (LARVAE)=		12.									
6/ 8	0.	0.	0.	0.	0.	116902.	0.	30039.	0.	90832.	0.	2062598.
S.E. LO	0.	0.	0.	0.	0.	50438.	0.	20632.	0.	51117.	0.	480297.
S.E. HI	0.	0.	0.	0.	0.	70229.	0.	26587.	0.	76786.	0.	656333.
.95 LCI	0.	0.	0.	0.	0.	111014.	0.	45411.	0.	112508.	0.	1057134.
.95 UCI	0.	0.	0.	0.	0.	155524.	0.	58518.	0.	169005.	0.	1444588.
.90 LCI	0.	0.	0.	0.	0.	90586.	0.	37055.	0.	91805.	0.	862614.
.90 UCI	0.	0.	0.	0.	0.	176132.	0.	47750.	0.	137907.	0.	1178773.
N (EGGS) =	4. N (LARVAE)=		12.									
6/15	0.	0.	0.	0.	0.	262639.	0.	9870.	0.	158267.	0.	1473746.
S.E. LO	0.	0.	0.	0.	0.	117767.	0.	6995.	0.	81012.	0.	349938.
S.E. HI	0.	0.	0.	0.	0.	186490.	0.	7828.	0.	130339.	0.	533167.
.95 LCI	0.	0.	0.	0.	0.	262390.	0.	15584.	0.	180494.	0.	779682.
.95 UCI	0.	0.	0.	0.	0.	416390.	0.	17442.	0.	290396.	0.	1299295.
.90 LCI	0.	0.	0.	0.	0.	213398.	0.	12674.	0.	144793.	0.	634088.
.90 UCI	0.	0.	0.	0.	0.	338644.	0.	14185.	0.	236175.	0.	1056697.
N (EGGS) =	3. N (LARVAE)=		11.									
6/22	0.	0.	0.	11614.	0.	104340.	0.	15954.	0.	30468.	0.	717512.
S.E. LO	0.	0.	0.	8537.	0.	53053.	0.	9450.	0.	19066.	0.	162471.
S.E. HI	0.	0.	0.	9669.	0.	78035.	0.	10765.	0.	24361.	0.	234358.
.95 LCI	0.	0.	0.	18790.	0.	116770.	0.	20799.	0.	41964.	0.	357598.
.95 UCI	0.	0.	0.	21278.	0.	171754.	0.	23695.	0.	52957.	0.	524626.
.90 LCI	0.	0.	0.	15332.	0.	95281.	0.	16972.	0.	34243.	0.	291798.
.90 UCI	0.	0.	0.	17363.	0.	140150.	0.	19335.	0.	43213.	0.	428091.
N (EGGS) =	4. N (LARVAE)=		12.									
6/29	0.	0.	0.	5359.	0.	8690.	0.	0.	485766.	120706.	485766.	634167.
S.E. LO	0.	0.	0.	5359.	0.	8690.	0.	0.	485766.	63709.	485766.	225084.
S.E. HI	0.	0.	0.	5788.	0.	9819.	0.	0.	4011099.	96460.	4011099.	393448.
.95 LCI	0.	0.	0.	12357.	0.	20340.	0.	0.	2090253.	146913.	2090253.	519045.
.95 UCI	0.	0.	0.	13347.	0.	22642.	0.	0.	17259756.	222436.	17259756.	907291.

.90 LCI	0.	0.	0.	9967.	0.	16164.	0.	0.	1418437.	118499.	1418437.	418657.
.90 UCI	0.	0.	0.	10769.	0.	18262.	0.	0.	11712405.	179415.	11712405.	731613.
N (EGGS) =	3.	N (LARVAE)=	9.									
7/ 6	0.	0.	0.	0.	0.	14799.	0.	0.	0.	28234.	0.	310239.
S.E. LO	0.	0.	0.	0.	0.	10250.	0.	0.	0.	15113.	0.	88234.
S.E. HI	0.	0.	0.	0.	0.	11770.	0.	0.	0.	17966.	0.	127843.
.95 LCI	0.	0.	0.	0.	0.	22837.	0.	0.	0.	33671.	0.	196518.
.95 UCI	0.	0.	0.	0.	0.	26111.	0.	0.	0.	40078.	0.	266835.
.90 LCI	0.	0.	0.	0.	0.	18573.	0.	0.	0.	27384.	0.	159825.
.90 UCI	0.	0.	0.	0.	0.	21236.	0.	0.	0.	32554.	0.	231652.
N (EGGS) =	3.	N (LARVAE)=	11.									
7/13	0.	0.	0.	0.	0.	10444.	0.	0.	0.	13731.	0.	151774.
S.E. LO	0.	0.	0.	0.	0.	7418.	0.	0.	0.	9045.	0.	37565.
S.E. HI	0.	0.	0.	0.	0.	8229.	0.	0.	0.	10233.	0.	46269.
.95 LCI	0.	0.	0.	0.	0.	16327.	0.	0.	0.	19908.	0.	82679.
.95 UCI	0.	0.	0.	0.	0.	18111.	0.	0.	0.	22523.	0.	101838.
.90 LCI	0.	0.	0.	0.	0.	13323.	0.	0.	0.	16245.	0.	67466.
.90 UCI	0.	0.	0.	0.	0.	14779.	0.	0.	0.	18379.	0.	83099.
N (EGGS) =	4.	N (LARVAE)=	12.									
7/20	0.	0.	0.	0.	0.	3691.	0.	0.	0.	23173.	0.	141962.
S.E. LO	0.	0.	0.	0.	0.	3691.	0.	0.	0.	13798.	0.	31956.
S.E. HI	0.	0.	0.	0.	0.	3811.	0.	0.	0.	15756.	0.	38067.
.95 LCI	0.	0.	0.	0.	0.	8124.	0.	0.	0.	29272.	0.	70335.
.95 UCI	0.	0.	0.	0.	0.	8608.	0.	0.	0.	34679.	0.	83785.
.90 LCI	0.	0.	0.	0.	0.	6629.	0.	0.	0.	23984.	0.	57393.
.90 UCI	0.	0.	0.	0.	0.	7024.	0.	0.	0.	28298.	0.	68368.
N (EGGS) =	4.	N (LARVAE)=	12.									
7/27	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	63513.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	23479.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	23678.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	45074.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	92115.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	36783.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	42526.
N (EGGS) =	4.	N (LARVAE)=	12.									
8/ 3	0.	0.	0.	0.	0.	7369.	0.	0.	0.	4554.	0.	44321.
S.E. LO	0.	0.	0.	0.	0.	7369.	0.	0.	0.	4554.	0.	16934.
S.E. HI	0.	0.	0.	0.	0.	8224.	0.	0.	0.	4881.	0.	19090.
.95 LCI	0.	0.	0.	0.	0.	16668.	0.	0.	0.	10302.	0.	33804.
.95 UCI	0.	0.	0.	0.	0.	18603.	0.	0.	0.	11052.	0.	43191.
.90 LCI	0.	0.	0.	0.	0.	13507.	0.	0.	0.	8348.	0.	31040.
.90 UCI	0.	0.	0.	0.	0.	15015.	0.	0.	0.	8947.	0.	34992.
N (EGGS) =	4.	N (LARVAE)=	10.									
8/10	0.	0.	0.	0.	0.	3629.	0.	0.	0.	3629.	0.	29991.
S.E. LO	0.	0.	0.	0.	0.	3629.	0.	0.	0.	3629.	0.	11765.
S.E. HI	0.	0.	0.	0.	0.	3865.	0.	0.	0.	3865.	0.	13081.
.95 LCI	0.	0.	0.	0.	0.	8085.	0.	0.	0.	8085.	0.	26213.
.95 UCI	0.	0.	0.	0.	0.	8611.	0.	0.	0.	8611.	0.	29144.
.90 LCI	0.	0.	0.	0.	0.	6575.	0.	0.	0.	6575.	0.	21319.
.90 UCI	0.	0.	0.	0.	0.	7003.	0.	0.	0.	7003.	0.	23703.
N (EGGS) =	3.	N (LARVAE)=	11.									
8/17	0.	0.	0.	3774.	0.	0.	0.	0.	0.	3774.	0.	7548.
S.E. LO	0.	0.	0.	3774.	0.	0.	0.	0.	0.	3774.	0.	5337.

S.E. HI	0.	0.	0.	3998.	0.	0.	0.	0.	0.	3998.	0.	5654.
.95 LCI	0.	0.	0.	8306.	0.	0.	0.	0.	0.	8306.	0.	11747.
.95 UCI	0.	0.	0.	8800.	0.	0.	0.	0.	0.	8800.	0.	12445.
.90 LCI	0.	0.	0.	6778.	0.	0.	0.	0.	0.	6778.	0.	9585.
.90 UCI	0.	0.	0.	7181.	0.	0.	0.	0.	0.	7181.	0.	10155.
N (EGGS) =	4. N (LARVAE)=		12.									
8/24	0.	0.	0.	0.	0.	3980.	0.	0.	0.	3980.	0.	35384.
S.E. LO	0.	0.	0.	0.	0.	3367.	0.	0.	0.	3367.	0.	13065.
S.E. HI	0.	0.	0.	0.	0.	4217.	0.	0.	0.	4217.	0.	15382.
.95 LCI	0.	0.	0.	0.	0.	8760.	0.	0.	0.	8760.	0.	30562.
.95 UCI	0.	0.	0.	0.	0.	9281.	0.	0.	0.	9281.	0.	33056.
.90 LCI	0.	0.	0.	0.	0.	7148.	0.	0.	0.	7148.	0.	24938.
.90 UCI	0.	0.	0.	0.	0.	7573.	0.	0.	0.	7573.	0.	27626.
N (EGGS) =	4. N (LARVAE)=		12.									
8/31	0.	0.	0.	4058.	0.	0.	0.	0.	0.	0.	0.	35189.
S.E. LO	0.	0.	0.	6058.	0.	0.	0.	0.	0.	0.	0.	15515.
S.E. HI	0.	0.	0.	6606.	0.	0.	0.	0.	0.	0.	0.	17584.
.95 LCI	0.	0.	0.	14378.	0.	0.	0.	0.	0.	0.	0.	36692.
.95 UCI	0.	0.	0.	15624.	0.	0.	0.	0.	0.	0.	0.	41586.
.90 LCI	0.	0.	0.	11480.	0.	0.	0.	0.	0.	0.	0.	29400.
.90 UCI	0.	0.	0.	12519.	0.	0.	0.	0.	0.	0.	0.	33322.
N (EGGS) =	3. N (LARVAE)=		8.									
9/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	6284.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	6284.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	6887.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	13332.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	15158.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	11286.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	12368.
N (EGGS) =	4. N (LARVAE)=		12.									
9/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		12.									
9/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		12.									
9/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=		12.									

