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The Food and Feeding of *Etrumeus whiteheadi* Wongratana 1983, off the Cape Province of South Africa.

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ABSTRACT

Feeding of the redeye roundherring *Etrumeus whiteheadi* Wongratana 1983, was investigated off the west and south coasts of the Cape Province of South Africa. Fish from the west coast were collected in April and May 1984, those from the south coast during November 1983 and 1984. Diet was determined from stomach contents. Dry mass and numbers of food items are presented. Copepods were the principal food off the south coast, constituting a mean of 67% (range: 60-75%) by mass of gut contents in juveniles, a mean of 59% (range 44-88%) in the transitional juvenile/adult size class and a mean of 43% (range: 30-73%) by mass in the adults. Adult and larval stages of euphausiids were also an important dietary component of these fish, comprising a mean of 10% (range: 0-18%) by mass in the juveniles, a mean of 14% (range: 7-18%) in the transitional juvenile/adult size class and a mean of 52% (range: 27-63%) by mass in the adults. On the west coast chaetognaths appeared to be the principal food item of the juvenile fish examined, yielding values as high as 99% by mass. Other less important prey in both areas included cladocerans, ostracods, fish eggs, pteropods, bivalve larvae, squid and juvenile fish. Phytoplankton formed a negligible component of the diet. It was present in minute quantities in the west coast fish only. Diurnal feeding patterns were investigated for both areas. Total mass of stomach contents constituted a maximum of 1.2% of total fish mass off the south coast in November 1983, and a maximum of 0.85% in November 1984. Off the west coast, where juveniles only were sampled, the stomach content mass made up to 7% of body mass. Stomachs were fullest in the afternoon and early evening and it is inferred that feeding takes place during daylight hours.

Predator-prey size relationships were investigated using two methods. The first method involved testing the correlation between fish mass and prey mass and the second employed Ursin's procedure using predator-prey mass ratios. Predator size was found to have a small effect on diet composition.

Declaration

This thesis is the product of the efforts of many people. My own contributions were the following:

I participated in the month-long sample collecting cruise on the south coast in 1984.

I did the majority of fish handling (meaning sorting, stomach removal, gut content identification).

I had a major input in the project planning and preparation of this thesis.

The thesis was planned and written by me although I benefitted greatly from criticism and assistance from the several people cited in the acknowledgements.

Signed by candidate

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Chapter 1
INTRODUCTION

Since the beginning of marine fishery research investigations, the diet of fish has been of fundamental interest. Food is one of the principal factors regulating growth, abundance and migration. An understanding of special feeding habits could contribute significantly to our ability to manage fish resources.

1.1 ETRUMEUS FISHERY

The redeye roundherring, *Etrumeus whiteheadi* Wongtatana 1983, one of the six pelagic fish species exploited commercially off the west coast of South Africa (Geldenhuys, 1978). This fish (family Clupeidae) is roughly similar in appearance to the South African pilchard, *Sardinops ocellatus*, but is immediately distinguishable by its more elongate head, larger eyes and absence of abdominal scutes. This latter feature results in a more rounded belly----hence the common name (Whitehead and Wongratana, 1986).

Between 1958 and 1967, the redeye made a minor contribution of 2 to 8% to the total South African pelagic fish catch. The quantity processed as canned products was also small, a mean of 14 tons p.a. However, in recent years the redeye catch has been steadily increasing, reaching a maximum of 69 000 tons in 1983, with 2000 tons per year canned in 1984 and 1985 (Armstrong, 1986).

1.2 ETRUMEUS TAXONOMY

The genus *Etrumeus* was created by Bleeker in 1853 for a herring-like fish of the western Pacific, *Clupea micropus* Schlegel 1846. Precedence was subsequently given by Gunther (1868) to the name *Alosa teres* De Kay 1842, described from the NW Atlantic. Gunther found no difference between the Pacific *micropus* and Atlantic *teres*. By the time these fishes were subjected to a worldwide revision (Whitehead, 1963), five more species names (*jacksoniensis, sadina, acuminatus, othonops* and *delicatulus*) had been applied to this same fish, and these had been attributed to a total of 10 nominal genera (*Alosa, Clupea, Harengula, Dussumieria, Etrumeus, Jekinsia, Perkinsia, Halecula, Parahalecula, and Stolephorus).* Whitehead (1963) synonymised all these forms and proposed *Etrumeus teres* as the correct binomen for them all. Only recently was it discovered, by Wongratana (1983), that in southern Africa a second valid species existed. He named it after his mentor Dr. P.J.P. Whitehead, of the British Museum: *Etrumeus whiteheadi.*

E. teres has a more widespread distribution than *E. whiteheadi,* being recorded from many tropical and subtropical regions around the world (Bigelow and Schroeder (1953). Whitehead (1963) reported populations of *E. teres* on the North American Atlantic and Pacific coasts, Japan, southern Africa, southern Australia, Red Sea, Galapagos, and Hawaii. *E. whiteheadi* is endemic to southern Africa and is known only from Walvis Bay to Durban. There is a possibility that the two species overlap between Durban and Cape Town (Whitehead and Wongratana, 1986).

The gill raker count in *E. whiteheadi* is higher than that of *E. teres.* Whitehead and Wongratana (1986) reported 31-35 rakers on the lower limb of the first arch in *E. teres* and 35-40 in *E. whiteheadi.* In addition there is a difference in the position of the origin of the ventral fins: in adult *E. teres* the fins insert at least 1/2 an eye diameter posterior to the insertion of the last dorsal ray; in adult *E. whiteheadi* the fins insert under or just behind the last dorsal ray (Whitehead and Wongratana, 1986).

1.3 ETRUMEUS BIOLOGY

Although the presence of an *Etrumeus* species in southern African waters has been known for more than 70 years (Gilchrist and Thompson, 1917), relatively little attention has been paid to its biology. The buoyant pelagic egg (and the yolksac larva that emerges from it) was described by Gilchrist (1903), but he was unable to relate it to any fish species known at that time. Even when the presence of *Etrumeus* was recognized in these waters, the egg was not immediately linked to the adult fish: Gilchrist and Hunter (1919) redescribed the egg and larva under the name "*Clupea* sp". Developmental stages were subsequently described by O'Toole and King (1974) and Brownell (1979).

Spawning is known to occur all year round (Brownell, 1979). Egg distribution has been described by Davies et al. (1981), and

Etrumeus eggs and larvae are sometimes more abundant than those of anchovy and pilchard combined. The principal spawning grounds of *E. whiteheadi* in South African waters (Fig.1) overlap those of the anchovy (Fig.2) and pilchard (Fig.3). They occur mainly on the south coast, east of Cape Point, but extend to a lesser extent up the west coast of the Cape Province. Because of the abundance of early stages, and the increasing landings of redeye it is not surprising that interest in this species has been developing rapidly (De Villiers, 1982). Additionally, roundherring comprise an important component of the food web, primarily as forage for sea birds, marine mammals and fish. It is a common item in the diet of hake, *Merluccius* spp. (Payne, 1987), seals (David, 1987) and seabirds, in particular penguins, gannets (Berruti, 1987) and cape cormorants (Rand, 1960).

Etrumeus whiteheadi was successfully reared through metamorphosis in the laboratory on one occasion (C. Brownell, pers. comm.). Sea-spawned redeye eggs were collected with anchovy and pilchard eggs off the west coast of the Cape Peninsula, and all three species were reared together in a 450-l asbestos-cement tank as described by Brownell (1983). Redeye hatched at a length of 4.5-5.6 mm NL (notochord length) (Brownell, 1979), which is larger than anchovy at hatching (2.5-3.1 mm NL), or pilchard (3.8-4.3 mm NL). These measurements were based on living fish, i.e. no shrinkage had taken place due to death or preservation. In captivity they grew more slowly than the latter two species. Thomas (1986) determined the growth rates at sea of several species of marine fish larvae by counting daily otolith rings. From the regression lines in his figure 5 (Cape west coast samples), *Etrumeus whiteheadi* and *Engraulis capensis* put on their 30th daily ring at a length of 18 mm, and pilchard put on its 30th ring at a length of 23 mm. Over the 30 days from first-feeding (deposition of the first daily ring) to the attainment of the lengths just given, the three species therefore grew at a mean daily rate of about 0.37, 0.48 and 0.58 mm d^{-1}, respectively. (Without correcting for shrinkage of Thomas' (1986) larvae at death or in preservation, *Etrumeus* grew from 7 mm to 18 mm in 30 days, or 0.37 mm d^{-1}; *Engraulis* grew from 3.5 mm to 18 mm in 30 days, or 0.48 mm d^{-1}, and *Sardinops* grew from 5.5 mm to 23 mm in 30 days, or 0.58 mm d^{-1}.) Thus it appears that *Etrumeus* during the larva stage is slower growing than the other two local clupeoids at sea as well as in the laboratory.

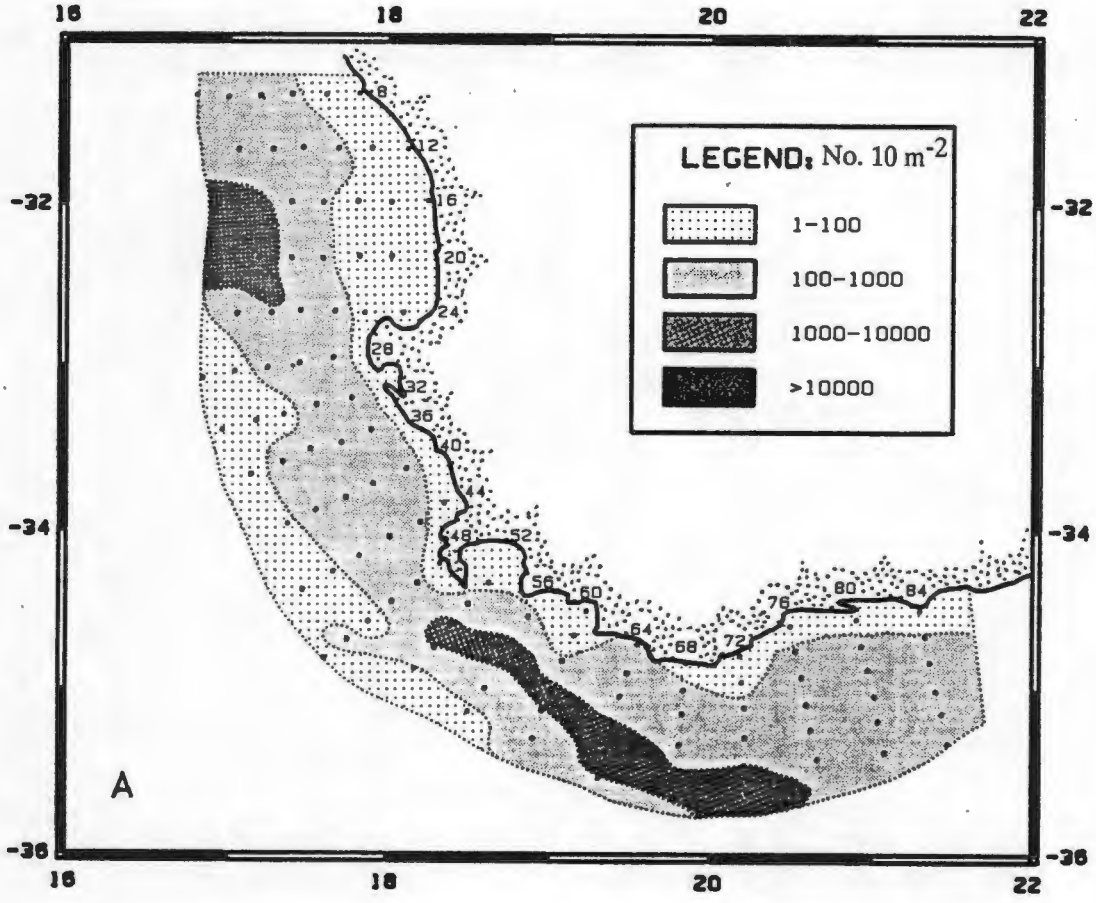
In the laboratory, *Etrumeus whiteheadi* was reared on cultured rotifers (*Brachionus plicatilis)* and cultured copepods (*Paracartia africana* and *Oithona nana)* which they captured with the same S-shaped strike used by other larval clupeoids that have been studied (Blaxter, 1969). Interestingly, the search-swimming mode of redeye larvae is not the serpentine motion of the clupeid fishes *Clupea*, *Sardinops* and *Sardina,* but rather the beat-and-glide motion of species of *Engraulis* (C. Brownell, pers. comm.). The osteology of *Etrumeus* bears a number of characteristics that allies the genus to the Engraulidae (Whitehead, 1963), and the swimming behaviour of the larval stage may provide additional evidence that among the living clupeid fishes, *Etrumeus* is relatively less differentiated from the common ancestor of the two families than is, for example, *Clupea* (herring), or *Sardinops* (pilchards/sardines). Metamorphosis in laboratory-reared *E. whiteheadi* occurred at a standard length of about 35 mm SL. In this respect it is more like *Engraulis* than *Sardinops* which metamophoses at about 30 mm SL.

The ecology of warm-water herrings including *Etrumeus*, was summarized by Longhurst (1971). He noted that clupeoids generally occur over or near continental shelves, and many are restricted to coastal habitats and estuaries. *E. whiteheadi* is essentially a neritic species, like the Cape anchovy and South African pilchard.

The availability and movements of the roundherring off South Africa were summarized by Crawford (1981). Young roundherring (5-10 cms) seem to have migrating patterns similar to anchovy and young pilchard of the same size. Young roundherring are frequently encountered in mixed shoals with either pilchard, anchovy or both species. Crawford (1981) reported that young roundherring, anchovy and pilchard appear to migrate southwards about the end of winter reaching an area west of Cape Agulhas by the following autumn.

Young roundherring are primarily taken by the purse seine fishery along the west coast of the Cape Peninsula, predominantly in the Lambert's Bay area.

The older roundherring (>11.0 cm) tend to be located further offshore and in deeper, colder waters between Lambert's Bay and Cape



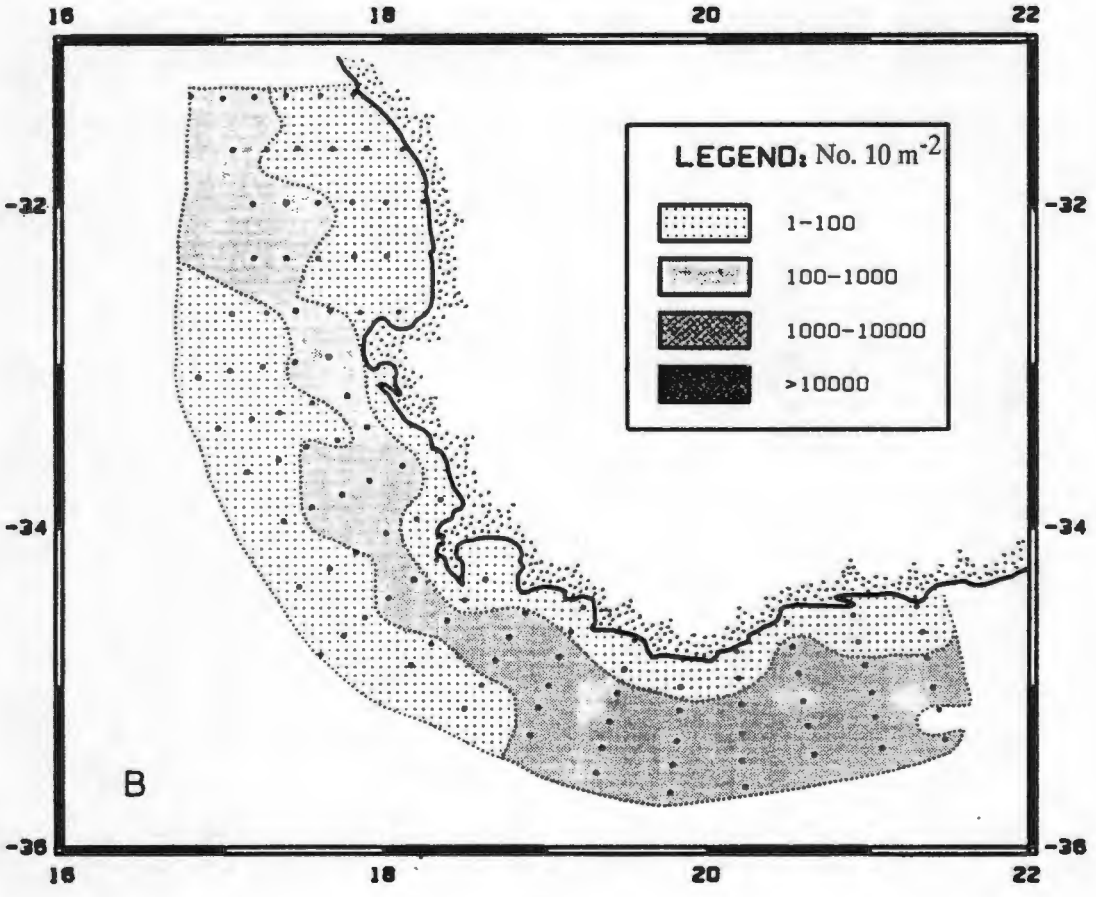


Figure 1. Mean pattern of abundance of roundherring eggs (A) and larvae (B) over the 12-cruise CELP survey grid between August 1977 and August 1978. (From Shelton, 1986).

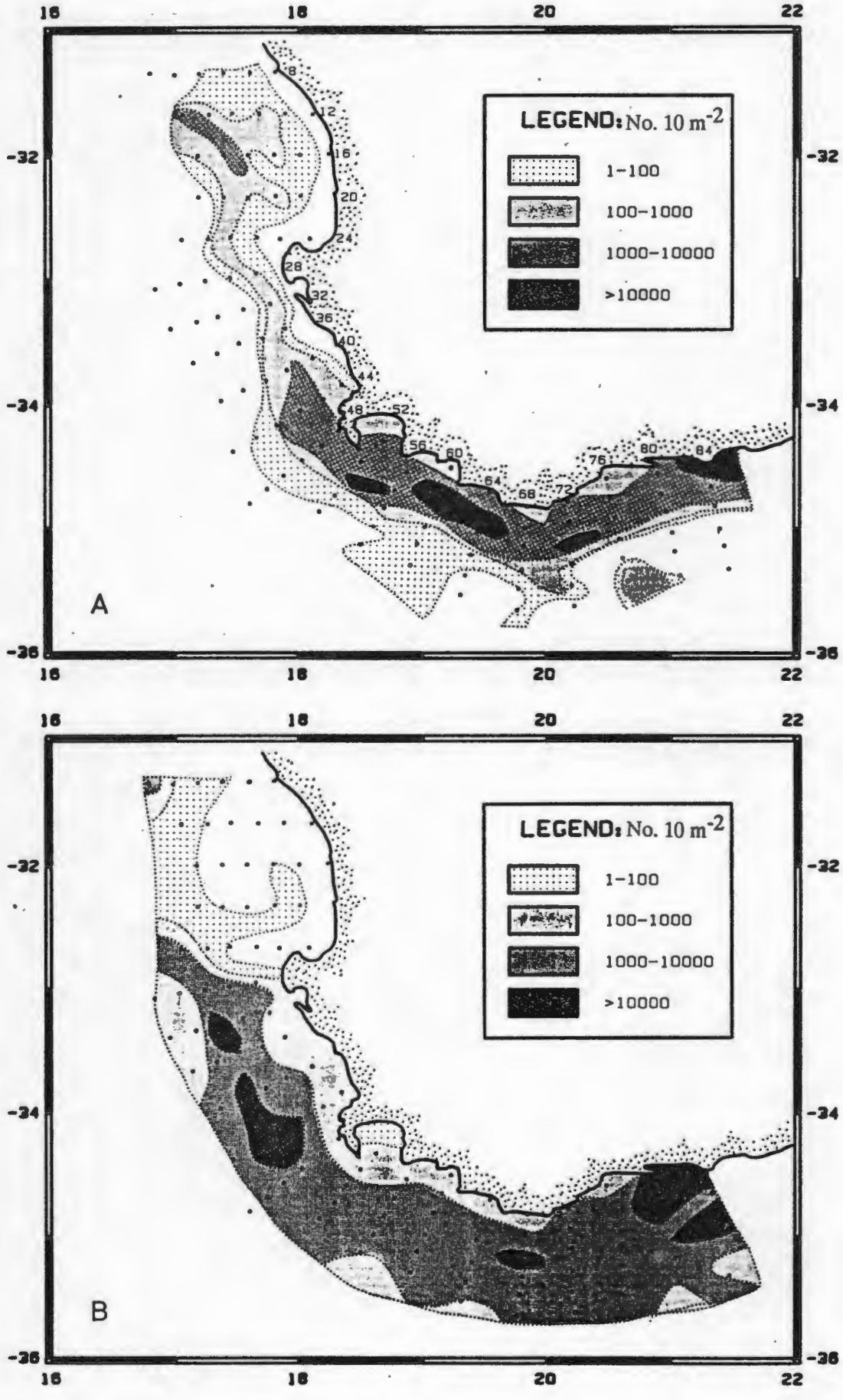


Figure 2. Mean pattern of abundance of anchovy eggs (A) and larvae (B) over the 12-cruise CELP survey grid between August 1977 and August 1978. (From Shelton, 1986).

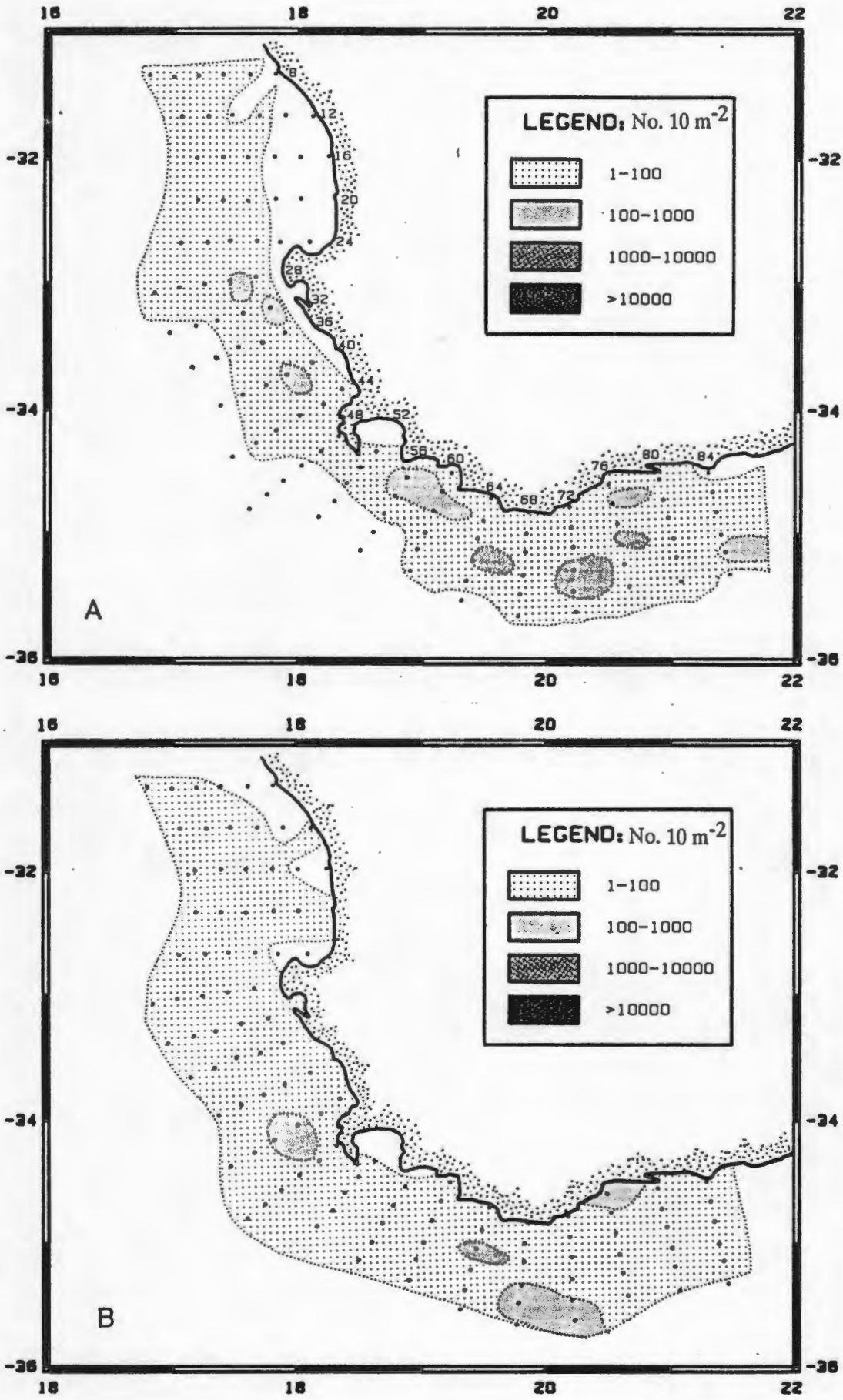


Figure 3. Mean pattern of abundance of pilchard eggs (A) and larvae (B) over the 12-cruise CELP survey grid between August 1977 and August 1978. (From Shelton, 1986).

Agulhas but sometimes as far east as Port Elizabeth. This is thought to be the spawning stock. Crawford (1981) reported that redeye eggs appear to be more tolerant of cold water than those of either anchovy or pilchard and are often found in regions subject to the influence of cold upwelling plumes. However, the eggs are mainly spawned in warmer water east of Cape Point as far as Cape Infanta, where older roundherring are often found with pilchard or mackerel in mixed shoals. The age and length of commercial redeye catches in South African waters was studied by Geldenhuys (1978). Isarev (1976a, b) studied maturation and fecundity of *E. whiteheadi* off Namibia and provided data on age, growth and mortality in the same region. There is no published information on the food and feeding habits of *E. whiteheadi* to date.

The objective of this study is, therefore, to fill this gap by providing a qualitative and quantitative report on the predatory patterns of the roundherring based on gut content analysis. This is to be complemented with data on gill raker morphology. Particular areas of interest are:

1. The composition of the diet; identification of food items,
2. Geographical variation in diet,
3. Diel feeding pattern, and
4. Morphological features of the gill raker apparatus related to feeding.

Chapter 2
PROCEDURES AND TECHNIQUES

2.1 STUDY AREA

E. whiteheadi were collected from both the south and west coasts of the Cape Province. The south coast area, from Cape Town to Port Elizabeth, was sampled during November 1983 (Fig.4) and November 1984 (Fig.5). The west coast area was represented by collections made off Lamberts Bay in April and May 1984 (Fig.5). Stations off the south coast fell conveniently into four areas which were examined separately. They are henceforth called Inshore West, Inshore East, Offshore and Eastern Cape (Figs 4 and 5).

2.2 COLLECTION OF MATERIAL

Redeye were collected by the Sea Fisheries Research Institute of South Africa from the *R.S. Africana* during anchovy spawning biomass surveys in November 1983 and 1984 (Table 1). The vessel operated both night and day, and fish targets detected acoustically were caught for identification using an Engels 308 midwater trawl. The trawl was towed at ca. 1.5 $m.sec^{-1}$, and the duration of trawls was varied from 5 minutes to 2 hours depending on catch rate. The depths at which fish schools were sampled ranged from 38-165 m in November 1983, 35-478 m in November 1984, and 44-95 and 63-73 m in April and May 1984, respectively.

Redeye were sorted into 2-cm (standard length SL) size classes. For certain analyses coarser divisions were employed: 5 - 10.9, 11 - 16.9 and 17 - 22.9 cm. In the latter case the smallest size class represents juvenile (immature) fish, the intermediate size class represents the transitional period between juvenile and adult, and the larger size class represents adults. Mean SL at 50% sexual maturity is 12-13 cm according to Geldenhuys (1978) and 16-17 cm according to DAMREP (Armstrong,1985). When sufficient numbers of fish were available, 5 - 10 individuals per trawl of each 2-cm size class were sampled for stomach contents. The fish samples were blast frozen as soon as possible after sorting.

2.3 GUT CONTENT ANALYSIS PROCEDURES

Stomachs were removed after defrosting of the sample by opening the body cavity and severing the gut at the oesophagus and behind the pyloric constriction. They were then preserved in 5% formalin solution and labeled according to vessel, cruise, station and fish length. In the laboratory, food remains contained in the stomach were carefully removed and placed in a container. Stomach contents from 5 fish of each size class were pooled. On rare occasions, food was found in the oesophagus, suggesting regurgitation or ingestion of food in the trawl. In such cases the sample was discarded. Fish were not separated into sexes.

With the aid of a dissecting microscope with an ocular micrometer, prey items with bodies intact were identified to major taxon and measured to the nearest 0.1 mm. For the commonly occurring crustacean prey, measurements were made as described by Clarke (1983): prosome length was measured in the case of copepods, total length for cladocerans and ostracods and maximum carapace length for decapods, mysids and euphausiids. Dimensions measured for other intact prey were standard length for fishes; maximum diameter for nearly spherical objects, e.g, eggs; and total length for any others, e.g., squid, bivalve larvae, chaetognaths, nauplii and amphipods. The equations of the mass-length regressions used are given in Table 2.

When large numbers of identifiable food items were present, processing was expedited by subsampling, according to methods of Engel (1976) and Starostka and Applegate (1970). The sample was suspended in a known volume of formalin, mixed gently so that the contents were uniformly distributed throughout the container, and subsampled three times using a wide-bore, 5 ml pipette. These were then transferred to a counting chamber and each aliquot was counted separately. Any specimens adhering to the outside of the pipette were washed off in such a way as to prevent them mixing with those inside. The concentration of the diluted sample was such that approximately 100-300 individuals were contained in each aliquot.

2.3.1 Gravimetric method

A number of authors have developed techniques for analyzing stomach contents of fish (reviewed by Hyslop, 1980). It is not

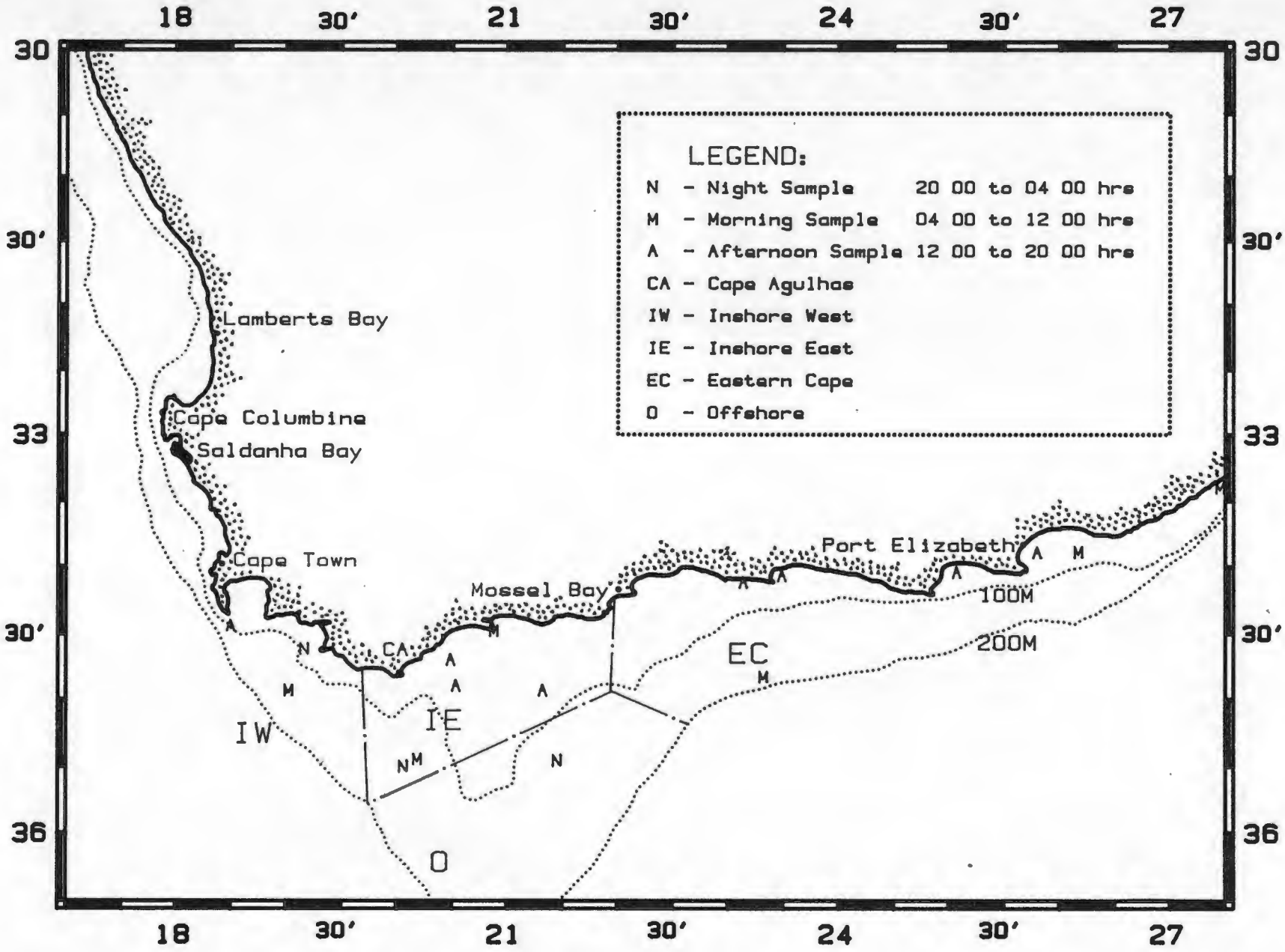


Figure 4. Sampling locations for roundherring, *E. whiteheadi*, in November 1983.

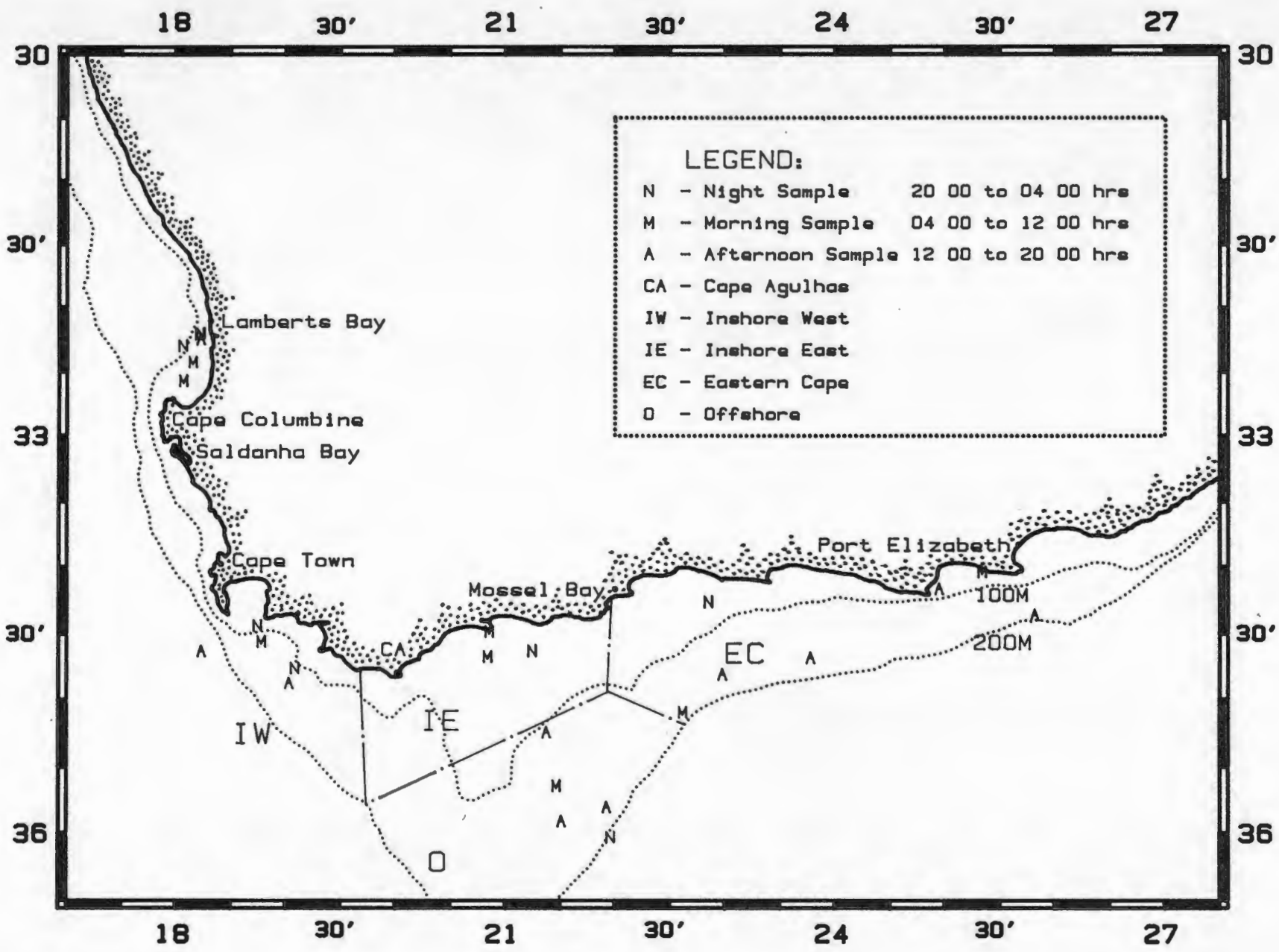


Figure 5. Sampling locations for roundherring, *E. whiteheadi*, in November 1984.

TABLE 1.- Midwater trawl, station information and sample sizes of roundherring from the south and west coasts of the Cape Province.

LOCATION	SAMPLING PERIOD	TOTAL NO. OF TOWS	TOWS CONTAINING ROUNDHERRING	DEPTH TRAWL	NO. OF STOMACHS [1]
South coast	November 1983	65	30	30-80	332 (67)
South coast	November 1984	63	43	5-275	465 (143)
West coast	April 1984	48	3	27-393	44 (19)
West coast	May 1984	49	3	14-34	18 (6)

[1] Number of stomachs containing food followed by number of empty stomachs in parentheses.

Table 2. Mass-length regressions used to calculate original dry mass from some measurements of prey.[1]

Prey type	Mass-length Relationship	n	r^2
Copepods	$M_{(ug)} = 22.95PL_{(mm)}^{2.88}$	5	0.94
Euphausiids[2] Mysids, and Decapods	$M_{(mg)} = 0.0012CL_{(mm)}^{3.16}$		
Fish larvae	$M_{(mg)} = 0.00015SL_{(mm)}^{3.22}$		
Chaetognaths	$M_{(mg)} = 0.00068TL_{(mm)}^{2.32}$		
Others[3]			

1 PL = prosome length; CL = carapace length; SL = standard length; TL = total length.

2 The relationship given is for the euphausiid *Euphausia lucens* and was taken from Stuart (1986). The same regression was used for mysids and decapods.

3 All cladocerans: 1.0 µg; all ostracods: 30.0 µg; all bivalve larvae: 50.0 µg; pteropod dry mass was approximated using the fish larva regression.