10/ 5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
10/12	0.	0.	0.	0.	0.	0.	0.	0.	0.	4783.	0.	4783.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	4783.	0.	4783.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	5369.	0.	5369.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	12297.	0.	12297.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	13803.	0.	13803.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	9638.	0.	9638.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	10818.	0.	10818.
N (EGGS) =	2. N (LARVAE)=	6.										
10/19	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	10.										
10/26	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
11/ 2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	2. N (LARVAE)=	11.										
11/ 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	5. N (LARVAE)=	15.										
11/16	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
11/23	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	12.										
11/30	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	4. N (LARVAE)=	10.										
12/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0. N (LARVAE)=	0.										
12/14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	13. N (LARVAE)=	13.										
12/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	3. N (LARVAE)=	3.										
12/28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	11. N (LARVAE)=	11.										
1/ 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	20. N (LARVAE)=	20.										
1/11	0.	0.	0.	0.	0.	0.	0.	0.	5811.	0.	5811.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	2991.	0.	2991.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	3214.	0.	3214.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	5984.	0.	5984.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	6431.	0.	6431.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	5000.	0.	5000.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	5374.	0.	5374.	0.
N (EGGS) =	31. N (LARVAE)=	31.										
1/18	0.	0.	0.	0.	0.	0.	0.	0.	3227.	0.	3220.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	3220.	0.	3220.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	3485.	0.	3485.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	6443.	0.	6443.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	6974.	0.	6974.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	5384.	0.	5384.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	5827.	0.	5827.	0.
N (EGGS) =	35. N (LARVAE)=	35.										
1/25	0.	0.	0.	0.	0.	0.	0.	0.	3433.	0.	3433.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	3433.	0.	3433.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	3724.	0.	3724.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	7140.	0.	7140.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	7746.	0.	7746.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	5908.	0.	5908.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	6409.	0.	6409.	0.
N (EGGS) =	22. N (LARVAE)=	22.										
2/ 1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	22. N (LARVAE)=	22.										
2/ 8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3487.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3487.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3760.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	6978.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	7523.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	5831.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	6286.	0.
N (EGGS) =	36. N (LARVAE)=	36.										
2/15	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) =	0. N (LARVAE)=	0.										

2/22	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 21. N (LARVAE)= 21.												
2/29	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 17. N (LARVAE)= 17.												
3/ 7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 22. N (LARVAE)= 22.												
3/14	0.	0.	0.	0.	0.	0.	0.	0.	10498.	0.	10498.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	9799.	0.	9799.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	12465.	0.	12465.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	19608.	0.	19608.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	24962.	0.	24962.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	16384.	0.	16384.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	20841.	0.	20841.	0.
N (EGGS) = 35. N (LARVAE)= 35.												
3/21	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
N (EGGS) = 32. N (LARVAE)= 32.												
3/28	0.	0.	0.	0.	0.	0.	0.	1911.	9507.	0.	9507.	67377.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	1911.	6645.	0.	6645.	24144.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	2004.	7699.	0.	7699.	31647.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	3963.	13783.	0.	13783.	50075.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	4157.	15968.	0.	15968.	65635.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	3281.	11410.	0.	11410.	41456.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	3441.	13219.	0.	13219.	54337.
N (EGGS) = 23. N (LARVAE)= 23.												
4/ 4	0.	0.	0.	0.	0.	0.	0.	0.	8269.	0.	8269.	4784.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	6018.	0.	6018.	2119.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	6936.	0.	6936.	2231.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	12042.	0.	12042.	4240.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	13879.	0.	13879.	4465.

.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	10062.	0.	10062.	3543.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	11597.	0.	11597.	3731.
N (EGGS) = 32. N (LARVAE)= 32.												
4/11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	5600.
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3177.
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3393.
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	6922.
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	7395.
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	5661.
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	6067.
N (EGGS) = 12. N (LARVAE)= 13.												
4/18	0.	0.	0.	600.	0.	14685.	0.	0.	0.	0.	0.	109934.
S.E. LO	0.	0.	0.	600.	0.	5926.	0.	0.	0.	0.	0.	18190.
S.E. HI	0.	0.	0.	611.	0.	6758.	0.	0.	0.	0.	0.	21323.
.95 LCI	0.	0.	0.	1201.	0.	11858.	0.	0.	0.	0.	0.	36399.
.95 UCI	0.	0.	0.	1222.	0.	13522.	0.	0.	0.	0.	0.	42668.
.90 LCI	0.	0.	0.	1003.	0.	9909.	0.	0.	0.	0.	0.	30414.
.90 UCI	0.	0.	0.	1021.	0.	11299.	0.	0.	0.	0.	0.	35652.
N (EGGS) = 30. N (LARVAE)= 39.												
4/25	0.	0.	0.	0.	0.	15832.	0.	0.	57691.	1193.	59778.	131108.
S.E. LO	0.	0.	0.	0.	0.	4905.	0.	0.	19463.	861.	19575.	14379.
S.E. HI	0.	0.	0.	0.	0.	5484.	0.	0.	24962.	885.	25060.	16098.
.95 LCI	0.	0.	0.	0.	0.	9816.	0.	0.	38946.	1722.	39170.	28773.
.95 UCI	0.	0.	0.	0.	0.	10973.	0.	0.	49945.	1770.	50144.	32212.
.90 LCI	0.	0.	0.	0.	0.	8202.	0.	0.	32543.	1439.	32729.	24042.
.90 UCI	0.	0.	0.	0.	0.	9169.	0.	0.	41733.	1479.	41900.	26916.
N (EGGS) = 35. N (LARVAE)= 47.												
5/ 2	0.	0.	0.	1193.	0.	45227.	0.	293.	924.	890.	924.	117119.
S.E. LO	0.	0.	0.	727.	0.	10691.	0.	293.	924.	662.	924.	13977.
S.E. HI	0.	0.	0.	746.	0.	12564.	0.	297.	956.	678.	956.	16098.
.95 LCI	0.	0.	0.	1654.	0.	21393.	0.	587.	1848.	1324.	1848.	27962.
.95 UCI	0.	0.	0.	1494.	0.	25140.	0.	593.	1912.	1357.	1912.	32212.
.90 LCI	0.	0.	0.	1215.	0.	17876.	0.	490.	1544.	1106.	1544.	23369.
.90 UCI	0.	0.	0.	1248.	0.	21006.	0.	496.	1598.	1134.	1598.	26916.
N (EGGS) = 47. N (LARVAE)= 63.												
5/ 9	0.	0.	0.	540.	0.	6862.	0.	0.	15737.	1039.	15737.	38149.
S.E. LO	0.	0.	0.	543.	0.	1759.	0.	0.	8876.	589.	8876.	4577.
S.E. HI	0.	0.	0.	549.	0.	1845.	0.	0.	10975.	600.	10975.	4853.
.95 LCI	0.	0.	0.	1080.	0.	3520.	0.	0.	17760.	1179.	17760.	9159.
.95 UCI	0.	0.	0.	1099.	0.	3693.	0.	0.	21961.	1201.	21961.	9710.
.90 LCI	0.	0.	0.	903.	0.	2941.	0.	0.	14840.	985.	14840.	7653.
.90 UCI	0.	0.	0.	919.	0.	3085.	0.	0.	18351.	1004.	18351.	8116.
N (EGGS) = 47. N (LARVAE)= 63.												
TOTALS	0.	0.	0.	30590.	38114.	1394097.	66970.	171366.	630799.	553508.	1299191.	1957680.
S.E. LO	0.	0.	0.	12483.	38114.	294856.	66970.	49962.	487374.	120118.	566719.	737658.
S.E. HI	0.	0.	0.	13791.	97600.	500459.	267880.	68315.	4011648.	184221.	4269852.	1134210.
.95 LCI	0.	0.	0.	24979.	76266.	590007.	134007.	99974.	975235.	240356.	1134005.	1476054.
.95 UCI	0.	0.	0.	27596.	195298.	1001419.	536027.	136698.	8027305.	368625.	8503952.	2269553.
.90 LCI	0.	0.	0.	20872.	63726.	492999.	111974.	83536.	814889.	200837.	947554.	1233365.
.90 UCI	0.	0.	0.	23058.	163187.	836768.	447895.	114223.	6707475.	308017.	7105753.	1896399.

LAST
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WEEKS	0.	0.	0.	30590.	38114.	1339039.	0.	156691.	600826.	514365.	1010159.	7768052.
S.E. LO	0.	0.	0.	12483.	38114.	293333.	0.	48766.	486451.	120051.	544332.	736559.
.95 LCI	0.	0.	0.	24979.	76266.	586959.	0.	97580.	973389.	240222.	1089209.	1473854.
.95 UCI	0.	0.	0.	27596.	195298.	997254.	0.	133381.	8026467.	368515.	8293405.	2266562.
.90 LCI	0.	0.	0.	20872.	63726.	490452.	0.	81536.	813347.	200725.	910124.	1231527.
.90 UCI	0.	0.	0.	23058.	163187.	833288.	0.	111451.	6706775.	307925.	6921467.	1893899.