Table 3.- The percentage of dominant food items and unidentified material in the diet of the roundherring during morning, afternoon and night.

Dominant Food Item	SOUTH COAST						WEST COAST		
	November 1983			November 1984			April/May 1984		
	(%) Morning	(%) Afternoon	(%) Night	(%) Morning	(%) Afternoon	(%) Night	(%) Morning	(%) Afternoon	(%) Night
	n[1] = 66	n = 106	n = 30	n = 58	n = 95	n = 141	n = 12	n = 27	n = 3
Copepods	91.0	58.7	49.9	23.8	22.9	25.4	21.8	1.0	0
Euphausiids	1.0	25.6	48.6	0	3.2	11.8	0	0	0
Decapods	0.03	12.6	0	3.6	5.3	8.9	0	0	0
Other	7.9	0.7	1.5	15.6	2.1	2.6	26.6	0.7	0
Unidentified material	0	3.1	0	57.0	66.4	51.7	51.6	45.1	100
Chaetognaths	0	0	0	0	0	0	0	53.2	0

[1] n = number of fish

unusual in feeding studies to employ more than one method of analysis in order to account for limitations or biases of certain methods. Two approaches were used here, the gravimetric and the numerical method of analysis. The former shows the contribution in biomass of various prey, the latter shows the contribution in numbers.

Stomach contents consisted of a mixture of identifiable prey and unidentifiable matter. The first step in the procedure was to pick out the identifiable prey from the pooled sample and estimate the original dry mass of the removed organisms from some measure of their size using length-mass regressions. The remaining unidentifiable material was dried at 60°C and weighed on an electrobalance. The nominal total dry mass of food in the stomach was taken to be the sum of the dry mass of unidentifiable matter and the reconstructed dry mass of the measurable prey. In determining the relative contribution of various prey types to the diet, only identified material was considered. This procedure relies on the assumption that the rate at which prey becomes unidentifiable due to digestion is constant for all prey types. It is appreciated that this is not the case, and that the contribution of rapidly digested material will be underestimated.

Prey taken from stomachs are unsuitable for the determination of mass/length relationships as there can be considerable change in mass from digestion and preservation. Thus fresh specimens were used for this purpose. Copepods and fish larvae were taken from laboratory cultures. The others were collected at sea, and measured while still fresh.

2.3.2 Numerical method

This is the determination of percentage contribution of items to the stomach contents by number and was described by Ikusemiju and Olaniyan (1977) and Crisp et al. (1978). The number of individuals belonging to each food category was determined for a group of stomachs and the total is expressed as a percentage of the total number of individuals in all food categories. The mean number of items per stomach was also calculated.

2.4 DIEL FEEDING PATTERN

The possibility that there is a daily feeding rhythm in *Etrumeus whiteheadi* was investigated by relating stomach fullness to time of day. Stomach fullness was quantified by determining the ratio of dry mass of stomach contents to dry mass of the fish, and was expresses as an index:

Stomach fullness index (%) =

$$\frac{100 \times \text{dry mass of stomach contents}}{\text{dry mass of fish}}$$

The dry mass of stomach contents was taken to be the sum of reconstructed mass and mass of unidentifiable matter. The sources of error in this approach are discussed later. Because of the large number of empty stomachs, even during peak feeding periods, the distribution of stomach fullness indices was highly skewed. In order to normalize this distribution for statistical purposes an inverse hyperbolic sine transformation ($Y = \sin h^{-1}$) was applied to the stomach fullness index value (Bartlett, 1947).

The dry mass of fish was derived from standard length using the following mass-length regression for *E. whiteheadi:*

$$M_{(g)} = 0.00182SL_{(cm)}^{3.24}$$

This relationship was determined from fish collected during the present study and is presented graphically in the appendix ($n = 52$, $r^2 = 0.98$).

2.5 PREDATOR-PREY SIZE RELATIONSHIP METHOD 1

Fish were kept in the original 2 cm size class and a mean predator mass was calculated for the midpoint of each size class. These values were then correlated with the mean individual mass of prey in the stomachs of predators in the designated size classes. The regression coefficient was statistically compared to zero (Zar, 1974, p.205).

2.6 PREDATOR-PREY SIZE RELATIONSHIP METHOD 2

The mean predator mass of each 2 cm size class was related to prey mass as described by Ursin (1973), Livingstone (1983) and Hahm and Langton (1984). Ursin (1973) used the ratio of the masses of predator and prey to quantify prey size selectivity of North Sea cod and dab. For each combination of predator and prey he calculated the natural logarithm of the ratio of predator to prey mass ($\ln m_i/m_j$) where m_i = predator mass and m_j = prey mass. Hahm and Langton (1984) termed the values obtained from taking the natural

log of predator-prey ratio "scores". They plotted the frequency distribution of the scores and made comparisons between predator species. The proportion of a food item in the diet of a predator is a function not only of the predator's choice for that item but also of the item's availability (Lawlor 1980). If one has sufficient information on the prey field available to the predator, it is possible to draw conclusions about predator/prey size selectivity, (Ursin, 1973). The size distribution of available prey was unknown to Hahm and Langton (1984), and unfortunately the same is true in the present study. Pelagic schooling fish such as red-eye can move appreciable distances during the feeding day and because of the heterogeneity in plankton distribution, both horizontally and vertically, the stomach contents may bear little relation to the composition of the plankton in the catch area.

In order to gain some limited insight into size preference of the redeye studied, a theoretical prey field was created by assuming that there is an inverse proportionality between the abundance of a particular prey and its mass (Ursin, 1973; Livingstone, 1983). By multiplying N_j (total number of prey of type j in a group of stomachs) by m_j (mean individual dry mass of prey j) the theoretical situation is created whereby equal numbers of each prey size are available to the predator. This was then adjusted to predator size by dividing by m_j (mean predator mass) and plotted against the scores obtained as described above.

2.7 GILL ARCH MORPHOLOGY PROCEDURES

The structure of the filtering mechanism was examined using the method employed by King and Macleod (1976). The entire gill-arch system was removed from freshly thawed fish and placed in 5% formalin. The gill filaments were dissected so that only the gill-raker system was displayed.

Redeye possess a branchial system consisting of five pairs of cartilaginous gill arches, each of which bears gill rakers. The arch structure is similar to that of other teleosts with an upper (epibranchial and pharyngobranchial) and a lower (hypobranchial and ceratobranchial) arch limb.

For the purpose of this study the first branchial arch was removed from the remaining four arches under a stereomicroscope, ensuring that there was no loss of or damage to the gill rakers. No difference was detected between the left and right first gill arch as regards counts and measurements.

Measurements were made on the gill structure of 17 fish ranging in size from 3.8 to 22.0 cm standard length. The mean gill-raker length and width was calculated from a number of randomly selected gill-rakers.

The gill-raker gap (G) was then calculated using the following formula:

$$G = T - (R \times W)/R - 1$$

where T = total gill-arch length,

R = total number of gill rakers,

W = mean gill raker width (King and Macleod, 1976).

To illustrate the relation between the dimensions and counts of various gill-arch structures and fish length, regression diagrams were plotted using the equation $Y = bX+a$ and $Y = aX^b$, where Y = fish length, X = measurement or count of the gill-arch structure, and a and b are constants. All fish lengths cited are standard lengths.

The following parameters were examined for each first gill arch on the left side:

(i) total gill-arch length,
(ii) total number of gill rakers,
(iii) number of gill rakers on the lower arch limb,
(iv) number of gill rakers on the upper arch limb,
(v) mean gill-raker length, and
(vi) mean gill-raker width.

Chapter 3
RESULTS

The stomach contents of 859 redeye taken in 44 trawls were examined, and of these, total of 631 (73%) contained prey. The prey were allocated into 15 taxa plus "unidentified matter". Redeye consumed a wide variety of organisms. A complete listing is given in the Appendix.

3.1 DIET OF REDEYE ON THE SOUTH COAST

The Agulhas current has a dominating influence on the south coast of the Cape Province. An introduction to the biotic and abiotic features of the region may be obtained by consulting the reviews by Heydorn et al. (1978), Brown and Jarman (1978) and Harris (1978).

To permit a finer geographic comparison, the fish-collecting stations conducted on the south coast during both November 1983 and November 1984 were partitioned among the four areas shown in Figs 1 and 2. The results of the stomach content analyses of south coast samples from these four areas are presented in a series of pie diagrams (Figs 6-13). Only the identifiable portions of the stomach contents are represented in these figures.

In general, the diet on the entire south coast was dominated by calanoid copepods, by mass and number, during both the 1983 (Figs 6-9) and 1984 (Figs 10-13) cruises. Copepods alone accounted for a mean of 67% (range: 60-75%) by mass of the diet of the juvenile size class, a mean of 59% (range: 44-88%) of the diet of the transitional (juvenile/adult) size class and a mean of 43% (range: 30-73%) of the diet of the adult size class. Euphausiids accounted for a mean of 10% (range: 7-18%) by mass of the diet of juveniles, 14% (range: 7-18%) of the diet of transitional fish and 52% (range: 27-63%) of the diet of adults. Decapods accounted for a mean of 9% (range: 4-13%) by mass of the diet of juveniles, a mean of 18% (range: 6-25%) of the diet of transitional fish and a mean of 5% (range: 0-7%) of the diet of adults.

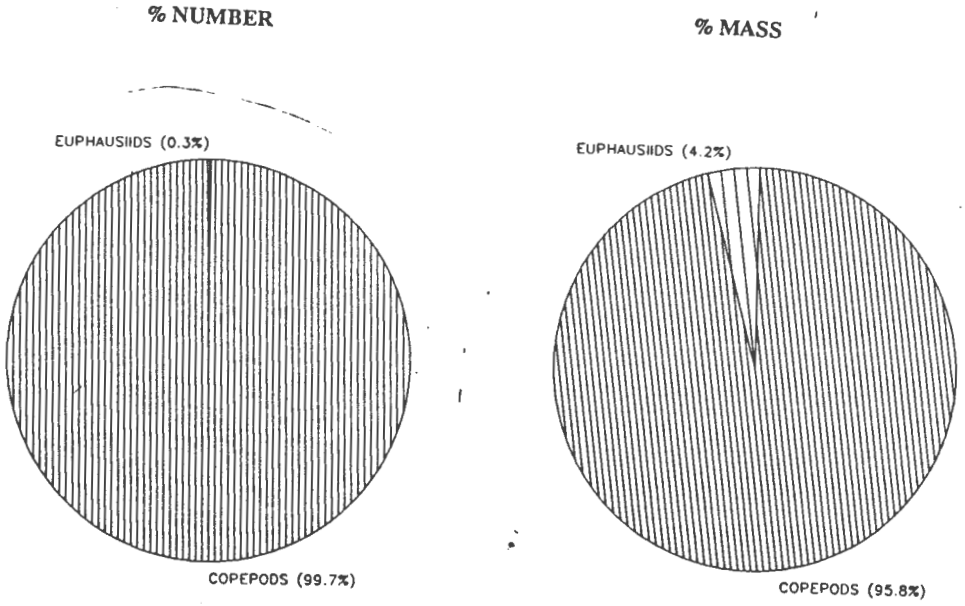
At certain stations, euphausiids and decapods were particularly well represented in gut contents. For example, euphausiids constituted 70% of the diet by mass of the adult size class in 1983 in the offshore area (Fig. 8), 70% of the diet of transitional fish in 1984 in the inshore area east of Cape Agulhas (Fig. 11), and 100% of the diet of adult fish in 1984 in the inshore area west of Cape Agulhas (Fig. 10). Decapods comprised 72% by mass of the gut contents of transitional fish in 1983 in the inshore area east of Cape Agulhas (Fig. 7), and 65% of the gut contents of transitional fish in 1984 in the inshore area west of Cape Agulhas (Fig. 10).

Cladocerans, bivalve larvae, ostracods, chaetognaths, pteropods, fish eggs and larvae, and mysids tended to be much less important in general, although there were notable exceptions. Mysids were recovered in significant quantities in juvenile fish taken in 1984 in the eastern Cape area, where they accounted for 36% of the stomach content by mass (Fig. 13). Pteropods were especially well represented in gut contents of juveniles taken in the offshore area in 1983 (Fig. 8). Fish eggs were very abundant (65% by mass) in stomach contents of juvenile redeye in the 1984 collections made in the inshore area east of Cape Agulhas (Fig. 11). On the whole of the south coast, fish eggs comprised 5-21% of the diet of juveniles, but less than 1% of the diet of the larger two size classes. The vast majority of eggs encountered were those of the anchovy, *Engraulis capensis*. Eggs of the lightfish, *Maurolicus muelleri*, were also among the more common fish eggs identified.

Unidentifiable matter in stomachs of south coast fish constituted 2-25% of the total mass of stomach contents (reconstructed mass plus that directly weighed) in all juvenile redeye from the south coast and 14-26% of the total mass in transitional and adult fish combined.

A comparison of pie diagrams from the four areas of the south coast suggests that both juvenile and adult fish taken in the offshore area (Figs 8 and 12) had a more diverse diet than those taken inshore. Copepods, euphausiids and decapods were the principal prey items in both inshore and offshore areas in both years, but significant numbers of pteropods and lesser prey types were present offshore but not inshore.

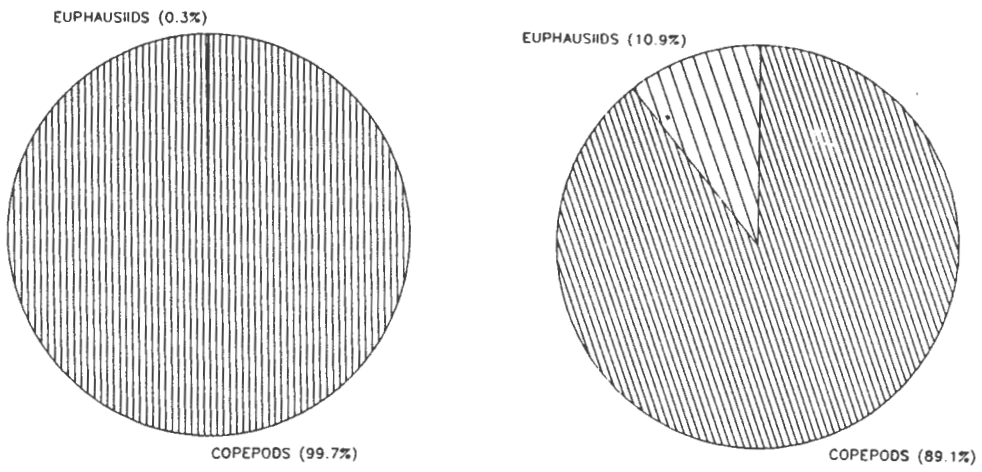
INSHORE WEST OF CAPE AGULHAS—1983



NO UNIDENTIFIABLE MATTER

ADULT SIZE CLASS

17-22.9 cm



NO UNIDENTIFIABLE MATTER

Figure 6. Composition of diet by percent mass and percent number for two size classes of redeye taken in the "Inshore West" area in November, 1983. Unidentifiable matter has been excluded from the diagram. Its contribution to total gut contents is given below the diagrams.

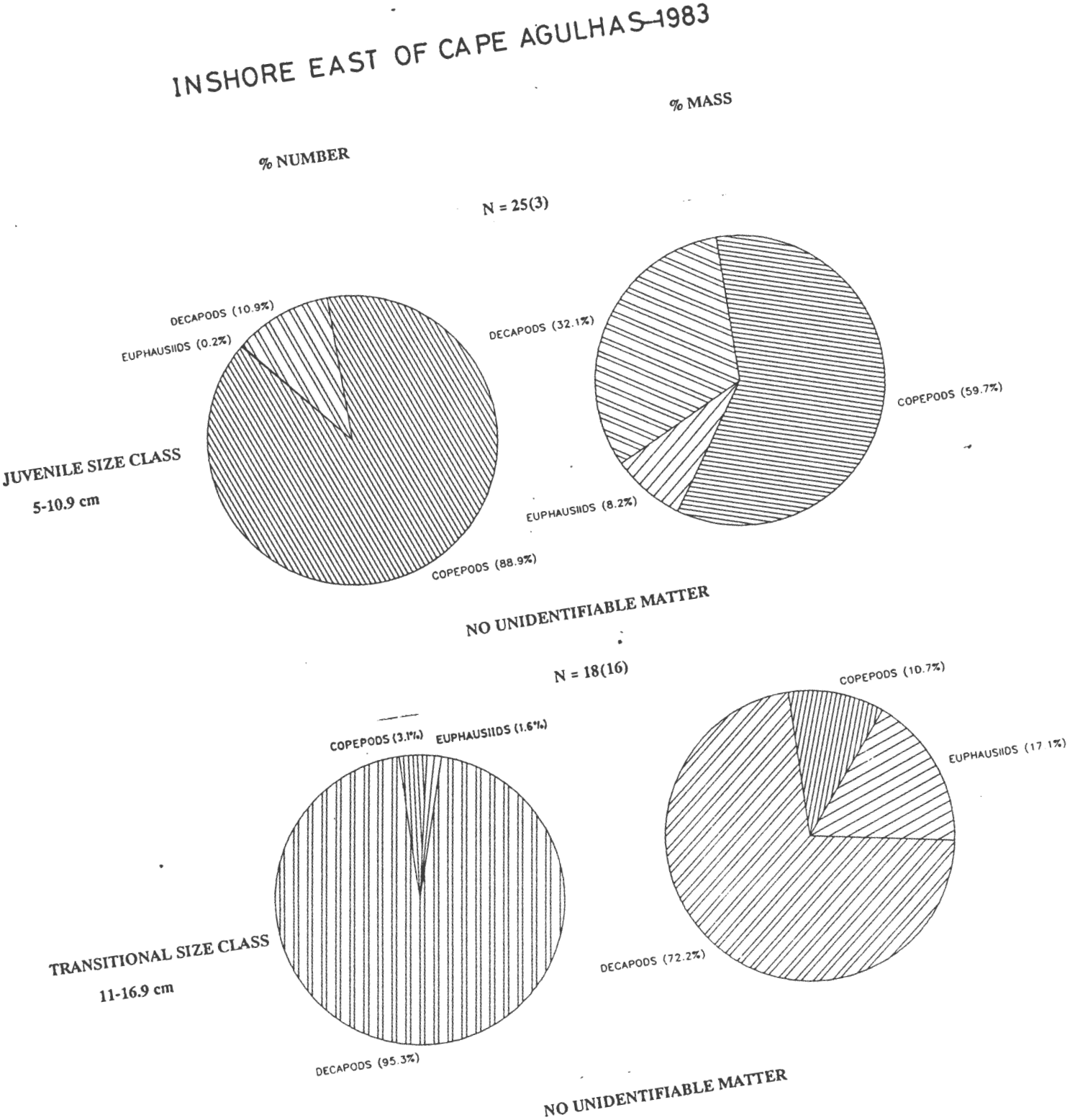


Figure 7. Composition of diet by percent mass and percent number for two size classes of redeye taken in the "Inshore East" area in November, 1983. Unidentifiable matter has been excluded from the diagram. Its contribution to total gut contents is given below the diagrams.

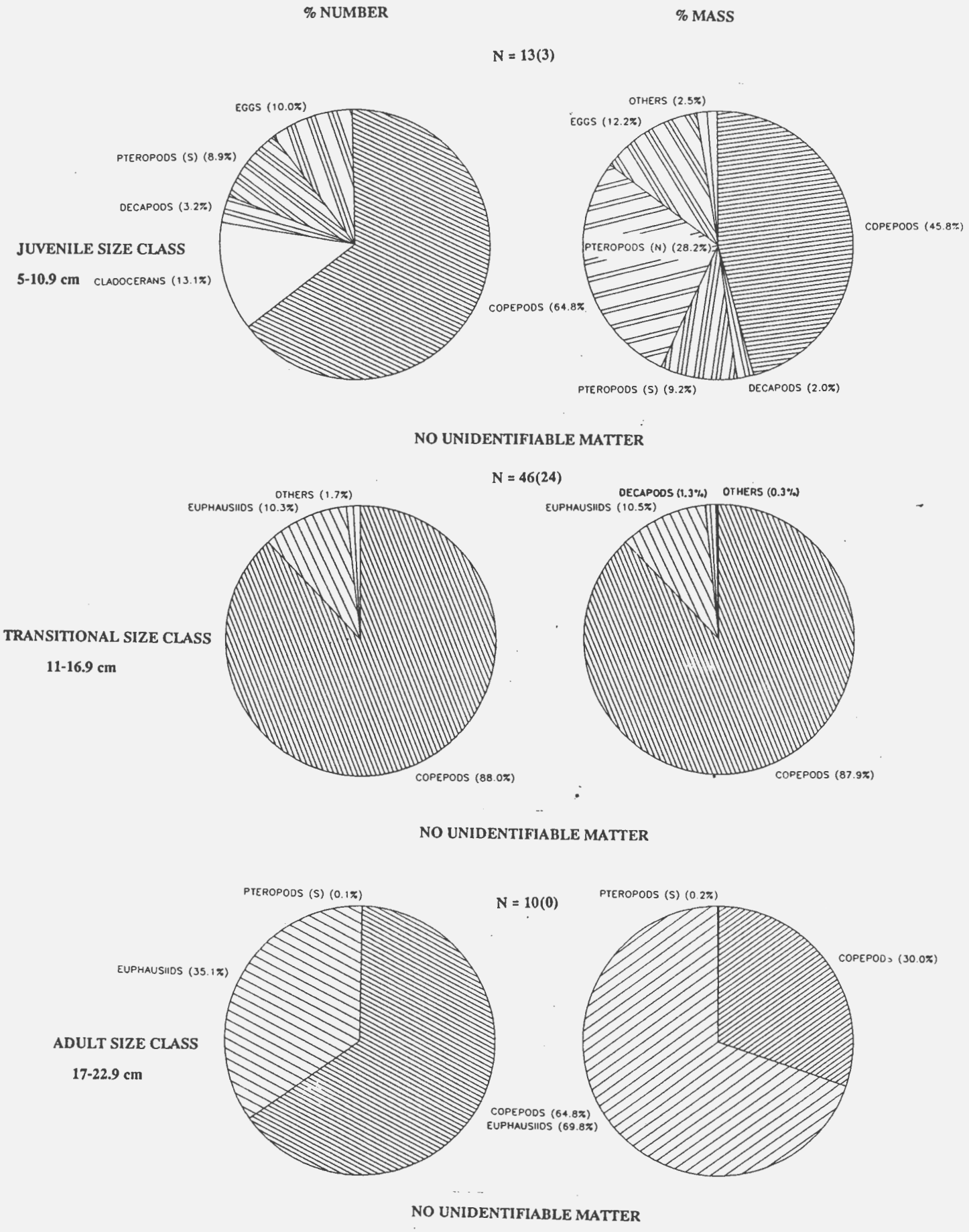


Figure 8. Composition of diet by percent mass and percent number for three size classes of redeye taken in the "Offshore" area in November, 1983. Unidentifiable matter has been excluded from the diagram. Its contribution to total gut contents is given below the diagrams.

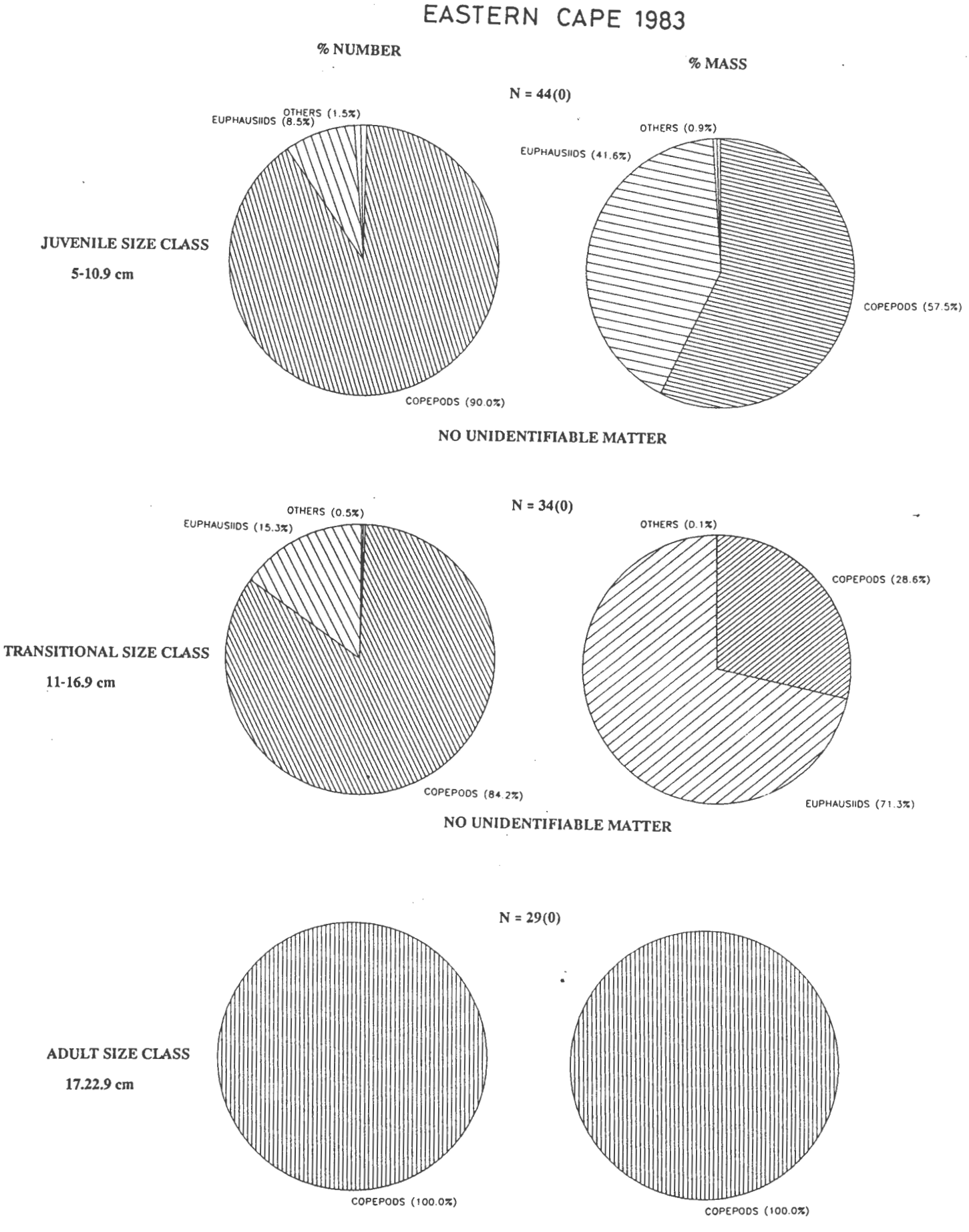


Figure 9. Composition of diet by percent mass and percent number for three size classes of redeye taken in the "Eastern Cape" area in November, 1983. Unidentifiable matter has been excluded from the diagram. Its contribution to total gut contents is given below the diagrams.

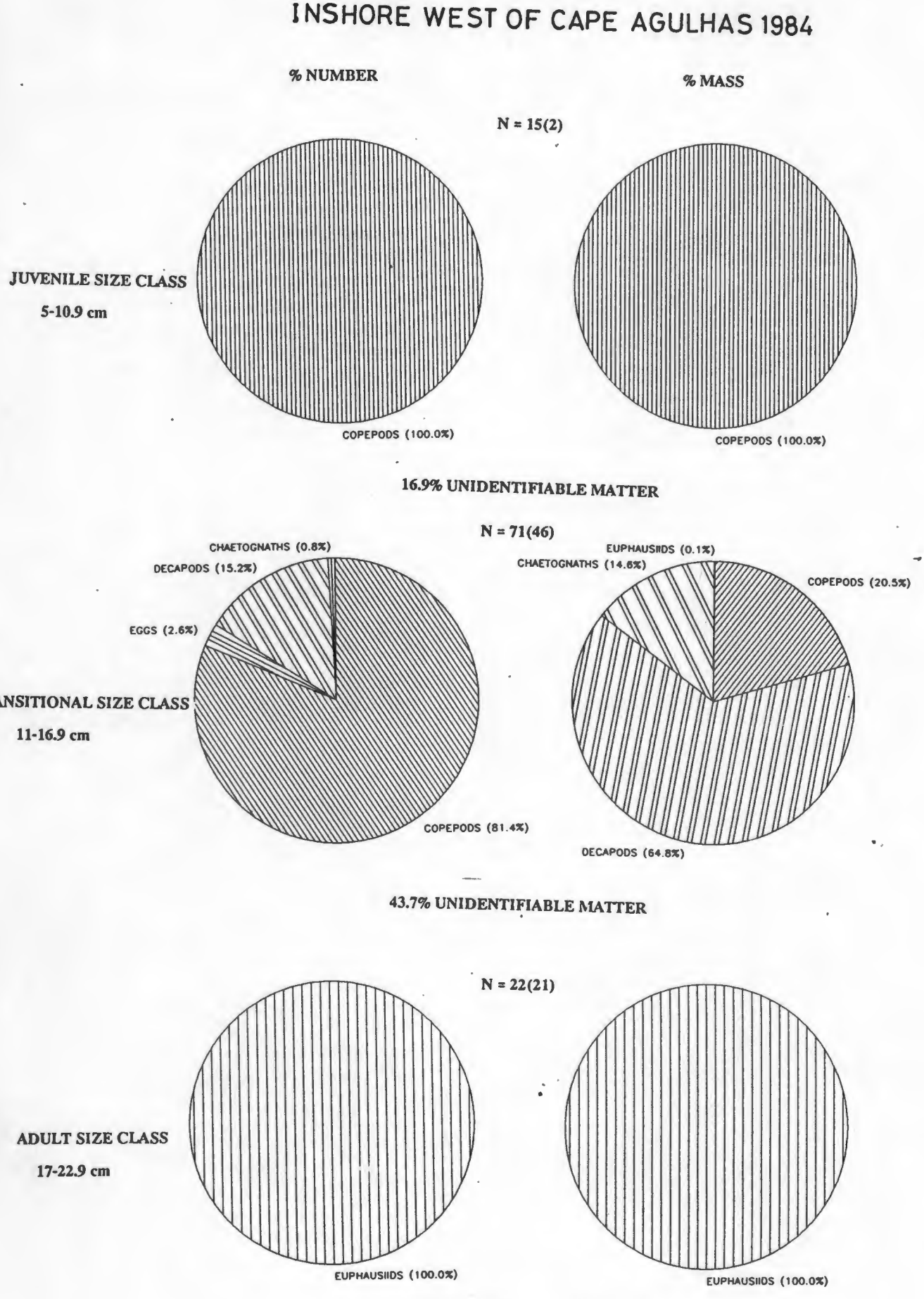


Figure 10. Composition of diet by percent mass and percent number for three size classes of redeye taken in the "Inshore West" area in November, 1984. Unidentifiable matter has been excluded from the diagram. Its contribution to total gut contents is given below the diagrams.

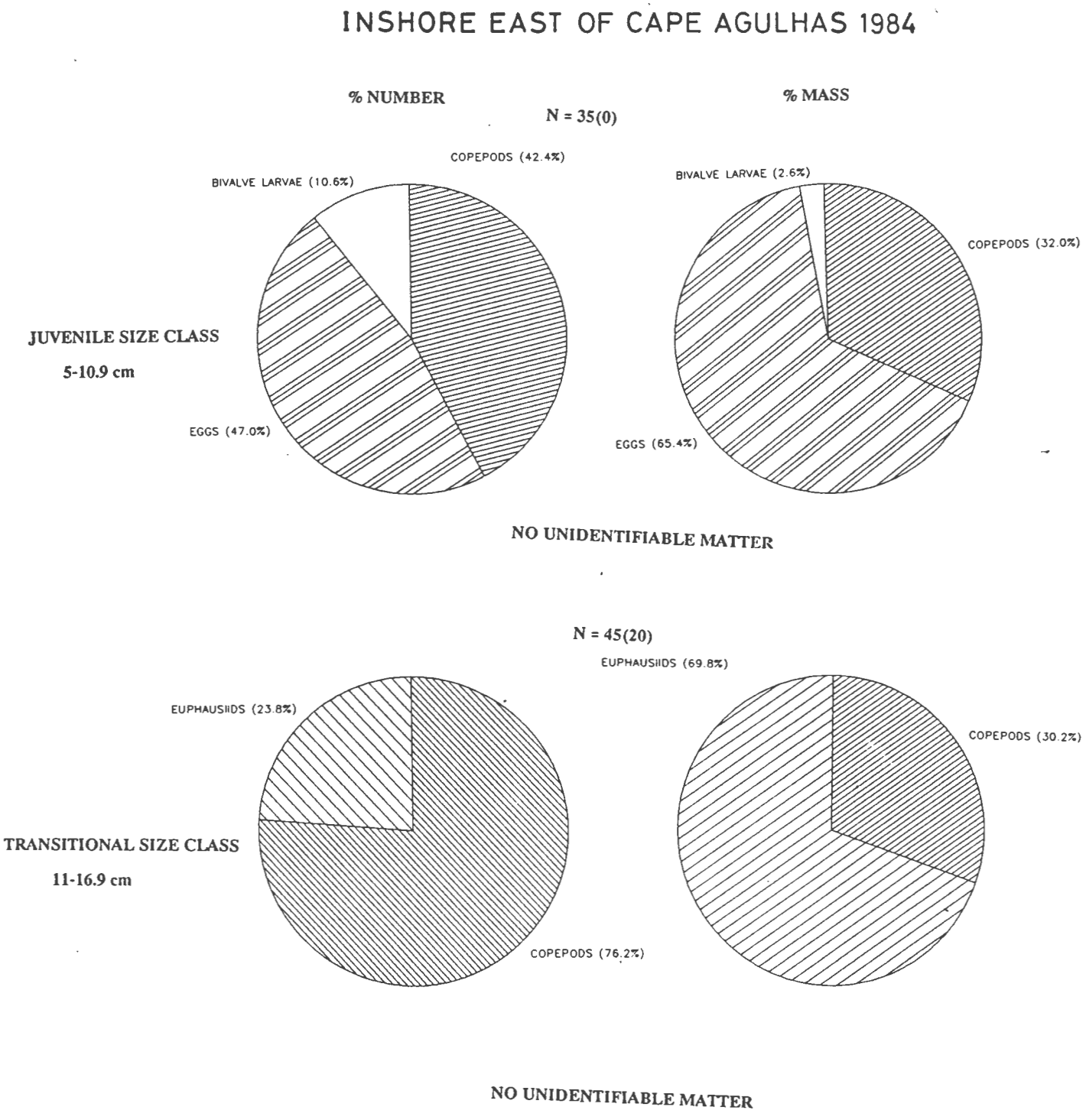


Figure 11. Composition of diet by percent mass and percent number for two size classes of redeye taken in the "Inshore East" area in November, 1984. Unidentifiable matter has been excluded from the diagram. Its contribution to total gut contents is given below the diagrams.

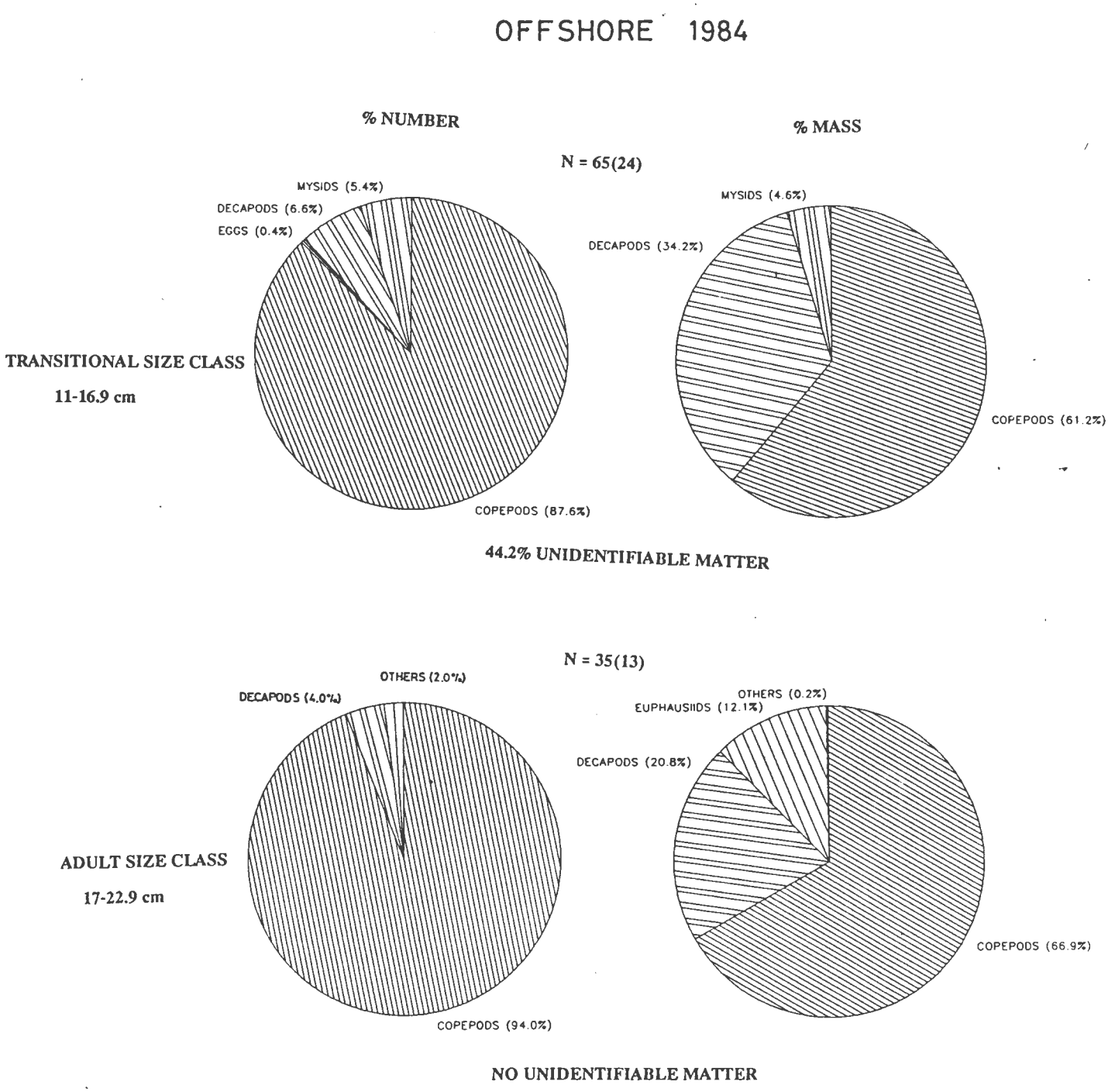


Figure 12. Composition of diet by percent mass and percent number for two size classes of redeye taken in the "Offshore" area in November, 1984. Unidentifiable matter has been excluded from the diagram. Its contribution to total gut contents is given below the diagrams.