EXECUTION TERMINATED 02 07 42 T=6.826 RC=0 12.43

Table E-3. Estimates of entrainment of macrozoobenthos at the Monroe Power Plant for May 1975-April 1976 based on $\log_{10}$ (x + 1) transformation of counts from Detroit Edison's daily entrainment data sheets.

	MAY	JUNE	JULY	AUGUST	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	TOTALS	PC.OF TOTAL
N	14	16	18	17	16	17	18	9	10	8	11	12		
Tricladida	1636.	0.	0.	8877.	13052.	34471.	8461.	4995.	2040.	2663.	1023.	0.	77412.	9.2
S.E. LO	1036.	0.	0.	6278.	9763.	13182.	4887.	4995.	1455.	1092.	1023.	0.	17244.	
S.E. HI	2313.	0.	0.	7910.	14733.	14193.	6157.	6294.	1559.	2004.	1089.	0.	24035.	
.95 LCI	3465.	0.	0.	13310.	20804.	21588.	10312.	11519.	3290.	4474.	2274.	0.	34526.	
.95 UCI	4995.	0.	0.	16769.	31835.	30090.	17292.	14513.	3526.	4740.	2427.	0.	48095.	
.90 LCI	3251.	0.	0.	10762.	17115.	17770.	8503.	9291.	2666.	3585.	1853.	0.	28032.	
.90 UCI	4096.	0.	0.	13811.	26188.	24787.	10714.	11706.	2858.	3798.	1974.	0.	40187.	
Hematoda	0.	4274.	0.	0.	0.	3021.	0.	0.	0.	0.	0.	0.	7296.	<0.1
S.E. LO	0.	4274.	0.	0.	0.	3021.	0.	0.	0.	0.	0.	0.	5235.	
S.E. HI	0.	5324.	0.	0.	0.	3039.	0.	0.	0.	0.	0.	0.	6595.	
.95 LCI	0.	9107.	0.	0.	0.	6407.	0.	0.	0.	0.	0.	0.	10475.	
.95 UCI	0.	11474.	0.	0.	0.	8075.	0.	0.	0.	0.	0.	0.	13197.	
.90 LCI	0.	7492.	0.	0.	0.	5278.	0.	0.	0.	0.	0.	0.	8752.	
.90 UCI	0.	9439.	0.	0.	0.	6650.	0.	0.	0.	0.	0.	0.	11027.	
Bryozoa	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1337.	1337.	<0.1
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1337.	1337.	
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1466.	1466.	
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2943.	2676.	
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3226.	2933.	
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2502.	2236.	
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2832.	2552.	
Oligochaeta	0.	0.	0.	0.	4660.	0.	4834.	1182.	2181.	0.	2369.	278.	16001.	<0.1
S.E. LO	0.	0.	0.	0.	4660.	0.	3453.	1182.	1545.	0.	1682.	278.	6342.	
S.E. HI	0.	0.	0.	0.	5872.	0.	4351.	1267.	1647.	0.	1808.	828.	7853.	
.95 LCI	0.	0.	0.	0.	9331.	0.	7286.	2726.	3494.	0.	3747.	1212.	12791.	
.95 UCI	0.	0.	0.	0.	12512.	0.	9180.	2921.	3726.	0.	4029.	1623.	15719.	
.90 LCI	0.	0.	0.	0.	8169.	0.	6008.	2199.	2832.	0.	3047.	1397.	10588.	
.90 UCI	0.	0.	0.	0.	10293.	0.	7570.	2356.	3020.	0.	3276.	1480.	13131.	
Hirudinea	17808.	35203.	0.	6020.	13125.	1925.	7596.	0.	0.	1203.	801.	5800.	89480.	0.2
S.E. LO	8220.	18666.	0.	6020.	13125.	1925.	4429.	0.	0.	1203.	801.	1814.	25577.	
S.E. HI	11833.	32222.	0.	8514.	22733.	2289.	5589.	0.	0.	1274.	849.	1940.	42620.	
.95 LCI	17885.	39778.	0.	12763.	27970.	4081.	9344.	0.	0.	2844.	1785.	3994.	51180.	
.95 UCI	25558.	68878.	0.	18050.	48445.	4853.	11773.	0.	0.	3014.	1891.	4268.	85283.	
.90 LCI	14664.	32722.	0.	10511.	23008.	3361.	7706.	0.	0.	2279.	1452.	3257.	42765.	
.90 UCI	20955.	56660.	0.	14865.	39852.	3997.	9709.	0.	0.	2615.	1538.	3484.	71261.	
Mysis	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	607.	606.	<0.1
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	607.	607.	
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	637.	637.	
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1335.	1214.	
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1403.	1276.	
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1290.	1014.	
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1145.	1066.	
Ancistrona	0.	0.	0.	0.	0.	0.	0.	0.	0.	1460.	0.	0.	1460.	<0.1
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	1460.	0.	0.	1460.	
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	1547.	0.	0.	1547.	
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	3454.	0.	0.	2922.	
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	3659.	0.	0.	3096.	
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	2767.	0.	0.	2442.	
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	2932.	0.	0.	2587.	
Argulus	0.	0.	4280.	0.	4467.	7788.	0.	4995.	1838.	0.	0.	0.	23367.	0.1
S.E. LO	0.	0.	4280.	0.	4467.	5784.	0.	4995.	1254.	0.	0.	0.	9912.	
S.E. HI	0.	0.	5393.	0.	5628.	8132.	0.	6294.	1375.	0.	0.	0.	12977.	
.95 LCI	0.	0.	9032.	0.	9519.	12262.	0.	11519.	2836.	0.	0.	0.	19834.	
.95 UCI	0.	0.	11379.	0.	11993.	17241.	0.	14513.	3110.	0.	0.	0.	25967.	

.90 LCI	0.	0.	7448.	0.	7831.	10099.	0.	9791.	2298.	0.	0.	0.	16573.	
.90 UCI	0.	0.	9364.	0.	9666.	14199.	0.	11706.	2520.	0.	0.	0.	21697.	
Isopoda	0.	0.	0.	12244.	4274.	4626.	2071.	1182.	0.	0.	1990.	529.	26709.	0.1
S.E. LO	0.	0.	0.	8745.	4274.	4550.	2071.	1182.	0.	0.	1408.	529.	11266.	
S.E. HI	0.	0.	0.	12502.	5384.	5733.	2613.	1267.	0.	0.	1534.	553.	15137.	
.95 LCI	0.	0.	0.	18963.	9107.	9446.	4370.	2726.	0.	0.	3136.	1165.	22543.	
.95 UCI	0.	0.	0.	26505.	11474.	12153.	5506.	2921.	0.	0.	3350.	1216.	30290.	
.90 LCI	0.	0.	0.	15618.	7492.	7944.	3604.	2199.	0.	0.	2551.	950.	18037.	
.90 UCI	0.	0.	0.	21829.	9339.	10032.	4541.	2356.	0.	0.	2725.	993.	25310.	
Amphipoda	0.	0.	0.	0.	0.	1925.	0.	0.	0.	0.	0.	0.	1925.	<0.1
S.E. LO	0.	0.	0.	0.	0.	1925.	0.	0.	0.	0.	0.	0.	1925.	
S.E. HI	0.	0.	0.	0.	0.	2239.	0.	0.	0.	0.	0.	0.	2239.	
.95 LCI	0.	0.	0.	0.	0.	4031.	0.	0.	0.	0.	0.	0.	3852.	
.95 UCI	0.	0.	0.	0.	0.	4853.	0.	0.	0.	0.	0.	0.	4581.	
.90 LCI	0.	0.	0.	0.	0.	3361.	0.	0.	0.	0.	0.	0.	3213.	
.90 UCI	0.	0.	0.	0.	0.	3997.	0.	0.	0.	0.	0.	0.	3828.	
Gammarus	12221.	220938.	206457.	213586.	268563.	133414.	93929.	57307.	31219.	64695.	33050.	11927.	1355731.	3.7
S.E. LO	8321.	54834.	48959.	64437.	177890.	18901.	18032.	14847.	6056.	17759.	7500.	3056.	206375.	
S.E. HI	17575.	104652.	90207.	187350.	356535.	27063.	26576.	21573.	8800.	23459.	8955.	3391.	793343.	
.95 LCI	17974.	116852.	103303.	136606.	379384.	40067.	38048.	34237.	13694.	42000.	16710.	6725.	412955.	
.95 UCI	37963.	222586.	190337.	392181.	1612176.	57326.	56076.	49768.	15381.	55479.	19951.	7376.	1587679.	
.90 LCI	14737.	96124.	85189.	112507.	311841.	33000.	31376.	27614.	11100.	33654.	13590.	5488.	345058.	
.90 UCI	31126.	183103.	156960.	327112.	1326205.	47252.	46243.	40126.	12464.	44654.	16226.	6019.	1326470.	
Pontoporeia	0.	0.	8871.	0.	0.	0.	4951.	1182.	1153.	0.	0.	0.	16154.	<0.1
S.E. LO	0.	0.	8871.	0.	0.	0.	4951.	1182.	1153.	0.	0.	0.	10292.	
S.E. HI	0.	0.	14082.	0.	0.	0.	7002.	1267.	1235.	0.	0.	0.	15826.	
.95 LCI	0.	0.	16714.	0.	0.	0.	10447.	2726.	2607.	0.	0.	0.	26595.	
.95 UCI	0.	0.	29713.	0.	0.	0.	14774.	2921.	2794.	0.	0.	0.	31467.	
.90 LCI	0.	0.	15435.	0.	0.	0.	8615.	2199.	2113.	0.	0.	0.	17207.	
.90 UCI	0.	0.	24502.	0.	0.	0.	12183.	2356.	2264.	0.	0.	0.	26461.	
Decapoda	0.	12211.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	12211.	<0.1
S.E. LO	0.	7451.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	7451.	
S.E. HI	0.	10267.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	10267.	
.95 LCI	0.	15679.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	14910.	
.95 UCI	0.	21889.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	21559.	
.90 LCI	0.	13062.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	12459.	
.90 UCI	0.	18002.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	17170.	
Acarina	0.	23185.	53329.	7712.	7427.	5668.	0.	0.	0.	0.	0.	0.	94318.	0.3
S.E. LO	0.	17204.	18933.	7712.	7427.	4017.	0.	0.	0.	0.	0.	0.	28025.	
S.E. HI	0.	30404.	29383.	11122.	10503.	5061.	0.	0.	0.	0.	0.	0.	45248.	
.95 LCI	0.	36662.	37961.	16349.	15826.	8515.	0.	0.	0.	0.	0.	0.	56378.	
.95 UCI	0.	64791.	61978.	23579.	22381.	10728.	0.	0.	0.	0.	0.	0.	90541.	
.90 LCI	0.	30159.	37953.	13464.	13019.	7013.	0.	0.	0.	0.	0.	0.	46059.	
.90 UCI	0.	53298.	51126.	19419.	18411.	8836.	0.	0.	0.	0.	0.	0.	75654.	
Diptera	0.	3302.	22319.	4532.	0.	0.	0.	0.	0.	0.	0.	0.	30153.	0.1
S.E. LO	0.	3302.	11546.	4532.	0.	0.	0.	0.	0.	0.	0.	0.	12836.	
S.E. HI	0.	6160.	16030.	5710.	0.	0.	0.	0.	0.	0.	0.	0.	17517.	
.95 LCI	0.	7035.	24367.	9608.	0.	0.	0.	0.	0.	0.	0.	0.	23604.	
.95 UCI	0.	8865.	33022.	12106.	0.	0.	0.	0.	0.	0.	0.	0.	35052.	
.90 LCI	0.	5783.	20990.	7913.	0.	0.	0.	0.	0.	0.	0.	0.	21461.	
.90 UCI	0.	7293.	27891.	9970.	0.	0.	0.	0.	0.	0.	0.	0.	29269.	
Ceratopogonidae	0.	0.	0.	0.	0.	0.	0.	0.	0.	1597.	2244.	0.	3840.	<0.1
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	1597.	1523.	0.	2207.	
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	1701.	1666.	0.	2395.	
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	3778.	3392.	0.	4416.	
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	4074.	3756.	0.	4793.	
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	3027.	2759.	0.	3692.	
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	3724.	3055.	0.	4005.	
Chironomidae	3846501.	4782045.	7012056.	3340387.	3908450.	883287.	183514.	351202.	198751.	875263.	1346641.	1039951.	27767839.	75.7
S.E. LO	729208.	581009.	1241615.	584635.	345147.	92595.	25251.	35632.	21066.	164262.	110998.	66611.	1710705.	