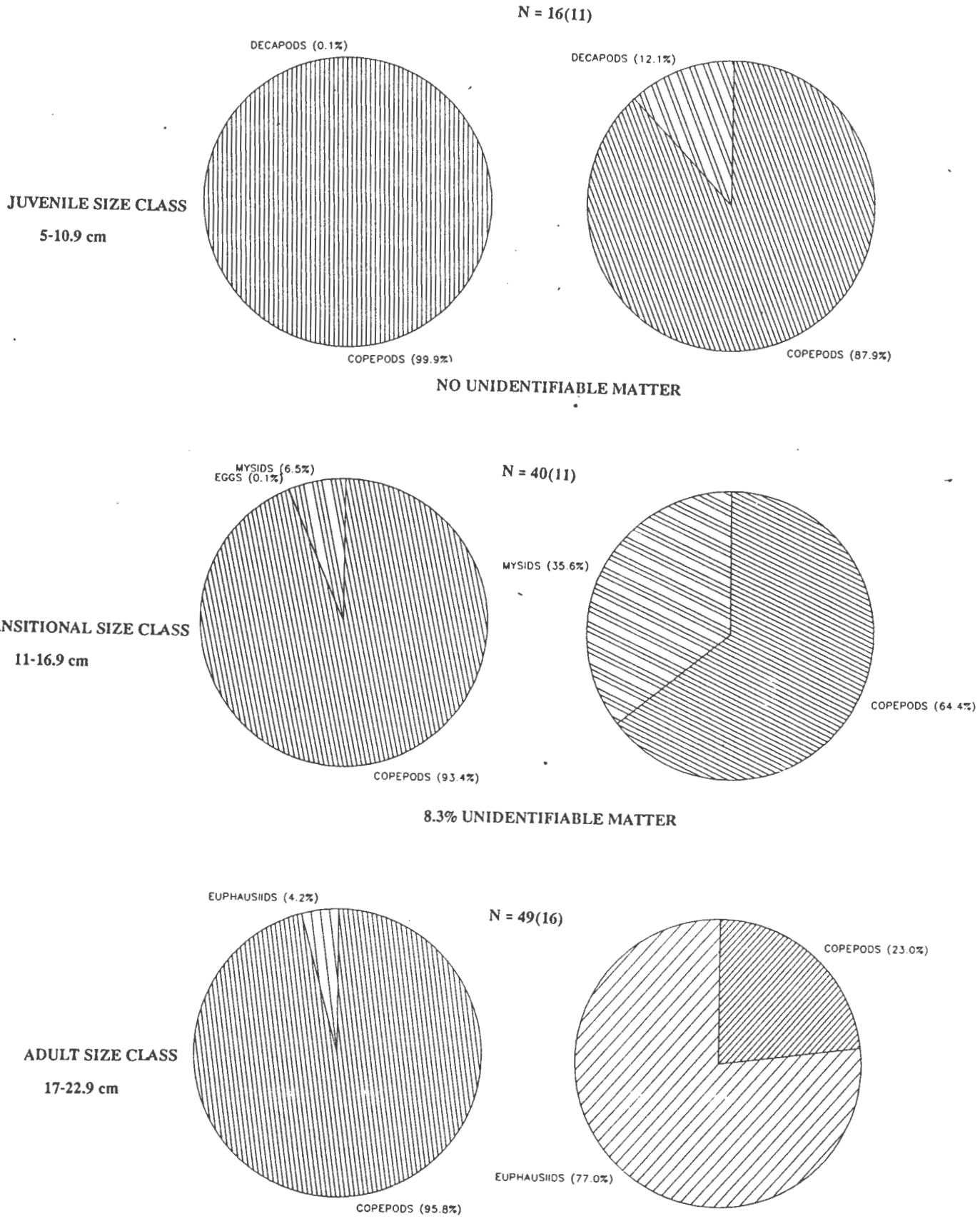


Figure 13. Composition of diet by percent mass and percent number for two size classes of redeye taken in the "Eastern Cape" area in November, 1984. Unidentifiable matter has been excluded from the diagram. Its contribution to total gut contents is given below the diagrams.

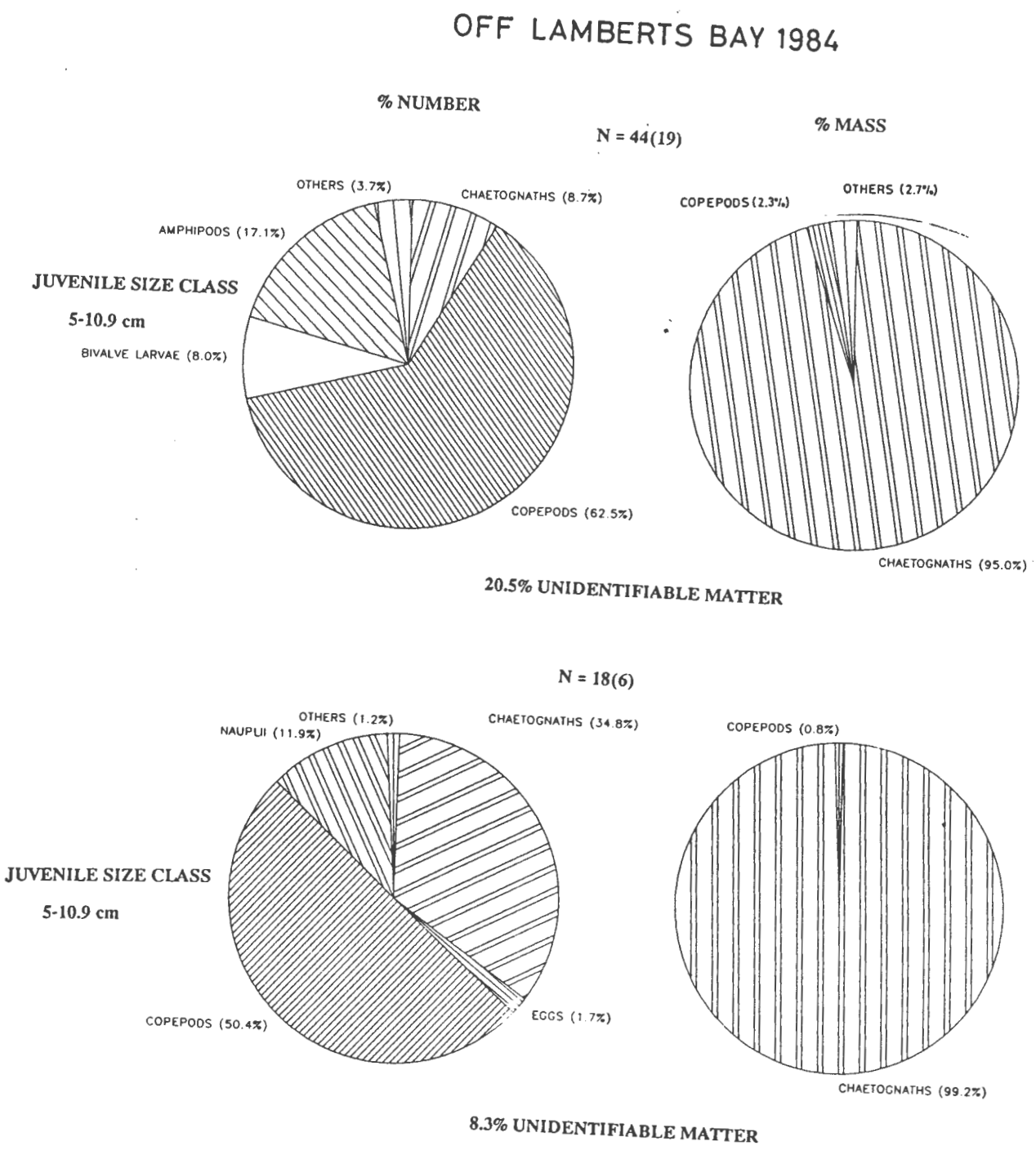


Figure 14. Composition of diet by percent mass and percent number for two size classes of redeye taken in the "West coast" area April 1984 and May 1984. Unidentifiable matter has been excluded from the diagram. Its contribution to total gut contents is given below the diagrams.

3.2 DIET OF REDEYE ON THE WEST COAST

The area north of the Cape of Good Hope was represented by juvenile fish only. These collections were made in Lamberts Bay during the months of April and May 1984. The stomach contents are presented as pie diagrams in Fig. 14.

By mass, the most important prey category here were chaetognaths. Arrow worms accounted for 96% by mass in the April samples. This rose to 99% in May (Fig. 14). By number, their contribution was considerably less, 9% and 35% in April and May, respectively. Crustaceans were less important and were dominated by small calanoid copepods. These contributed little to the diet by mass, 2.3% in April and 0.6% in May, but by number accounted for 63% in April and 50% in May. In April other prey items contributing to the stomach contents were bivalve larvae (0.6% by mass, 8% by number) and amphipods (0.5% by mass, 17% by number. In May the only other food type of any importance was euphausiid and copepod nauplii (0.1% by mass, 12% by number).

The remaining taxonomic groups contributed <1%, by mass and number, in both months, with the exception of cladocerans (April) and fish eggs (May), where values of 3.5% by number and 1.7% by number were recorded, respectively. Unidentified material accounted for 21% of the total stomach content mass in April, but only 8.3% in May.

3.3 RELATIONSHIPS BETWEEN STOMACH FULLNESS AND TIME OF DAY

Since data were collected throughout the day and night, it was possible to examine the influence of the time of capture on the quantity of prey in the stomach and on its composition.

3.3.1 South coast.

The plot of stomach fullness index (S.F.I.) *versus* time of day for the November 1983 cruise is presented in Fig. 15. All three size classes yielded peak fullness indices in the afternoon and early evening. The same trends appeared in the November 1984 cruise (Fig. 16). When all data from the November 1983 south coast cruise were combined, the weighted mean S.F.I.'s obtained from morning-caught (0400-1200 hrs), afternoon-caught (1200-2000 hrs) and night-caught (2000-0400 hrs) fish were statistically compared using a student's *t* test. The overall mean S.F.I. obtained for afternoon-caught fish (0.88%) was significantly ($p<.05$) higher than that obtained for either morning-caught (0.15%) or night-caught (0.06%) fish.

The same conclusion is reached when all S.F.I. *versus* time-of-day data for the 1984 cruise were combined. On that cruise the mean S.F.I. for afternoon-caught fish (0.53%) was significantly higher than that for either morning-caught (0.11%) or night-caught (0.20%) fish. These significance tests were based on inverse hyperbolic sine transformed data. Empty stomachs were included in the analysis.

3.3.2 West coast.

The juvenile fish collected in Lambert's Bay yielded a bimodal distribution of S.F.I. when plotted against time of day, with one peak around midday and the other in the evening (Fig. 17). The samples taken in the intervening period (1300 hrs, 1500 hrs and 1700 hrs) happened to be empty. The weighted mean S.F.I. for morning-caught fish was 0.25%, for afternoon-caught fish, 0.44% and for night-caught fish, 0.20%. The results of both south and west coast samples indicate that redeye are largely daytime, especially afternoon, feeders.

3.4 RELATIONSHIP BETWEEN STOMACH FULLNESS AND GEOGRAPHICAL AREA

A non-parametric ranking test (Kruskal-Wallis test, Zar, 1974, p. 141) was used to test the null hypothesis that S.F.I. was the same in all four areas on the south coast. The analysis was performed separately on the 1983 and 1984 S.F.I. data and in neither case was the null hypothesis rejected at the $p<.05$ level (H_c = 2.92, v = 2; and 2.56, v = 3, in 1983 and 1984, respectively). Thus the stomach fullness index differs from area to area on the south coast.

3.5 RELATIONSHIP BETWEEN COMPOSITION OF DIET AND TIME OF DAY

The percent, by mass, of various prey types is listed in Table 3 according to the three time categories: morning, afternoon and night. There does appear to be a temporal effect on diet composition, and this is most strongly illustrated in the case of euphausiids, which were rare in morning samples but abundant in afternoon and night samples. Decapods appear to follow the same trend (see Table 3).

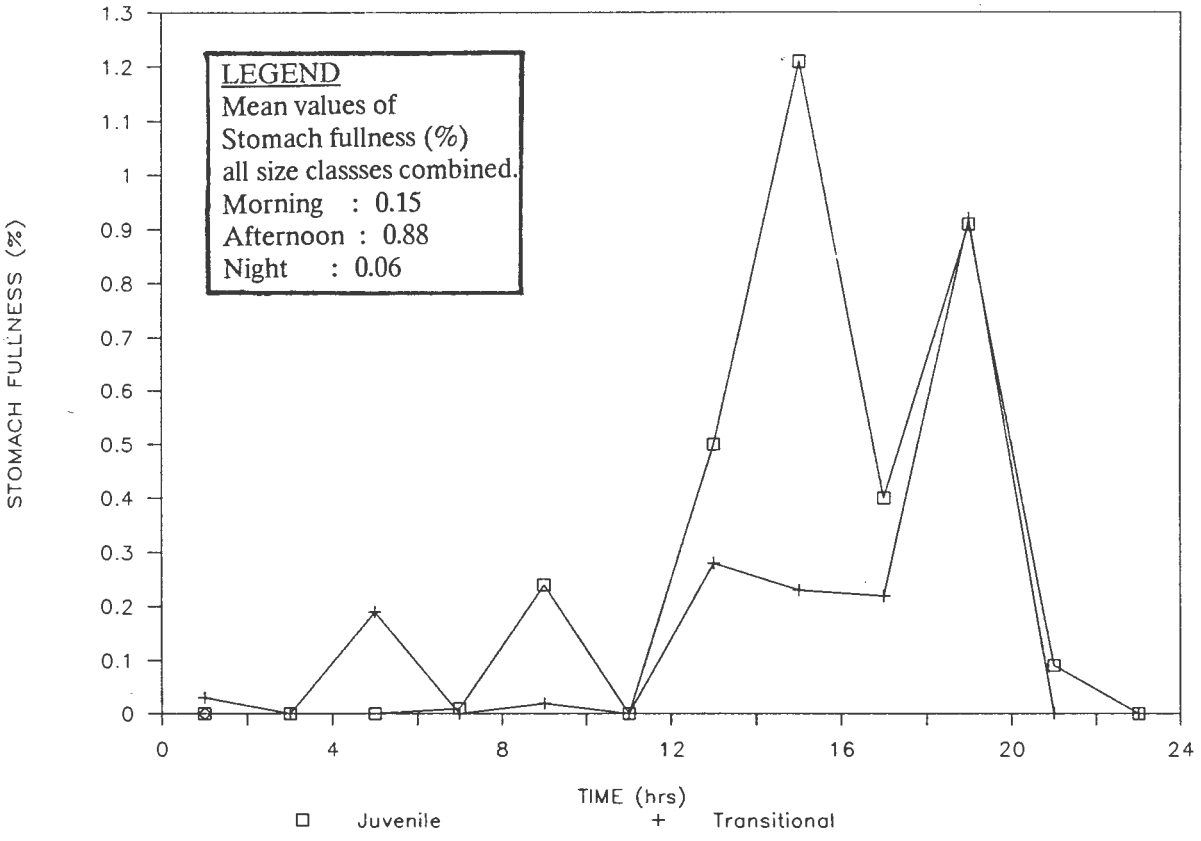


Figure 15. Dry mass of stomach contents as a percent of total fish dry mass for samples collected November, 1983 on the South Coast. The 24 hour day has been divided into morning: 0400-1200 hrs; afternoon: 1200-2000 hrs; and night: 2000-0400 hrs.

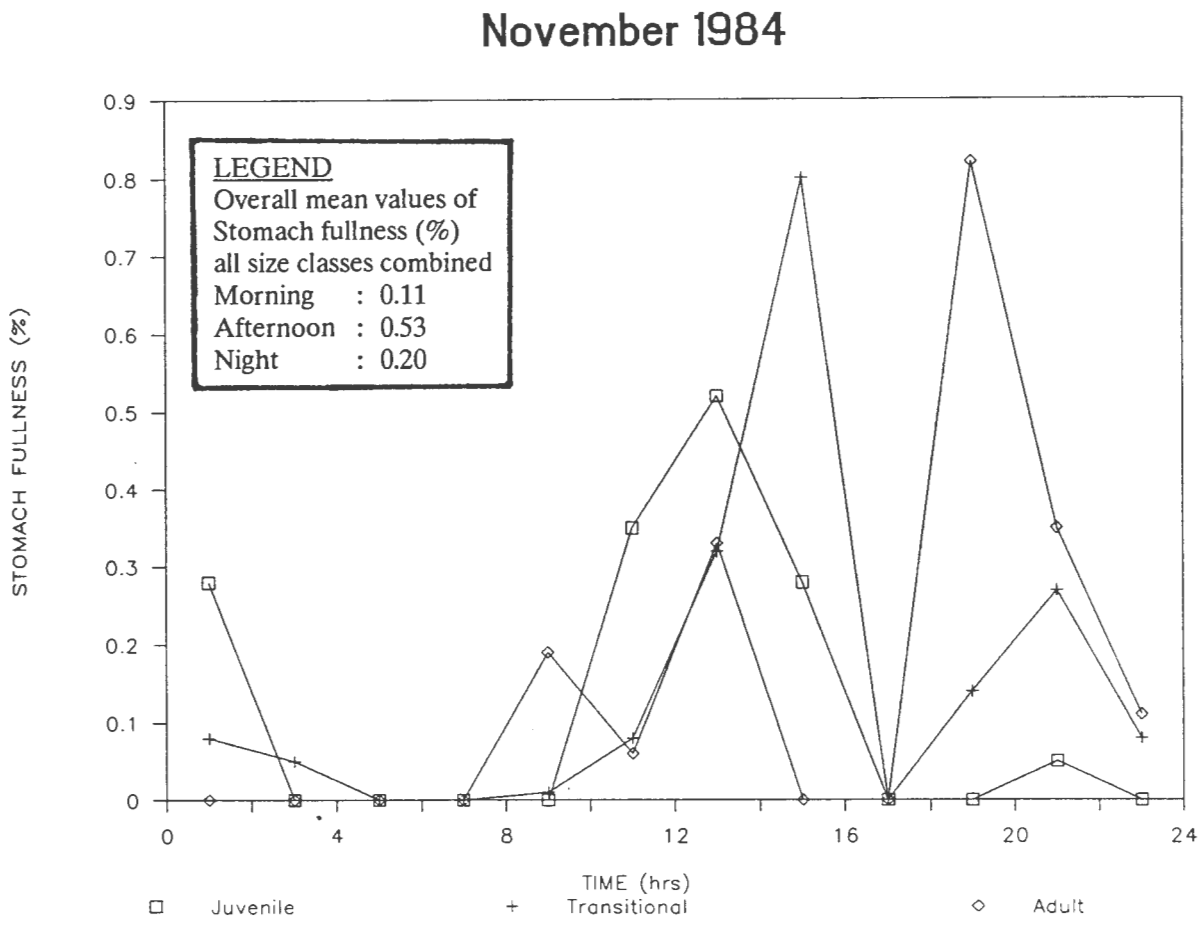


Figure 16. Dry mass of stomach contents as a percent of total fish dry mass for samples collected November, 1984 on the South Coast. The 24 hour day has been divided into morning: 0400-1200 hrs; afternoon: 1200-2000 hrs; and night: 2000-0400 hrs.

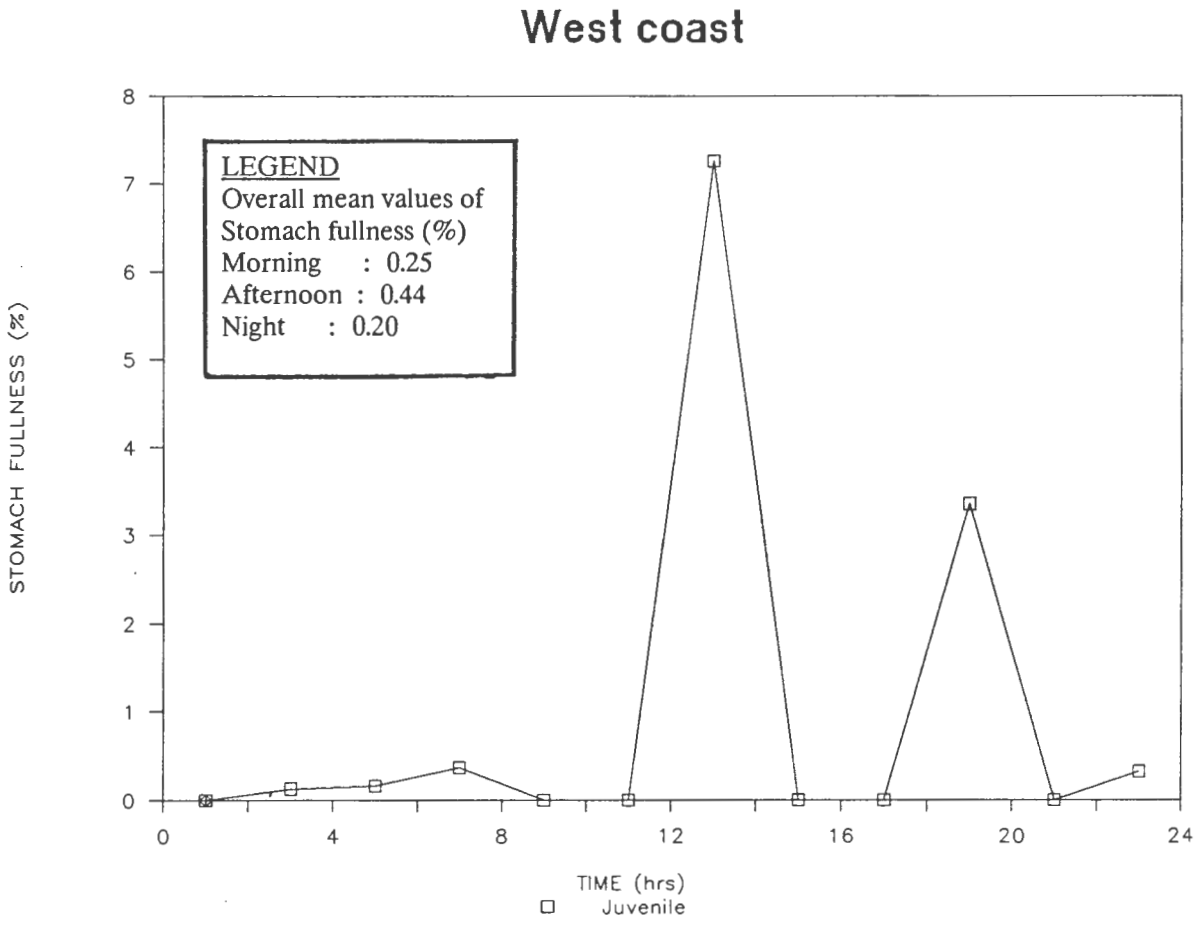


Figure 17. Dry mass of stomach contents as a percent of total fish dry mass for samples collected April and May 1984 on the West Coast. The 24 hour day has been divided into morning: 0400-1200 hrs; afternoon: 1200-2000 hrs; and night: 2000-0400 hrs.

3.6 RELATIONSHIP BETWEEN STOMACH FULLNESS AND FISH LENGTH

Fig. 18 is the plot of S.F.I. against fish standard length (2-cm size classes) for the 1983 cruise. The slope of the straight line fitted to this data by least-squares regression was not significantly ($p<.05$) different from zero (Zar, 1974, p. 205). The same result was obtained in 1984 (Fig. 19). Thus, there was no relationship between stomach fullness and fish size.

3.7 RELATIONSHIP BETWEEN PREDATOR MASS AND PREY MASS

An examination of the relationship between the size of a predatory fish and its preferred prey size may aid in understanding, interpreting and quantifying a predator's feeding habits (Ursin, 1973; Werner, 1974; Agger and Ursin, 1976; Werner and Hall, 1974). Relative size of predator and prey is known to be a controlling factor in prey preference by fish. Size preferences are well documented for a number of marine and freshwater species (Levings, 1974; Moore and Moore, 1976; Ross, 1977; Helfman, 1978). Prey size preference is also central to the concept of optimal foraging which is based on the premise of a maximum of energy return to the predator for each prey encounter. (Werner, 1974; Krebs and Davies, 1979). However, factors such as prey abundance and species composition must also be considered.

3.7.1 Predator/prey size relationship---method 1.

The relationships between fish mass and mean mass of individual prey items in stomach contents (all size classes of fish combined) in 1983 and 1984 are presented in Figs 20 and 21, respectively. Only the data from the south coast surveys were included; the samples from the west coast consisted of a relatively narrow size range of fish.

The slope of the linear regression line fitted to the 1983 data alone (Fig. 20) does not differ significantly from zero ($0.05<p<0.10$). The line fitted to the 1984 data (Fig. 21) and that fitted to data obtained from combining the two years have significantly positive slopes ($p<.05$).

3.7.2 Predator/prey size relationship---method 2.

The results of applying the method of Ursin (1973) to the redeye predator-prey size relationship are presented in Figs 22-28. There are three figures from the 1983 south coast cruise (one for each predator size class), three from the 1984 south coast cruise and one (juveniles) from the two west coast cruises.

1. The solid line in these figures is the actual distribution of scores ($\ln(m_i/m_j)$), where m_i is predator mass, m_j is prey mass, and each score represents a single combination of predator and prey. A score of 7 indicates that the predator's mass is about 1000 times the mass of a particular prey item ($e^7 = 1097$). Scores greater than 7 indicate relatively smaller prey, scores less than 7, relatively larger prey. The solid lines are associated with the y-axis on the left side of these figures labelled "frequency of occurrence". This is N_j, that is, the total number of prey of type j recovered from predator stomachs. The solid line is thus the frequency distribution of N_j over a range of scores. The line represents the actual number of cases in which various scores were obtained, and therefore directly reflects the contents of predator stomachs.

2. The purpose of the dashed lines is to provide an indication of the tendency for the predators to select prey according to size. The assumption was made that there is an equal mass of prey in each prey size group, in other words, that the number of prey of a particular mass is inversely proportional to that mass (Ursin, 1973). The dashed lines are associated with the y-axis on the right side of the figures, which is labelled $N_j\ m_j/m_i$. The derivation of this quantity was given in the methods section.

If a major peak in the dashed line falls to the left of the major peak in the solid line, it suggests a selection for the larger prey; if it falls to the right, there is a suggestion that smaller prey are being actively selected.

3.7.2.1 South coast---November 1983.

The juvenile curve based on hypothetical prey-field conditions (Fig. 22, dashed line) is positioned slightly to the left of the curve based purely on gut contents. This implies a preference for the larger prey

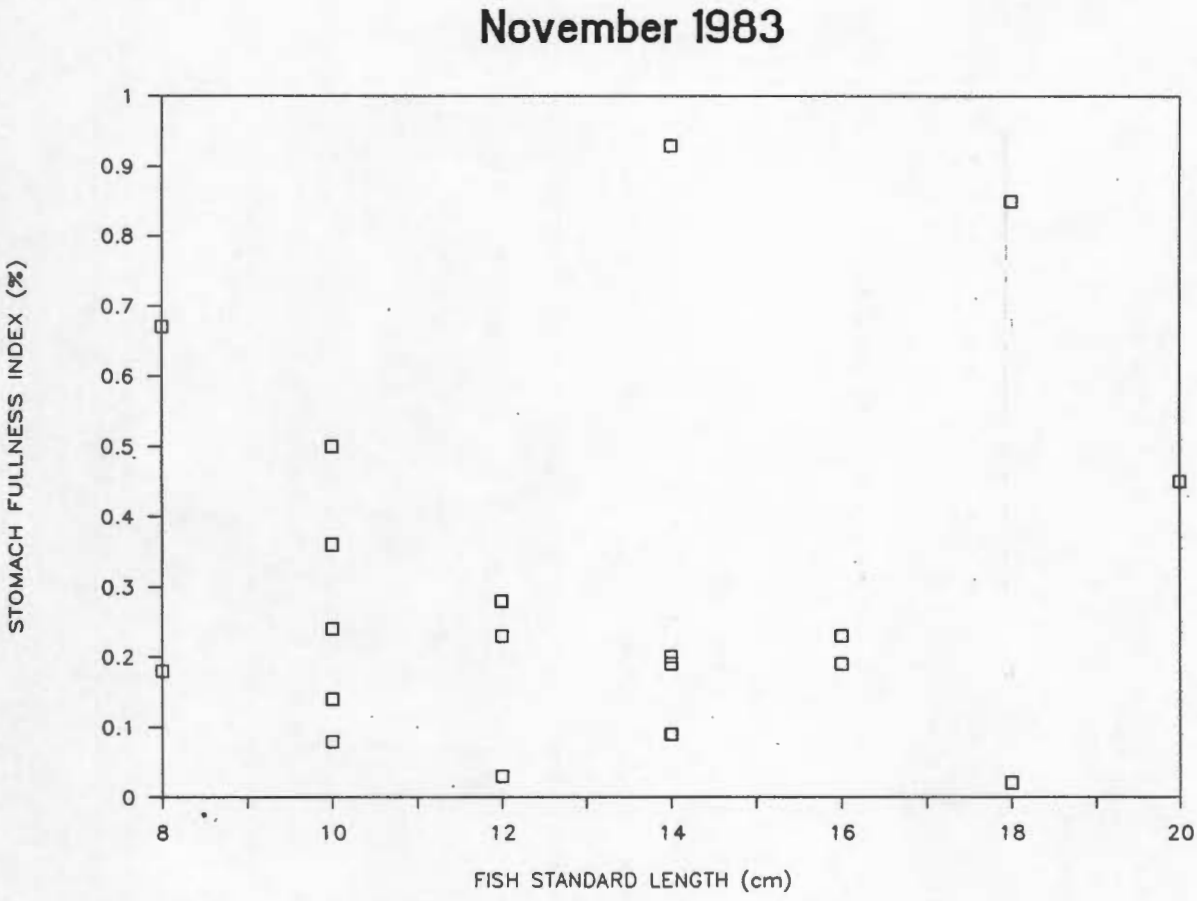


Figure 18. Plot of stomach fullness index against fish standard length for redeye collected on the south coast in November 1983. There is no correlation between the two variables.

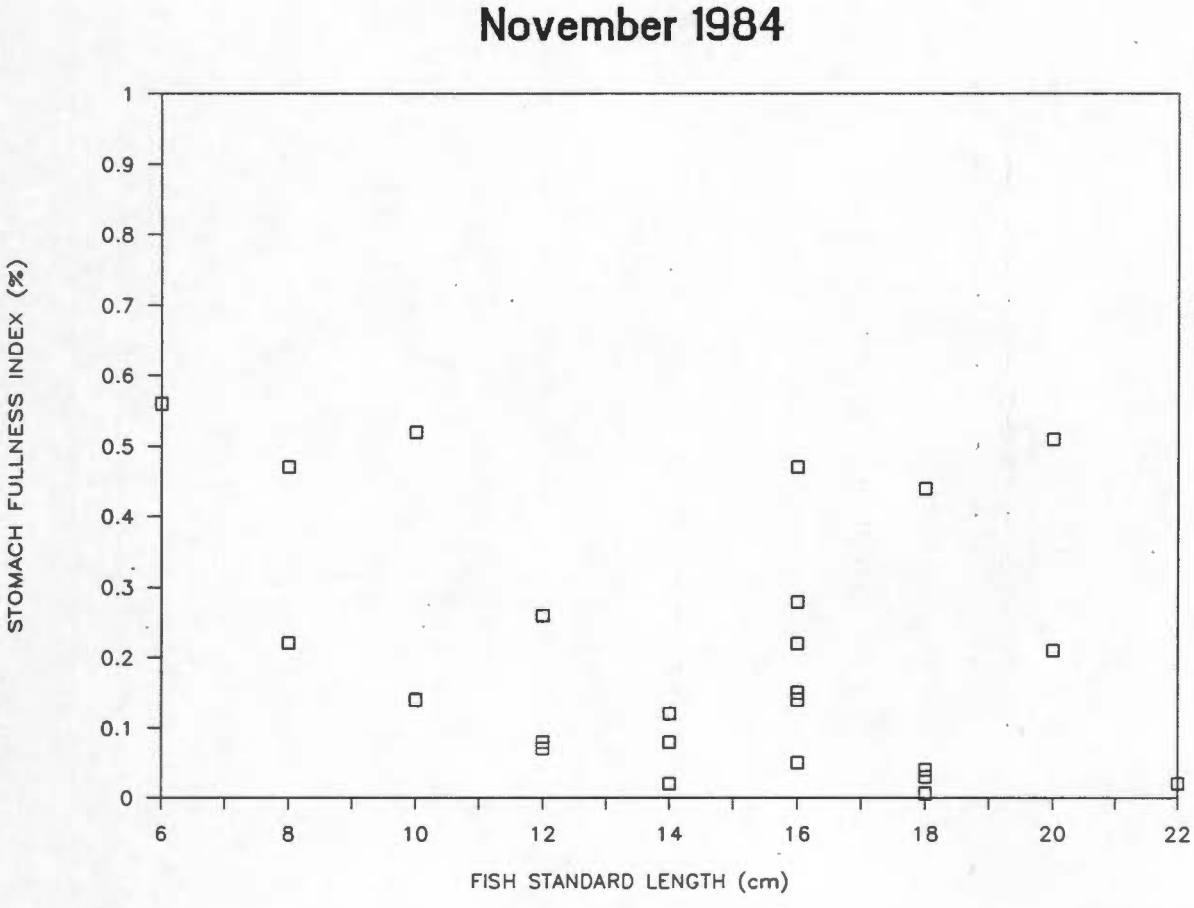


Figure 19. Plot of stomach fullness index against fish standard length for redeye collected on the south coast in November 1984. There is no correlation between the two variables.

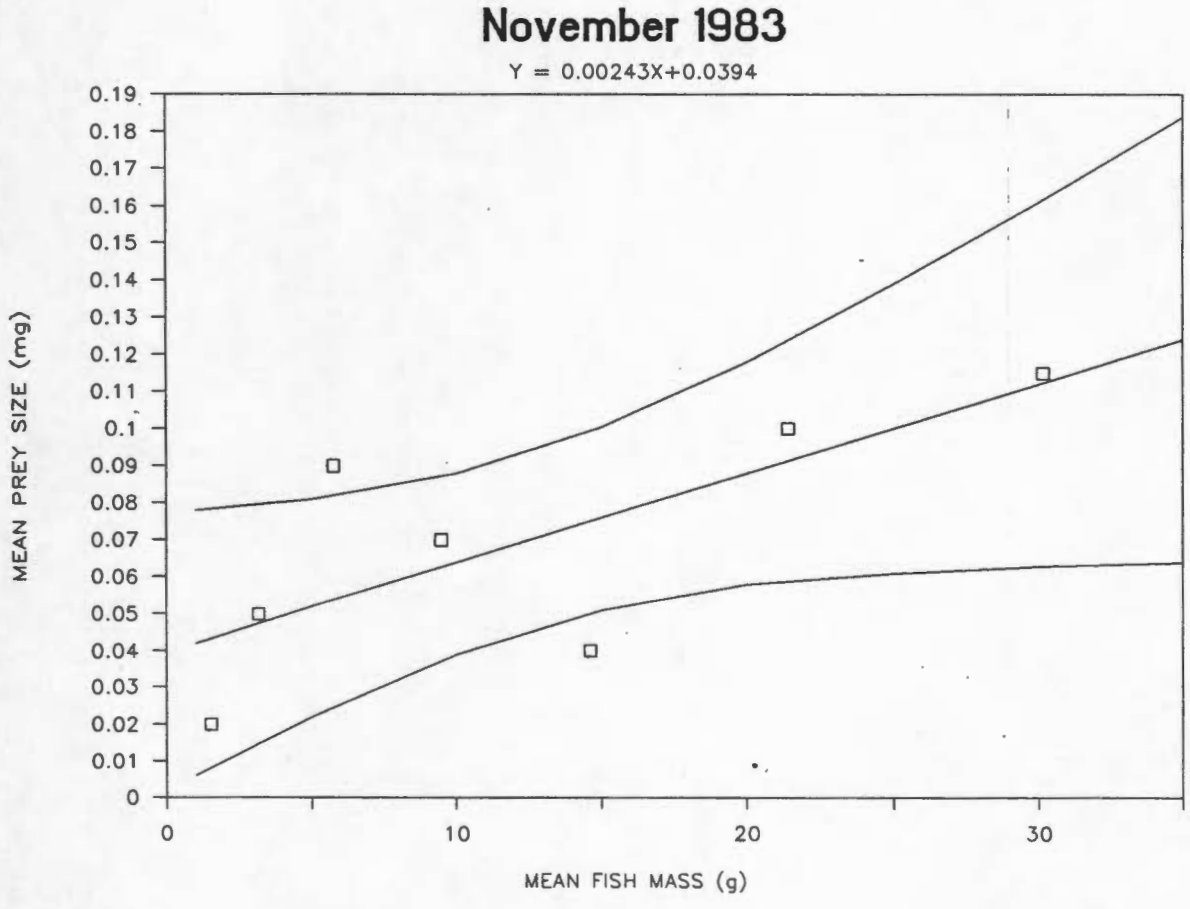


Figure 20. Mean dry mass of prey plotted against fish dry mass for redeye collected off the south coast on November 1983. Linear regression line and 95% confidence belt are indicated.

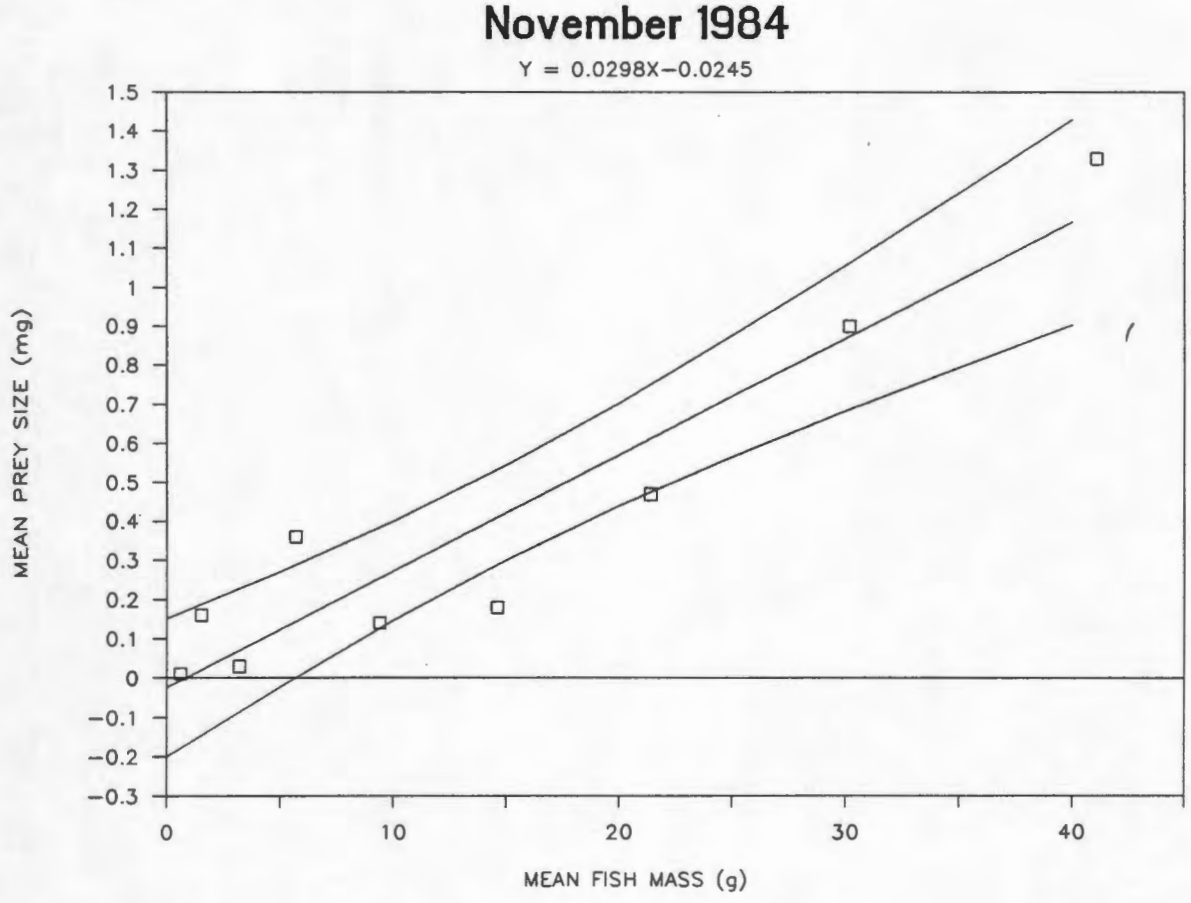


Figure 21. Mean dry mass of prey plotted against fish dry mass for redeye collected off the south coast on November 1984. Linear regression line and 95% confidence belt are indicated.

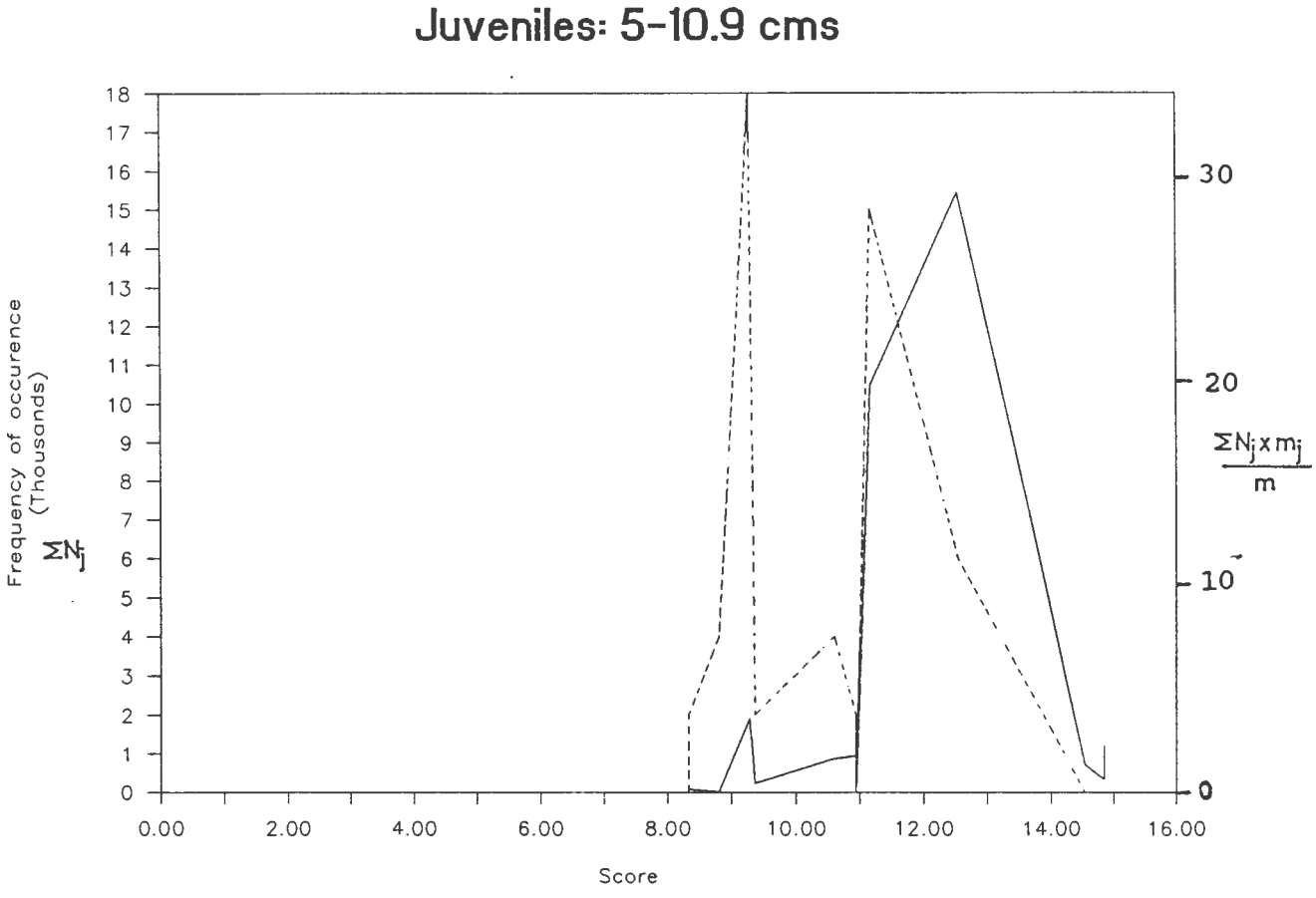


Figure 22. Frequency distribution of predator prey size scores based on collections of juveniles (5-10.9 cm) made in November 1983. Solid line is based directly on gut contents, hatched line is derived from the hypothetical prey field.

items. Although the curve is irregular in shape, it is bimodal with the small mode at 9.28, corresponding to euphausiids, and the larger mode peaking a 12.5, corresponding to small copepods (500-1000µm prosome length). In the case of the transitional and adult size classes, the theoretical distribution of scores coincided with the true distribution (Figs 23 and 24), which implies that these fish were taking prey according to their theoretical abundances and size selection was not a factor in feeding behaviour. The solid line for the 11-16.9 cm size class (Fig. 23) peaks at 10.9 (corresponding to euphausiids) and at 12.2 and 13.8 (corresponding to small (500-1000µm) and medium (1000-1500µm) copepods, respectively. These transitional fish seemed to be taking slightly smaller (in relation to their own body mass) copepods and euphausiids than the juveniles, as both dashed-line peaks are farther to the right in those fish. The peak of the adult size class (Fig. 24) corresponds to large copepods (1500-2000µm).

3.7.2.2 South coast---November 1984.

The juvenile curve based directly on gut contents (Fig. 25, solid line) peaks in three places: 8.5, 12.3 and 14.3, all of which fall in the range of small-to-medium sized copepods (500-1000µm). The lack of major peaks in the dashed line at 12.3 and 14.3 suggests that the small copepods present in the gut were not preferentially selected by these juveniles.

The Ursin curves for transitional and adult fish (Figs 26 and 27) show peaks in the range of large-sized copepods (1500-2000µm). The well developed dashed line of the adult size class (Fig. 27) at a score or 8.9 implies that there was active selection of large copepods.

3.7.2.3 West coast---April/May 1984.

The solid line (Fig. 28) of the juvenile fish from the west coast has a lesser peak at a score of 5.5, and a major peak at 11.6. The former corresponds to chaetognaths, the latter to small copepods. The distribution based on hypothetical prey densities (dashed line) peaked strongly at the chaetognath score, which suggests that these were selected.

3.8 GILL ARCH MORPHOLOGY

The redeye possesses a branchial system consisting of five pairs of cartilaginous gill arches, each of which bears a number of gill rakers. The arch structure is shown in Fig. 29 and a listing of measurements and counts are given in Table 4.

3.8.1 Relationship between gill arch length and fish length.

The length of the first gill arch increases linearly with standard length (Fig. 30). In this regard, *Etrumeus whiteheadi* resembles the pilchard *Sardinops ocellatus* and anchovy *Engraulis capensis* (King and McLeod, 1976). The straight line fitted to the gill arch length measurements has the equation:

gill arch length (mm) = 0.214 SL (mm)+0.365
(r = 1.00, n = 17).

3.8.2 Relationship between gill raker number and fish length.

An important character which permits one to distinguish *Etrumeus whiteheadi* from *E. teres* is the number of gill rakers in the upper and lower limbs of the first gill arch. Adult *E. whiteheadi* have counts of GR(16-18)+(35-40), adult *E. teres* have GR(12-15)+(31-35) (Whitehead and Wongratana, 1986). An examination of Table 4 shows that in all fish examined in this study of standard length of 50 mm or greater, the gill raker counts were in the range (15-19)+(35-40). The smallest fish examined, a 38-mm SL specimen, yielded a count of 12+28. It appears that there is a rapid increase in gill raker number, both in the upper and lower limbs between metamorphosis (at 35-40 mm SL) and a standard length of 50 mm. However, once the latter length is attained, there is no further increase. The solid curved line drawn in Fig. 31 was fitted by eye and reflects this early burst in raker count. Among fish of 50 mm and greater, the mean number of rakers in the upper limb was 16.9; the mean number in the lower limb was 36.9.

3.8.3 Relationship between gill raker gap and fish length.

The plot of calculated raker gap *versus* standard length yielded a straight line (Fig. 32):

gill raker gap (mm) = 0.0035 SL (mm) + 0.000829

($r = 0.99$; $n = 17$).

The size of the gill raker gap is obviously of importance to a fish that uses its branchial system for filter-feeding. The gap size calculated here is compared to that of other related species in the discussion to follow.

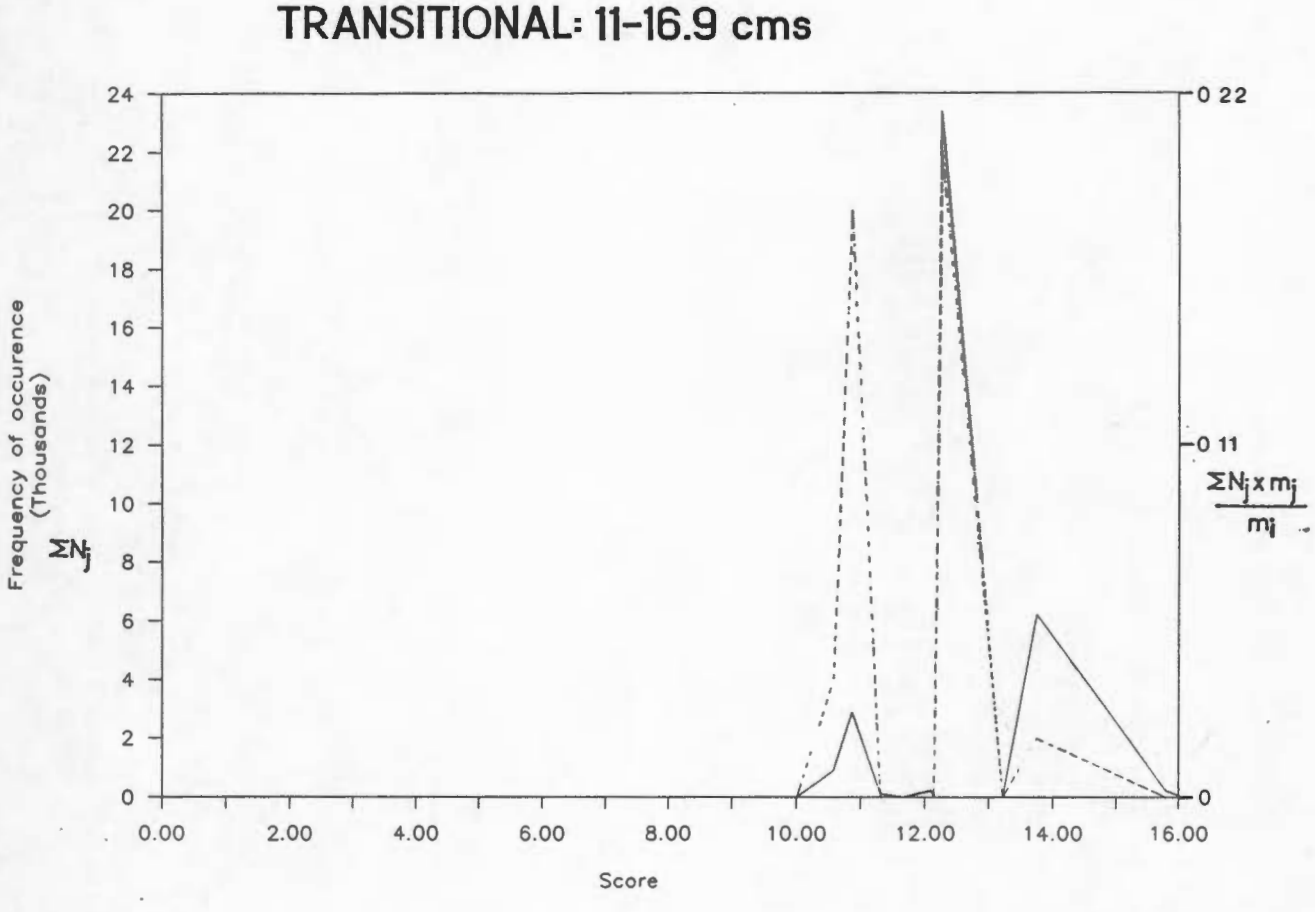


Figure 23. Frequency distribution of predator prey size scores based on collections of transitional fish (11-16.9 cm) made in November 1983. Solid line is based directly on gut contents, hatched line is derived from the hypothetical prey field.

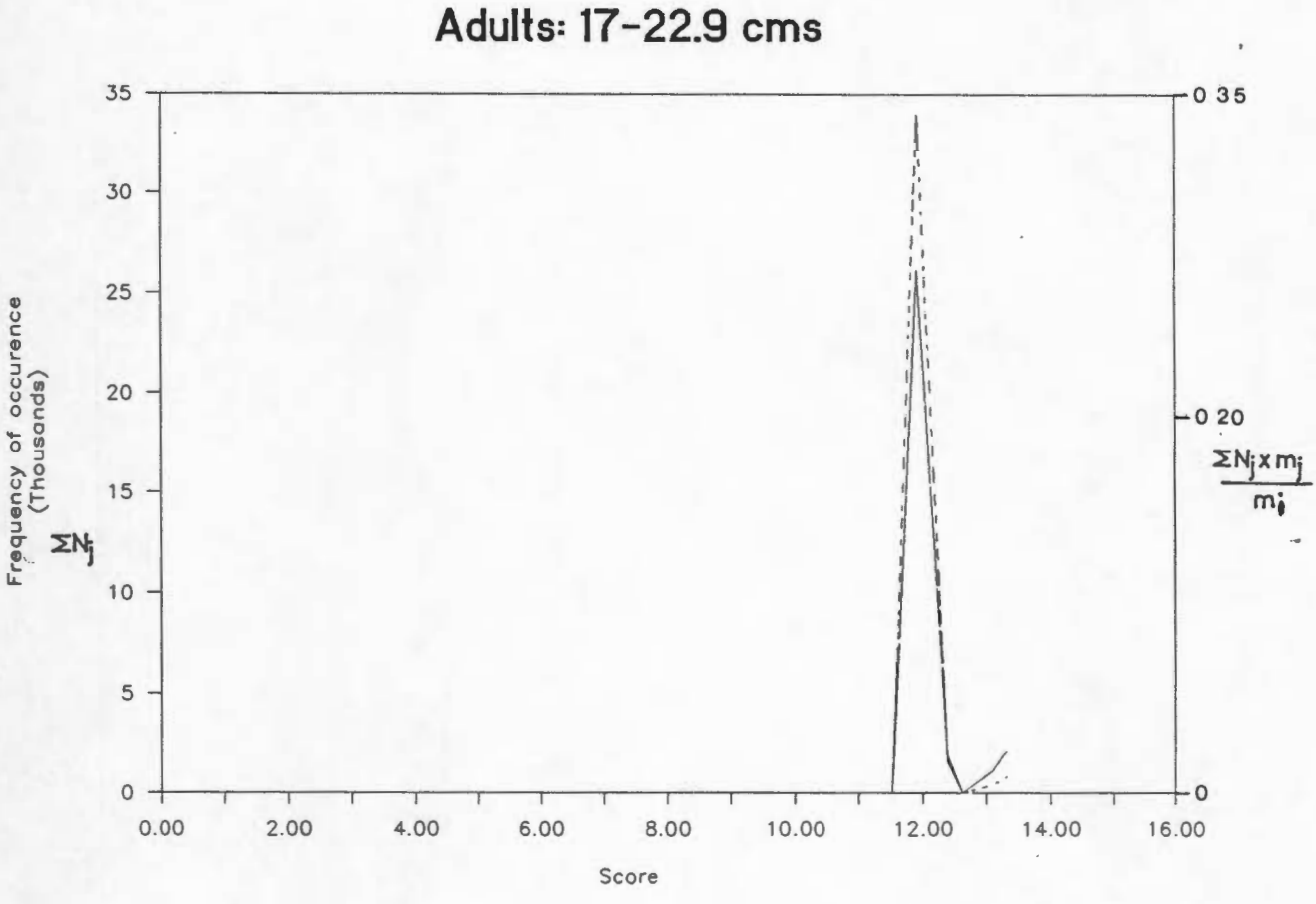


Figure 24. Frequency distribution of predator prey size scores based on collections of adults (17-22.9 cm) made in November 1983. Solid line is based directly on gut contents, hatched line is derived from the hypothetical prey field.

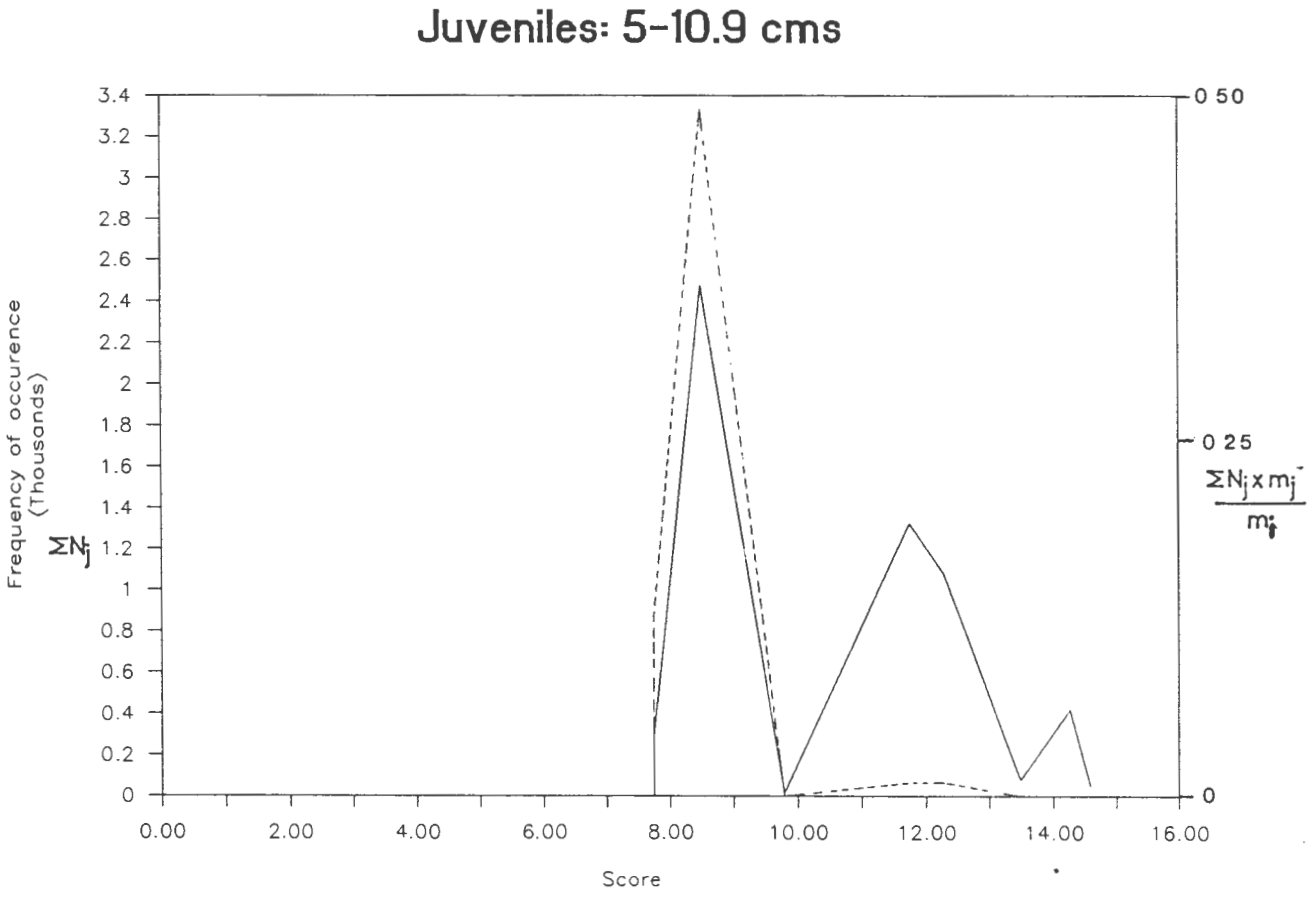


Figure 25 Frequency distribution of predator prey size scores based on collections of juveniles (5-10.9 cm) made in November 1984. Solid line is based directly on gut contents, hatched line is derived from the hypothetical prey field.

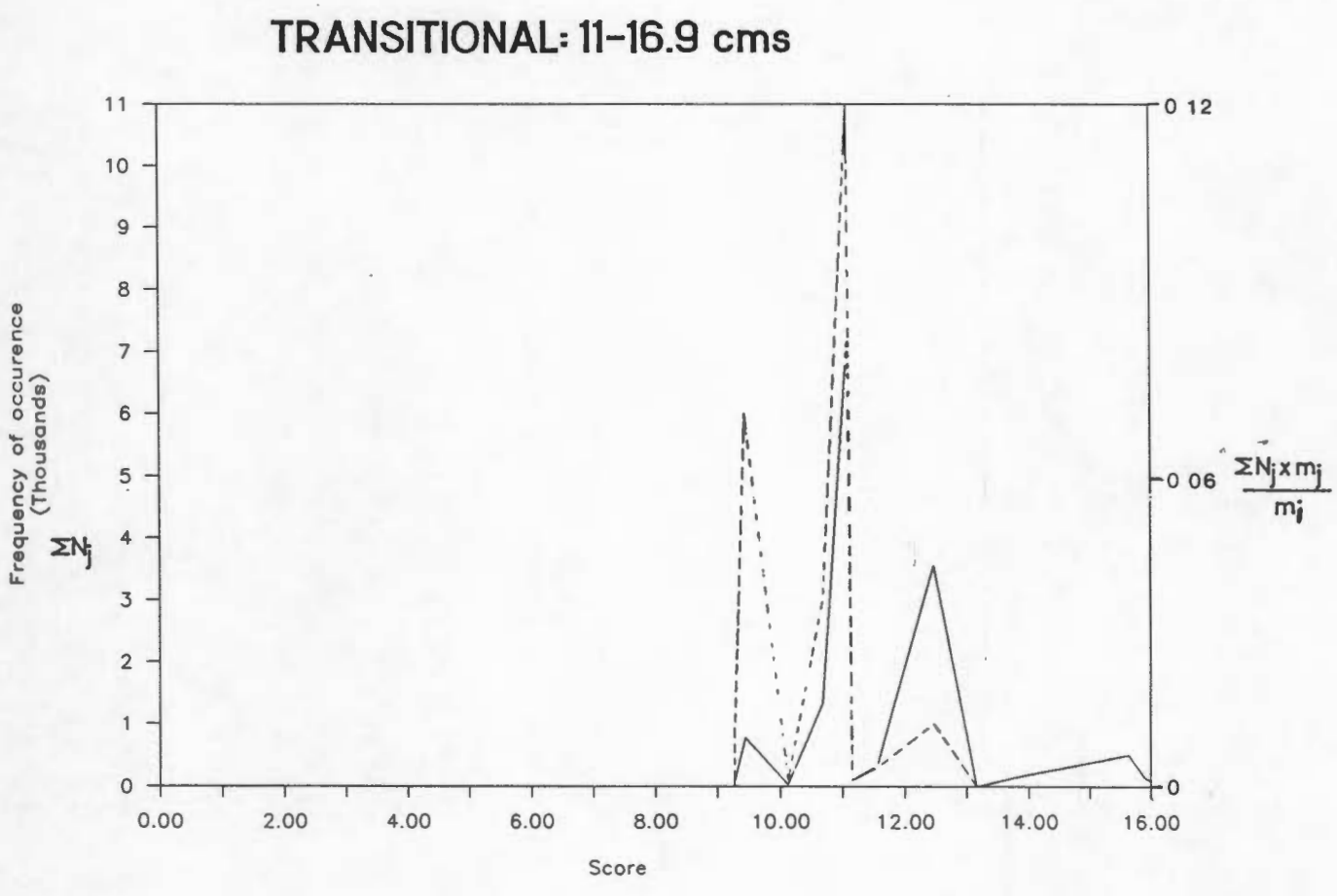


Figure 26 Frequency distribution of predator prey size scores based on collections of transitional fish (11-16.9 cm) made in November 1984. Solid line is based directly on gut contents, hatched line is derived from the hypothetical prey field.

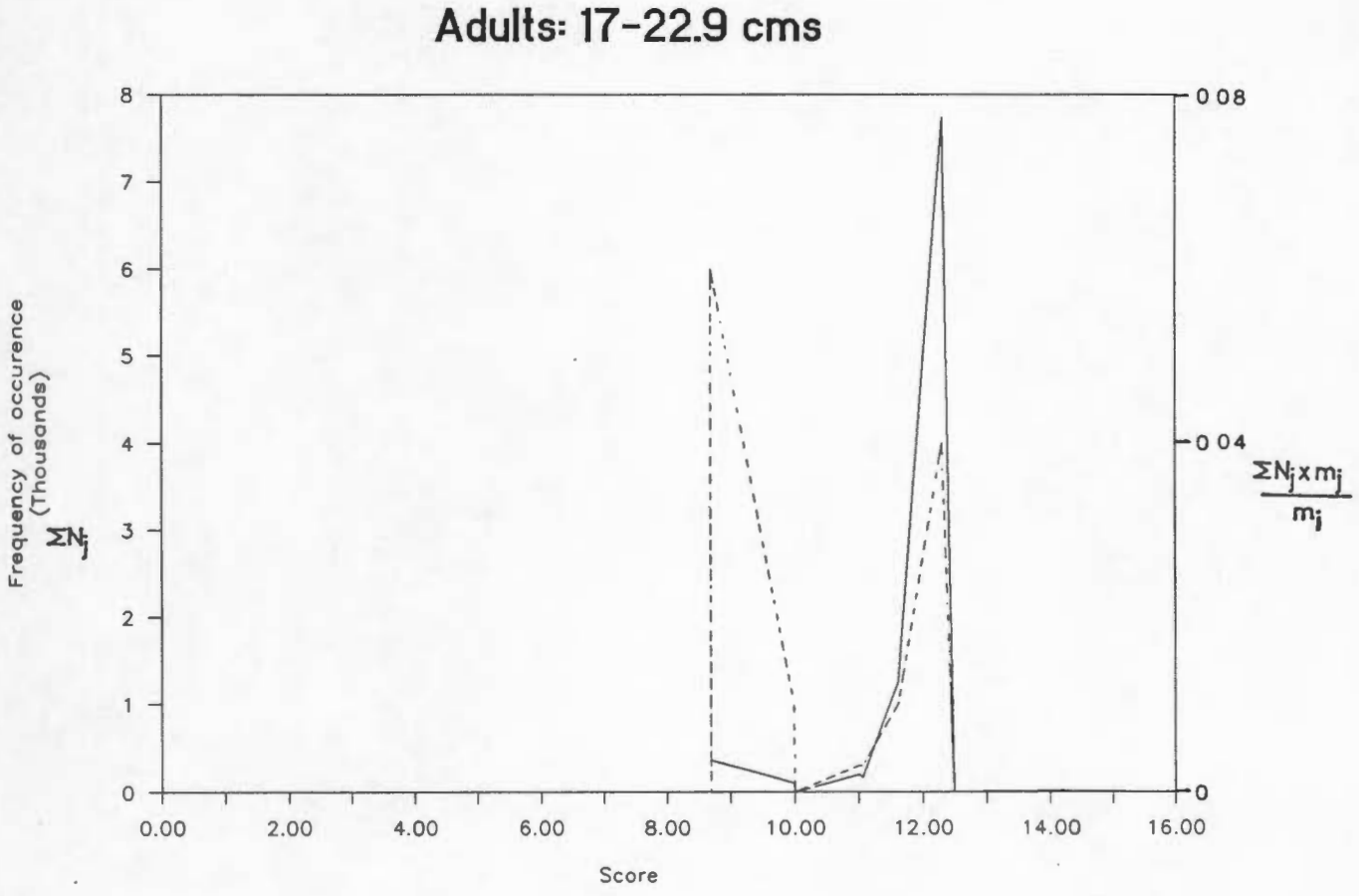


Figure 27 Frequency distribution of predator prey size scores based on collections of adults (17-22.9 cm) made in November 1984. Solid line is based directly on gut contents, hatched line is derived from the hypothetical prey field.

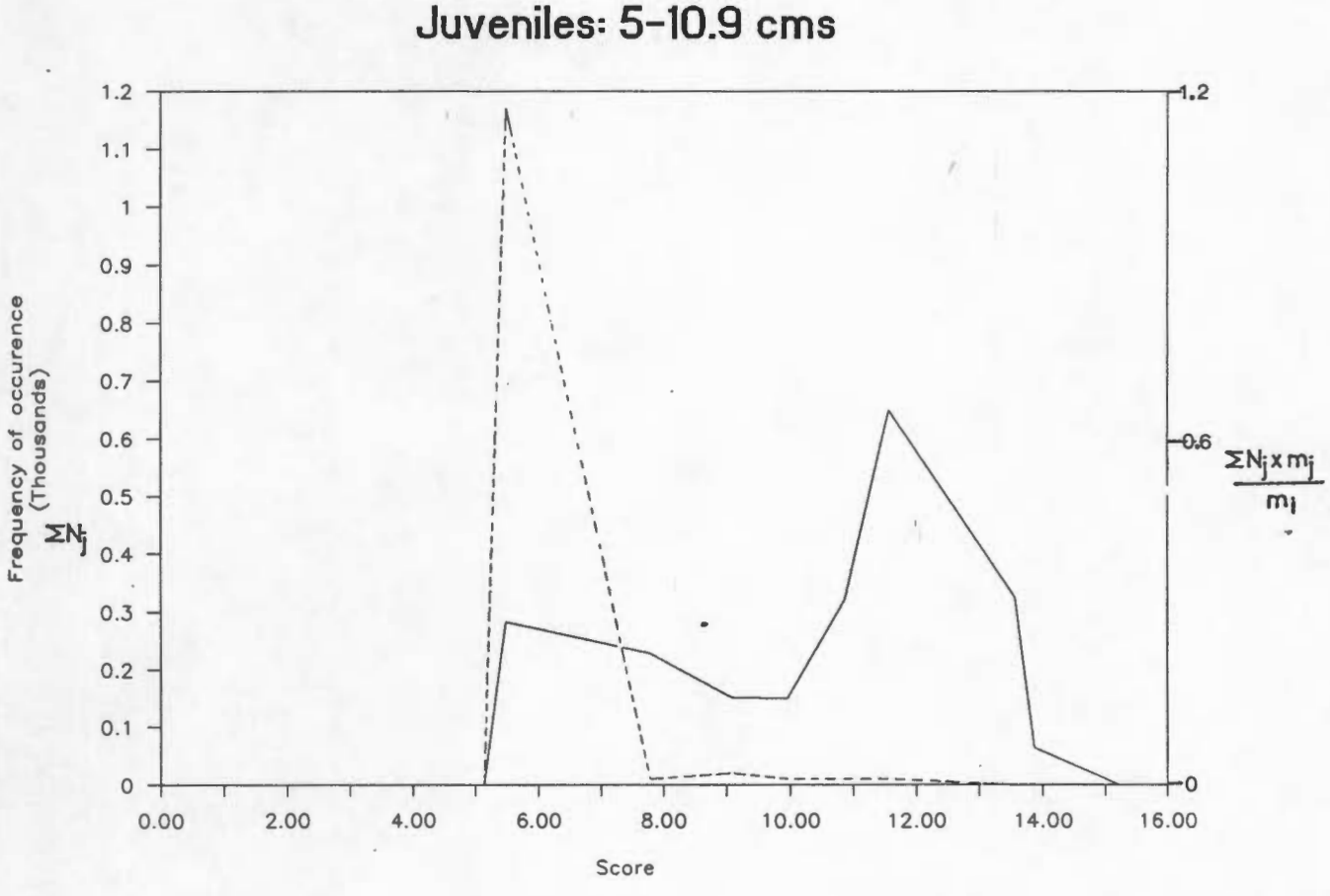


Figure 28 Frequency distribution of predator prey size scores based on collections of juveniles (5-10.9 cm) made in April and May 1984. Solid line is based directly on gut contents, hatched line is derived from the hypothetical prey field.

Table 4.- Measurements and counts of first gill arch in redeye.

Fish Standard length	Length of Gill-arch (mm)	Number of gill rakers			Length of gill-rakers (mm)	Mean width of gill rakers (mm)	Mean gill-raker gap (mm)
		Upper limb	Lower limb	Total			
38	7.1	12	28	40	0.83	0.04	0.14
50	11.1	16	35	51	1.46	0.04	0.17
62	14.1	17	38	55	1.82	0.04	0.22
72	16.3	15	39	54	1.98	0.04	0.27
80	17.0	16	36	52	2.10	0.04	0.29
95	21.3	19	38	57	2.75	0.06	0.32
102	22.8	16	35	51	2.88	0.08	0.37
120	25.0	17	35	52	3.41	0.08	0.40
130	28.3	18	38	56	3.41	0.08	0.43
140	31.5	16	38	54	4.00	0.08	0.51
150	34.7	17	38	55	3.57	0.10	0.54
160	36.0	19	40	59	4.43	0.10	0.52
170	37.1	17	33	50	4.64	0.10	0.65
182	37.8	15	35	50	5.12	0.10	0.67
191	42.9	17	39	56	5.44	0.10	0.68
210	44.3	17	37	54	5.86	0.10	0.73
220	46.0	17	36	55	6.42	0.10	0.75

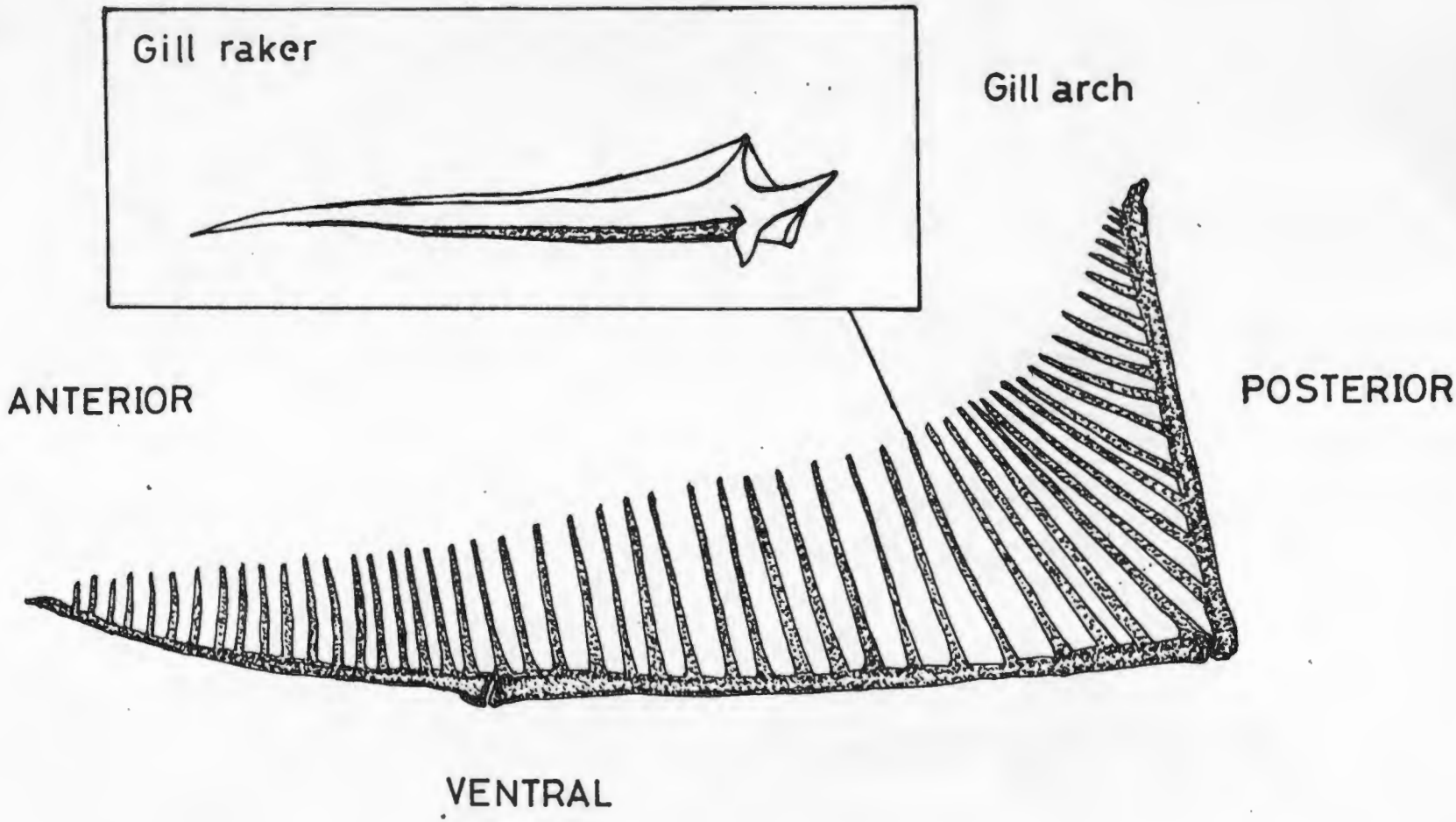


Figure 29 Lateral view of first left gill arch, with gill filaments removed. Inset: gill raker.