S.E. HI	1467637.	1117694.	3679113.	2073051.	672264.	155922.	37233.	62293.	26492.	219651.	147741.	80449.	6661423.	
.95 LCI	1575089.	1238131.	2613806.	1239425.	735509.	196302.	53279.	82167.	47652.	388480.	247304.	146610.	3423120.	
.95 UCI	3170100.	2381783.	7745360.	4398168.	1432595.	330556.	78562.	143187.	59925.	519474.	329166.	177337.	9327704.	
.90 LCI	1291427.	1018509.	2160409.	1020772.	605043.	161671.	43936.	66275.	38615.	311277.	201120.	119633.	2060249.	
.90 UCI	2599188.	1959299.	6386349.	3619566.	1178447.	272239.	66785.	115493.	48560.	416238.	267706.	145197.	7795233.	
Chaoborus	24325.	3495.	81007.	363714.	54437.	6234.	2763.	41968.	0.	0.	8008.	12633.	593379.	1.6
S.E. LO	8498.	3495.	35025.	108544.	19005.	4527.	2763.	9421.	0.	0.	3257.	3573.	116043.	
S.E. HI	11809.	4424.	73186.	297863.	28592.	5577.	3481.	11870.	0.	0.	3529.	3996.	310588.	
.95 LCI	18355.	7448.	75654.	230114.	40500.	9384.	5830.	21726.	0.	0.	7216.	7863.	233803.	
.95 UCI	25681.	9384.	154427.	635709.	60933.	11824.	7345.	27373.	0.	0.	7863.	8795.	621488.	
.90 LCI	15049.	6127.	62387.	189518.	33316.	7729.	4808.	17524.	0.	0.	5869.	6416.	195362.	
.90 UCI	21056.	7720.	127348.	523560.	50122.	9738.	6057.	22079.	0.	0.	6395.	7177.	519303.	
Simuliidae	0.	0.	0.	4344.	0.	0.	0.	260140.	10187.	478028.	1270916.	14631.	2048245.	5.6
S.E. LO	0.	0.	0.	4344.	0.	0.	0.	52645.	3656.	106940.	179792.	5448.	175141.	
S.E. HI	0.	0.	0.	5674.	0.	0.	0.	103162.	4023.	129138.	186619.	6369.	253328.	
.95 LCI	0.	0.	0.	9210.	0.	0.	0.	121399.	8270.	248183.	289177.	11980.	350557.	
.95 UCI	0.	0.	0.	11604.	0.	0.	0.	237892.	9101.	329060.	411332.	14414.	506909.	
.90 LCI	0.	0.	0.	7585.	0.	0.	0.	97920.	6701.	198861.	235183.	9784.	292919.	
.90 UCI	0.	0.	0.	9551.	0.	0.	0.	191882.	7373.	263666.	336530.	11762.	423564.	
Tabanidae	0.	0.	0.	0.	7427.	0.	0.	0.	0.	0.	0.	0.	7426.	<0.1
S.E. LO	0.	0.	0.	0.	7427.	0.	0.	0.	0.	0.	0.	0.	7427.	
S.E. HI	0.	0.	0.	0.	10503.	0.	0.	0.	0.	0.	0.	0.	10503.	
.95 LCI	0.	0.	0.	0.	15826.	0.	0.	0.	0.	0.	0.	0.	14051.	
.95 UCI	0.	0.	0.	0.	22381.	0.	0.	0.	0.	0.	0.	0.	21016.	
.90 LCI	0.	0.	0.	0.	13019.	0.	0.	0.	0.	0.	0.	0.	12417.	
.90 UCI	0.	0.	0.	0.	18411.	0.	0.	0.	0.	0.	0.	0.	17581.	
Plecoptera	0.	0.	0.	0.	0.	0.	0.	0.	0.	5111.	4195.	1659.	10942.	<0.1
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	0.	2760.	2678.	1173.	4019.	
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	0.	3062.	3021.	1243.	4464.	
.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	6526.	5963.	2582.	8043.	
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	7195.	6732.	2735.	8933.	
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	5229.	4850.	2107.	6720.	
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	0.	5765.	5475.	2232.	7464.	
Ephemeroptera	22035.	17506.	4280.	0.	10532.	0.	0.	76606.	1330.	140235.	657889.	80337.	1010545.	2.8
S.E. LO	6151.	9519.	4280.	0.	10532.	0.	0.	16672.	1330.	27975.	57138.	8813.	67705.	
S.E. HI	7796.	13122.	5193.	0.	16718.	0.	0.	25003.	1426.	35527.	69797.	10148.	80056.	
.95 LCI	13285.	20278.	9032.	0.	22443.	0.	0.	33718.	3009.	66162.	127237.	19397.	135638.	
.95 UCI	16837.	27964.	11374.	0.	35626.	0.	0.	57656.	3225.	84022.	155508.	22337.	172197.	
.90 LCI	10693.	16601.	7448.	0.	18462.	0.	0.	27196.	2439.	53013.	103507.	15627.	113737.	
.90 UCI	13436.	23333.	9384.	0.	29307.	0.	0.	46505.	2614.	67324.	126473.	18227.	143885.	
Beetlera	28972.	6274.	4280.	0.	0.	0.	0.	0.	964.	0.	2170.	3402.	44980.	0.1
S.E. LO	7805.	4774.	4280.	0.	0.	0.	0.	0.	964.	0.	1541.	1558.	9762.	
S.E. HI	9425.	5384.	5393.	0.	0.	0.	0.	0.	1027.	0.	1710.	1654.	12547.	
.95 LCI	15779.	9107.	9032.	0.	0.	0.	0.	0.	2181.	0.	3434.	3428.	19573.	
.95 UCI	20798.	11474.	11373.	0.	0.	0.	0.	0.	2322.	0.	3909.	3661.	25107.	
.90 LCI	12937.	7492.	7448.	0.	0.	0.	0.	0.	1767.	0.	2793.	2798.	16355.	
.90 UCI	17046.	9639.	9384.	0.	0.	0.	0.	0.	1882.	0.	3098.	2971.	20979.	
Caenis	2752.	0.	12131.	4532.	66355.	0.	0.	0.	0.	0.	0.	0.	85769.	0.2
S.E. LO	2752.	0.	7010.	4532.	28013.	0.	0.	0.	0.	0.	0.	0.	29359.	
S.E. HI	3467.	0.	8832.	5710.	49168.	0.	0.	0.	0.	0.	0.	0.	50400.	
.95 LCI	5945.	0.	16791.	9008.	52695.	0.	0.	0.	0.	0.	0.	0.	58768.	
.95 UCI	7489.	0.	18635.	12106.	104777.	0.	0.	0.	0.	0.	0.	0.	108850.	
.90 LCI	4873.	0.	12197.	7913.	49106.	0.	0.	0.	0.	0.	0.	0.	49219.	
.90 UCI	6140.	0.	15368.	9973.	86192.	0.	0.	0.	0.	0.	0.	0.	86268.	
Hexagenia	0.	5947.	0.	4532.	7427.	0.	0.	20595.	1029.	7870.	69298.	30007.	126702.	0.3
S.E. LO	0.	5947.	0.	4532.	7427.	0.	0.	0.	1029.	5180.	8877.	6363.	16150.	
S.E. HI	0.	8577.	0.	5713.	10503.	0.	0.	0.	1090.	6188.	10605.	7788.	20713.	
.95 LCI	0.	12673.	0.	9008.	15826.	0.	0.	0.	2327.	12251.	19778.	14445.	32316.	
.95 UCI	0.	18278.	0.	12106.	22381.	0.	0.	0.	2465.	14634.	23627.	17138.	41448.	
.90 LCI	0.	10425.	0.	7913.	13019.	0.	0.	0.	1885.	9816.	16085.	11787.	27003.	

.99 UCI	0.	15230.	0.	9970.	18411.	0.	0.	0.	1997.	11726.	19216.	13984.	34433.		
Stenomma	107995.	54640.	15667.	4532.	13401.	9666.	10187.	112154.	7146.	73908.	174374.	59116.	642779.	1.8	
S.E. LO	25636.	16146.	9332.	4532.	7762.	6267.	5125.	11901.	2363.	20907.	22725.	7665.	47935.		
S.E. HI	75131.	24863.	12893.	5710.	9754.	5971.	6657.	16071.	3188.	27371.	23639.	8748.	92758.		
.95 LCI	55374.	34403.	16616.	9608.	16498.	10065.	10814.	27643.	6657.	42446.	50633.	16826.	95918.		
.95 UCI	162283.	52983.	27197.	12106.	20795.	12681.	13625.	37059.	7212.	64615.	66335.	19254.	185609.		
.90 LCI	45431.	28301.	16341.	7913.	13571.	8229.	8918.	22135.	5395.	39612.	41184.	13731.	80167.		
.90 UCI	133057.	43585.	22428.	9970.	17097.	10444.	11236.	29892.	5844.	51774.	53705.	15711.	155092.		
Coleoptera	20522.	13363.	40758.	14932.	25963.	8502.	2763.	0.	0.	10256.	11846.	2197.	156075.	0.4	
S.E. LO	7270.	8716.	14143.	8869.	15078.	4909.	2763.	0.	0.	5369.	3583.	1115.	26642.		
S.E. HI	9608.	11600.	19122.	11956.	24581.	6184.	3481.	0.	0.	6193.	4030.	1172.	38051.		
.95 LCI	15747.	18575.	29942.	18902.	32131.	10488.	5830.	0.	0.	12697.	7982.	2454.	53310.		
.95 UCI	20752.	24889.	40347.	25347.	52382.	13111.	7345.	0.	0.	16867.	8900.	2579.	76140.		
.90 LCI	12914.	15280.	24609.	15485.	26431.	8570.	4808.	0.	0.	10174.	6492.	2002.	44545.		
.90 UCI	17015.	20474.	33272.	20876.	43091.	10798.	6057.	0.	0.	11736.	7301.	2105.	83621.		
Curculionidae	15595.	4274.	30320.	10960.	12396.	3401.	8266.	5353.	0.	0.	2224.	829.	93813.	0.3	
S.E. LO	7324.	4274.	10743.	7865.	9101.	3401.	8266.	5353.	0.	0.	1633.	829.	21069.		
S.E. HI	10221.	5384.	13536.	10888.	12746.	4284.	14317.	6744.	0.	0.	1769.	879.	29503.		
.95 LCI	15820.	9107.	22669.	16674.	19394.	7209.	17652.	12344.	0.	0.	3639.	1826.	47100.		
.95 UCI	22078.	11474.	28561.	23083.	27161.	9083.	30210.	15552.	0.	0.	3941.	1934.	59035.		
.90 LCI	12971.	7692.	18694.	13732.	15954.	5937.	14393.	9757.	0.	0.	2959.	1490.	35229.		
.90 UCI	18102.	9439.	23552.	19010.	22343.	7481.	24912.	12544.	0.	0.	3205.	1578.	49329.		
Dytiscidae	2295.	0.	0.	0.	7427.	0.	0.	4995.	0.	0.	967.	0.	15683.	0.0	
S.E. LO	2295.	0.	0.	0.	7427.	0.	0.	4995.	0.	0.	967.	0.	9790.		
S.E. HI	2892.	0.	0.	0.	10503.	0.	0.	6294.	0.	0.	1036.	0.	12624.		
.95 LCI	4957.	0.	0.	0.	15826.	0.	0.	11519.	0.	0.	2155.	0.	18590.		
.95 UCI	6246.	0.	0.	0.	22391.	0.	0.	14513.	0.	0.	2309.	0.	25280.		
.90 LCI	4065.	0.	0.	0.	13019.	0.	0.	9291.	0.	0.	1752.	0.	15533.		
.90 UCI	5121.	0.	0.	0.	18411.	0.	0.	11706.	0.	0.	1879.	0.	21107.		
Elmidae	10896.	29729.	16495.	0.	37056.	0.	0.	1182.	0.	0.	801.	3180.	99327.	0.3	
S.E. LO	4339.	16180.	11837.	0.	33060.	0.	0.	1182.	0.	0.	801.	1459.	36172.		
S.E. HI	5462.	21671.	13135.	0.	92879.	0.	0.	1267.	0.	0.	849.	1543.	97305.		
.95 LCI	9263.	30216.	26276.	0.	70651.	0.	0.	2724.	0.	0.	1789.	3211.	76182.		
.95 UCI	11747.	46608.	38244.	0.	197325.	0.	0.	2921.	0.	0.	1891.	3396.	194747.		
.90 LCI	7677.	24958.	20594.	0.	57954.	0.	0.	2199.	0.	0.	1452.	2620.	63725.		
.90 UCI	9612.	38340.	31554.	0.	162817.	0.	0.	2356.	0.	0.	1538.	2771.	162694.		
Hemiptera	2559.	0.	17478.	4532.	4274.	3401.	2935.	0.	0.	0.	0.	0.	35175.	0.1	
S.E. LO	2559.	0.	7775.	4532.	4274.	3401.	2935.	0.	0.	0.	0.	0.	11224.		
S.E. HI	3619.	0.	9796.	5712.	5385.	4284.	3698.	0.	0.	0.	0.	0.	14737.		
.95 LCI	5527.	0.	16406.	9608.	9107.	7209.	6193.	0.	0.	0.	0.	0.	22460.		
.95 UCI	7816.	0.	20670.	12106.	11474.	9083.	7802.	0.	0.	0.	0.	0.	28498.		
.90 LCI	4532.	0.	13529.	7913.	7492.	5937.	5107.	0.	0.	0.	0.	0.	18767.		
.90 UCI	6509.	0.	17745.	9970.	9439.	7481.	6434.	0.	0.	0.	0.	0.	23864.		
Corixidae	3901.	4274.	24534.	20932.	51976.	35978.	7896.	0.	0.	5035.	5353.	0.	159859.	0.4	
S.E. LO	2763.	4274.	13665.	10855.	22191.	27533.	5756.	0.	0.	2837.	2603.	0.	37195.		
S.E. HI	3481.	5384.	22066.	14708.	34322.	45754.	7910.	0.	0.	3083.	2964.	0.	64007.		
.95 LCI	5968.	9107.	23212.	23012.	47288.	47771.	12145.	0.	0.	6710.	5799.	0.	74429.		
.95 UCI	7519.	11474.	46563.	31182.	73140.	96998.	14708.	0.	0.	7292.	6604.	0.	128077.		
.90 LCI	4893.	7692.	26990.	18952.	38990.	39343.	10015.	0.	0.	5376.	4718.	0.	62191.		
.90 UCI	6165.	9439.	33338.	25681.	60166.	79886.	13778.	0.	0.	5843.	5371.	0.	107014.		
Nebridae	0.	0.	25050.	0.	4660.	2645.	0.	0.	0.	0.	0.	0.	32353.	0.1	
S.E. LO	0.	0.	15031.	0.	4660.	2645.	0.	0.	0.	0.	0.	0.	15957.		
S.E. HI	0.	0.	24193.	0.	5872.	3332.	0.	0.	0.	0.	0.	0.	25117.		
.95 LCI	0.	0.	31715.	0.	9931.	5607.	0.	0.	0.	0.	0.	0.	31930.		
.95 UCI	0.	0.	51048.	0.	12512.	7064.	0.	0.	0.	0.	0.	0.	50260.		
.90 LCI	0.	0.	26153.	0.	8169.	4618.	0.	0.	0.	0.	0.	0.	26681.		
.90 UCI	0.	0.	42098.	0.	10293.	5818.	0.	0.	0.	0.	0.	0.	41995.		
Notonectidae	0.	0.	0.	0.	0.	0.	0.	0.	1029.	0.	0.	0.	1028.	<0.1	
S.E. LO	0.	0.	0.	0.	0.	0.	0.	0.	1029.	0.	0.	0.	1029.		
S.E. HI	0.	0.	0.	0.	0.	0.	0.	0.	1090.	0.	0.	0.	1090.		