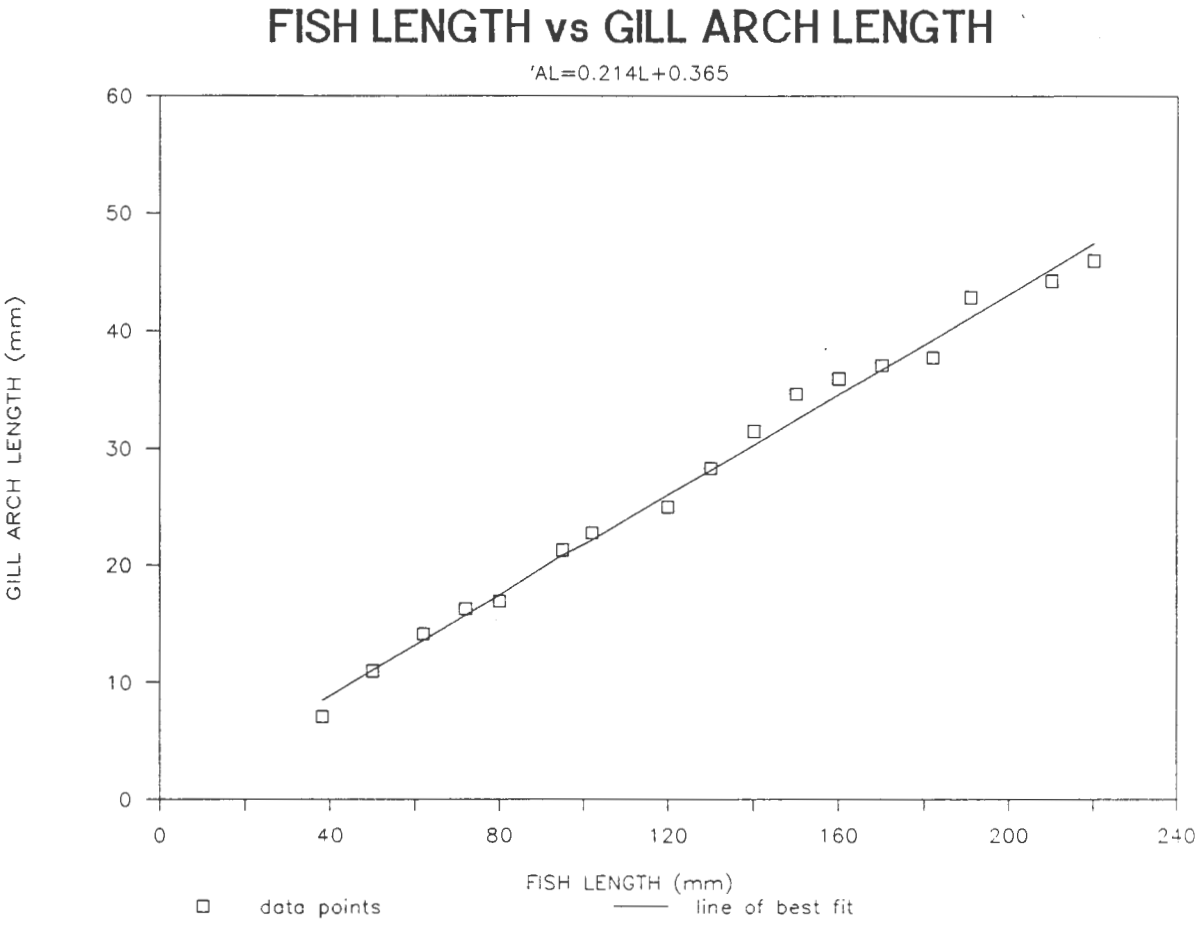


Figure 30 Relationship between fish length and gill-arch length.

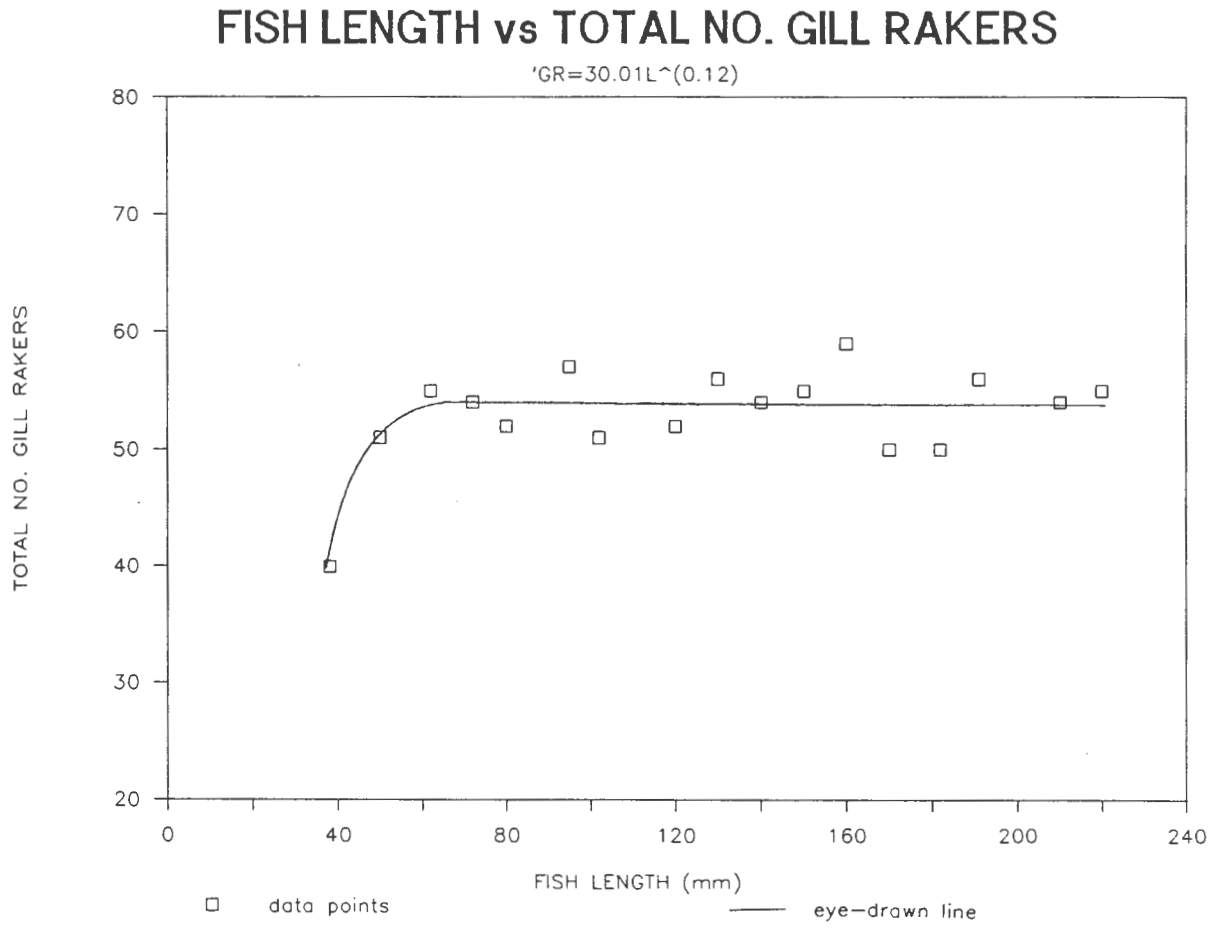


Figure 31 Relationship between fish length and total number of gill-rakers.

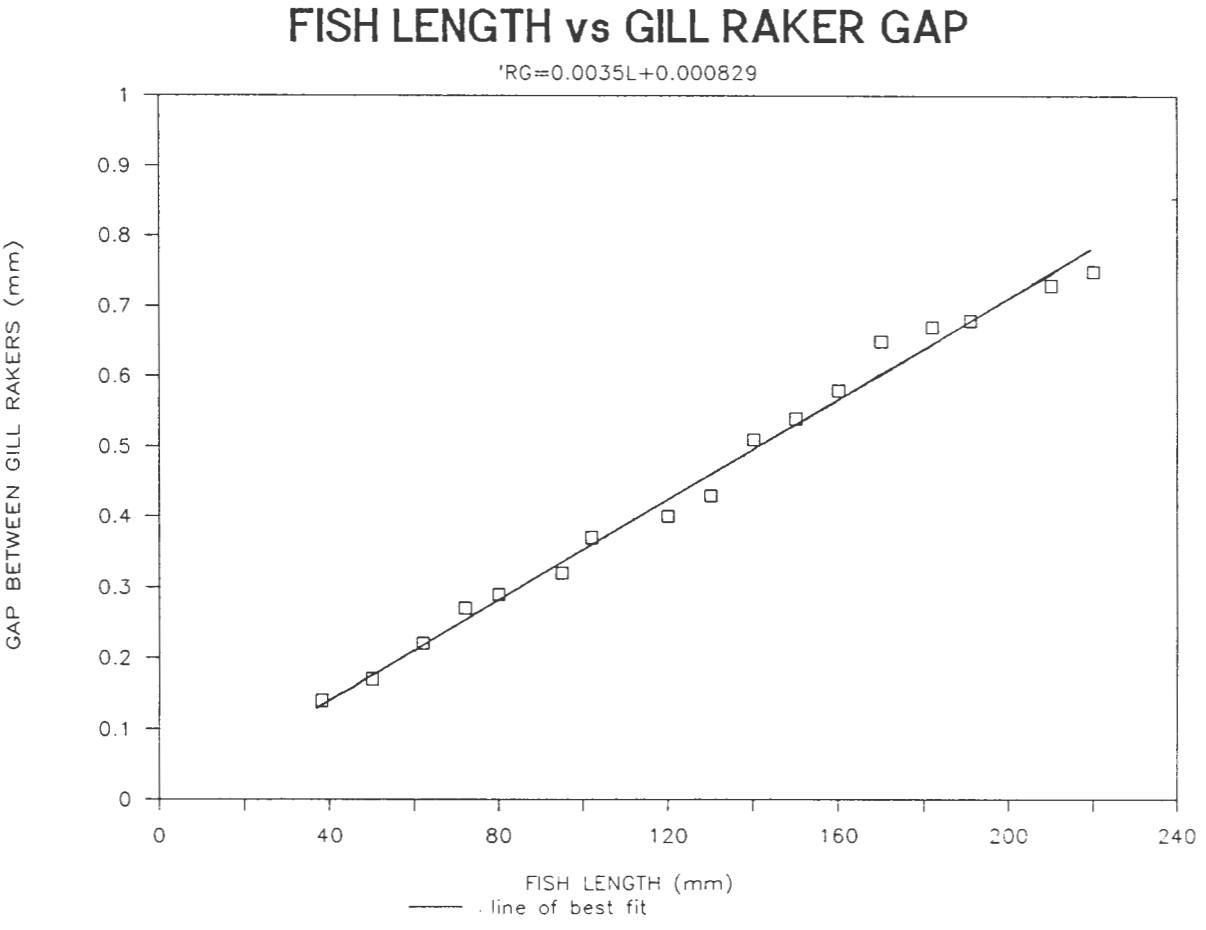


Figure 32 Relationship between fish length and gill raker gap.

Chapter 4
DISCUSSION

4.1 FEEDING BY *E WHITEHEADI* IN RELATION TO OTHER CLUPEOID FISHES.

The diet of *E. whiteheadi* in South Africa has been summarized from Appendix 1 in Tables 5-12. Tables 5-7 are arranged to permit comparisons among the three size classes: juvenile, transitional sizes, and adults. Tables 8-12 are arranged to permit comparisons among the five areas: four on the south coast (Tables 8-11) and one on the west coast (Table 12).

The most salient feature that emerges from these data is the preponderance of copepods, euphausiids, and decapods, in that order of importance, in the diet.

Other aspects of feeding in redeye are mentioned in appropriate places below, and are summarized in point form at the end of this chapter.

The contents of the stomach of *E whiteheadi* indicates clearly that it is a zooplanktophage, and in fact, this study supports the inclusion by Longhurst (1971) of *Etrumeus* along with *Dussumeria* and *Spratelloides* as macrozooplankton feeders. The major study by Yokota et al. (1961) on feeding in Japanese fishes may have provided the basis for Longhurst's classification. The Japanese publication appears to be the only source of information on the diet of an *Etrumeus* species, namely *Etrumeus teres* De Kay. The latter is unquestionably a macrozooplankton feeder and as will be seen below, has feeding habits that in many ways parallel those of *E. whiteheadi.*

The great majority of fishes in the suborder Clupeoidei are generalized planktivores, feeding on either phytoplankton or zooplankton, or both. An example of a phytoplanktivore is the tropical eastern Pacific engraulid, *Cetengraulis mysticetus,* whose diet was studied by Bayliff (1963). Based on samples collected for this study *Etrumeus whiteheadi* falls fully in the zooplanktophage feeding category. Examples of mixed phytoplankton/zooplankton feeders are the widely distributed members of the commercially important genera *Engraulis, Sardinops, Sardina,* and *Sardinella.* The mixed-feeding clupeoids are discussed more fully by Loukashkin (1970), Nieland (1982) and by Longhurst (1971) in his review.

The herrings of the northern hemisphere, *Clupea harengus* and *C. pallasi*, appear to have much in common with *E. whiteheadi*, particularly as regards body size, vertical movements and prey size preference. Much more is known about *Clupea* than *Etrumeus*, as is evident from major reviews on herring biology (Blaxter and Holliday, 1963; Blaxter and Hunter, 1982). Only recently (Gibson and Ezzi, 1985) has it been shown conclusively that *Clupea harengus* alternates between particulate and filter feeding, depending on prey size and prey concentration. Much earlier, Moore (1898) had come to the same conclusion, but in the interim, opinion was that the herring was purely a particle feeder. For, example, Bigelow (1926) observed herring and menhaden in captivity and found that "they select (the prey organisms) individually and not by swimming open-mouthed as the menhaden does". Parrish and Saville (1965) also concluded that "feeding in herring appears to be a predatory selection process rather than a non-selective filtering off of organisms of a size capable of being retained by the gill rakers". This was deduced from the study of stomach contents compared with simultaneous plankton samples by Hardy (1924) for Atlanto-Scandian herring. The dual distinct feeding modes of *Clupea harengus* are reminiscent of the northern anchovy (Leong and O'Connell, 1969; O'Connell, 1972), the alewife (Janssen, 1976) and the threadfin shad (Holanov and Tasch, 1978).

Neither *Clupea harengus* (Nelson, 1967) nor *E. whiteheadi* (this study) are endowed with epibranchial organs. These structures are paired dorsal diverticula at the posterior of the pharynx (Nelson, 1967). Their degree of development seems to correlate with the extent of microphagy practiced by the species (Blaxter and Hunter, 1982). Species that filter-feed extensively and concentrate on small prey (e.g., *Cetengraulis mysticetus, Brevoortia* spp) tend to have well developed epibranchial organs. Without direct evidence from laboratory feeding observation, it cannot be said with certainty to what extent both particulate and filtering modes are available to *Etrumeus*. It seems likely, however, that if conditions are appropriate, redeye will filter-feed just as has been recently

TABLE 5. Summary of diet of juvenile, transitional, and adult redeye taken on the south coast in November 1983. Composition of stomach contents is expressed in percent mass (M%) and percent number (No.%). Only identifiable material is included.

Month	November 1983					
Area	South coast					
Red-eye size class	5-10.9 cm		11-16.9 cm		17-22.9 cm	
	M (%)	No.(%)	M (%)	No.(%)	M (%)	No.(%)
Food Item						
Copepods	60.2	81.8	87.4	66.3	73.0	88.1
Cladocerans	1*	4.3			0.1	0.1
Ostracods	*	*	*	0.1	0.5	
Euphausiids	18.4	2.9	6.8	10.4	26.9	11.8
Decapods	12.6	4.7	5.7	22.9		
Mysids					*	*
Amphipods					*	*
Pteropods (shelled)	3.4	2.9				
Pteropods (naked)						
Bivalve larvae	0.9	0.8			*	*
Squid						
Chaetognaths						
Fish						
Nauplii (copepod)						
Eggs	4.5	3.3				
No. of fish	82		118		44	
No. with food	76		78		44	
No. empty	6		40		0	

[1] Values less than 0.01%

Table 6. Summary of diet of juvenile, transitional and adult redeye taken on the south coast in November 1984. Composition of stomach contents is expressed in percent mass (M%) and percent number (No.%). Only identifiable material is included.

Month	November 1984					
Area	South coast					
Red-eye size class	5-10.9 cm		11-16.9 cm		17-22.9 cm	
Food Item	M (%)	No.(%)	M (%)	No.(%)	M (%)	No.(%)
Copepods	74.6	80.8	44.0	84.7	30.0	63.3
Cladocerans						
Ostracods					0.03	*
Euphausiids			17.5	6.0	63.0	34.9
Decapods	3.8	1*	24.8	5.5	6.9	1.3
Mysids			10.1	3.0		
Amphipods						
Pteropods (shelled)					0.03	0.1
Pteropods (naked)						
Bivalve larvae	0.8	3.5				
Squid						
Chaetognaths			3.7	*		
Fish						
Nauplii (copepod)						
Eggs	20.8	15.7	*	0.8	0.03	0.4
No. of fish	131		191		106	
No. with food	94		101		56	
No. empty	37		90		50	

[1] Values less than 0.01%

Table 7. Summary of diet of juvenile redeye taken on the west coast in April and May 1984. Composition of stomach contents is expressed in percent mass (M%) and percent number (No.%). Only identifiable material is included.

Month	April		May 1984	
Area	West coast			
Red-eye size class	5-10.9 cm		5-10.9 cm	
Food Item	M (%)	No.(%)	M (%)	No.(%)
Copepods	2.3	62.6	0.6	50.4
Cladocerans	*[1]	3.5		
Ostracods	*	0.1		
Euphausiids				
Decapods			*	0.3
Mysids			*	0.6
Amphipods	0.5	17.1		
Pteropods (shelled)				
Pteropods (naked)				
Bivalve larvae	0.6	8.0		
Squid	0.1	*		
Chaetognaths	95.5	8.7	99.2	34.8
Fish	1.0	0.1	*	0.3
Nauplii (copepod)			0.1	11.9
Eggs			*	1.7
No. of fish	44		18	
No. with food	25		12	
No. empty	19		6	

[1] Values less than 0.01%

TABLE 8. Summary of diet of juvenile redeye in the four areas of the south coast on the November 1983 cruise.

Month	November 1983							
South coast	[1] Area IW		Area IE		Area O		Area EC	
	M (%)	No.(%)	M (%)	No.(%)	M (%)	No.(%)	M (%)	No.(%)
Food Item								
Copepods			59.7	88.9	[2]45.8	63.1	57.5	90.0
Cladocerans						12.8		
Ostracods								
Euphausiids			8.2	0.2			41.6	8.5
Decapods			32.1	10.9	2.0	3.1		
Mysids								
Amphipods								
Pteropods (shelled)	NO JUVENILES					9.2	*	
Pteropods (naked)					28.2	8.7		
Bivalve larvae	SAMPLED IN							
Squid								
Chaetognaths	THIS AREA							
Fish								
Nauplii (copepod)								
Eggs					12.2	9.7		
Others					[3] 2.5	2.5	[4] 0.9	1.5
No. of fish			25		13		16	
No. with food			22		10		5	
No. empty			3		3		11	

[1] Area IW = Inshore West of Cape Agulhas.
Area IE = Inshore East of Cape Agulhas.
Area O = Offshore.
Area EC = Eastern Cape.

[2] Values less than 0.01%.

[3] Others = cladocerans, ostracods, euphausiids and pteropods (shelled).

[4] Others = ostracods and bivalve larvae.

TABLE 9. Summary of diet of transitional (11-16.9 cm SL) and adult (17-22.9 cm SL) redeye in the four areas of the south coast on the November 1983 cruise.

Month	November 1983							
South coast [1]	Area IW		Area IE		Area O		Area EC	
Food Item	M (%)	No. (%)	M (%)	No. (%)	M (%)	No. (%)	M (%)	No. (%)
Copepods	92.4	99.7	10.7	3.1	59.0	76.4	64.3	92.1
Cladocerans								
Ostracods								
Euphausiids	7.6	0.3	17.1	1.6	40.2	22.7	35.7	7.6
Decapods			72.2	95.3	0.7	[2]	*	
Mysids								
Amphipods								
Pteropods (shelled)					0.1	*	*	*
Pteropods (naked)								
Bivalve larvae								
Squid								
Chaetognaths								
Fish								
Nauplii (copepod)								
Eggs								
Others					[3] 0.2	0.9	[4] 0.1	0.3
No. of fish	25		18		56		63	
No. with food	25		2		32		63	
No. empty	0		16		24		0	

[1] Area IW = Inshore West of Cape Agulhas.
Area IE = Inshore East of Cape Agulhas.
Area O = Offshore.
Area EC = Eastern Cape.

[2] Values less than 0.01%.

[3] Others = cladocerans, ostracods, decapods, pteropods (shelled), bivalve larvae and eggs.

[4] Others = cladocerans, ostracods, bivalve larvae and amphipods.

TABLE 10. Summary of diet of juvenile redeye in the four areas of the south coast on the November 1984 cruise.

Month	November 1984							
South coast [1]	Area IW		Area IE		Area O		Area EC	
Food Item	M (%)	No.(%)	M (%)	No(%)	M (%)	No.(%)	M (%)	No.(%)
Copepods	100	100	32.0	42.4			87.9	99.9
Cladocerans								
Ostracods								
Euphausiids								
Decapods							12.1	0.1
Mysids								
Amphipods								
Pteropods (shelled)					NO JUVENILES			
Pteropods (naked)								
Bivalve larvae			2.6	10.6	SAMPLED IN			
Squid								
Chaetognaths					THIS AREA			
Fish								
Nauplii (copepod)								
Eggs			65.4	47.0				
Others								
No. of fish	15		35				16	
No. with food	13		35				5	
No.empty	2		0				11	

[1] Area IW = Inshore West of Cape Agulhas.
Area IE = Inshore East of Cape Agulhas.
Area O = Offshore.
Area EC = Eastern Cape.

TABLE 11. Summary of diet of transitional (11-16.9 cm SL) and adult (17-22.9 cm SL) redeye from the four areas of the south coast on the November 1984 cruise.

Month	November 1984							
South coast [1]	Area IW		Area IE		Area O		Area EC	
	M (%)	No.(%)	M (%)	No.(%)	M (%)	No.(%)	M (%)	No.(%)
Food Item								
Copepods	10.2	7.6	30.2	76.2	64.1	90.0	43.7	94.5
Cladocerans								
Ostracods					2	*		
Euphausiids	50.0	50.0	69.8	23.8	6.0	*	38.5	2.0
Decapods	32.4	40.7			27.5	5.3		
Mysids					2.3	2.7	17.8	3.3
Amphipods								
Pteropods (shelled)					0.05	0.5	*	0.1
Pteropods (naked)								
Bivalve larvae								
Squid								
Chaetognaths	7.3	0.4						
Fish								
Nauplii (copepod)								
Eggs	0.1	1.3					*	0.1
Others					3 0.2	2.0		
No. of fish	93		45		100		89	
No. with food	26		25		63		62	
No. empty	67		20		37		27	

1 Area IW = Inshore West of Cape Agulhas.
Area IE = Inshore East of Cape Agulhas.
Area O = Offshore.
Area EC = Eastern Cape.

2 Values less than 0.01%.

3 Others = ostracods, euphausiids and pteropods.

TABLE 12. Summary of diet of juvenile redeye on the west coast (Off Lambert's Bay) on the April and May 1984 cruises.

Month	April 1984		May 1984	
West coast	M (%)	No.(%)	M (%)	No.(%)
Food Item				
Copepods	2.3	62.6	0.6	50.4
Cladocerans	*[1]			
Ostracods	*			
Euphausiids				
Decapods			*	
Mysids			*	
Amphipods	0.5	17.1		
Pteropods (shelled)				
Pteropods (naked)				
Bivalve larvae		8.0		
Squid		*		
Chaetognaths	95.5	8.7	99.2	34.8
Fish				
Nauplii (copepod)				11.9
Eggs			*	1.7
Others	1.7[2]	3.6	0.2[3]	1.2
No. of fish	44		18	
No. with food	25		12	
No. empty	19		6	

1 Values less than 0.01%.

2 Others = cladocerans, ostracods, amphipods, bivalve larvae and fish larvae.

3 Others = decapods, mysids, fish larvae, nauplii and eggs.

confirmed for herring (Gibson and Ezzi, 1985). The mean space between adjacent gill rakers on the first arch in *Etrumeus whiteheadi* (Table 4, Fig. 32) is virtually the same as anchovy (*Engraulis capensis)* of the same length (King and Macleod, 1976). It is considerably less than that of pilchard (*Sardinops ocellatus)* (King and Macleod, 1976). In redeye the gill raker gap increased linearly from about 130 um in newly metamorphosed fish (38 mm SL) to about 750 um in the largest fish examined (220 mm SL). Pilchard of 220 mm have a mean raker gap of only about 330 um (King and Macleod, 1976). In redeye, as in anchovy, the total number of rakers on the first gill arch does not increase after a standard length of about 50 mm is attained (Fig. 31) and the gill raker gap continues to widen with increasing fish length (Fig. 32). If filter feeding does take place in redeye, it can only be applied to much larger particles than would be available to the pilchard.

The most closely related non-*Etrumeus* clupeid in South African waters is the estuarine roundherring, *Gilchristella aestuaria.* It is a small species, attaining a standard length of only 6.5 cm (Whitehead and Wongratana, 1986). Its diet has been described by several authors (Blaber, 1979; Blaber et al., 1981; White and Bruton, 1982; Talbot and Baird, 1985). Talbot and Baird (1985) found it to be zooplanktophagous in Swatkops Estuary (Port Elizabeth, South Africa). However, a study by White and Bruton (1982) on the same species from pools in the Bloukrans River showed that the majority (52.8%) of the diet consisted of diatoms, with nauplius larvae and copepods occupying approximately 6.6% and 4.0%, respectively. Applying the same methods as employed in the present study to the gill arch system of *Gilchristella,* White and Bruton (1982) determined the mean gill raker gap to be between 27 and 36μm over the length range studied. They concluded that the branchial sieve itself would be inadequate to trap the large amount of phytoplankton found in gut contents. They suggested that mucus secreting cells situated along the epithelium of the gill arches, gill raker, hyoid arch and pharynx aid in trapping prey items, which are then formed into a bolus that can be trapped on the gill rakers. The material is collected into two suprabranchial pouches. The mucus feeding-aid hypotheses was proposed and elaborated on by Al-Hussaini (1949), Greenwood (1953), Iwai (1964) and King (1975).

4.2 FEEDING HABITAT OF *ETRUMEUS WHITEHEADI*

The availability and movements of the redeye off South Africa were reviewed by Crawford (1981). A summary of results of more recent trawling and acoustic surveys was provided in DAMREP (1985). Young redeye (5-10 cm) seem to have migrating patterns similar to anchovy and young pilchard of the same size. Young redeye are frequently encountered in mixed shoals with either pilchard, anchovy or both species. Crawford (1981) reported that nought-year-old redeye, anchovy and pilchard appear to migrate southwards about the end of winter reaching an area west of Cape Agulhas by the following autumn. Young redeye, are primarily taken by the purse seine fishery along the west coast of the Cape Province, predominantly in the Lambert's Bay area.

The older redeye (>11.0 cm) tend to be located further offshore and in deeper, colder waters between Lambert's Bay and Cape Agulhas but sometimes as far east as Port Elizabeth. This is thought to be the spawning stock. There was a suggestion in DAMREP (Armstrong, 1985) that the movement offshore over the shelf break is likely to be reflected in a change in diet from small to larger zooplankton (e.g. euphausiids). The larger fish tend to become more demersal during daylight hours and would find themselves in a feeding habitat different from the juvenile fish, which tend to lie closer inshore. The results of the November 1984 south coast survey (Table 6) suggested that the largest size class (adults) consumed a greater proportion of euphausiids than the smaller two size classes. The same trend is discernible although less obvious in the results of the 1983 cruise (Table 5).

Many clupeoid species perform duel vertical migrations, (Longhurst, 1971). This has been particularly well documented for the North Atlantic Herring *Clupea harengus* (Brawn, 1960) and the tropical sardinelle *Sardinella aurita* (Probatov, 1959). From shipboard observations by echo-sounder, *E. whiteheadi* also undergoes a duel pattern of vertical migration. Based on information obtained during the summer sampling period off the south coast of southern Africa, redeye were

predominately found at depths of 150-200 m during the day. Upward migration occurred a few hours before sunset, and shoals of fish tended to be located near the surface at night, (I. Hampton, Sea Fisheries Research Institute pers. comm.). The diel vertical movements of redeye are not entirely consistent, however, and probably depend on a number of poorly understood factors (DAMREP. 1985).

Obviously the diet of *E. whiteheadi* is affected by the relative distribution and movements of its prey. The species feeds primarily during daytime (Figs 6-18), and stomachs were significantly fuller in the afternoon than in the morning. Daytime is the period typically spent at depth. Significant amounts of prey could conceivably be taken in surface waters in the early morning prior to descending to deeper water, but the majority of prey must be taken during descent, at depth, or during ascent. Large calanoid copepods on the Cape south coast show a vertical migration pattern in synchrony with that of the redeye. Small copepods (e.g. *Paracalanus*) seem not to migrate vertically in this region (H. Verheye, Sea Fisheries Research Institute, pers. comm). The synchronous vertical movements of redeye and large copepods would enable them to feed for an extended period over a 24 hour day, given sufficient light intensity to locate their prey. In the North Atlantic herring, *Clupea harengus,* ceased feeding in darkness (Battle et al, 1936). Muzinic (1932) noted that feeding stopped between 9 pm and 4 am and that very little food was found in the stomachs at midnight. Blaxter and Holliday (1958) however, found that moonlight provided adequate light intensity for feeding. The light threshold for feeding by *Etrumeus* has not been established.

Gut fullness index values for night-caught fish were not reported by Yokota et al. (1961) for *Etrumeus teres.* However, fullness index increased gradually during the day in samples collected at 10 am, 12 am, and 4 pm, similarly to *E.whiteheadi in* the present study.

Relatively few differences in diet composition were observed among the four areas on the south coast (Tables 8-11). Calanoid copepods dominated the diet both by number and bulk in the adult fish. The gut contents of both adults and juveniles in the offshore area did show a slightly greater diversity of prey than those in inshore areas. Euphausiids were more important offshore than inshore in 1983 (Table 9) and *vice versa* in 1984 (Table 11). Minor dietary components such as cladocerans, ostracods, pteropods, decapods, bivalve larvae and fish eggs were more prevalent in 1983 than 1984.

4.3 FOOD SELECTION BY *E. WHITEHEADI*

An analysis of prey selectivity is impossible without some knowledge of the prey field available to the predator. An attempt was originally made in this study to relate redeye gut contents to net-plankton taken at the same station where fish were caught, but was abandoned for several reasons, Firstly, the number of instances where both plankton samples and fish with food in the stomach were taken at the same place and at the same known depth was very small. Secondly, when these conditions were satisfied, it was apparent by the abundance of otherwise more attractive prey types in the plankton and total absence of them in the gut, that the fish were often not feeding in the vicinity of their place of capture.

By making the assumption that larger prey organisms at sea are less abundant numerically than smaller prey organisms, and that this tendency can be approximated by an inverse proportionality based on individual prey mass (Ursin, 1973), an attempt was made to investigate size-selection of prey by redeye. The results of this analysis are presented in Figs 22-28. Classification of predators into feeding niches based on size selectivity was attempted by Hahm and Langton (1984). For each predator species they obtained a distribution of scores (as in solid lines in Figs 22-28). The mean score was then plotted against the standard deviation of the scores for each species. The same procedure was followed here. Values for redeye are shown in Fig. 33 along with the values obtained by Hahm and Langton (1980) for 11 species of demersal fishes from the N.W. Atlantic.

Mean scores (X-axis in Fig. 33) for redeye fell above those for the seven gadiform and four pleuronectiform species studied by Hahm and Langton (1980). This simply means that the mean ratio of predator mass to prey mass in redeye was greater than that in the other species. Redeye were taking, on average, relatively smaller prey. The juveniles examined from the west coast were taking relatively larger prey than the south coast fish. The mean score of 12 (south

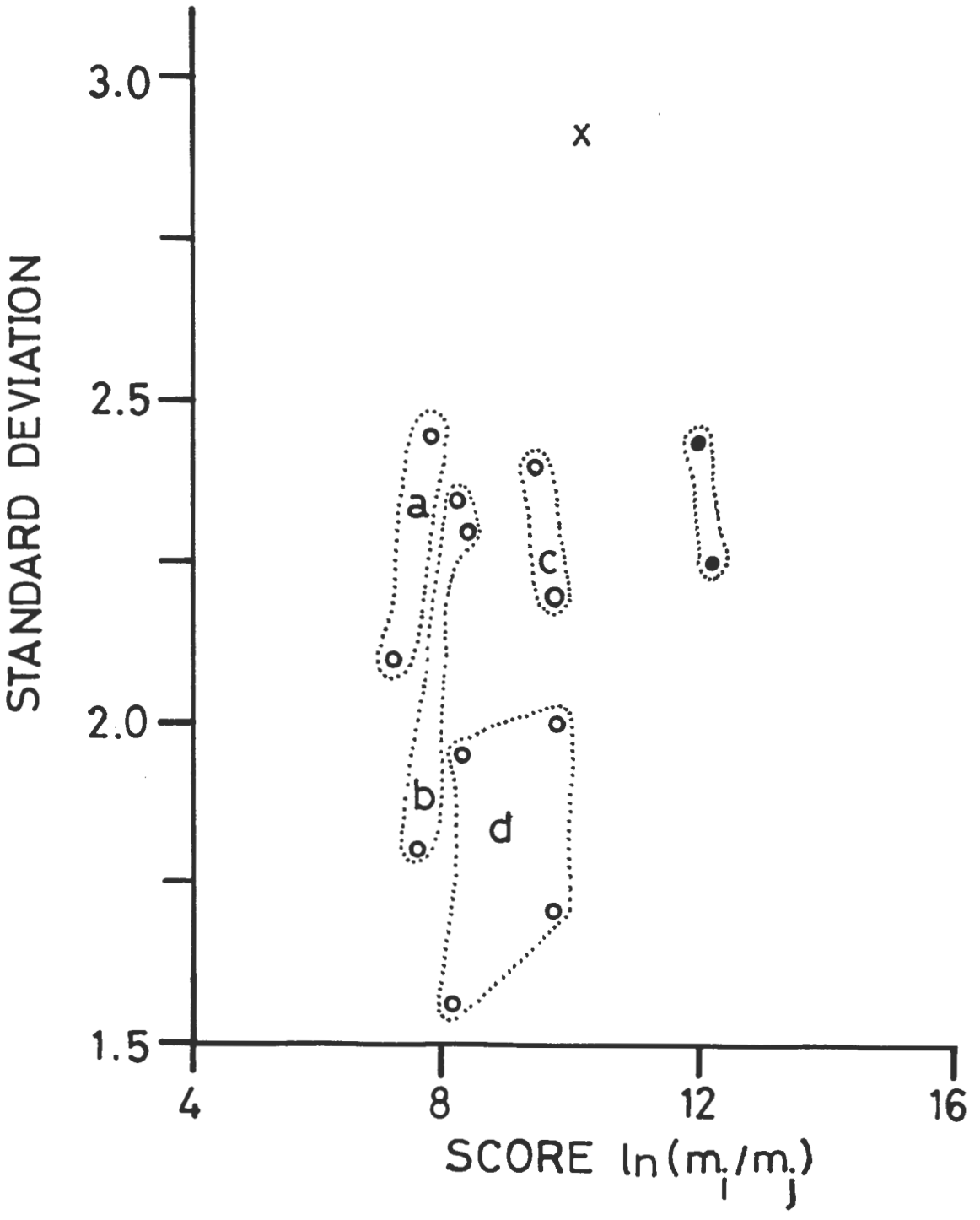


Figure 33 Mean predator/prey scores plotted against standard deviation. Groupings indicate probable feeding niches. ● = South Coast, X = West Coast, a, b, c and d are feeding-size niches for gadiform and pleuronectiform species from Hahm and Langton (1984).

coast fish) corresponds to a predator/prey mass ratio of 163 000:1.

The magnitude of the score standard deviation is an indication of size diversity in prey selection where a small standard deviation implies that the predator selects a narrow range of prey sizes. The standard deviations obtained for redeye, particularly the one from the west coast juveniles (Fig. 33), are moderately large when compared to those reported by Hahm and Langton (1980). The west coast juveniles (see Fig. 28) took a combination of relatively large prey (chaetognaths) and relatively small prey (small copepods), and this resulted in an especially high score standard deviation for that predator group.

The tendency for mean prey size to increase with increasing fish size was not surprising, and the same trend appeared in the study of *Etrumeus teres* by Yokota et al. (1961). Although it is generally true that large fish may be more successful than small fish at capturing large prey, either because of greater mouth size or body strength, it is an unlikely explanation for the results obtained here. More probable is that a large fish feeding on small prey one at a time gains little food energy per bite relative to its body size whereas a small fish would gain relatively more energy feeding on the same number of small prey. Also, juvenile redeye have a smaller gill raker gap than the adult fish and may be better suited for handling smaller prey.

The composition of the diet of juvenile, transitional and adult fish differed notable in several instances. Juveniles took many more fish eggs than the larger fish (Tables 5 and 6). This may be due to a tendency for juveniles to locate themselves at depths or habitats where eggs tend to be more abundant, but it seems more likely that the smaller fish prefer, or are better able to perceive and handle, small transparent objects such as fish eggs than the larger fish.

A discussion of feeding or food selection based on gut contents would be incomplete without some mention of the inevitable sources of error and bias. For example, the method used to determine stomach fullness index tends to result in an overestimation. Stomach fullness index was calculated as the sum of the mass of unidentifiable matter (weighed directly) and the mass of identified prey (reconstructed from mass/length regressions), standardized to fish mass. The error arises because some of the material may be included twice. It is unlikely that the trends in diel feeding pattern based on stomach fullness indices calculated in this way, however, are seriously affected by this bias.

The fact that digestion rates of various prey types are different inevitably introduces errors into this kind of study. Of the several species of fish eggs, for example, that one would expect to be fed upon by redeye (anchovy, pilchard, redeye, lightfish, lanternfish) only anchovy and lightfish (*Maurolicus muelleri*) were encountered regularly in gut contents. Although apparently not proven experimentally, it is believed that anchovy eggs are somewhat more resistant to digestion than eggs of pilchard and redeye, and much more resistant than eggs of lanternfish (C. L. Brownell, pers. comm.). Small fish larvae are also rapidly digested. However, some stomachs contained unmistakable fish eye lenses. The outer layer of the lens is digested rapidly but the core, with a diameter of about half that of the original lens diameter, is more resistant to digestion (C. L. Brownell, pers. comm.). These lenses were estimated to have come from fish between 20 and 35 mm SL. Several fish bones were also found in gut contents. Yokota et al. (1961, tables 5.7 and 5.8) reported many instances of piscivory by the related *Etrumeus teres* (= *E. micropus*). Anchovy (*Engraulis japonicus)* were most frequently eaten.

The relative digestion rates of crustacean prey types are poorly known. The small cyclopoid copepods of the genus *Oncaea* have a hard exoskeleton that is particularly resistant to digestion. These copepods were found very commonly in gut contents of redeye of all sizes. They are exceptionally small (total length in gut content was about 500 µm) and because they are so resistent to digestion, it is surprising that the fish would bother to feed on them. The explanation in this case may be that *Oncaea* are associated with larger copepods, and are taken incidentally. *Oncaea* species were also abundant in gut contents of the anchoveta (*Engraulis ringens)* off Peru (Rojas de Mendiola, 1980), probably for the same reasons. The robust maxillipeds of the Oncaeidae were shown by Wickstead (1962) to be used for grasping larger planktonic organisms. He reproduced photographs of

Oncaea gripping *Sagitta* (chaetognath) and *Rhincalanus* (copepod).