.95 LCI	0.	0.	0.	0.	0.	0.	0.	0.	2327.	0.	0.	0.	7058.	
.95 UCI	0.	0.	0.	0.	0.	0.	0.	0.	2465.	0.	0.	0.	2160.	
.90 LCI	0.	0.	0.	0.	0.	0.	0.	0.	1885.	0.	0.	0.	1720.	
.90 UCI	0.	0.	0.	0.	0.	0.	0.	0.	1997.	0.	0.	0.	1822.	
Odonata	4365.	8158.	0.	0.	10076.	5857.	0.	0.	0.	0.	2913.	1830.	47218.	0.1
S.E. LO	4385.	5775.	0.	0.	3443.	4144.	0.	0.	0.	0.	1653.	1031.	12040.	
S.E. HI	6202.	7276.	0.	0.	10637.	5721.	0.	0.	0.	0.	1788.	1150.	15373.	
.95 LCI	9472.	12307.	0.	0.	17992.	8705.	0.	0.	0.	0.	3653.	2401.	24092.	
.95 UCI	13376.	15506.	0.	0.	22668.	11068.	0.	0.	0.	0.	3833.	2530.	37761.	
.90 LCI	7786.	10124.	0.	0.	14800.	7215.	0.	0.	0.	0.	2995.	1960.	20133.	
.90 UCI	10989.	12755.	0.	0.	13647.	9115.	0.	0.	0.	0.	3240.	2065.	25704.	
Anphisyrinn	6136.	18398.	38974.	6921.	53759.	3023.	0.	0.	5783.	8739.	3024.	6184.	150445.	0.4
S.E. LO	4344.	11467.	13645.	4973.	17579.	3023.	0.	0.	2345.	4487.	1819.	2254.	27141.	
S.E. HI	5788.	17196.	18513.	9791.	24116.	3809.	0.	0.	2514.	5092.	1962.	2419.	37495.	
.95 LCI	9387.	24534.	27702.	15677.	37662.	6459.	0.	0.	5304.	10522.	4053.	4367.	54369.	
.95 UCI	12498.	36645.	39063.	23757.	51392.	8315.	0.	0.	5695.	12344.	4372.	5325.	75027.	
.90 LCI	7653.	20102.	27343.	12088.	30817.	5278.	0.	0.	4298.	8693.	3296.	4049.	45330.	
.90 UCI	10247.	30145.	32213.	17095.	42276.	6859.	0.	0.	4619.	9850.	3555.	4345.	62641.	
Trichopsera	0.	0.	13959.	12390.	18970.	25201.	0.	0.	0.	0.	0.	0.	67318.	0.2
S.E. LO	0.	0.	7933.	6987.	11692.	5601.	0.	0.	0.	0.	0.	0.	16754.	
S.E. HI	0.	0.	11060.	8803.	17635.	7929.	0.	0.	0.	0.	0.	0.	23706.	
.95 LCI	0.	0.	16738.	14813.	24916.	12065.	0.	0.	0.	0.	0.	0.	33534.	
.95 UCI	0.	0.	23293.	13663.	37154.	16810.	0.	0.	0.	0.	0.	0.	47615.	
.90 LCI	0.	0.	13803.	12200.	20497.	9937.	0.	0.	0.	0.	0.	0.	28020.	
.90 UCI	0.	0.	19209.	15370.	30544.	13844.	0.	0.	0.	0.	0.	0.	39796.	
Hydropsyche	17713.	24703.	99060.	150174.	361712.	254994.	69964.	9633.	5884.	58945.	20329.	13667.	1085476.	3.0
S.E. LO	5304.	12692.	35479.	40371.	52581.	27683.	15504.	6854.	2630.	13500.	6157.	3918.	84561.	
S.E. HI	7232.	18101.	63041.	86763.	83079.	39899.	23278.	9635.	2821.	16981.	7315.	4656.	146158.	
.95 LCI	11635.	27947.	74560.	85596.	112050.	58457.	32714.	15335.	5967.	32573.	13718.	8673.	167206.	
.95 UCI	15621.	38574.	133016.	183937.	177041.	84595.	49116.	19913.	6381.	40141.	16297.	9875.	292463.	
.90 LCI	9539.	22250.	61733.	70497.	92175.	48534.	26378.	12748.	4935.	26340.	11156.	7336.	141344.	
.90 UCI	12807.	31782.	133691.	151487.	145637.	69663.	40503.	16562.	5170.	32179.	13754.	8056.	244377.	
Gastropoda	0.	0.	117550.	184169.	79614.	30779.	50134.	61599.	34991.	15772.	25023.	28964.	628159.	1.7
S.E. LO	0.	0.	26741.	38217.	27206.	10645.	9989.	5931.	7904.	6216.	6057.	6342.	55015.	
S.E. HI	0.	0.	47467.	62571.	34543.	14704.	13619.	7789.	9208.	7187.	7826.	7083.	86874.	
.95 LCI	0.	0.	56423.	82292.	47320.	22568.	21675.	13677.	17888.	14702.	13495.	13343.	112088.	
.95 UCI	0.	0.	83394.	132439.	72550.	31173.	29736.	16807.	20929.	16993.	15653.	15589.	173835.	
.90 LCI	0.	0.	46529.	67774.	38927.	18597.	17379.	11032.	14495.	11780.	10376.	10882.	93857.	
.90 UCI	0.	0.	73718.	109075.	59673.	25675.	23697.	13557.	16879.	13670.	12731.	12721.	155755.	
Pelecypoda	0.	0.	3725.	0.	4467.	0.	0.	0.	0.	0.	0.	0.	8191.	<0.1
S.E. LO	0.	0.	3725.	0.	4467.	0.	0.	0.	0.	0.	0.	0.	5947.	
S.E. HI	0.	0.	4946.	0.	5628.	0.	0.	0.	0.	0.	0.	0.	7492.	
.95 LCI	0.	0.	8797.	0.	9519.	0.	0.	0.	0.	0.	0.	0.	11893.	
.95 UCI	0.	0.	13635.	0.	11993.	0.	0.	0.	0.	0.	0.	0.	14942.	
.90 LCI	0.	0.	6830.	0.	7871.	0.	0.	0.	0.	0.	0.	0.	9963.	
.90 UCI	0.	0.	8605.	0.	9846.	0.	0.	0.	0.	0.	0.	0.	12527.	

TOTALS	4147952.	5274878.	7845152.	4377719.	5024923.	1467610.	459319.	1015999.	304923.	1750793.	3636035.	1321759.	36489376.	
S.E. LO	730017.	585119.	1244676.	601289.	397953.	103267.	39227.	69979.	25284.	193656.	182744.	68451.	1743544.	
S.E. HI	1469950.	1124504.	3673504.	2106003.	1024156.	171911.	57542.	127617.	29792.	265776.	249056.	83305.	4753283.	
.95 LCI	1565887.	1740453.	2615063.	1243740.	841661.	217893.	82435.	158292.	54104.	460657.	401117.	157327.	3699831.	
.95 UCI	3153043.	2383948.	7718036.	4543665.	2171211.	362737.	120895.	288670.	66376.	612880.	548173.	181521.	9511317.	
.90 LCI	1285560.	1021618.	2158271.	1046259.	694826.	179644.	69019.	125271.	44002.	371361.	327311.	122693.	2915206.	
.90 UCI	2588582.	1963383.	6367857.	3664444.	1788176.	299129.	99777.	233922.	53982.	494344.	447305.	148449.	7947469.	

EXECUTION TERMINATED 02 09 10 T=0.298 RC=0 $1.82

APPENDIX F

Additional errors found in the 316(b).

Chapter 3

p. 3.2-3: There is no Figure 3.1-3 or any detailed illustration of the discharge structure as indicated below in Section 3.2.4.

> **3.2.4 Discharge Structure**
>
> The condenser cooling water from all four units is discharged to a common overflow canal, approximately 1,000 ft long with varying widths and constant bottom elevation (Figure 3.1-3). Just north of the East Front Street bridge, the overflow canal terminates at the recirculation gates. Here the heated effluent can be directed either south through the discharge canal (approximately 5,800 ft x 560 ft) to Lake Erie or north through the MacMillan Road canal (approximately 1,400 ft long by 160 ft wide) to the Raisin River.

Table 3.3-1: 2328 MW is given as the maximum net capacity. The table, however, lists several capacity values that exceed 2328 MW. It appears that the maximum is 2528 MW, not 2328 MW.

Table 3.3-3: The area of 1251.0 ft^2 given for calculating velocity in front of the screens is incorrect. (572.27-546.0)(8)(10) = 2101.6 ft^2. The velocity of 0.77 ft/sec is correct however.

TABLE 3.3-3 INTAKE VELOCITY CALCULATION AT EACH SCREENHOUSE, MONROE POWER PLANT

Mean April 1975-April 1976 water level	=	572.27 ft
Screen bottom elevation	=	546.0 ft
Skimmer wall bottom elevation	=	560.0 ft
Q = maximum flow possible/screenhouse	=	1,624.2 ft^3/sec
Number of screens	=	8
Screen width	=	10.0 ft
Screenwell width	=	11.17 ft

1. Calculation of Velocity Directly in Front of Screens

$$A = \text{Area of Intake } (ft^2) = \left(\text{Mean Water Level (ft)} - \text{Screen Bottom Elevation (ft)}\right)\left(\text{No. of Screens}\right)\left(\text{Screen Width (ft)}\right)$$

$$\longrightarrow A = (572.27 \text{ ft} - 546.0 \text{ ft})(8)(10 \text{ ft}) = 1,251.0 \text{ ft}^2$$

$$V = Q/A = \frac{1,624.2 \text{ ft}^3/\text{sec}}{1,251.0 \text{ ft}^2} = 0.77 \text{ ft/sec}$$

2. Calculation of Velocity Past Skimmer Wall

$$A = \text{Cross-section of screenwell } (ft^2) = \left(\begin{matrix}\text{Skimmer wall}\\ \text{Bottom}\\ \text{Elevation (ft)}\end{matrix} - \begin{matrix}\text{Screen}\\ \text{Bottom}\\ \text{Elevation (ft)}\end{matrix}\right)\left(\begin{matrix}\text{No.}\\ \text{of}\\ \text{Screenwells}\end{matrix}\right)\left(\begin{matrix}\text{Screenwell}\\ \text{Width}\\ \text{(ft)}\end{matrix}\right)$$

$$A = (560 - 546)\ (8)\ (11.17\ ft) = 1251.0\ ft^2$$

$$V = Q/A = \frac{1,624.2\ ft^3/sec}{1,251.0\ ft^2} = 1.30\ ft/sec.$$

Chapter 4

p. 4.2-17: According to the Literature Cited section, the reference to "Hartman (b)" should be "Hartman (a)".

p. 4.2-26: Clupeid density in paragraph #1 is 900/100 m^3, not 900/m^3.

p. 4.2-27: The smelt data mentioned is not listed in Table 4.2-31.

p. 4.2-27: The Cole (1975a) reference is not listed in the Literature Cited section. The correct reference is evidently Cole (1976a).

p. 4.3-4: It is stated that:

> As indicated in Table 4.3-3, yellow perch impingement in 1972 was characterized by two peaks: in October (36,704), and in April (28,350).

whereas, Table 4.3-3 (shown below) indicates that impingement peaked in October and August.

TABLE 4.3-3 FISH IMPINGEMENT EXTRAPOLATIONS AT THE MONROE POWER PLANT, APRIL THROUGH DECEMBER 1972

Species	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Gizzard shad	45	40	828	99	114,793	6,540	148,831	195,030	233,275
Rainbow smelt		19					62	342	
Shiners	93,000	17,732	1,479		6,671	1,500			78
Walleye	3	12	12				12		
Yellow perch	28,350	12,245	7,530	7,440	39,031	14,460	36,704	15,360	4,185
White bass	12	353	42	99	378	1,140	422	108	16
Channel catfish	6	12			62		6		
Coho salmon			9				6		
Rock bass	12	56	15					6	
Smallmouth bass		9					6	12	16
Freshwater drum	39	849	1,359	155	502	501	31	6	16
White crappie	90	202	6	16	6	90	68	54	25
Sunfish	120	87	21	53	19	81	87	12	6
Northern pike	3	6	3			15	12		
Brown bullhead	54	12		9		30		18	
Goldfish	1,800	1,333	108	31	87	30	31	78	341
Carp	3	6	12	16	7	9	38		87
Steelhead trout	3							6	
Suckers	90	38							
Others	27	87	3			15	7		10
Totals	123,057	33,058	11,427	7,918	161,616	24,411	186,323	211,032	238,055

p. 4.4-2: The volume of the entrainment sampling pumps is listed as 2.016×10^6 gal/day. 530 l/min = 2.016×10^5 gal/day, not 2.016×10^6.

Table 4.1-1: According to 316(b) p. 4.1-5, this table lists "all species whose presence was noted one or more times during the monitoring period sampling effort" from 1972-1976.

TABLE 4.1-1 SPECIES OF FISH IDENTIFIED AT THE INTAKE OF THE MONROE POWER PLANT

Common name	Scientific name
Silver lamprey	*Ichthyomyzon unicuspis*
Sea lamprey	*Petromyzon marinus*
Longnose gar	*Lepisosteus osseus*
Bowfin	*Amia calva*
Alewife	*Alosa pseudoharengus*
Gizzard shad	*Dorosoma cepedianum*
Coho salmon	*Oncorhynchus kisutch*
Chinook salmon	*Oncorhynchus tshawytscha*
Rainbow trout	*Salmo gairdneri*
Rainbow smelt	*Osmerus mordax*
Central mudminnow	*Umbra limi*
Northern pike	*Esox lucius*
Goldfish	*Carassius auratus*
Carp	*Cyprinus carpio*
Golden shiner	*Notemigonus crysoleucas*
Emerald shiner	*Notropis atherinoides*
Spottail shiner	*Notropis hudsonius*
Bluntnose minnow	*Pimephales notatus*
Creek chub	*Semotilus atromaculatus*
Quillback	*Carpiodes cyprinus*
White sucker	*Catostomus commersoni*
Black bullhead	*Ictalurus melas*
Yellow bullhead	*Ictalurus natalis*
Brown bullhead	*Ictalurus nebulosus*
Channel catfish	*Ictalurus punctatus*
Stonecat	*Noturus flavus*
Tadpole madtom	*Noturus gyrinus*
Brindled madtom	*Noturus miurus*
Trout-perch	*Percopsis omiscomaycus*
Burbot	*Lota lota*
Brook silverside	*Labidesthes sicculus*
White perch	*Morone americana*
White bass	*Morone chrysops*
Rock bass	*Ambloplites rupestris*
Green sunfish	*Lepomis cyanellus*
Pumpkinseed	*Lepomis gibbosus*
Bluegill	*Lepomis macrochirus*
Smallmouth bass	*Micropterus dolomieui*
Largemouth bass	*Micropterus salmoides*
White crappie	*Pomoxis annularis*
Black crappie	*Pomoxis nigromaculatus*
Johnny darter	*Etheostoma nigrum*
Yellow perch	*Perca flavescens*
Logperch	*Percina caprodes*
Walleye	*Stizostedion vitreum vitreum*
Freshwater drum	*Aplodinotus grunniens*

Note: Species list includes fish impinged and entrained; also those removed by nets or by pump. For some collections, only group common names were used including crappie, black bass, gar, sucker, and sunfish. Because these group names were sometimes used, additions to the above species list are not possible.

Comparison of the table with the Monroe data base, however, revealed several discrepancies. For example, the creek chub is listed in the table, but neither the impingement nor the entrainment records show it occurring at the intake. According to the data base, the common shiner, muskellunge, and blue catfish were impinged, but these species are not listed in Table 4.4-1. Three additional species--shorthead redhorse, slimy sculpin, and silver chub--are listed in the 316(a) demonstration (Table 3-51, Cole 1976; Table 4.2-5, Detroit Edison 1976) but are not listed in the table.

Table 4.2-5: According to the Literature Cited section, the reference to "Hartman (b)" should be "Hartman (a)".

Table 4.2-8: 316(b) fails to indicate, as done in VanVooren et al., 1975, that the 1974 YOY yellow perch catch is heavily weighted. 98% of the catch for the entire season came from one tow at the Cedar Point station (personal communication, D. H. Davies, 9-6-77).

Table 4.2-9: The life stage labeled "young" should be "young-of-the-year".

Table 4.2-11: Gill net total catch for longnose gar is 3, not 0.

Table 4.2-13: The spring collection labeled as a gill net is really a trawl that was mislabeled. Most of the values, however, were added into the correct total column.

Table 4.2-13: Mean CPE for rainbow smelt is 0.6, not 0.8.

Table 4.2-13: Mean CPE for white crappie is 1.4, not 0.8.

Table 4.2-14: The yellow perch catches by age class for station 12 do not add up to 1283.

Table 4.2-14: On the computer printouts we received from the DNR, the freshwater drum total for station 14 had been changed from 390 to 410. This changes the CPE from 78 to 82, the catch over all age groups from 662 to 682, and the mean CPE from 66 to 68.

Table 4.2-14: One of the 1230 young-of-the-year gizzard shad in the station 14 trawl should be listed as a yearling or possibly an adult.

Table 4.2-14: All 54 smelt in station 12 trawl should be listed as YOY.

Table 4.2-15: All totals are displaced from the correct species by one line.

Table 4.2-15: Station 12 trawl data for smelt should include 10 adults not listed in the table.

Table 4.2-15: Station 14 trawl for smelt YOY should be 9, not 2. This yields a total catch of 9, not 2, and a CPE of 3.0, not 0.4. The totals and mean CPE over all age groups are therefore also wrong.

Table 4.2-15: 316(b) shows all 5 trout-perch in station 12 trawl as YOY. The DNR printouts show both YOY and yearlings.

Table 4.2-15: 25 trout-perch caught in station 14 trawl have been omitted. The trawl total thus is 30, not 5, and mean CPE is 4.7, not 0.5.

Table 4.2-16: 316(b) indicates no sampling was done in the fall. Cole's data, however, show that there was sampling done in the fall and that shiners and white bass were caught.

Table 4.2-19: The 1970 estimates are incorrect because of the mislabeling error in Table 4.2-10. Most of the 1970-75 means are therefore also wrong, but only by 1-4%.

Table 4.2-19: The 1973 smelt estimate is wrong (should be 61,000 not 70,000) because of the incorrect CPE value in Table 4.2-14.

Table 4.2-19: The 1974 estimate for freshwater drum is incorrect (should be 5,953,000 not 5,761,000) because of the error in Table 4.2-14.

Table 4.2-19: The 1975 smelt estimate is low (should be 532,000 not 419,000) because of the error made in Table 4.2-15.

Table 4.2-19: The 1975 trout-perch estimate is greatly underestimated (410,000 not 44,000) because of the 25 fish omitted in Table 4.2-15.

Table 4.2-20: 1974 freshwater drum estimate is incorrect (from Table 4.2-19).

Table 4.2-20: 1975 smelt estimate is incorrect (from Table 4.2-19).

Table 4.2-20: 1975 trout-perch estimate is wrong (from Table 4.2-19).

Table 4.2-20: There are several other errors in the age class divisions arising from errors in Tables 4.2-14 and 4.2-15.

Table 4.2-21: August 1-4 estimate for gizzard shad is reported by CLEAR as 9.5×10^5, not 9.5×10^9. The mean value, however, is correct. Peak shad population thus appears to be in early June instead of in August as reported on p. 4.2-25.

Table 4.2-25: July 2 count for station 8 (bottom) is 0.4, not 1.4.

Table 4.2-26: July 2 count for station 10 (surface) is 35.0, not 33.8.

Table 4.2-31: All data for station P-16 is displaced from the correct species column.

Figure 4.2-1: According to 316(b) Literature Cited, the reference should be Hartman (a), not Hartman (b).

Chapter 5

p. 5.2-1: Gizzard shad are said to make up 51.8% of the impingement loss.

> Calculations of extrapolated impingement losses of fish at the Monroe Power Plant over a 12-month period are presented in Subsection 4.3.2. An estimated total of 861,000 fish were impinged during this time, of which 51.8 percent were gizzard shad and 14.2 percent were yellow perch. The third most frequently impinged fish were shiners, which comprised 12.7 percent of the calculated 12-month total.

However, according to p. 4.3-1 and Table 4.3-1, gizzard shad comprised 58.1% of impinged fish.

> Impingement at the Monroe Power Plant was extrapolated to 861,000 fish during the period from June 1975 to May 1976 (Table 4.3-1). Of this total, 58.1 percent were gizzard shad, 14.2 percent were yellow perch, 12.7 percent were shiners (*Notropis* spp.), 7.0 percent were freshwater drum, and 4.3 percent were white bass. Other species were impinged less frequently.