4.4 FEEDING STUDIES ON *ETRUMEUS* IN SOUTHERN AFRICA: FUTURE WORK.

1. Nought-year-old redeye, pilchard and anchovy often school together in South African waters (Armstrong, 1985). The diet of pilchard was investigated by Davies (1957), King and Macleod (1976) and James (1987). A comparison of gut contents of redeye, pilchard and anchovy from the same shoals has not been undertaken. From the above studies there is considerable dietary overlap, and a composite study would provide valuable information on possible resource partitioning among these three major southern African clupeoid fishes.

2. Although more difficult to maintain in captivity than either anchovy or pilchard, a small number of redeye were reared on one occasion in the laboratory from the egg to an age of about 5 months (C. L. Brownell pers. comm.). A much better understanding of redeye feeding behaviour (prey selection, daily ration, filtering versus particulate feeding, etc.) could be obtained by studying captive fish. Wild-caught juvenile redeye have been brought back to the laboratory but none have survived longer than 24 hours. Wild anchovy and pilchard, on the other hand, survived quite well after receiving the same handling as the redeye. (A. James, pers. comm.).

3. The scope of this study was restricted by availability of material. Only a single month (November) was represented on the south coast and only a two month period (April-May) on the west coast; the latter were limited to the juvenile size class. A definitive study of feeding in redeye will require samples from other seasons and west coast specimens of the larger size classes. Fish samples from farther north, i.e. Namibia, would also be required, although redeye are less common there.

Chapter 5
SUMMARY

1. *Etrumeus whiteheadi* Wongratana, is the third most important pelagic fishery resource in South Africa, after the anchovy, *Engraulis capensis*, and pilchard, *Sardinops ocellatus*. The mean annual catch over the 20 year period 1966-1985 was 28 100 metric tons.

2. It is distributed from Walvis Bay to Natal, where it is replaced by its warmer water congener *Etrumeus teres* (De Kay).

3. The diet of redeye, which has not previously been investigated, is crustacean-dominated.

(a) Copepods comprised a mean of 67%, 59% and 43% by mass of identifiable prey items in juveniles (5-10.9 cm SL), transitional juvenile/adults (11-16.9 cm SL), and adults (17-22.9 cm SL), respectively, on the south coast.

(b) Euphausiids comprised a mean of 10%, 14% and 52% by mass of identifiable prey items in juveniles, transitional stages, and adults, respectively (1983 and 1984 south coast cruises combined).

(c) The corresponding mean for decapods crustaceans were 9%, 18% and 5%.

(d) Other common prey types were chaetognaths, mysids, pteropods, cladocerans, and fish eggs (particularly anchovy) and larvae. Chaetognaths dominated the diet (mean 96% by mass) in two groups of juvenile fish collected in April and May, 1984 in Lamberts Bay.

(e) There was no evidence that redeye feed on phytoplankton.

4. Feeding appears to take place during daylight hours. As the day proceeds the amount of food in stomachs, relative to fish mass, increases, reaching a maximum between noon and 2000 hours. Acoustic and catch data indicate that redeye undergo diel vertical migration, passing the night near the surface and spending daylight hours in deeper water, where most feeding is likely to take place.

5. There was no significant difference in stomach fullness among fish collected from four major regions off the south coast in either cruise. This suggests that none of the four areas studied constitutes a better feeding ground than the others, at least at the time of the two surveys. Fish taken offshore tended to take a greater diversity of prey types.

6. Over the size range of fish studied (5-22.9 cm SL) there was a significant trend for larger fish to take larger prey. The overall mean ratio of fish mass to individual prey mass in south coast fish was about 163 000:1 (which is the equivalent of a 15-cm redeye consuming a copepod of prosome length 1500 um).

7. The length of the first gill arch and the mean gap between adjacent gill raker increases linearly with standard length over the size range studied (38-210 mm) according to the relationships:

gill arch length = 0.214 SL+0.365, and

mean raker gap = 0.0035 SL+0.000829

respectively

The number of gill rakers on the first gill arch increased rapidly during metamorphosis to reach about 35 at 50 mm SL. Beyond this size there was no further tendency for raker number to increase. The mean and range of counts observed for fish of 50 mm SL and above were 54 (range: 51-59).

8. Because juvenile redeye, often shoal with anchovy and pilchard of similar length and there is a larger dietary overlap among these three species at all stages in their life histories, there may be a degree of competition among them. Further work that directly compares the feeding niches of the three major southern African clupeoid fishes might help our understanding of the dynamics of possible ecological interactions among them.

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APPENDIX

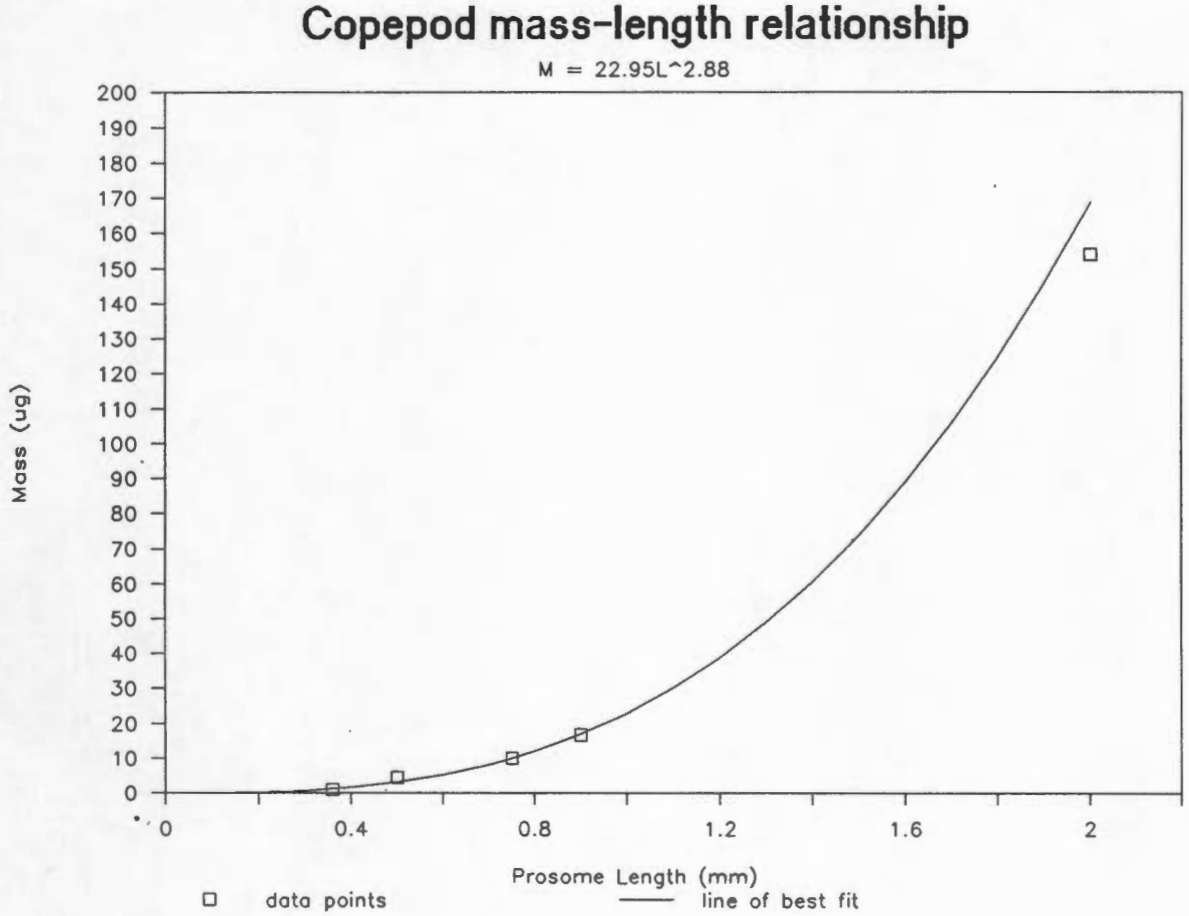

Figure 34 Power curve fit to the plot of copepod prosome length versus dry mass. Each data point represents the mass of 50 individuals (n = 5, r^2 = 0.97).

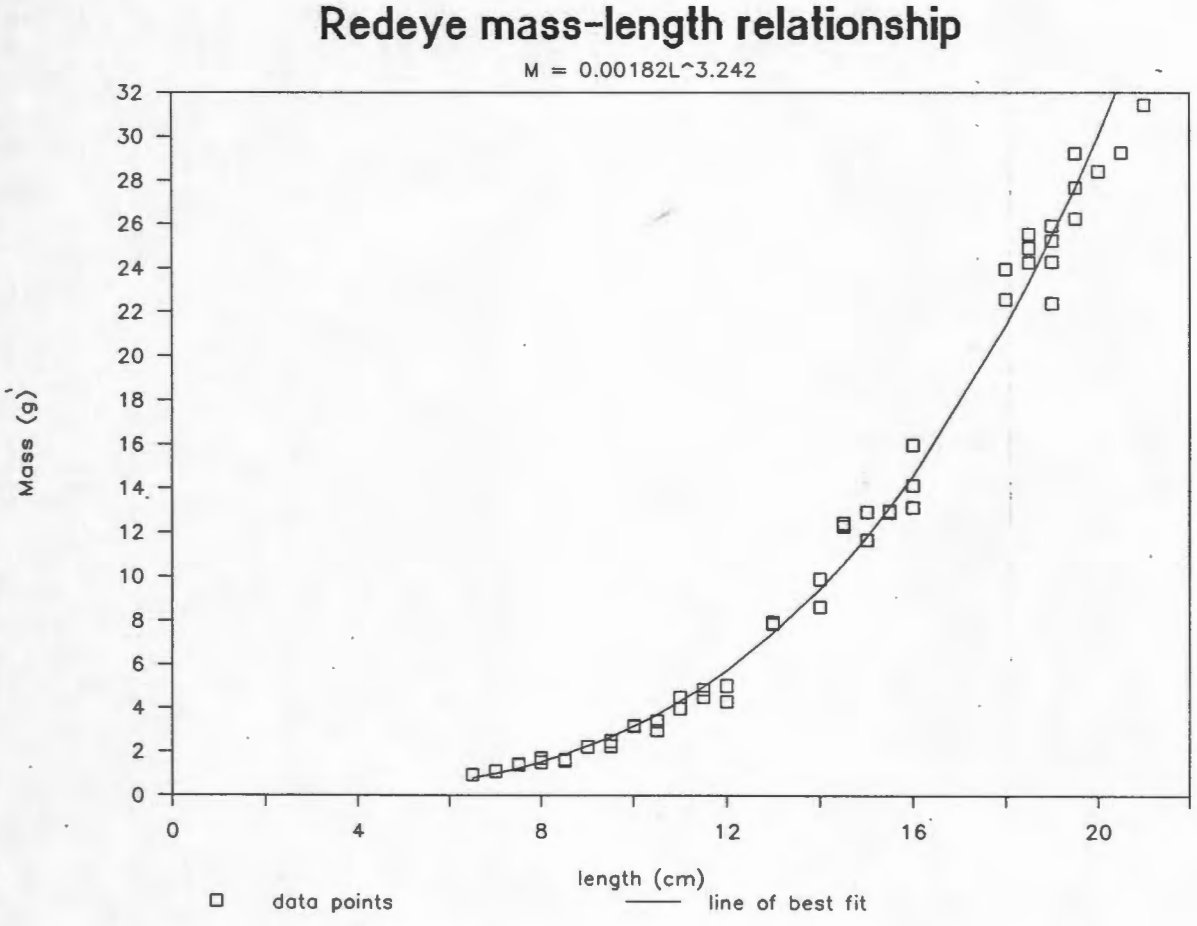

Figure 35 Power curve fit to the plot of redeye standard length versus dry mass (n=52, r^2 = 0.98).

GUT CONTENT

ANALYSIS

DATA

November 1983

STATION:	52-06A	SIZE CLASS:	7-8.9CMS
TIME:	2054HRS	DEPTH:	20-34M
COMMENT:	ALL STOMACHS EMPTY.		

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0
DINOFLAGELLATES					0
CALANOID COPEPODS	>4500-5000				0
	>4000-4500				0
	>3500-4000				0
	>3000-3500				0
	>2500-3000				0
	>2000-2500				0
	>1500-2000				0
	>1000-1500				0
	>500-1000				0
	250-500				0
CYCLOPOID COPEPODS	>500-1000				0
	250-500				0
CLADOCERANS					0
"					0
OSTRACODS					0
EUPHAUSIIDS					0
(lengths)					0
"					0
"					0
"					0
"					0
EUPHAUSIIDS					0
(eye diams)					0
"					0
DECAPODS					0
MYSIDS					0
AMPHIPODS					0
PTEROPODS (SHELLED)					0
PTEROPODS (NAKED)					0
BIVALVE LARVAE					0
SQUIDS					
CHAETOGNATHS					0
FISH					0
NAUPLII					0
EGGS					0

UNIDENTIFIED MATERIAL	
STANDARD FISH LENGTH	7-8.9CMS
NUMBER EMPTY	10
NUMBER OF FISH	10
NUMBER EXAMINED	0
TOTAL (NO., %, WT.ug)	0

STATION:	60-04A	SIZE CLASS:	5-6.9CCMS
TIME:	0250HRS	DEPTH:	20M
COMMENT:	ALL STOMACHS EMPTY.		

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0
DINOFLAGELLATES					0
CALANOID COPEPODS	>4500-5000				0
	>4000-4500				0
	>3500-4000				0
	>3000-3500				0
	>2500-3000				0
	>2000-2500				0
	>1500-2000				0
	>1000-1500				0
	>500-1000				0
	250-500				0
CYCLOPOID COPEPODS	>500-1000				0
	250-500				0
CLADOCERANS					0
"					0
OSTRACODS					0
EUPHAUSIIDS					0
(lengths)					0
"					0
"					0
"					0
"					0
EUPHAUSIIDS					0
(eye diams)					0
"					0
DECAPODS					0
MYSIDS					0
AMPHIPODS					0
PTEROPODS (SHELLED)					0
PTEROPODS (NAKED)					0
BIVALVE LARVAE					0
SQUIDS					
CHAETOGNATHS					0
FISH					0
NAUPLII					0
EGGS					0

UNIDENTIFIED MATERIAL	
STANDARD FISH LENGTH	5-6.9CMS
NUMBER EMPTY	1
NUMBER OF FISH	1
NUMBER EXAMINED	0
TOTAL (NO., %, WT.ug)	0

STATION:	60-04A	SIZE CLASS:	7-8.9CMS
TIME:	0250HRS	DEPTH:	20M
COMMENT:	ALL STOMACHS EMPTY.		

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0
DINOFLAGELLATES					0
CALANOID COPEPODS	>4500-5000				0
	>4000-4500				0
	>3500-4000				0
	>3000-3500				0
	>2500-3000				0
	>2000-2500				0
	>1500-2000				0
	>1000-1500				0
	>500-1000				0
	250-500				0
CYCLOPOID COPEPODS	>500-1000				0
	250-500				0
CLADOCERANS					0
"					0
OSTRACODS					0
EUPHAUSIIDS					0
(lengths)					0
"					0
"					0
"					0
"					0
EUPHAUSIIDS					0
(eye diams)					0
"					0
DECAPODS					0
MYSIDS					0
AMPHIPODS					0
PTEROPODS (SHELLED)					0
PTEROPODS (NAKED)					0
BIVALVE LARVAE					0
SQUIDS					
CHAETOGNATHS					0
FISH					0
NAUPLII					0
EGGS					0

UNIDENTIFIED MATERIAL	
STANDARD FISH LENGTH	7-8.9CMS
NUMBER EMPTY	10
NUMBER OF FISH	10
NUMBER EXAMINED	0
TOTAL (NO., %, WT.mg)	0

STATION:	60-04A	SIZE CLASS:	15-16.9CMS		
TIME:	0250HRS	DEPTH:	20M		
COMMENT:	ONE EUPHAUSIID ONLY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS		1	100.00	11.7	2848.71
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		15-16.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		1			
NUMBER EXAMINED		1			
TOTAL (NO., %, WT.mg)		1	100.00		2848.71

STATION:	60-04A	SIZE CLASS:	17-18.9CMS		
TIME:	0250HRS	DEPTH:	20M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS		5	100.00	11.7	14243.56
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		17-18.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		2			
NUMBER EXAMINED		2			
TOTAL (NO., %, WT.mg)		5	100.00		14243.56

STATION:	60-08A	SIZE CLASS:	13-14.9CMS		
TIME:	0600HRS	DEPTH:	30-75M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500	3595	94.09		156885.36
	>500-1000	216	5.65		2164.78
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	6	0.16		8.17
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS		4	0.10	4.5	5356.94
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		13-14.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		9			
NUMBER EXAMINED		9			
TOTAL (NO., %, WT.ug)		3821	100.00		164415.24

STATION:	60-08A	SIZE CLASS:	15-16.9CMS		
TIME:	0600HRS	DEPTH:	30-75M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500	6050	79.19		264021.26
	>500-1000	1560	20.42		15634.49
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS		30	0.39	4.5	4173.05
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		15-16.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		10			
NUMBER EXAMINED		10			
TOTAL (NO., %, WT.mg)		7640	100.00		283828.81

STATION:	60-08A	SIZE CLASS:		17-18.9CMS		
TIME:	0600HRS	DEPTH:		30-75M		
COMMENT:						
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	
DIATOMS			0.00		0.00	
DINOFLAGELLATES			0.00		0.00	
CALANOID COPEPODS	>4500-5000		0.00		0.00	
	>4000-4500		0.00		0.00	
	>3500-4000		0.00		0.00	
	>3000-3500		0.00		0.00	
	>2500-3000		0.00		0.00	
	>2000-2500		0.00		0.00	
	>1500-2000	451	18.62		51869.11	
	>1000-1500	1969	81.30		85926.92	
	>500-1000		0.00		0.00	
	250-500		0.00		0.00	
CYCLOPOID COPEPODS	>500-1000		0.00		0.00	
	250-500		0.00		0.00	
CLADOCERANS			0.00		0.00	
"			0.00		0.00	
OSTRACODS			0.00		0.00	
EUPHAUSIIDS			0.00		0.00	
(lengths)			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
EUPHAUSIIDS		2	0.08	4.5	2678.47	
(eye diams)			0.00		0.00	
"			0.00		0.00	
DECAPODS			0.00		0.00	
MYSIDS			0.00		0.00	
AMPHIPODS			0.00		0.00	
PTEROPODS (SHELLED)			0.00		0.00	
PTEROPODS (NAKED)			0.00		0.00	
BIVALVE LARVAE			0.00		0.00	
SQUIDS			0.00		0.00	
CHAETOGNATHS			0.00		0.00	
FISH			0.00		0.00	
NAUPLII			0.00		0.00	
EGGS			0.00		0.00	
UNIDENTIFIED MATERIAL					0.00	
STANDARD FISH LENGTH		17-18.9CMS				
NUMBER EMPTY		0				
NUMBER OF FISH		3				
NUMBER EXAMINED		3				
TOTAL (NO., %, WT.mg)		2422	100.00		140474.50	

STATION:	72-012A	SIZE CLASS:		7-8.9CMS		
TIME:	0608HRS	DEPTH:		20M		
COMMENT:	ALL STOMACHS EMPTY.					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	
DIATOMS						0
DINOFLAGELLATES						0
CALANOID COPEPODS	>4500-5000					0
	>4000-4500					0
	>3500-4000					0
	>3000-3500					0
	>2500-3000					0
	>2000-2500					0
	>1500-2000					0
	>1000-1500					0
	>500-1000					0
	250-500					0
CYCLOPOID COPEPODS	>500-1000					0
	250-500					0
CLADOCERANS						0
"						0
OSTRACODS						0
EUPHAUSIIDS						0
(lengths)						0
"						0
"						0
"						0
"						0
EUPHAUSIIDS						0
(eye diams)						0
"						0
DECAPODS						0
MYSIDS						0
AMPHIPODS						0
PTEROPODS (SHELLED)						0
PTEROPODS (NAKED)						0
BIVALVE LARVAE						0
SQUIDS						
CHAETOGNATHS						0
FISH						0
NAUPLII						0
EGGS						0
UNIDENTIFIED MATERIAL						
STANDARD FISH LENGTH		7-8.9CMS				
NUMBER EMPTY		3				
NUMBER OF FISH		3				
NUMBER EXAMINED		0				
TOTAL (NO., %, WT.ug)		0				0

STATION:	72-012A	SIZE CLASS:		9-10.9CMS		
TIME:	0608HRS	DEPTH:		20M		
COMMENT:	PRACTICALLY EMPTY.					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	
DIATOMS			0.00			0
DINOFLAGELLATES			0.00			0
CALANOID COPEPODS	>4500-5000		0.00			0
	>4000-4500		0.00			0
	>3500-4000		0.00			0
	>3000-3500		0.00			0
	>2500-3000		0.00			0
	>2000-2500	1	0.51		237.1746902	
	>1500-2000		0.00			0
	>1000-1500	5	2.56		218.1993897	
	>500-1000	57	29.23		571.2602217	
	250-500		0.00			0
CYCLOPOID COPEPODS	>500-1000	10	5.13		100.2210915	
	250-500	50	25.64		68.07109633	
CLADOCERANS		25	12.82	0.7	0.025	
"			0.00			0
OSTRACODS		1	0.51	0.4	0.03	
EUPHAUSIIDS		1	0.51	2	10.72595652	
(lengths)			0.00			0
"			0.00			0
"			0.00			0
"			0.00			0
"			0.00			0
EUPHAUSIIDS			0.00			0
(eye diams)			0.00			0
"			0.00			0
DECAPODS		6	3.08	0.8	3.557106394	
MYSIDS			0.00			0
AMPHIPODS			0.00			0
PTEROPODS (SHELLED)		3	1.54	2.2	240	
PTEROPODS (NAKED)		17	8.72	5.5	0.742483374	
BIVALVE LARVAE			0.00			0
SQUIDS			0.00			
CHAETOGNATHS			0.00			0
FISH			0.00			0
NAUPLII			0.00			0
EGGS		19	9.74	1.2	0.323	
UNIDENTIFIED MATERIAL						
STANDARD FISH LENGTH		9-10.9CMS				
NUMBER EMPTY		0				
NUMBER OF FISH		10				
NUMBER EXAMINED		10				
TOTAL (NO., %, WT.ug)		195	100.00		1.450330035	

STATION:	72-012A	SIZE CLASS:	11-12.9CMS		
TIME:	0608HRS	DEPTH:	20M		
COMMENT:	ALL STOMACHS EMPTY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0
DINOFLAGELLATES					0
CALANOID COPEPODS	>4500-5000				0
	>4000-4500				0
	>3500-4000				0
	>3000-3500				0
	>2500-3000				0
	>2000-2500				0
	>1500-2000				0
	>1000-1500				0
	>500-1000				0
	250-500				0
CYCLOPOID COPEPODS	>500-1000				0
	250-500				0
CLADOCERANS					0
"					0
OSTRACODS					0
EUPHAUSIIDS					0
(lengths)					0
"					0
"					0
"					0
"					0
EUPHAUSIIDS					0
(eye diams)					0
"					0
DECAPODS					0
MYSIDS					0
AMPHIPODS					0
PTEROPODS (SHELLED)					0
PTEROPODS (NAKED)					0
BIVALVE LARVAE					0
SQUIDS					
CHAETOGNATHS					0
FISH					0
NAUPLII					0
EGGS					0
UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH		11-12.9CMS			
NUMBER EMPTY		10			
NUMBER OF FISH		10			
NUMBER EXAMINED		0			
TOTAL (NO., %, WT.ug)		0			0

STATION:	76-02A	SIZE CLASS:	7-8.9CMS		
TIME:	1930HRS	DEPTH:	45M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500	810	14.50		35348.30
	>500-1000	4550	81.44		45600.60
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	30	0.54		40.84
CLADOCERANS		5	0.09	0.8	5.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS		17	0.30	7.67	12752.15
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		175	3.13	3.3	9135.31
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		8-9.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		10			
NUMBER EXAMINED		10			
TOTAL (NO., %, WT.ug)		5587	100.00		102882.20

STATION:	80-02A	SIZE CLASS:	11-12.9CMS		
TIME:	0830HRS	DEPTH:	37M		
COMMENT:	ALL STOMACHS EMPTY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0
DINOFLAGELLATES					0
CALANOID COPEPODS	>4500-5000				0
	>4000-4500				0
	>3500-4000				0
	>3000-3500				0
	>2500-3000				0
	>2000-2500				0
	>1500-2000				0
	>1000-1500				0
	>500-1000				0
	250-500				0
CYCLOPOID COPEPODS	>500-1000				0
	250-500				0
CLADOCERANS					0
"					0
OSTRACODS					0
EUPHAUSIIDS					0
(lengths)					0
"					0
"					0
"					0
"					0
EUPHAUSIIDS					0
(eye diams)					0
"					0
DECAPODS					0
MYSIDS					0
AMPHIPODS					0
PTEROPODS (SHELLED)					0
PTEROPODS (NAKED)					0
BIVALVE LARVAE					0
SQUIDS					
CHAETOGNATHS					0
FISH					0
NAUPLII					0
EGGS					0
UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH		11-12.9CMS			
NUMBER EMPTY		5			
NUMBER OF FISH		5			
NUMBER EXAMINED		0			
TOTAL (NO., %, WT.ug)		0			0

STATION:	80-02A	SIZE CLASS:	13-14.9CMS		
TIME:	0830HRS	DEPTH:	37M		
COMMENT:	ALL STOMACHS EMPTY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0
DINOFLAGELLATES					0
CALANOID COPEPODS	>4500-5000				0
	>4000-4500				0
	>3500-4000				0
	>3000-3500				0
	>2500-3000				0
	>2000-2500				0
	>1500-2000				0
	>1000-1500				0
	>500-1000				0
	250-500				0
CYCLOPOID COPEPODS	>500-1000				0
	250-500				0
CLADOCERANS					0
"					0
OSTRACODS					0
EUPHAUSIIDS					0
(lengths)					0
"					0
"					0
"					0
"					0
EUPHAUSIIDS					0
(eye diams)					0
"					0
DECAPODS					0
MYSIDS					0
AMPHIPODS					0
PTEROPODS (SHELLED)					0
PTEROPODS (NAKED)					0
BIVALVE LARVAE					0
SQUIDS					
CHAETOGNATHS					0
FISH					0
NAUPLII					0
EGGS					0
UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH		13-14.9CMS			
NUMBER EMPTY		5			
NUMBER OF FISH		5			
NUMBER EXAMINED		0			
TOTAL (NO., %, WT.ug)		0			0

STATION:	80-02A	SIZE CLASS:	15-16.9CMS		
TIME:	0830HRS	DEPTH:	37M		
COMMENT:	FISH EYE LENSES FOUND, '3 PRS., FISH SZ ='162MM.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0
DINOFLAGELLATES					0
CALANOID COPEPODS	>4500-5000				0
	>4000-4500				0
	>3500-4000				0
	>3000-3500				0
	>2500-3000				0
	>2000-2500				0
	>1500-2000				0
	>1000-1500				0
	>500-1000				0
	250-500				0
CYCLOPOID COPEPODS	>500-1000				0
	250-500				0
CLADOCERANS					0
"					0
OSTRACODS					0
EUPHAUSIIDS					0
(lengths)					0
"					0
"					0
"					0
"					0
EUPHAUSIIDS					0
(eye diams)					0
"					0
DECAPODS					0
MYSIDS					0
AMPHIPODS					0
PTEROPODS (SHELLED)					0
PTEROPODS (NAKED)					0
BIVALVE LARVAE					0
SQUIDS					
CHAETOGNATHS					0
FISH					0
NAUPLII					0
EGGS					0
UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH		15-16.9CMS			
NUMBER EMPTY		1			
NUMBER OF FISH		2			
NUMBER EXAMINED		1			
TOTAL (NO., %, WT.ug)		0			0

STATION:	80-14A	SIZE CLASS:	11-12.9CMS		
TIME:	2251HRS	DEPTH:	10-60M		
COMMENT:	ALL STOMACHS EMPTY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0
DINOFLAGELLATES					0
CALANOID COPEPODS	>4500-5000				0
	>4000-4500				0
	>3500-4000				0
	>3000-3500				0
	>2500-3000				0
	>2000-2500				0
	>1500-2000				0
	>1000-1500				0
	>500-1000				0
	250-500				0
CYCLOPOID COPEPODS	>500-1000				0
	250-500				0
CLADOCERANS					0
"					0
OSTRACODS					0
EUPHAUSIIDS					0
(lengths)					0
"					0
"					0
"					0
"					0
EUPHAUSIIDS					0
(eye diams)					0
"					0
DECAPODS					0
MYSIDS					0
AMPHIPODS					0
PTEROPODS (SHELLED)					0
PTEROPODS (NAKED)					0
BIVALVE LARVAE					0
SQUIDS					
CHAETOGNATHS					0
FISH					0
NAUPLII					0
EGGS					0
UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH		11-12.9CMS			
NUMBER EMPTY		10			
NUMBER OF FISH		10			
NUMBER EXAMINED		0			
TOTAL (NO., %, WT.ug)		0			0

STATION:	80-14A	SIZE CLASS:	13-14.9CMS		
TIME:	2251HRS	DEPTH:	10-60M		
COMMENT:	ALL STOMACHS EMPTY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0
DINOFLAGELLATES					0
CALANOID COPEPODS	>4500-5000				0
	>4000-4500				0
	>3500-4000				0
	>3000-3500				0
	>2500-3000				0
	>2000-2500				0
	>1500-2000				0
	>1000-1500				0
	>500-1000				0
	250-500				0
CYCLOPOID COPEPODS	>500-1000				0
	250-500				0
CLADOCERANS					0
"					0
OSTRACODS					0
EUPHAUSIIDS					0
(lengths)					0
"					0
"					0
"					0
"					0
EUPHAUSIIDS					0
(eye diams)					0
"					0
DECAPODS					0
MYSIDS					0
AMPHIPODS					0
PTEROPODS (SHELLED)					0
PTEROPODS (NAKED)					0
BIVALVE LARVAE					0
SQUIDS					
CHAETOGNATHS					0
FISH					0
NAUPLII					0
EGGS					0
UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH		13-14.9CMS			
NUMBER EMPTY		1			
NUMBER OF FISH		1			
NUMBER EXAMINED		0			
TOTAL (NO., %, WT.ug)		0			0

STATION:	84-08A	SIZE CLASS:	13-14.9CMS			
TIME:	1703HRS	DEPTH:	45M			
COMMENT:						
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	
DIATOMS			0.00			0.00
DINOFLAGELLATES			0.00			0.00
CALANOID COPEPODS	>4500-5000		0.00			0.00
	>4000-4500		0.00			0.00
	>3500-4000		0.00			0.00
	>3000-3500		0.00			0.00
	>2500-3000		0.00			0.00
	>2000-2500	280	7.01			66408.91
	>1500-2000		0.00			0.00
	>1000-1500	2596	65.00			113289.12
	>500-1000		0.00			0.00
	250-500		0.00			0.00
CYCLOPOID COPEPODS	>500-1000	580	14.52			5812.82
	250-500	388	9.71			528.23
CLADOCERANS			0.00			0.00
"			0.00			0.00
OSTRACODS		2	0.05	1.2		60.00
EUPHAUSIIDS			0.00			0.00
(lengths)			0.00			0.00
"			0.00			0.00
"			0.00			0.00
"			0.00			0.00
"			0.00			0.00
EUPHAUSIIDS			0.00			0.00
(eye diams)			0.00			0.00
"			0.00			0.00
DECAPODS		132	3.30	3.3		6890.63
MYSIDS			0.00			0.00
AMPHIPODS			0.00			0.00
PTEROPODS (SHELLED)			0.00			0.00
PTEROPODS (NAKED)			0.00			0.00
BIVALVE LARVAE		16	0.40	0.6		800.00
SQUIDS			0.00			0.00
CHAETOGNATHS			0.00			0.00
FISH			0.00			0.00
NAUPLII			0.00			0.00
EGGS			0.00			0.00
UNIDENTIFIED MATERIAL						0.00
STANDARD FISH LENGTH		13-14.9CMS				
NUMBER EMPTY		0				
NUMBER OF FISH		10				
NUMBER EXAMINED		10				
TOTAL (NO., %, WT.ug)		3994	100.00			193789.73

STATION:	84-08A	SIZE CLASS:	15-16.9CMS			
TIME:	1703HRS	DEPTH:	45M			
COMMENT:						
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	
DIATOMS			0.00			0.00
DINOFLAGELLATES			0.00			0.00
CALANOID COPEPODS	>4500-5000		0.00			0.00
	>4000-4500		0.00			0.00
	>3500-4000		0.00			0.00
	>3000-3500		0.00			0.00
	>2500-3000		0.00			0.00
	>2000-2500	415	6.50			98427.50
	>1500-2000		0.00			0.00
	>1000-1500	4025	63.09			175650.51
	>500-1000	325	5.09			3257.19
	250-500		0.00			0.00
CYCLOPOID COPEPODS	>500-1000	365	5.72			3658.07
	250-500	160	2.51			217.83
CLADOCERANS		5	0.08	0.5		5.00
"			0.00			0.00
OSTRACODS			0.00			0.00
EUPHAUSIIDS		1055	16.54	3.3		55072.88
(lengths)			0.00			0.00
"			0.00			0.00
"			0.00			0.00
"			0.00			0.00
"			0.00			0.00
EUPHAUSIIDS			0.00			0.00
(eye diams)			0.00			0.00
"			0.00			0.00
DECAPODS			0.00			0.00
MYSIDS			0.00			0.00
AMPHIPODS			0.00			0.00
PTEROPODS (SHELLED)			0.00			0.00
PTEROPODS (NAKED)			0.00			0.00
BIVALVE LARVAE		20	0.31	0.7		1000.00
SQUIDS			0.00			0.00
CHAETOGNATHS			0.00			0.00
FISH			0.00			0.00
NAUPLII			0.00			0.00
EGGS		10	0.16	1.2		170.00
UNIDENTIFIED MATERIAL						0.00
STANDARD FISH LENGTH		15-16.9CMS				
NUMBER EMPTY		0				
NUMBER OF FISH		10				
NUMBER EXAMINED		10				
TOTAL (NO., %, WT.ug)		6380	100.00			337458.96

STATION:	84-14A	SIZE CLASS:	13-14.9CMS		
TIME:	2207HRS	DEPTH:	18M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000	7	35.00		70.15
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	1	5.00		1.36
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS		12	60.00	3.3	626.42
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		13-14.9CMS			
NUMBER EMPTY		3			
NUMBER OF FISH		5			
NUMBER EXAMINED		2			
TOTAL (NO., %, WT.ug)		20	100.00		697.94

STATION:	84-14A	SIZE CLASS:	17-18.9CMS		
TIME:	2207HRS	DEPTH:	18M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500	150	4.84		6545.98
	>500-1000	1860	59.96		18641.12
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS		1090	35.14	3.33	58550.62
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)		2	0.06	3	160.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		17-18.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		10			
NUMBER EXAMINED		10			
TOTAL (NO., %, WT.ug)		3102	100.00		83897.73

STATION:	104-02A	SIZE CLASS:	9-10.9CMS		
TIME:	1555HRS	DEPTH:	17-43M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500	120	1.30		28460.96
	>1500-2000		0.00		0.00
	>1000-1500	1260	13.70		54986.25
	>500-1000	6290	68.37		63039.07
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	10	0.11		13.61
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS		70	0.76	0.9	2100.00
EUPHAUSIIDS		120	1.30	7.67	90015.20
(lengths)		1330	14.46	3.33	71442.50
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		9-10.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		8			
NUMBER EXAMINED		8			
TOTAL (NO., %, WT.ug)		9200	100.00		310057.59

STATION:	104-02A	SIZE CLASS:	11-12.9CMS		
TIME:	1555HRS	DEPTH:	17-43M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500	40	1.54		9486.99
	>1500-2000		0.00		0.00
	>1000-1500	590	22.75		25747.53
	>500-1000	1660	64.02		16636.70
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000	30	1.16		300.66
	250-500	40	1.54		54.46
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS		3	0.12	0.9	90.00
EUPHAUSIIDS		80	3.09	7.67	60010.13
(lengths)		150	5.78	3.33	8057.43
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		11-12.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		9			
NUMBER EXAMINED		9			
TOTAL (NO., %, WT.ug)		2593	100.00		120383.89

STATION:	104-12A	SIZE CLASS		17-18.9CMS	
TIME:	0839HRS	DEPTH:		120M	
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500	153	1.08		36287.73
	>1500-2000	13968	98.92		1606447.35
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		17-18.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		9			
NUMBER EXAMINED		9			
TOTAL (NO., %, WT.mg)		14121	100.00		1642735.08

STATION:	104-12A	SIZE CLASS		19-20.9CMS	
TIME:	0839HRS	DEPTH:		120M	
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500	21	0.00		4980.67
	>1500-2000	11790	0.00		1355957.49
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		19-20.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		10			
NUMBER EXAMINED		10			
TOTAL (NO., %, WT.mg)		11811	0.00		1360938.16

STATION:	108-02A	SIZE CLASS:		9-10.9CMS	
TIME:	1925HRS	DEPTH:		12-30M	
COMMENT:	PACKED STOMACHS.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000	24	0.34		10145.47
	>2000-2500		0.00		0.00
	>1500-2000	288	4.04		33122.63
	>1000-1500	5616	78.85		245081.55
	>500-1000	488	6.85		4890.79
	250-500	192	2.70		261.39
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	34	0.48		46.29
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS		96	1.35	0.9	2880.00
EUPHAUSIIDS		204	2.86	9	253640.00
(lengths)		180	2.53	4.5	25038.33
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		9-10.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		5			
NUMBER EXAMINED		5			
TOTAL (NO., %, WT.ug)		7122	100.00		575106.44

STATION:	108-02A	SIZE CLASS:		11-12.9CMS	
TIME:	1925HRS	DEPTH:		12-30M	
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000	2	0.02		845.46
	>2000-2500		0.00		0.00
	>1500-2000	49	0.59		5635.45
	>1000-1500	5610	67.75		244819.72
	>500-1000	1320	15.94		13229.18
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS		34	0.41	0.9	1020.00
EUPHAUSIIDS		700	8.45	7.67	525088.66
(lengths)		560	6.76	3.92	50367.83
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE		6	0.07		300.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		11-12.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		10			
NUMBER EXAMINED		10			
TOTAL (NO., %, WT.ug)		8281	100.00		841306.29