TABLE 4.3-1 FISH IMPINGEMENT EXTRAPOLATIONS AT THE MONROE POWER PLANT, JUNE 1975 THROUGH MAY 1976

Species	1975 June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1976 Jan.	Feb.	Mar.	Apr.	May	Totals	% of Total
Gizzard shad	71	17552	49814	18879	15801	29060	83239	100719	143463	25447	11359	4154	500560	58.1
Alewife	177	211	7	81	1258	627	76	9		472	1658	5583	10789	1.3
Rainbow smelt	122	53		8	1828	2840	644	227	609		158	522	6711	0.8
Shiners	14484	10184	11613	12831	12679	8056	8147	8590	9899	2688	8958	5348	109507	12.7
Trout-perch	783	37	56	120	233	86	15	616	948	601	1966	47	5471	0.6
Logperch	47	52	37	140	369	221	39	4		6	53	136	1114	0.1
Walleye	6	104	121	98	6	38	14		51	8	12	3	459	<0.1
Yellow perch	47381	8894	35551	12942	4164	1974	1348	1436	3378	992	3777	454	122301	14.2
White bass	204	3685	13452	12921	5229	734	366	122	224	23	160	74	37235	4.3
Channel catfish	60	86	64	204	31	10	184	79	364	15	29	20	1128	0.1
Coho salmon	2												2	<0.1
Rock bass	64	28	21	27	15	5	29		5	43	83	56	380	<0.1
Smallmouth bass			3	4	2	16					3	6	34	<0.1
Freshwater drum	3704	3187	14027	17799	16348	1504	2458	487	1227	124	738	1051	60948	7.0
White crappie	4		31	25	31	23	55	25	34	2	40	19	259	<0.1
Burbish	73	129	37	61	83	74	169	38	20	36	34	29	783	0.1
Northern pike	30	30		11			3		7	7	15	6	106	<0.1
Brown bullhead	4	2										2	8	<0.1
Yellow bullhead				4		3		24	10	16	9	9	75	<0.1
Goldfish	73	77	102	53	10	8	95	484	639	685	436	92	2754	0.3
Largemouth bass	2		3		6		7					6	24	<0.1
Chinook salmon	3	1				3				3			10	<0.1
Carp		2		11		2	8	36	641	35	14	3	752	0.1
Suckers		5		21	2					5	3	5	41	<0.1
Others	3			8	2					5	17	2	37	<0.1
Totals	71911	44303	124875	76248	52232	43046	96898	110896	161509	32213	29572	17427	861231	

p. 5.3-3: Maximum standing crop of gizzard shad is 2.9×10^9, not 9.5×10^9, due to error in Table 4.2-21.

p. 5.3-4: Minimum percent of gizzard shad larvae lost is 0.3, not 0.1, due to error in Table 4.2-21.

Table 5.2-2: Ohio fall 1974 estimate for shiners is overestimated (46,343,000 instead of 82,913,000) by an apparent error in Table 4.2-18.

Table 5.2-2: Most of the Michigan 1970-75 means are incorrect because of transfer from Table 4.2-19.

Table 5.2-2: Michigan fall 1975 estimates for trout-perch and smelt are incorrect by transfer from Table 4.2-20.

Table 5.2-2: Michigan fall 1975 estimate for shiners is not the same as listed in Table 4.2-20 from which it supposedly came.

Table 5.2-3: Estimates listed for smelt and freshwater drum are incorrect by transfer from Table 5.2-2. The percentage impinged is therefore incorrect for these 2 species.

Table 5.3-1: CLEAR weekly maximum for shad is 2.9×10^9 not 9.5×10^9. Percentage entrained is thus 0.3, not 0.1.

TABLE 5.3-1 PERCENTAGE OF LARVAL FISH ENTRAINMENT AT THE MONROE POWER PLANT

Species	Annual Estimate of Larvae Entrained[a]	Population Estimate: CLEAR[b] x Weekly	Population Estimate: CLEAR[b] Weekly Max.	Population Estimate: Michigan DNR[c] x Weekly	Population Estimate: Michigan DNR[c] Weekly Max.	Percent Entrained: CLEAR x Weekly	Percent Entrained: CLEAR Weekly Max.	Percent Entrained: Michigan DNR x Weekly	Percent Entrained: Michigan DNR Weekly Max.
Alewife[d]	13942	7.1 x 10^4	3.8 x 10^4	6.7 x 10^4	1.4 x 10^4	1.9	10.1	2.5	1.0
Gizzard shad[d]	[illegible]	5.1 x 10^4	9.5 x 10^9	3.4 x 10^4	6.4 x 10^4	1.9	0.1	2.8	1.0
Rainbow smelt	122827	8.3 x 10^3	3.5 x 10^4	1.8 x 10^4	1.1 x 10^4	0.5	0.2	4.0	0.7
Carp	484125	—[e]	—	—	—	—	—	—	—
Emerald shiner	176299	2.8 x 10^4	5.8 x 10^4	—	—	8.1	49.1	—	—
Channel catfish	719548	—	—	—	—	—	—	—	—
Trout-perch	19580	—	—	—	—	—	—	—	—
White bass	391995	3.8 x 10^3	1.3 x 10^4	2.1 x 10^3	1.1 x 10^4	1.3	0.3	1.6	0.4
Yellow perch	4990924	2.6 x 10^4	1.1 x 10^4	2.0 x 10^4	1.1 x 10^4	1.9	0.5	241.8	45.4
Logperch	53458	1.3 x 10^3	5.3 x 10^4	—	—	3.1	1.0	—	—
Walleye	809186	2.5 x 10^4	2.1 x 10^4	—	—	43.1	19.5	—	—
Freshwater drum	1774575	2.4 x 10^4	2.1 x 10^4	1.5 x 10^4	5.0 x 10^4	8.7	0.1	118.2	35.5

a. From Table 4.4-2.
b. From Table 4.2-21, 51% of western basin area.
c. From Table 4.2-20, six stations closest to the Monroe Power Plant.
d. Alewife and gizzard shad entrainment estimates for Monroe and the Michigan DNR data were apportioned according to the ratio found in the CLEAR entrainment data.
e. Dashes indicate calculations not completed or data not available.

Table 5.3-1: CLEAR mean value for walleye should be 2.5×10^5 from Table 4.2-21 below. This results in the tabulated percentage entrained of 163.7%. The 2.2×10^5 value yields 186.0%.

TABLE 4.2-21 TOTAL LARVAL POPULATION ABUNDANCE ESTIMATES FOR 621 mi^2 (1,611 km^2) OF THE WESTERN BASIN (51% OF TOTAL AREA), INCLUDING ALL OHIO WATERS AND A FRACTION OF CANADIAN WATERS 1975[a]

Species	May 22-28	May 29-June 5	June 6-12	June 13-19	June 20-26	July 3-9	July 10-16	Aug. 7-13	Aug. 27-Sept. 3	Mean
Gizzard shad	—[b]	6.1 x 10^4	2.9 x 10^4	3.4 x 10^4	4.3 x 10^4	4.3 x 10^4	1.2 x 10^4	9.5 x 10^4	1.4 x 10^4	5.1 x 10^4
Rainbow smelt	3.8 x 10^4	3.5 x 10^4	3.5 x 10^4	2.6 x 10^4	1.4 x 10^4	2.5 x 10^4	3.8 x 10^4	—	4.7 x 10^4	8.3 x 10^4
Emerald shiner	—	7.4 x 10^4	6.4 x 10^4	5.8 x 10^4	5.3 x 10^4	4.3 x 10^4	1.2 x 10^4	1.5 x 10^4	7.6 x 10^4	2.0 x 10^4
Spotfail shiner	—	3.1 x 10^4	3.7 x 10^4	6.0 x 10^4	7.6 x 10^4	2.3 x 10^4	—	—	—	2.2 x 10^4
Freshwater drum	—	2.1 x 10^4	2.1 x 10^4	1.0 x 10^4	7.0 x 10^4	4.9 x 10^4	1.9 x 10^4	8.9 x 10^4	—	2.4 x 10^4
Yellow perch	4.1 x 10^4	7.5 x 10^4	1.1 x 10^4	1.3 x 10^4	2.0 x 10^4	—	—	—	—	2.6 x 10^4
White bass	—	3.3 x 10^4	7.1 x 10^4	2.0 x 10^4	3.2 x 10^4	1.6 x 10^4	1.8 x 10^4	—	—	3.0 x 10^4
Walleye	—	2.1 x 10^4	—	—	7.4 x 10^4	—	—	—	—	2.5 x 10^4
Alewife	—	—	—	3.8 x 10^4	1.9 x 10^4	2.3 x 10^4	7.0 x 10^4	2.9 x 10^4	—	7.1 x 10^4
Logperch	—	—	—	4.9 x 10^4	1.9 x 10^4	5.3 x 10^4	—	—	—	1.3 x 10^4[c]

a. From CLEAR, unpublished draft data.
b. Dashes indicate insufficient data.
c. This exponent was changed from 4 to 5 to correct an error on the original table.

Table 5.3-3: The numbers of alewife and shad larvae entrained are not the same as those in Table 5.3-1

TABLE 5.3-3 PERCENTAGE OF POTENTIAL ADULT FISH LOST THROUGH ENTRAINMENT IN LAKE ERIE

Species	No. of Larvae Entrained	Adult Losses[a]	Population Estimate (in Thousands)[b]	% Lost to Population	Table Reference[c]
Alewife	38,404	51	35,679	0.0001	Mean of 4.2-17 and 4.2-20
Gizzard shad	9,562,726	510	76,328	0.0007	Mean of 4.2-17 and 4.2-20
Rainbow smelt	722,821	15,800[d]	419	3.8[e]	4.2-20
Emerald shiner	170,299	1,000	2,654	0.04	4.2-20
Channel catfish	719,548	3,600	1,851	0.2	4.2-20
White bass	391,945	14	20,815	0.00006	4.2-17
Yellow perch	4,996,924	4,000	18,942	0.02	4.2-20
Walleye	409,186	170	5,500	0.003	4.2-20
Freshwater drum	1,774,575	710	14,200	0.005	4.2-20

a. Numbers taken from Table 5.3-2 and generated through 90% model.
b. Best estimate based on current abundance indices (see rationales developed in Subsection 5.2.3).
c. Rationales for estimates in these tables presented in Subsection 4.2.
d. Used 99.5% model based on Rothschild 1961.
e. Estimated percent lost to population is too high if Canadian commercial harvest information is considered (Subsection 5.2.3).