STATION:	108-02A	SIZE CLASS:	13-14.9CMS			
TIME:	1925HRS	DEPTH:	12-30M			
COMMENT:						
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	
DIATOMS			0.00			0.00
DINOFLAGELLATES			0.00			0.00
CALANOID COPEPODS	>4500-5000		0.00			0.00
	>4000-4500		0.00			0.00
	>3500-4000		0.00			0.00
	>3000-3500	3	0.51			2051.77
	>2500-3000		0.00			0.00
	>2000-2500		0.00			0.00
	>1500-2000	34	5.81			3910.31
	>1000-1500	220	37.61			9600.77
	>500-1000	42	7.18			420.93
	250-500	20	3.42			27.23
CYCLOPOID COPEPODS	>500-1000		0.00			0.00
	250-500		0.00			0.00
CLADOCERANS		18	3.08	0.9		18.00
"			0.00			0.00
OSTRACODS			0.00			0.00
EUPHAUSIIDS		196	33.50	9		243693.33
(lengths)		50	8.55	4.5		6955.09
"			0.00			0.00
"			0.00			0.00
"			0.00			0.00
"			0.00			0.00
EUPHAUSIIDS			0.00			0.00
(eye diams)			0.00			0.00
"			0.00			0.00
DECAPODS			0.00			0.00
MYSIDS			0.00			0.00
AMPHIPODS		2	0.34	3		154.51
PTEROPODS (SHELLED)			0.00			0.00
PTEROPODS (NAKED)			0.00			0.00
BIVALVE LARVAE			0.00			0.00
SQUIDS			0.00			0.00
CHAETOGNATHS			0.00			0.00
FISH			0.00			0.00
NAUPLII			0.00			0.00
EGGS			0.00			0.00
UNIDENTIFIED MATERIAL						0.00
STANDARD FISH LENGTH		13-14.9CMS				
NUMBER EMPTY		0				
NUMBER OF FISH		3				
NUMBER EXAMINED		3				
TOTAL (NO., %, WT.ug)		585	100.00			266831.94

STATION:	124-02A	SIZE CLASS:	9-10.9CMS			
TIME:	1630HRS	DEPTH:	30M			
COMMENT:						
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	
DIATOMS			0.00			0.00
DINOFLAGELLATES			0.00			0.00
CALANOID COPEPODS	>4500-5000		0.00			0.00
	>4000-4500		0.00			0.00
	>3500-4000		0.00			0.00
	>3000-3500		0.00			0.00
	>2500-3000		0.00			0.00
	>2000-2500	2	0.09			474.35
	>1500-2000	50	2.13			5750.46
	>1000-1500	1489	63.55			64979.78
	>500-1000	441	18.82			4419.75
	250-500		0.00			0.00
CYCLOPOID COPEPODS	>500-1000	238	10.16			2385.26
	250-500	15	0.64			20.42
CLADOCERANS			0.00			0.00
"			0.00			0.00
OSTRACODS		75	3.20	0.9		2250.00
EUPHAUSIIDS		19	0.81	10		32956.03
(lengths)			0.00			0.00
"			0.00			0.00
"			0.00			0.00
"			0.00			0.00
"			0.00			0.00
EUPHAUSIIDS			0.00			0.00
(eye diams)			0.00			0.00
"			0.00			0.00
DECAPODS			0.00			0.00
MYSIDS			0.00			0.00
AMPHIPODS			0.00			0.00
PTEROPODS (SHELLED)			0.00			0.00
PTEROPODS (NAKED)			0.00			0.00
BIVALVE LARVAE		14	0.60	0.556		700.00
SQUIDS			0.00			0.00
CHAETOGNATHS			0.00			0.00
FISH			0.00			0.00
NAUPLII			0.00			0.00
EGGS			0.00			0.00
UNIDENTIFIED MATERIAL						0.00
STANDARD FISH LENGTH		9-10.9CMS				
NUMBER EMPTY		0				
NUMBER OF FISH		10				
NUMBER EXAMINED		10				
TOTAL (NO., %, WT.ug)		2343	100.00			113936.04

STATION:	132-04A	SIZE CLASS:	7-8.9CMS		
TIME:	2024HRS	DEPTH:	10M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500	9	1.54		392.76
	>500-1000	550	93.86		5512.16
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000	2	0.34		20.04
	250-500	18	3.07		24.51
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)		7	1.19	3.33	376.01
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		7-8.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		2			
NUMBER EXAMINED		2			
TOTAL (NO., %, WT.ug)		586	100.00		6325.48

STATION:	132-04A	SIZE CLASS:	9-10.9CMS		
TIME:	2024HRS	DEPTH:	10M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500	30	1.27		7115.24
	>1500-2000		0.00		0.00
	>1000-1500	740	31.22		32293.51
	>500-1000	1450	61.18		14532.06
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	70	2.95		95.30
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS		80	3.38	0.833	2400.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		9-10.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		10			
NUMBER EXAMINED		10			
TOTAL (NO., %, WT.ug)		2370	100.00		56436.11

STATION:	152-02A	SIZE CLASS:	9-10.9CMS		
TIME:	1230HRS	DEPTH:	45M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500	80	18.10		54713.78
	>2500-3000		0.00		0.00
	>2000-2500	88	19.91		20871.37
	>1500-2000		0.00		0.00
	>1000-1500	215	48.64		9382.57
	>500-1000	38	8.60		380.84
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	3	0.68		4.08
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS		7	1.58	7.67	5250.89
(lengths)		11	2.49	3.33	590.88
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					52800.00
STANDARD FISH LENGTH		9-10.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		9			
NUMBER EXAMINED		9			
TOTAL (NO., %, WT.ug)		442	100.00		143994.42

STATION:	152-02A	SIZE CLASS:	11-12.9CMS		
TIME:	1230HRS	DEPTH:	45M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500	147	0.00		34864.68
	>1500-2000		0.00		0.00
	>1000-1500	67	0.00		2923.87
	>500-1000	6	0.00		60.13
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000	2	0.71		20.04
	250-500	3	1.07		4.08
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS		38	13.57	7.67	28504.81
(lengths)		17	6.07	3.33	913.17
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					29000.00
STANDARD FISH LENGTH		11-12.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		6			
NUMBER EXAMINED		6			
TOTAL (NO., %, WT.ug)		280	21.43		96290.80

STATION:	152-002F	SIZE CLASS:	9-10.9CMS		STATION:		SIZE CLASS:	
TIME:	0939HRS	DEPTH:	50M		TIME:		DEPTH:	
COMMENT:					COMMENT:			
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH: DRY WT:	FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER: LENGTH: DRY WT:
DIATOMS				0	DIATOMS			0
DINOFLAGELLATES				0	DINOFLAGELLATES			0
CALANOID COPEPODS	>4500-5000			0	CALANOID COPEPODS	>4500-5000		0
	>4000-4500			0		>4000-4500		0
	>3500-4000			0		>3500-4000		0
	>3000-3500			0		>3000-3500		0
	>2500-3000			0		>2500-3000		0
	>2000-2500			0		>2000-2500		0
	>1500-2000			0		>1500-2000		0
	>1000-1500			0		>1000-1500		0
	>500-1000			0		>500-1000		0
	250-500			0		250-500		0
CYCLOPOID COPEPODS	>500-1000			0	CYCLOPOID COPEPODS	>500-1000		0
	250-500			0		250-500		0
CLADOCERANS				0	CLADOCERANS			0
"				0	"			0
OSTRACODS				0	OSTRACODS			0
EUPHAUSIIDS				0	EUPHAUSIIDS			0
(lengths)				0	(lengths)			0
"				0	"			0
"				0	"			0
"				0	"			0
"				0	"			0
EUPHAUSIIDS				0	EUPHAUSIIDS			0
(eye diams)				0	(eye diams)			0
"				0	"			0
DECAPODS				0	DECAPODS			0
MYSIDS				0	MYSIDS			0
AMPHIPODS				0	AMPHIPODS			0
PTEROPODS (SHELLED)				0	PTEROPODS (SHELLED)			0
PTEROPODS (NAKED)				0	PTEROPODS (NAKED)			0
BIVALVE LARVAE				0	BIVALVE LARVAE			0
SQUIDS					SQUIDS			
CHAETOGNATHS				0	CHAETOGNATHS			0
FISH				0	FISH			0
NAUPLII				0	NAUPLII			0
EGGS				0	EGGS			0
UNIDENTIFIED MATERIAL					UNIDENTIFIED MATERIAL			
STANDARD FISH LENGTH					STANDARD FISH LENGTH			
NUMBER EMPTY					NUMBER EMPTY			
NUMBER OF FISH					NUMBER OF FISH			
NUMBER EXAMINED					NUMBER EXAMINED			
TOTAL (NO., %, WT.ug)		0		0	TOTAL (NO., %, WT.ug)		0	0

STATION:	52-02A	SIZE CLASS:	13-14.9CMS		
TIME:	0322HRS	DEPTH:	10M		
COMMENT:	ALL STOMACHS EMPTY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0
DINOFLAGELLATES					0
CALANOID COPEPODS	>4500-5000				0
	>4000-4500				0
	>3500-4000				0
	>3000-3500				0
	>2500-3000				0
	>2000-2500				0
	>1500-2000				0
	>1000-1500				0
	>500-1000				0
	250-500				0
CYCLOPOID COPEPODS	>500-1000				0
	250-500				0
CLADOCERANS					0
"					0
OSTRACODS					0
EUPHAUSIIDS					0
(lengths)					0
"					0
"					0
"					0
"					0
EUPHAUSIIDS					0
(eye diams)					0
"					0
DECAPODS					0
MYSIDS					0
AMPHIPODS					0
PTEROPODS (SHELLED)					0
PTEROPODS (NAKED)					0
BIVALVE LARVAE					0
SQUIDS					
CHAETOGNATHS					0
FISH					0
NAUPLII					0
EGGS					0
UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH	13-14.9CMS				
NUMBER EMPTY		3			
NUMBER OF FISH		10			
NUMBER EXAMINED		7			
TOTAL (NO., %, WT.ug)		0			0

STATION:	52-02A	SIZE CLASS:	15-16.9CMS		
TIME:	0322HRS	DEPTH:	10M		
COMMENT:	ALL STOMACHS EMPTY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0
DINOFLAGELLATES					0
CALANOID COPEPODS	>4500-5000				0
	>4000-4500				0
	>3500-4000				0
	>3000-3500				0
	>2500-3000				0
	>2000-2500				0
	>1500-2000				0
	>1000-1500				0
	>500-1000				0
	250-500				0
CYCLOPOID COPEPODS	>500-1000				0
	250-500				0
CLADOCERANS					0
"					0
OSTRACODS					0
EUPHAUSIIDS					0
(lengths)					0
"					0
"					0
"					0
"					0
EUPHAUSIIDS					0
(eye diams)					0
"					0
DECAPODS					0
MYSIDS					0
AMPHIPODS					0
PTEROPODS (SHELLED)					0
PTEROPODS (NAKED)					0
BIVALVE LARVAE					0
SQUIDS					
CHAETOGNATHS					0
FISH					0
NAUPLII					0
EGGS					0
UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH	15-16.9CMS				
NUMBER EMPTY		5			
NUMBER OF FISH		10			
NUMBER EXAMINED		5			
TOTAL (NO., %, WT.ug)		0			0

STATION:	56-04A	SIZE CLASS:	13-14.9CMS		
TIME:	0621HRS	DEPTH:	127M		
COMMENT:	ALL STOMACHS EMPTY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0
DINOFLAGELLATES					0
CALANOID COPEPODS	>4500-5000				0
	>4000-4500				0
	>3500-4000				0
	>3000-3500				0
	>2500-3000				0
	>2000-2500				0
	>1500-2000				0
	>1000-1500				0
	>500-1000				0
	250-500				0
CYCLOPOID COPEPODS	>500-1000				0
	250-500				0
CLADOCERANS					0
"					0
OSTRACODS					0
EUPHAUSIIDS					0
(lengths)					0
"					0
"					0
"					0
"					0
EUPHAUSIIDS					0
(eye diams)					0
"					0
DECAPODS					0
MYSIDS					0
AMPHIPODS					0
PTEROPODS (SHELLED)					0
PTEROPODS (NAKED)					0
BIVALVE LARVAE					0
SQUIDS					
CHAETOGNATHS					0
FISH					0
NAUPLII					0
EGGS					0
UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH		13-14.9CMS			
NUMBER EMPTY		5			
NUMBER OF FISH		5			
NUMBER EXAMINED		0			
TOTAL (NO., %, WT.mg)		0			0

STATION	52-10A	SIZE CLASS:	13-14.9CMS		
TIME	1820HRS	DEPTH:	220-275M		
COMMENT:	AVERAGE COPEPOD SIZE, 1500-2000 MICRONS.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					0.00
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					22700.00
STANDARD FISH LENGTH		13-14.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		2			
NUMBER EXAMINED		2			
TOTAL (NO., %, WT.ug)		0			22700.00

STATION:	52-10A	SIZE CLASS:	15-16.9CMS		
TIME:	1820HRS	DEPTH:	220-275M		
COMMENT:	DECAPOD AND EUPHAUSIID LARVAE ONLY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000	10	6.13		1150.09
	>1000-1500	11	6.75		480.04
	>500-1000		0.00		0.00
	250-500	4	2.45		5.45
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		115	70.55	10	199470.69
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH		3	1.84		0.00
NAUPLII			0.00		0.00
EGGS		20	12.27		340.00
			0.00		
			0.00		
UNIDENTIFIED MATERIAL			0.00		0.00
STANDARD FISH LENGTH		15-16.9C	0.00		
NUMBER EMPTY		0	0.00		
NUMBER OF FISH		5	3.07		
NUMBER EXAMINED		5	3.07		
TOTAL (NO., %, WT.ug)		163	100.00		201446.26

STATION:	52-10A	SIZE CLASS:	17-18.9CMS			
TIME:	1820HRS	DEPTH:	220-275M			
COMMENT:						
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	
DIATOMS			0.00			0.00
DINOFLAGELLATES			0.00			0.00
CALANOID COPEPODS	>4500-5000		0.00			0.00
	>4000-4500		0.00			0.00
	>3500-4000		0.00			0.00
	>3000-3500		0.00			0.00
	>2500-3000		0.00			0.00
	>2000-2500		0.00			0.00
	>1500-2000		0.00			0.00
	>1000-1500		0.00			0.00
	>500-1000		0.00			0.00
	250-500		0.00			0.00
CYCLOPOID COPEPODS	>500-1000		0.00			0.00
	250-500		0.00			0.00
CLADOCERANS			0.00			0.00
"			0.00			0.00
OSTRACODS			0.00			0.00
EUPHAUSIIDS			0.00			0.00
(lengths)			0.00			0.00
"			0.00			0.00
"			0.00			0.00
"			0.00			0.00
"			0.00			0.00
EUPHAUSIIDS		54	100.00	13.8	2044043.54	
(eye diams)			0.00			0.00
"			0.00			0.00
DECAPODS			0.00			0.00
MYSIDS			0.00			0.00
AMPHIPODS			0.00			0.00
PTEROPODS (SHELLED)			0.00			0.00
PTEROPODS (NAKED)			0.00			0.00
BIVALVE LARVAE			0.00			0.00
SQUIDS			0.00			0.00
CHAETOGNATHS			0.00			0.00
FISH			0.00			0.00
NAUPLII			0.00			0.00
EGGS			0.00			0.00
UNIDENTIFIED MATERIAL						0.00
STANDARD FISH LENGTH						
NUMBER EMPTY						
NUMBER OF FISH						
NUMBER EXAMINED						
TOTAL (NO., %, WT.ug)		54	100.00		2044043.54	

STATION:	TSO-118	SIZE CLASS:	5-6.9CMS		
TIME:	1823HRS	DEPTH:	20-40M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES		55	39.57		0.22
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000	26	18.71		260.57
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	7	5.04		9.53
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS		40	28.78	5.5	1427.02
FISH			0.00		0.00
NAUPLII		5	3.60	0.5	15.00
EGGS		6	4.32	1.2	102.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		5-6.9CMS			
NUMBER EMPTY		2			
NUMBER OF FISH		6			
NUMBER EXAMINED		4			
TOTAL (NO., %, WT.ug)		139	100.00		1814.35

STATION:	60-06A	SIZE CLASS:	7-8.9CMS			STATION:	60-06A	SIZE CLASS:	9-10.9CMS		
TIME:	2332HRS	DEPTH:	12M			TIME:	2332HRS	DEPTH:	12M		
COMMENT:	ALL STOMACHS EMPTY.					COMMENT:	ALL STOMACHS EMPTY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0	DIATOMS					0
DINOFLAGELLATES					0	DINOFLAGELLATES					0
CALANOID COPEPODS	>4500-5000				0	CALANOID COPEPODS	>4500-5000				0
	>4000-4500				0		>4000-4500				0
	>3500-4000				0		>3500-4000				0
	>3000-3500				0		>3000-3500				0
	>2500-3000				0		>2500-3000				0
	>2000-2500				0		>2000-2500				0
	>1500-2000				0		>1500-2000				0
	>1000-1500				0		>1000-1500				0
	>500-1000				0		>500-1000				0
	250-500				0		250-500				0
CYCLOPOID COPEPODS	>500-1000				0	CYCLOPOID COPEPODS	>500-1000				0
	250-500				0		250-500				0
CLADOCERANS					0	CLADOCERANS					0
"					0	"					0
OSTRACODS					0	OSTRACODS					0
EUPHAUSIIDS					0	EUPHAUSIIDS					0
(lengths)					0	(lengths)					0
"					0	"					0
"					0	"					0
"					0	"					0
"					0	"					0
EUPHAUSIIDS					0	EUPHAUSIIDS					0
(eye diams)					0	(eye diams)					0
"					0	"					0
DECAPODS					0	DECAPODS					0
MYSIDS					0	MYSIDS					0
AMPHIPODS					0	AMPHIPODS					0
PTEROPODS (SHELLED)					0	PTEROPODS (SHELLED)					0
PTEROPODS (NAKED)					0	PTEROPODS (NAKED)					0
BIVALVE LARVAE					0	BIVALVE LARVAE					0
SQUIDS						SQUIDS					
CHAETOGNATHS					0	CHAETOGNATHS					0
FISH					0	FISH					0
NAUPLII					0	NAUPLII					0
EGGS					0	EGGS					0
UNIDENTIFIED MATERIAL						UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH		7-8.9CMS				STANDARD FISH LENGTH		9-10.9CMS			
NUMBER EMPTY		5				NUMBER EMPTY		5			
NUMBER OF FISH		5				NUMBER OF FISH		5			
NUMBER EXAMINED		5				NUMBER EXAMINED		0			
TOTAL (NO., %, WT.ug)		0			0	TOTAL (NO., %, WT.ug)		0			0

STATION:	60-06A	SIZE CLASS:	11-12.9CMS		
TIME:	2332HRS	DEPTH:	12M		
COMMENT:	ALL STOMACHS EMPTY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0
DINOFLAGELLATES					0
CALANOID COPEPODS	>4500-5000				0
	>4000-4500				0
	>3500-4000				0
	>3000-3500				0
	>2500-3000				0
	>2000-2500				0
	>1500-2000				0
	>1000-1500				0
	>500-1000				0
	250-500				0
CYCLOPOID COPEPODS	>500-1000				0
	250-500				0
CLADOCERANS					0
"					0
OSTRACODS					0
EUPHAUSIIDS					0
(lengths)					0
"					0
"					0
"					0
"					0
EUPHAUSIIDS					0
(eye diams)					0
"					0
DECAPODS					0
MYSIDS					0
AMPHIPODS					0
PTEROPODS (SHELLED)					0
PTEROPODS (NAKED)					0
BIVALVE LARVAE					0
SQUIDS					
CHAETOGNATHS					0
FISH					0
NAUPLII					0
EGGS					0
UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH		11-12.9CMS			
NUMBER EMPTY		5			
NUMBER OF FISH		5			
NUMBER EXAMINED		0			
TOTAL (NO., %, WT.ug)		0			0

STATION:	60-08A	SIZE CLASS:	13-14.9CMS		
TIME:	2135HRS	DEPTH:	19-35M		
COMMENT:	CONTENTS TO BE WEIGHED.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					0.00
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					12000.00

STATION:	60-08A	SIZE CLASS:	15-16.9CMS		
TIME:	2135HRS	DEPTH:	19-35M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					0.00
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					19000.00

STATION:	68-02A	SIZE CLASS:	9-10.9CMS		
TIME:	1315HRS	DEPTH:	10M		
COMMENT:	THREE FISH BONES FOUND.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS		5.00	0.19		0.02
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000	16.00	0.60		1840.15
	>1000-1500	2467.00	92.50		107659.58
	>500-1000	142.00	5.32		1423.14
	250-500	29.00	1.09		39.48
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	6.00	0.22		8.17
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS		2.00	0.07	1.20	34.00
UNIDENTIFIED MATERIAL					22500.00
STANDARD FISH LENGTH		9-10.9CMS			
NUMBER EMPTY		2.00			
NUMBER OF FISH		8.00			
NUMBER EXAMINED		6.00			
TOTAL (NO., %, WT.ug)		2667.00	100.00		133504.53

STATION:	68-02A	SIZE CLASS:	11-12.9CMS		
TIME:	1315HRS	DEPTH:	10M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000	10.00	28.57		1150.09
	>1000-1500	14.00	40.00		610.96
	>500-1000	9.00	25.71		90.20
	250-500	2.00	5.71		2.72
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00	3.50	0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					162300.00
STANDARD FISH LENGTH		11-12.9CMS			
NUMBER EMPTY		3.00			
NUMBER OF FISH		11.00			
NUMBER EXAMINED		7.00			
TOTAL (NO., %, WT.ug)		35.00	100.00		164153.97

STATION:	68-05A	SIZE CLASS:	13-14.9CMS
TIME:	0800HRS	DEPTH:	57M
COMMENT:	ALL STOMACHS EMPTY.		

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00

UNIDENTIFIED MATERIAL		
STANDARD FISH LENGTH	13-14.9CMS	
NUMBER EMPTY	10.00	
NUMBER OF FISH	10.00	
NUMBER EXAMINED	0.00	
TOTAL (NO., %, WT.ug)	0.00	0.00

STATION:	68-08A	SIZE CLASS:	15-16.9CMS
TIME:	0430HRS	DEPTH:	9-50M
COMMENT:			

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES		5.00	0.88		0.02
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000	494.00	86.82		56814.50
	>1000-1500	63.00	11.07		2749.31
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	1.00	0.18		1.36
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		
CHAETOGNATHS		6.00	1.05	55.00	45.03
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00

UNIDENTIFIED MATERIAL			
STANDARD FISH LENGTH	15-16.9CMS		113600.00
NUMBER EMPTY	6.00		
NUMBER OF FISH	10.00		
NUMBER EXAMINED	4.00		
TOTAL (NO., %, WT.mg)	569.00	100.00	59.61

STATION:	68-08A	SIZE CLASS:	17-18.9CMS
TIME:	0430HRS	DEPTH:	9-50M
COMMENT:	ALL STOMACHS EMPTY.		

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00

UNIDENTIFIED MATERIAL		
STANDARD FISH LENGTH	17-18.9CMS	
NUMBER EMPTY	10.00	
NUMBER OF FISH	10.00	
NUMBER EXAMINED	0.00	
TOTAL (NO., %, WT.ug)	0.00	0.00

STATION:	68-12A	SIZE CLASS:	15-16.9CMS		
TIME:	0100HRS	DEPTH:	12M		
COMMENT:	ALL STOMACHS EMPTY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH		15-16.9CMS			
NUMBER EMPTY		10.00			
NUMBER OF FISH		10.00			
NUMBER EXAMINED		0.00			
TOTAL (NO., %, WT.ug)		0.00			0.00

STATION:	68-12A	SIZE CLASS:	17-18.9CMS		
TIME:	0100HRS	DEPTH:	12M		
COMMENT:	ALL STOMACHS EMPTY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH		17-18.9CMS			
NUMBER EMPTY		10.00			
NUMBER OF FISH		10.00			
NUMBER EXAMINED		0.00			
TOTAL (NO., %, WT.ug)		0.00			0.00

STATION:	72-02A	SIZE CLASS:	5-6.9CMS		
TIME:	1600HRS	DEPTH:	17M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500	3.00	1.18		130.92
	>500-1000	100.00	39.37		1002.21
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	35.00	13.78		47.65
CLADOCERANS		29.00	11.42	0.50	29.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII		80.00	31.50	0.50	240.00
EGGS		7.00	2.76		119.00
UNIDENTIFIED MATERIAL					5200.00
STANDARD FISH LENGTH		5-6.9CMS			
NUMBER EMPTY		0.00			
NUMBER OF FISH		2.00			
NUMBER EXAMINED		2.00			
TOTAL (NO., %, WT.ug)		254.00	100.00		6768.78

STATION:	72-02A	SIZE CLASS:	7-8.9CMS		
TIME:	1600HRS	DEPTH:	17M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500	7.00	9.21		305.48
	>500-1000	32.00	42.11		320.71
	250-500	3.00	3.95		4.08
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	3.00	3.95		4.08
CLADOCERANS		22.00	28.95	0.50	22.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS		9.00	11.84		153.00
UNIDENTIFIED MATERIAL					33600.00
STANDARD FISH LENGTH		7-8.9CMS			
NUMBER EMPTY		0.00			
NUMBER OF FISH		10.00			
NUMBER EXAMINED					
TOTAL (NO., %, WT.ug)		76.00	100.00		34409.36

STATION:	72-02A	SIZE CLASS:	11-12.9CMS		
TIME:	1600HRS	DEPTH:	17M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000	7.00	5.19		805.06
	>1000-1500	9.00	6.67		392.76
	>500-1000	40.00	29.63		400.88
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	17.00	12.59		23.14
CLADOCERANS		55.00	40.74	0.50	55.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS		7.00	5.19		119.00
UNIDENTIFIED MATERIAL					42900.00
STANDARD FISH LENGTH		11-12.9CMMS			
NUMBER EMPTY		0.00			
NUMBER OF FISH		10.00			
NUMBER EXAMINED		10.00			
TOTAL (NO., %, WT.ug)		135.00	100.00		44695.85

STATION:	72-08A	SIZE CLASS:	13-14.9CMS		
TIME:	2000HRS	DEPTH:	17-40M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500	10.00	32.26		2371.75
	>1500-2000		0.00		0.00
	>1000-1500	4.00	12.90		174.56
	>500-1000	5.00	16.13		50.11
	250-500	2.00	6.45		2.72
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		10.00	32.26	2.50	217.11
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					17400.00
STANDARD FISH LENGTH		13-14.9CMS			
NUMBER EMPTY		9.00			
NUMBER OF FISH		10.00			
NUMBER EXAMINED		1.00			
TOTAL (NO., %, WT.mg)		31.00	100.00		20216.25

STATION:	76-12A	SIZE CLASS:	13-14.9CMS		
TIME:	2200HRS	DEPTH:	32M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		72.00	100.00	2.50	1563.16
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					27300.00
STANDARD FISH LENGTH		13-14.9CMS			
NUMBER EMPTY		2.00			
NUMBER OF FISH		5.00			
NUMBER EXAMINED		3.00			
TOTAL (NO., %, WT.ug)		72.00	100.00		28863.16

STATION:	76-12A	SIZE CLASS:	15-16.9CMS		
TIME:	2200HRS	DEPTH:	32M		
COMMENT:	FISH EYE BALLS FOUND, '13. STOMACHS EMPTY.				

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		2.00	100.00	2.50	43.42
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					17200.00
STANDARD FISH LENGTH		15-16.9CMS			
NUMBER EMPTY		3.00			
NUMBER OF FISH		5.00			
NUMBER EXAMINED		2.00			
TOTAL (NO., %, WT.ug)		2.00	100.00		17243.42

STATION:	80-02A	SIZE CLASS:	11-12.9CMS		
TIME:	37M	DEPTH:	20M		
COMMENT:	ALL STOMACHS EMPTY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					0.00
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		11-12.9CMS			
NUMBER EMPTY		5.00			
NUMBER OF FISH		5.00			
NUMBER EXAMINED		0.00			
TOTAL (NO., %, WT.ug)		0.00			0.00

STATION:	80-02A	SIZE CLASS:	13-14.9CMS		
TIME:	37M	DEPTH:	20M		
COMMENT:	ALL STOMACHS EMPTY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					0.00
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		13-14.9CMS			
NUMBER EMPTY		5.00			
NUMBER OF FISH		5.00			
NUMBER EXAMINED		0.00			
TOTAL (NO., %, WT.ug)		0.00			0.00

STATION:	80-02A	SIZE CLASS:	15-16.9CMS		
TIME:	37M	DEPTH:	20M		
COMMENT:	3 FISH EYE LENSES FOUND . FISH SIZE = '162MM.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH		15-16.9CMS			
NUMBER EMPTY		5.00			
NUMBER OF FISH		5.00			
NUMBER EXAMINED		0.00			
TOTAL (NO., %, WT.ug)		0.00			0.00

STATION:	80-02A	SIZE CLASS:	11-12.9CMS	
TIME:	0830HRS	DEPTH:	37M	
COMMENT:	ALL STOMACHS EMPTY.			
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH: DRY WT:
DIATOMS				0
DINOFLAGELLATES				0
CALANOID COPEPODS	>4500-5000			0
	>4000-4500			0
	>3500-4000			0
	>3000-3500			0
	>2500-3000			0
	>2000-2500			0
	>1500-2000			0
	>1000-1500			0
	>500-1000			0
	250-500			0
CYCLOPOID COPEPODS	>500-1000			0
	250-500			0
CLADOCERANS				0
"				0
OSTRACODS				0
EUPHAUSIIDS				0
(lengths)				0
"				0
"				0
"				0
"				0
EUPHAUSIIDS				0
(eye diams)				0
"				0
DECAPODS				0
MYSIDS				0
AMPHIPODS				0
PTEROPODS (SHELLED)				0
PTEROPODS (NAKED)				0
BIVALVE LARVAE				0
SQUIDS				
CHAETOGNATHS				0
FISH				0
NAUPLII				0
EGGS				0
UNIDENTIFIED MATERIAL				
STANDARD FISH LENGTH		11-12.9CMS		
NUMBER EMPTY		10		
NUMBER OF FISH		10		
NUMBER EXAMINED		0		
TOTAL (NO., %, WT.mg)		0		0

STATION:	80-02A	SIZE CLASS:	13-14.9CMS	
TIME:	0830HRS	DEPTH:	37M	
COMMENT:				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH: DRY WT:
DIATOMS				0
DINOFLAGELLATES				0
CALANOID COPEPODS	>4500-5000			0
	>4000-4500			0
	>3500-4000			0
	>3000-3500			0
	>2500-3000			0
	>2000-2500			0
	>1500-2000			0
	>1000-1500			0
	>500-1000			0
	250-500			0
CYCLOPOID COPEPODS	>500-1000			0
	250-500			0
CLADOCERANS				0
"				0
OSTRACODS				0
EUPHAUSIIDS				0
(lengths)				0
"				0
"				0
"				0
"				0
EUPHAUSIIDS				0
(eye diams)				0
"				0
DECAPODS				0
MYSIDS				0
AMPHIPODS				0
PTEROPODS (SHELLED)				0
PTEROPODS (NAKED)				0
BIVALVE LARVAE				0
SQUIDS				
CHAETOGNATHS				0
FISH				0
NAUPLII				0
EGGS				0
UNIDENTIFIED MATERIAL				
STANDARD FISH LENGTH		13-14.9CMS		
NUMBER EMPTY		10		
NUMBER OF FISH		10		
NUMBER EXAMINED		0		
TOTAL (NO., %, WT.mg)		0		0

STATION:	80-02A	SIZE CLASS:	15-16.9CMS	
TIME:	0830HRS	DEPTH:	37M	
COMMENT:	3 FISH EYE LENSES FOUND, AV. FISH SIZE = '162MM.			
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH: DRY WT:
DIATOMS				0
DINOFLAGELLATES				0
CALANOID COPEPODS	>4500-5000			0
	>4000-4500			0
	>3500-4000			0
	>3000-3500			0
	>2500-3000			0
	>2000-2500			0
	>1500-2000			0
	>1000-1500			0
	>500-1000			0
	250-500			0
CYCLOPOID COPEPODS	>500-1000			0
	250-500			0
CLADOCERANS				0
"				0
OSTRACODS				0
EUPHAUSIIDS				0
(lengths)				0
"				0
"				0
"				0
"				0
EUPHAUSIIDS				0
(eye diams)				0
"				0
DECAPODS				0
MYSIDS				0
AMPHIPODS				0
PTEROPODS (SHELLED)				0
PTEROPODS (NAKED)				0
BIVALVE LARVAE				0
SQUIDS				
CHAETOGNATHS				0
FISH				0
NAUPLII				0
EGGS				0
UNIDENTIFIED MATERIAL				
STANDARD FISH LENGTH		15-16.9CMS		
NUMBER EMPTY		6		
NUMBER OF FISH		7		
NUMBER EXAMINED		1		
TOTAL (NO., %, WT.mg)		0		0

STATION:	80-04A	SIZE CLASS:	7-8.9CMS		
TIME:	1100HRS	DEPTH:	20M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	122.00	12.07		166.09
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		262.00	25.91	2.50	5688.18
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS		627.00	62.02		10659.00
UNIDENTIFIED MATERIAL					63800.00
STANDARD FISH LENGTH		7-8.9CMS			
NUMBER EMPTY		0.00			
NUMBER OF FISH		10.00			
NUMBER EXAMINED		10.00			
TOTAL (NO., %, WT.mg)		1011.00	100.00		80313.27

STATION:	80-04A	SIZE CLASS:	11-12.9CMS		
TIME:	1100HRS	DEPTH:	20M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	71.00	12.43		96.66
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		29.00	5.08	2.50	629.61
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS		471.00	82.49		8007.00
UNIDENTIFIED MATERIAL					20100.00
STANDARD FISH LENGTH		11-12.9CMS			
NUMBER EMPTY		0.00			
NUMBER OF FISH		5.00			
NUMBER EXAMINED		5.00			
TOTAL (NO., %, WT.mg)		571.00	100.00		28833.27

STATION:	80-04A	SIZE CLASS:	7-8.9CMS		
TIME:	1047HRS	DEPTH:	20M		
COMMENT:	DRY WEIGHT TO BE OBTAINED.				

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500	9	6.82		12.25
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS		123	93.18		2091.00
UNIDENTIFIED MATERIAL					25200.00
STANDARD FISH LENGTH		7-8.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		5			
NUMBER EXAMINED		5			
TOTAL (NO., %, WT.ug)		132	100.00		27303.25

STATION:	80-04A	SIZE CLASS:	9-10.9CMS		
TIME:	1047HRS	DEPTH:	20M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	78	26.44		106.19
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS		217	73.56		3689.00
UNIDENTIFIED MATERIAL					12900.00
STANDARD FISH LENGTH		9-10.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		4			
NUMBER EXAMINED		4			
TOTAL (NO., %, WT.ug)		295	100.00		16695.19

STATION:	80-04A	SIZE CLASS:	11-12.9CMS		
TIME:	1047HRS	DEPTH:	20M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					0.00
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					10900.00
STANDARD FISH LENGTH					
NUMBER EMPTY					
NUMBER OF FISH					
NUMBER EXAMINED					
TOTAL (NO., %, WT.mg)		0			10900.00

STATION:	80-04A	SIZE CLASS:	9-10.9CMS		
TIME:	1100HRS	DEPTH:	20M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	54.00	12.95		73.52
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		27.00	6.47	2.50	586.19
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS		336.00	80.58		5712.00
UNIDENTIFIED MATERIAL					11500.00
STANDARD FISH LENGTH		9-10.9CMS			
NUMBER EMPTY		0.00			
NUMBER OF FISH		3.00			
NUMBER EXAMINED		3.00			
TOTAL (NO., %, WT.mg)		417.00	100.00		17871.70

STATION:	80-15A	SIZE CLASS:	13-14.9CMS		
TIME:	1900HRS	DEPTH:	50M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000	9.00	3.42		1035.08
	>1000-1500	20.00	7.60		872.80
	>500-1000	2.00	0.76		20.04
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	8.00	3.04		10.89
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		71.00	27.00	2.30	1184.40
MYSIDS		150.00	57.03	4.10	15547.82
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)		3.00	1.14	2.30	240.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					164300.00
STANDARD FISH LENGTH		13-14.9CMS			
NUMBER EMPTY		1.00			
NUMBER OF FISH		10.00			
NUMBER EXAMINED		9.00			
TOTAL (NO., %, WT.ug)		263.00	100.00		183211.04

STATION:	80-15A	SIZE CLASS:	15-16.9CMS		
TIME:	1900HRS	DEPTH:	50M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500	1.00	0.47		43.64
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	2.00	0.93		2.72
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		23.00	10.75	2.30	383.68
MYSIDS		186.00	86.92	4.10	19279.30
AMPHIPODS		1.00	0.47	2.00	21.45
PTEROPODS (SHELLED)		1.00	0.47	2.40	80.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					181400.00
STANDARD FISH LENGTH		15-16.9CMS			
NUMBER EMPTY		3.00			
NUMBER OF FISH		10.00			
NUMBER EXAMINED		7.00			
TOTAL (NO., %, WT.ug)		214.00	100.00		201210.79

STATION:	84-04A	SIZE CLASS:	9-10.9CMS		
TIME:	0130HRS	DEPTH:	12M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					0.00
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					8900.00
STANDARD FISH LENGTH		9-10.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		1			
NUMBER EXAMINED		1			
TOTAL (NO., %, WT.ug		0			8900.00

STATION:	84-04A	SIZE CLASS:	15-16.9CMS		
TIME:	0130HRS	DEPTH:	12M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE,					0.00
SQUIDS					0.00
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					9700.00
STANDARD FISH LENGTH		15-16.9CMS			
NUMBER EMPTY		1			
NUMBER OF FISH		5			
NUMBER EXAMINED		4			
TOTAL (NO., %, WT.ug		0			9700.00

STATION:	84-04A	SIZE CLASS:	11-12.9CMS			
TIME:	0130HRS	DEPTH:	12M			
COMMENT:						
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	
DIATOMS			0.00		0.00	
DINOFLAGELLATES			0.00		0.00	
CALANOID COPEPODS	>4500-5000		0.00		0.00	
	>4000-4500		0.00		0.00	
	>3500-4000		0.00		0.00	
	>3000-3500		0.00		0.00	
	>2500-3000		0.00		0.00	
	>2000-2500	144	97.30		34153.16	
	>1500-2000		0.00		0.00	
	>1000-1500		0.00		0.00	
	>500-1000		0.00		0.00	
	250-500	4	2.70		5.45	
CYCLOPOID COPEPODS	>500-1000		0.00		0.00	
	250-500		0.00		0.00	
CLADOCERANS			0.00		0.00	
"			0.00		0.00	
OSTRACODS			0.00		0.00	
EUPHAUSIIDS			0.00		0.00	
(lengths)			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
EUPHAUSIIDS			0.00		0.00	
(eye diams)			0.00		0.00	
"			0.00		0.00	
DECAPODS			0.00		0.00	
MYSIDS			0.00		0.00	
AMPHIPODS			0.00		0.00	
PTEROPODS (SHELLED)			0.00		0.00	
PTEROPODS (NAKED)			0.00		0.00	
BIVALVE LARVAE			0.00		0.00	
SQUIDS			0.00		0.00	
CHAETOGNATHS			0.00		0.00	
FISH			0.00		0.00	
NAUPLII			0.00		0.00	
EGGS			0.00		0.00	
UNIDENTIFIED MATERIAL					0.00	
STANDARD FISH LENGTH		11-12.9CMS				
NUMBER EMPTY		2				
NUMBER OF FISH		5				
NUMBER EXAMINED		3				
TOTAL (NO., %, WT.ug		148	100.00		34158.60	

STATION:	84-04A	SIZE CLASS:	13-14.9CMS			
TIME:	0130HRS	DEPTH:	12M			
COMMENT:	FISH LARVAE FOUND, ONE.					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	
DIATOMS			0.00		0.00	
DINOFLAGELLATES			0.00		0.00	
CALANOID COPEPODS	>4500-5000		0.00		0.00	
	>4000-4500		0.00		0.00	
	>3500-4000		0.00		0.00	
	>3000-3500		0.00		0.00	
	>2500-3000		0.00		0.00	
	>2000-2500		0.00		0.00	
	>1500-2000		0.00		0.00	
	>1000-1500		0.00		0.00	
	>500-1000		0.00		0.00	
	250-500		0.00		0.00	
CYCLOPOID COPEPODS	>500-1000		0.00		0.00	
	250-500		0.00		0.00	
CLADOCERANS			0.00		0.00	
"			0.00		0.00	
OSTRACODS			0.00		0.00	
EUPHAUSIIDS		86	98.85	8.3	82787.82	
(lengths)			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
EUPHAUSIIDS			0.00		0.00	
(eye diams)			0.00		0.00	
"			0.00		0.00	
DECAPODS			0.00		0.00	
MYSIDS			0.00		0.00	
AMPHIPODS			0.00		0.00	
PTEROPODS (SHELLED)			0.00		0.00	
PTEROPODS (NAKED)			0.00		0.00	
BIVALVE LARVAE			0.00		0.00	
SQUIDS			0.00		0.00	
CHAETOGNATHS			0.00		0.00	
FISH		1	1.15		0.00	
NAUPLII			0.00		0.00	
EGGS			0.00		0.00	
UNIDENTIFIED MATERIAL					38100.00	
STANDARD FISH LENGTH		13-14CMS				
NUMBER EMPTY		1				
NUMBER OF FISH		5				
NUMBER EXAMINED		4				
TOTAL (NO., %, WT.ug		87	100.00		120887.82	

STATION:	84-098	SIZE CLASS:	15-16.9CMS		
TIME:	2120HRS	DEPTH:	8M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000	50	43.10		5750.46
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		66	56.90		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					41800.00
STANDARD FISH LENGTH		15-16.9CMS			
NUMBER EMPTY		4			
NUMBER OF FISH		5			
NUMBER EXAMINED		1			
TOTAL (NO., %, WT.ug)		116	100.00		47550.46

STATION:	84-098	SIZE CLASS:	17-18.9CMS		
TIME:	2120HRS	DEPTH:	8M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000	326	51.91		37492.97
	>1000-1500	186	29.62		8117.02
	>500-1000	6	0.96		60.13
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		110	17.52		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
			0.00		
			0.00		
UNIDENTIFIED MATERIAL			0.00		13800.00
STANDARD FISH LENGTH		17-18.9C	0.00		
NUMBER EMPTY		0	0.00		
NUMBER OF FISH		4	0.64		
NUMBER EXAMINED		4	0.64		
TOTAL (NO., %, WT.ug)		628	100.00		59470.12

STATION:	84-098	SIZE CLASS:	19-20.9CMS		
TIME:	2120HRS	DEPTH:	8M		
COMMENT:	SINGLE STOMACH, EMPTY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0
DINOFLAGELLATES					0
CALANOID COPEPODS	>4500-5000				0
	>4000-4500				0
	>3500-4000				0
	>3000-3500				0
	>2500-3000				0
	>2000-2500				0
	>1500-2000				0
	>1000-1500				0
	>500-1000				0
	250-500				0
CYCLOPOID COPEPODS	>500-1000				0
	250-500				0
CLADOCERANS					0
"					0
OSTRACODS					0
EUPHAUSIIDS					0
(lengths)					0
"					0
"					0
"					0
"					0
EUPHAUSIIDS					0
(eye diams)					0
"					0
DECAPODS					0
MYSIDS					0
AMPHIPODS					0
PTEROPODS (SHELLED)					0
PTEROPODS (NAKED)					0
BIVALVE LARVAE					0
SQUIDS					
CHAETOGNATHS					0
FISH					0
NAUPLII					0
EGGS					0
UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH		19-20.9CMS			
NUMBER EMPTY		1			
NUMBER OF FISH		1			
NUMBER EXAMINED		0			
TOTAL (NO., %, WT.ug)		0			0

STATION:	84-16A	SIZE CLASS:	11-12.9CMS		
TIME:	2023HRS	DEPTH:	15-30M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000	34	25.37		3910.31
	>1000-1500	37	27.61		1614.68
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		63	47.01	8.71	70628.37
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
			0.00		
			0.00		
UNIDENTIFIED MATERIAL			0.00		11500.00
STANDARD FISH LENGTH			0.00		
NUMBER EMPTY			0.00		
NUMBER OF FISH			0.00		
NUMBER EXAMINED			0.00		
TOTAL (NO., %, WT.ug)		134	100.00		87653.35

STATION:	84-16A	SIZE CLASS:	17-18.9CMS		
TIME:	2023HRS	DEPTH:	15-30M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000	168	0.00		19321.53
	>1000-1500	12	0.00		523.68
	>500-1000		0.00		0.00
	250-500	6	0.00		8.17
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		17-18.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		1			
NUMBER EXAMINED		1			
TOTAL (NO., %, WT.ug)		186	0.00		19853.38

STATION:	84-16A	SIZE CLASS:	13-14.9CMS		
TIME:	2023HRS	DEPTH:	15-30M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000	1260	100.00		144911.49
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					17800.00
STANDARD FISH LENGTH		13-14.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		5			
NUMBER EXAMINED		5			
TOTAL (NO., %, WT.ug)		1260	100.00		162711.49

STATION:	84-16A	SIZE CLASS:	15-16.9CMS		
TIME:	2023HRS	DEPTH:	15-30M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500	34	1.54		8063.94
	>1500-2000	1060	48.03		121909.66
	>1000-1500	1000	45.31		43639.88
	>500-1000	14	0.63		140.31
	250-500	6	0.27		8.17
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		93	4.21	8.71	104260.92
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
			0.00		
			0.00		
UNIDENTIFIED MATERIAL			0.00		29900.00
STANDARD FISH LENGTH			0.00		
NUMBER EMPTY			0.00		
NUMBER OF FISH			0.00		
NUMBER EXAMINED			0.00		
TOTAL (NO., %, WT.ug)		2207	100.00		307922.88

STATION:	84-19A	SIZE CLASS:	15-16.9CMS		
TIME:	0930HRS	DEPTH:	84-104M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000	28	22.76		11836.38
	>2000-2500	94	76.42		22294.42
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500	1	0.81		1.36
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		15-16.9CMS			
NUMBER EMPTY		1			
NUMBER OF FISH		5			
NUMBER EXAMINED		4			
TOTAL (NO., %, WT.ug)		123	100.00		34132.16

STATION:	84-19A	SIZE CLASS:	17-18.9CMS		
TIME:	0930HRS	DEPTH:	84-104M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500	170	100.00		40319.70
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		17-18.9CMS			
NUMBER EMPTY		3			
NUMBER OF FISH		5			
NUMBER EXAMINED		2			
TOTAL (NO., %, WT.ug)		170	100.00		40319.70

STATION:	84-19A	SIZE CLASS:	19-20.9CMS		
TIME:	0930HRS	DEPTH:	84-104M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000	160	30.77		67636.45
	>2000-2500	360	69.23		85382.89
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		19-20.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		1			
NUMBER EXAMINED		1			
TOTAL (NO., %, WT.ug)		520	100.00		153019.34

STATION:	88-20A	SIZE CLASS:	15-16.9CMS		
TIME:	2007HRS	DEPTH:	12M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000	312	17.36		35882.84
	>1000-1500	1417	78.85		61837.71
	>500-1000	4	0.22		40.09
	250-500	30	1.67		40.84
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS		4	0.22	0.5	120.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		8	0.45	8.71	8968.68
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS		22	1.22	1.2	374.00
UNIDENTIFIED MATERIAL					97000.00
STANDARD FISH LENGTH		15-16.9CMS			
NUMBER EMPTY		1			
NUMBER OF FISH		4			
NUMBER EXAMINED		3			
TOTAL (NO., %, WT.ug)		1797	100.00		204264.16

STATION:	8802A	SIZE CLASS:	17-18.9CMS		
TIME:	2007HRS	DEPTH:	12M		
COMMENT:	DRY WEIGHT OBTAINED.				

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS		9	100.00		153.00
UNIDENTIFIED MATERIAL					85300.00
STANDARD FISH LENGTH		17-18.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		5			
NUMBER EXAMINED		5			
TOTAL (NO., %, WT.ug)		9	100.00		85453.00

STATION:	88-20A	SIZE CLASS:	19-20.9CMS		
TIME:	2007HRS	DEPTH:	12M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					0.00
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					98500.00
STANDARD FISH LENGTH		19-20.9CMS			
NUMBER EMPTY		2			
NUMBER OF FISH		5			
NUMBER EXAMINED		3			
TOTAL (NO., %, WT.ug)		0			98500.00

STATION:	88-20A	SIZE CLASS:	21-22.9CMS		
TIME:	2007HRS	DEPTH:	12M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0
DINOFLAGELLATES					0
CALANOID COPEPODS	>4500-5000				0
	>4000-4500				0
	>3500-4000				0
	>3000-3500				0
	>2500-3000				0
	>2000-2500				0
	>1500-2000				0
	>1000-1500				0
	>500-1000				0
	250-500				0
CYCLOPOID COPEPODS	>500-1000				0
	250-500				0
CLADOCERANS					0
"					0
OSTRACODS					0
EUPHAUSIIDS					0
(lengths)					0
"					0
"					0
"					0
"					0
EUPHAUSIIDS					0
(eye diams)					0
"					0
DECAPODS					0
MYSIDS					0
AMPHIPODS					0
PTEROPODS (SHELLED)					0
PTEROPODS (NAKED)					0
BIVALVE LARVAE					0
SQUIDS					
CHAETOGNATHS					0
FISH					0
NAUPLII					0
EGGS					0
UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH		21-22.9CMS			
NUMBER EMPTY		2			
NUMBER OF FISH		2			
NUMBER EXAMINED		0			
TOTAL (NO., %, WT.ug)		0			0

STATION:	88-22A	SIZE CLASS:	17-18.9CMS		
TIME:	2242HRS	DEPTH:	24M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500	10	0.83		2371.75
	>1500-2000	1180	97.44		135710.76
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS		3	0.25	0.9	90.00
EUPHAUSIIDS		15	1.24	13.8	71993.02
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)		3	0.25	2	240.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		17-18.9CMS			
NUMBER EMPTY		2			
NUMBER OF FISH		5			
NUMBER EXAMINED		3			
TOTAL (NO., %, WT.ug)		1211	100.00		210405.53

STATION:	88-22A	SIZE CLASS:	19-20.9CMS		
TIME:	2242HRS	DEPTH:	24M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)		4	10.26	2	320.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS		35	89.74		595.00
UNIDENTIFIED MATERIAL					73600.00
STANDARD FISH LENGTH		19-20.9CMS			
NUMBER EMPTY		2			
NUMBER OF FISH		5			
NUMBER EXAMINED		3			
TOTAL (NO., %, WT.ug)		39	100.00		74515.00

STATION:	96-14A	SIZE CLASS:	15-16.9CMS		
TIME:	1244HRS	DEPTH:	131M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500	14	0.47		3320.45
	>1500-2000	2940	98.59		338126.80
	>1000-1500	28	0.94		1221.92
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		15-16.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		5			
NUMBER EXAMINED		5			
TOTAL (NO., %, WT.ug)		2982	100.00		342669.17

STATION:	96-14A	SIZE CLASS:	17-18.9CMS		
TIME:	1244HRS	DEPTH:	131M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500	98	2.46		23243.12
	>1500-2000	3878	97.54		446005.36
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		17-18.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		5			
NUMBER EXAMINED		5			
TOTAL (NO., %, WT.ug)		3976	100.00		469248.48

STATION:	96-14A	SIZE CLASS:	19-20.9CMS			
TIME:	1244HRS	DEPTH:	131M			
COMMENT:						
FOOD ITEM:	SIZE CLASS:	NUMBER:		LENGTH:	DRY WT:	
DIATOMS			0.00			0.00
DINOFLAGELLATES			0.00			0.00
CALANOID COPEPODS	>4500-5000		0.00			0.00
	>4000-4500		0.00			0.00
	>3500-4000		0.00			0.00
	>3000-3500		0.00			0.00
	>2500-3000		0.00			0.00
	>2000-2500	140	6.71			33204.46
	>1500-2000	1932	92.62			222197.61
	>1000-1500		0.00			0.00
	>500-1000		0.00			0.00
	250-500		0.00			0.00
CYCLOPOID COPEPODS	>500-1000		0.00			0.00
	250-500		0.00			0.00
CLADOCERANS			0.00			0.00
"			0.00			0.00
OSTRACODS			0.00			0.00
EUPHAUSIIDS		14	0.67	13.8		67193.49
(lengths)			0.00			0.00
"			0.00			0.00
"			0.00			0.00
"			0.00			0.00
"			0.00			0.00
EUPHAUSIIDS			0.00			0.00
(eye diams)			0.00			0.00
"			0.00			0.00
DECAPODS			0.00			0.00
MYSIDS			0.00			0.00
AMPHIPODS			0.00			0.00
PTEROPODS (SHELLED)			0.00			0.00
PTEROPODS (NAKED)			0.00			0.00
BIVALVE LARVAE			0.00			0.00
SQUIDS			0.00			0.00
CHAETOGNATHS			0.00			0.00
FISH			0.00			0.00
NAUPLII			0.00			0.00
EGGS			0.00			0.00
UNIDENTIFIED MATERIAL						0.00
STANDARD FISH LENGTH		19-20.9CMS				
NUMBER EMPTY		1				
NUMBER OF FISH		5				
NUMBER EXAMINED		4				
TOTAL (NO., %, WT.ug)		2086	100.00			322595.56

STATION:	100-04A	SIZE CLASS:	7-8.9CMS			
TIME:	0317HRS	DEPTH:	7M			
COMMENT:	EMPTY STOMACHS.					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	
DIATOMS						0
DINOFLAGELLATES						0
CALANOID COPEPODS	>4500-5000					0
	>4000-4500					0
	>3500-4000					0
	>3000-3500					0
	>2500-3000					0
	>2000-2500					0
	>1500-2000					0
	>1000-1500					0
	>500-1000					0
	250-500					0
CYCLOPOID COPEPODS	>500-1000					0
	250-500					0
CLADOCERANS						0
"						0
OSTRACODS						0
EUPHAUSIIDS						0
(lengths)						0
"						0
"						0
"						0
"						0
EUPHAUSIIDS						0
(eye diams)						0
"						0
DECAPODS						0
MYSIDS						0
AMPHIPODS						0
PTEROPODS (SHELLED)						0
PTEROPODS (NAKED)						0
BIVALVE LARVAE						0
SQUIDS						
CHAETOGNATHS						0
FISH						0
NAUPLII						0
EGGS						0
UNIDENTIFIED MATERIAL						
STANDARD FISH LENGTH		7-8.9CMS				
NUMBER EMPTY		5				
NUMBER OF FISH		5				
NUMBER EXAMINED		0				
TOTAL (NO., %, WT.ug)		0				0

STATION:	100-04A	SIZE CLASS:	9-10.9CMS			
TIME:	0317HRS	DEPTH:	7M			
COMMENT:	EMPTY STOMACHS.					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	
DIATOMS						0
DINOFLAGELLATES						0
CALANOID COPEPODS	>4500-5000					0
	>4000-4500					0
	>3500-4000					0
	>3000-3500					0
	>2500-3000					0
	>2000-2500					0
	>1500-2000					0
	>1000-1500					0
	>500-1000					0
	250-500					0
CYCLOPOID COPEPODS	>500-1000					0
	250-500					0
CLADOCERANS						0
"						0
OSTRACODS						0
EUPHAUSIIDS						0
(lengths)						0
"						0
"						0
"						0
"						0
EUPHAUSIIDS						0
(eye diams)						0
"						0
DECAPODS						0
MYSIDS						0
AMPHIPODS						0
PTEROPODS (SHELLED)						0
PTEROPODS (NAKED)						0
BIVALVE LARVAE						0
SQUIDS						
CHAETOGNATHS						0
FISH						0
NAUPLII						0
EGGS						0
UNIDENTIFIED MATERIAL						
STANDARD FISH LENGTH		9-10.9CMS				
NUMBER EMPTY		5				
NUMBER OF FISH		5				
NUMBER EXAMINED		0				
TOTAL (NO., %, WT.ug)		0				0

STATION:	100-04A	SIZE CLASS:	11-12.9CMS		
TIME:	0317HRS	DEPTH:	7M		
COMMENT:	EMPTY STOMACHS.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0
DINOFLAGELLATES					0
CALANOID COPEPODS	>4500-5000				0
	>4000-4500				0
	>3500-4000				0
	>3000-3500				0
	>2500-3000				0
	>2000-2500				0
	>1500-2000				0
	>1000-1500				0
	>500-1000				0
	250-500				0
CYCLOPOID COPEPODS	>500-1000				0
	250-500				0
CLADOCERANS					0
"					0
OSTRACODS					0
EUPHAUSIIDS					0
(lengths)					0
"					0
"					0
"					0
"					0
EUPHAUSIIDS					0
(eye diams)					0
"					0
DECAPODS					0
MYSIDS					0
AMPHIPODS					0
PTEROPODS (SHELLED)					0
PTEROPODS (NAKED)					0
BIVALVE LARVAE					0
SQUIDS					
CHAETOGNATHS					0
FISH					0
NAUPLII					0
EGGS					0
UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH		11-12.9CMS			
NUMBER EMPTY		5			
NUMBER OF FISH		5			
NUMBER EXAMINED		0			
TOTAL (NO., %, WT.ug)		0			0

STATION:	100-11A	SIZE CLASS:	15-16.9CMS		
TIME:	2137HRS	DEPTH:	18-30M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					0.00
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					106300.00
STANDARD FISH LENGTH		15-16.9CMS			
NUMBER EMPTY		3			
NUMBER OF FISH		5			
NUMBER EXAMINED		2			
TOTAL (NO., %, WT.ug)		0			106300.00

STATION:	100-11A	SIZE CLASS:	17-18.9CMS		
TIME:	2137HRS	DEPTH:	18-30M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					0.00
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					78500.00
STANDARD FISH LENGTH		17-18.9CMS			
NUMBER EMPTY		1			
NUMBER OF FISH		5			
NUMBER EXAMINED		4			
TOTAL (NO., %, WT.ug)		0			78500.00

STATION:	100-11A	SIZE CLASS:		19-20.9CMS		
TIME:	2137HRS	DEPTH:		18-30M		
COMMENT:						
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	
DIATOMS			0.00		0.00	
DINOFLAGELLATES			0.00		0.00	
CALANOID COPEPODS	>4500-5000		0.00		0.00	
	>4000-4500		0.00		0.00	
	>3500-4000		0.00		0.00	
	>3000-3500		0.00		0.00	
	>2500-3000		0.00		0.00	
	>2000-2500		0.00		0.00	
	>1500-2000	20	12.90		2300.18	
	>1000-1500		0.00		0.00	
	>500-1000		0.00		0.00	
	250-500		0.00		0.00	
CYCLOPOID COPEPODS	>500-1000		0.00		0.00	
	250-500		0.00		0.00	
CLADOCERANS			0.00		0.00	
"			0.00		0.00	
OSTRACODS			0.00		0.00	
EUPHAUSIIDS		130	83.87	13.1	529300.00	
(lengths)			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
EUPHAUSIIDS			0.00		0.00	
(eye diams)			0.00		0.00	
"			0.00		0.00	
DECAPODS			0.00		0.00	
MYSIDS			0.00		0.00	
AMPHIPODS			0.00		0.00	
PTEROPODS (SHELLED)			0.00		0.00	
PTEROPODS (NAKED)			0.00		0.00	
BIVALVE LARVAE			0.00		0.00	
SQUIDS			0.00		0.00	
CHAETOGNATHS			0.00		0.00	
FISH			0.00		0.00	
NAUPLII			0.00		0.00	
EGGS		5	3.23	1.2	85.00	
			0.00			
			0.00			
UNIDENTIFIED MATERIAL			0.00		183500.00	
STANDARD FISH LENGTH		19-20.9C	0.00			
NUMBER EMPTY		0	0.00			
NUMBER OF FISH		4	2.58			
NUMBER EXAMINED		4	2.58			
TOTAL (NO., %, WT.ug)		155	100.00		715185.18	

STATION:		SIZE CLASS:				
TIME:		DEPTH:				
COMMENT:						
FOOD ITEM:	SIZE CLASS:	NUMBER:		LENGTH:	DRY WT:	
DIATOMS			ERR			0
DINOFLAGELLATES			ERR			0
CALANOID COPEPODS	>4500-5000		ERR			0
	>4000-4500		ERR			0
	>3500-4000		ERR			0
	>3000-3500		ERR			0
	>2500-3000		ERR			0
	>2000-2500		ERR			0
	>1500-2000		ERR			0
	>1000-1500		ERR			0
	>500-1000		ERR			0
	250-500		ERR			0
CYCLOPOID COPEPODS	>500-1000		ERR			0
	250-500		ERR			0
CLADOCERANS			ERR			0
"			ERR			0
OSTRACODS			ERR			0
EUPHAUSIIDS			ERR			0
(lengths)			ERR			0
"			ERR			0
"			ERR			0
"			ERR			0
"			ERR			0
EUPHAUSIIDS			ERR			0
(eye diams)			ERR			0
"			ERR			0
DECAPODS			ERR			0
MYSIDS			ERR			0
AMPHIPODS			ERR			0
PTEROPODS (SHELLED)			ERR			0
PTEROPODS (NAKED)			ERR			0
BIVALVE LARVAE			ERR			0
SQUIDS			ERR			
CHAETOGNATHS			ERR			0
FISH			ERR			0
NAUPLII			ERR			0
EGGS			ERR			0
UNIDENTIFIED MATERIAL						
STANDARD FISH LENGTH						
NUMBER EMPTY						
NUMBER OF FISH						
NUMBER EXAMINED						
TOTAL (NO., %, WT.ug)		0	ERR			0

STATION:	108-10A	SIZE CLASS:		17-18.9CMS		
TIME:	2029HRS	DEPTH:		25M		
COMMENT:						
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	
DIATOMS			0.00		0.00	
DINOFLAGELLATES			0.00		0.00	
CALANOID COPEPODS	>4500-5000		0.00		0.00	
	>4000-4500		0.00		0.00	
	>3500-4000		0.00		0.00	
	>3000-3500		0.00		0.00	
	>2500-3000		0.00		0.00	
	>2000-2500		0.00		0.00	
	>1500-2000		0.00		0.00	
	>1000-1500		0.00		0.00	
	>500-1000		0.00		0.00	
	250-500		0.00		0.00	
CYCLOPOID COPEPODS	>500-1000		0.00		0.00	
	250-500		0.00		0.00	
CLADOCERANS			0.00		0.00	
"			0.00		0.00	
OSTRACODS			0.00		0.00	
EUPHAUSIIDS		10	76.92	9.2	13327.56	
(lengths)			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
EUPHAUSIIDS			0.00		0.00	
(eye diams)			0.00		0.00	
"			0.00		0.00	
DECAPODS			0.00		0.00	
MYSIDS			0.00		0.00	
AMPHIPODS			0.00		0.00	
PTEROPODS (SHELLED)		3	23.08	2	240.00	
PTEROPODS (NAKED)			0.00		0.00	
BIVALVE LARVAE			0.00		0.00	
SQUIDS			0.00		0.00	
CHAETOGNATHS			0.00		0.00	
FISH			0.00		0.00	
NAUPLII			0.00		0.00	
EGGS			0.00		0.00	
UNIDENTIFIED MATERIAL					467000.00	
STANDARD FISH LENGTH		17-18.9CMS				
NUMBER EMPTY		0				
NUMBER OF FISH		5				
NUMBER EXAMINED		5				
TOTAL (NO., %, WT.ug)		13	100.00		480567.56	

STATION:	108-10A	SIZE CLASS:		19-20.9CMS		
TIME:	2029HRS	DEPTH:		25M		
COMMENT:						
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	
DIATOMS			0.00		0.00	
DINOFLAGELLATES			0.00		0.00	
CALANOID COPEPODS	>4500-5000		0.00		0.00	
	>4000-4500		0.00		0.00	
	>3500-4000		0.00		0.00	
	>3000-3500		0.00		0.00	
	>2500-3000		0.00		0.00	
	>2000-2500	480	88.89		113843.85	
	>1500-2000		0.00		0.00	
	>1000-1500		0.00		0.00	
	>500-1000		0.00		0.00	
	250-500		0.00		0.00	
CYCLOPOID COPEPODS	>500-1000		0.00		0.00	
	250-500		0.00		0.00	
CLADOCERANS			0.00		0.00	
"			0.00		0.00	
OSTRACODS			0.00		0.00	
EUPHAUSIIDS			0.00		0.00	
(lengths)			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
"			0.00		0.00	
EUPHAUSIIDS		50	9.26	13.8	1892632.91	
(eye diams)			0.00		0.00	
"			0.00		0.00	
DECAPODS			0.00		0.00	
MYSIDS			0.00		0.00	
AMPHIPODS			0.00		0.00	
PTEROPODS (SHELLED)		3	0.00	2.5	240.00	
PTEROPODS (NAKED)			0.00		0.00	
BIVALVE LARVAE			0.00		0.00	
SQUIDS			0.00		0.00	
CHAETOGNATHS			0.00		0.00	
FISH			0.00		0.00	
NAUPLII			0.00		0.00	
EGGS		10	1.85	1.2	170.00	
UNIDENTIFIED MATERIAL					0.00	
STANDARD FISH LENGTH		19-20.9CMS				
NUMBER EMPTY		0				
NUMBER OF FISH		5				
NUMBER EXAMINED		5				
TOTAL (NO., %, WT.ug)		553	100.00		2006886.76	

STATION:	108-10A	SIZE CLASS:	21-22.9CMS		
TIME:	2029HRS	DEPTH:	25M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000	240	73.17		27602.19
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS		85	25.91	13.8	407960.47
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS		3	0.91	1.2	51.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		21-22.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		4			
NUMBER EXAMINED		4			
TOTAL (NO., %, WT.ug)		328	100.00		435613.66

STATION:	120-02A	SIZE CLASS:	7-8.9CMS			
TIME:	2031HRS	DEPTH:	15M			
COMMENT:	ALL STOMACHS EMPTY.					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	
DIATOMS						0
DINOFLAGELLATES						0
CALANOID COPEPODS	>4500-5000					0
	>4000-4500					0
	>3500-4000					0
	>3000-3500					0
	>2500-3000					0
	>2000-2500					0
	>1500-2000					0
	>1000-1500					0
	>500-1000					0
	250-500					0
CYCLOPOID COPEPODS	>500-1000					0
	250-500					0
CLADOCERANS						0
"						0
OSTRACODS						0
EUPHAUSIIDS						0
(lengths)						0
"						0
"						0
"						0
"						0
EUPHAUSIIDS						0
(eye diams)						0
"						0
DECAPODS						0
MYSIDS						0
AMPHIPODS						0
PTEROPODS (SHELLED)						0
PTEROPODS (NAKED)						0
BIVALVE LARVAE						0
SQUIDS						
CHAETOGNATHS						0
FISH						0
NAUPLII						0
EGGS						0
UNIDENTIFIED MATERIAL						
STANDARD FISH LENGTH		7-8.9CMS				
NUMBER EMPTY		1				
NUMBER OF FISH		1				
NUMBER EXAMINED		0				
TOTAL (NO., %, WT.ug)		0				0

STATION:	120-02A	SIZE CLASS:	9-10.9CMS		
TIME:	2031HRS	DEPTH:	15M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES .			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000	804	90.44		8057.78
	250-500	84	9.45		114.36
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		1	0.11	8.71	1121.09
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		9-10.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		5			
NUMBER EXAMINED		5			
TOTAL (NO., %, WT.ug)		889	100.00		9293.22

STATION:	120-02A	SIZE CLASS:	11-12.9CMS		
TIME:	2031HRS	DEPTH:	15M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500	960	82.76		41894.28
	>500-1000	96	8.28		962.12
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS		4	0.34	0.5	120.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)		100	8.62	8	15173.81
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		11-12.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		5			
NUMBER EXAMINED		5			
TOTAL (NO., %, WT.ug)		1160	100.00		58150.21

STATION:	120-02A	SIZE CLASS:	13-14.9CMS		
TIME:	2031HRS	DEPTH:	15M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000	1020	99.03		117309.30
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		5	0.49	8.7	5585.11
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS		5	0.49	1.2	85.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH					
NUMBER EMPTY					
NUMBER OF FISH					
NUMBER EXAMINED					
TOTAL (NO., %, WT.ug)		1030	100.00		122979.41

STATION:	120-02A	SIZE CLASS:	15-16.9CMS		
TIME:	2031HRS	DEPTH:	15M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500	1034	76.71		245238.63
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		314	23.29	8.71	352020.75
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		15-16.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		5			
NUMBER EXAMINED		5			
TOTAL (NO., %, WT.ug)		1348	100.00		597259.38

STATION:	120-04A	SIZE CLASS:	13-14.9CMS	
TIME:	2212HRS	DEPTH:	26M	
COMMENT:				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH: DRY WT:
DIATOMS				0.00
DINOFLAGELLATES				0.00
CALANOID COPEPODS	>4500-5000			0.00
	>4000-4500			0.00
	>3500-4000			0.00
	>3000-3500			0.00
	>2500-3000			0.00
	>2000-2500			0.00
	>1500-2000			0.00
	>1000-1500			0.00
	>500-1000			0.00
	250-500			0.00
CYCLOPOID COPEPODS	>500-1000			0.00
	250-500			0.00
CLADOCERANS				0.00
"				0.00
OSTRACODS				0.00
EUPHAUSIIDS				0.00
(lengths)				0.00
"				0.00
"				0.00
"				0.00
"				0.00
EUPHAUSIIDS				0.00
(eye diams)				0.00
"				0.00
DECAPODS				0.00
MYSIDS				0.00
AMPHIPODS				0.00
PTEROPODS (SHELLED)				0.00
PTEROPODS (NAKED)				0.00
BIVALVE LARVAE				0.00
SQUIDS				0.00
CHAETOGNATHS				0.00
FISH				0.00
NAUPLII				0.00
EGGS				0.00
UNIDENTIFIED MATERIAL				27200.00
STANDARD FISH LENGTH		13-14.9CMS		
NUMBER EMPTY		0		
NUMBER OF FISH		2		
NUMBER EXAMINED		2		
TOTAL (NO., %, WT.ug)		0		27200.00

STATION:	120-04A	SIZE CLASS:	15-16.9CMS	
TIME:	2212HRS	DEPTH:	26M	
COMMENT:				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH: DRY WT:
DIATOMS				0.00
DINOFLAGELLATES				0.00
CALANOID COPEPODS	>4500-5000			0.00
	>4000-4500			0.00
	>3500-4000			0.00
	>3000-3500			0.00
	>2500-3000			0.00
	>2000-2500			0.00
	>1500-2000			0.00
	>1000-1500			0.00
	>500-1000			0.00
	250-500			0.00
CYCLOPOID COPEPODS	>500-1000			0.00
	250-500			0.00
CLADOCERANS				0.00
"				0.00
OSTRACODS				0.00
EUPHAUSIIDS				0.00
(lengths)				0.00
"				0.00
"				0.00
"				0.00
"				0.00
EUPHAUSIIDS				0.00
(eye diams)				0.00
"				0.00
DECAPODS				0.00
MYSIDS				0.00
AMPHIPODS				0.00
PTEROPODS (SHELLED)				0.00
PTEROPODS (NAKED)				0.00
BIVALVE LARVAE				0.00
SQUIDS				0.00
CHAETOGNATHS				0.00
FISH				0.00
NAUPLII				0.00
EGGS				0.00
UNIDENTIFIED MATERIAL				56300.00
STANDARD FISH LENGTH		15-16.9CMS		
NUMBER EMPTY		3		
NUMBER OF FISH		5		
NUMBER EXAMINED		2		
TOTAL (NO., %, WT.ug)		0		56300.00

STATION:	120-04A	SIZE CLASS:	17-18.9CMS	
TIME:	2212HRS	DEPTH:	26M	
COMMENT:				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH: DRY WT:
DIATOMS				0.00
DINOFLAGELLATES				0.00
CALANOID COPEPODS	>4500-5000			0.00
	>4000-4500			0.00
	>3500-4000			0.00
	>3000-3500			0.00
	>2500-3000			0.00
	>2000-2500			0.00
	>1500-2000			0.00
	>1000-1500			0.00
	>500-1000			0.00
	250-500			0.00
CYCLOPOID COPEPODS	>500-1000			0.00
	250-500			0.00
CLADOCERANS				0.00
"				0.00
OSTRACODS				0.00
EUPHAUSIIDS				0.00
(lengths)				0.00
"				0.00
"				0.00
"				0.00
"				0.00
EUPHAUSIIDS				0.00
(eye diams)				0.00
"				0.00
DECAPODS				0.00
MYSIDS				0.00
AMPHIPODS				0.00
PTEROPODS (SHELLED)				0.00
PTEROPODS (NAKED)				0.00
BIVALVE LARVAE				0.00
SQUIDS				0.00
CHAETOGNATHS				0.00
FISH				0.00
NAUPLII				0.00
EGGS				0.00
UNIDENTIFIED MATERIAL				13600.00
STANDARD FISH LENGTH		17-18.9CMS		
NUMBER EMPTY		2		
NUMBER OF FISH		5		
NUMBER EXAMINED		3		
TOTAL (NO., %, WT.ug)		0		13600.00

STATION:	124-02A	SIZE CLASS:	13-14.9CMS		
TIME:	1122HRS	DEPTH:	26M		
COMMENT:	DRY WEIGHT OBTAINED.				

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					0.00
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					15300.00
STANDARD FISH LENGTH		13-14.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		2			
NUMBER EXAMINED		2			
TOTAL (NO., %, WT.ug)		0			15300.00

STATION:	124-02A	SIZE CLASS:	15-16.9CMS		
TIME:	1122HRS	DEPTH:	26M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		29	100.00	8.71	32511.47
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					0.00
STANDARD FISH LENGTH		15-16.9CMS			
NUMBER EMPTY		0			
NUMBER OF FISH		1			
NUMBER EXAMINED		1			
TOTAL (NO., %, WT.ug)		29	100.00		32511.47

STATION:	124-02A	SIZE CLASS:	17-18.9CMS		
TIME:	1122HRS	DEPTH:	26M		
COMMENT:					

FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000		0.00		0.00
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS		1	100.00	8	1200.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
			0.00		
			0.00		
UNIDENTIFIED MATERHAL			0.00		0.00
STANDARD FISH LENGTH		17-18.9C	0.00		
NUMBER EMPTY		0	0.00		
NUMBER OF FISH		1	100.00		
NUMBER EXAMINED		1	100.00		
TOTAL (NO., %, WT.ug)		1	100.00		1200.00

STATION:	128-06A	SIZE CLASS:	17-18.9CMS		
TIME:	1953HRS	DEPTH:	10M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					0.00
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					33300.00
STANDARD FISH LENGTH		17-18.9CMS			
NUMBER EMPTY		4			
NUMBER OF FISH		5			
NUMBER EXAMINED		1			
TOTAL (NO., %, WT.ug)		0			33300.00

STATION:	128-06A	SIZE CLASS:	21-22.9CMS		
TIME:	1953HRS	DEPTH:	10M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					ERR
BIVALVE LARVAE					0.00
SQUIDS					0.00
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					31400.00
STANDARD FISH LENGTH		21-22.9CMS			
NUMBER EMPTY		4			
NUMBER OF FISH		5			
NUMBER EXAMINED		1			
TOTAL (NO., %, WT.ug)		0			ERR

STATION:	TSO-118	SIZE CLASS:	5-6.9CMS		
TIME:	1823HRS	DEPTH:	20-40M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES		55.00	39.57		0.22
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500		0.00		0.00
	>500-1000	26.00	18.71		260.57
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	7.00	5.04		9.53
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS		40.00	28.78	5.50	1427.02
FISH			0.00		0.00
NAUPLII		5.00	3.60	0.50	15.00
EGGS		6.00	4.32	1.20	102.00
UNIDENTIFIED MATERIAL					13600.00
STANDARD FISH LENGTH		5-6.9CMS			
NUMBER EMPTY		2.00			
NUMBER OF FISH		6.00			
NUMBER EXAMINED		4.00			
TOTAL (NO., %, WT.ugs)		139.00	100.00		15414.35

STATION:	TSO-118	SIZE CLASS:	7-8.9CMS		
TIME:	1823HRS	DEPTH:	20-40M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS		10.00	2.89		0.04
DINOFLAGELLATES		75.00	21.68		0.30
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000	17.00	0.00		1955.15
	>1000-1500	14.00	0.00		610.96
	>500-1000	92.00	23.12		922.03
	250-500		0.29		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500	18.00	5.20		24.51
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS		1.00	0.29	3.00	38.63
MYSIDS		2.00	0.58	3.85	169.93
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS		80.00	23.12	55.00	600428.68
FISH		1.00	0.29	3.00	5.83
NAUPLII			0.00		0.00
EGGS		36.00	10.40		612.00
UNIDENTIFIED MATERIAL					27700.00
STANDARD FISH LENGTH		7-8.9CMS			
NUMBER EMPTY		2.00			
NUMBER OF FISH		7.00			
NUMBER EXAMINED		5.00			
TOTAL (NO., %, WT.ugs)		346.00	87.86		632468.05

STATION:	TSO-124	SIZE CLASS:	5-6.9CMS		
TIME:	2350HRS	DEPTH:	30M		
COMMENT:	DRY MASS ONLY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					0.00
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					5900.00
STANDARD FISH LENGTH		5-6.9CMS			
NUMBER EMPTY		2.00			
NUMBER OF FISH		3.00			
NUMBER EXAMINED		1.00			
TOTAL (NO., %, WT.ug)		0.00			5900.00

STATION:	TSO-206	SIZE CLASS:	5-6.9CMS		
TIME:	0547HRS	DEPTH:	14M		
COMMENT:	DRY MASS ONLY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					0.00
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					1100.00
STANDARD FISH LENGTH		5-6.9CMS			
NUMBER EMPTY		0.00			
NUMBER OF FISH		1.00			
NUMBER EXAMINED		1.00			
TOTAL (NO., %, WT.ug)		0.00			1100.00

STATION:	TSO-206	SIZE CLASS:	7-8.9CMS		
TIME:	0547HRS	DEPTH:	14M		
COMMENT:	DRY MASS ONLY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					0.00
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					2100.00
STANDARD FISH LENGTH		7-8.9CMS			
NUMBER EMPTY		0.00			
NUMBER OF FISH		1.00			
NUMBER EXAMINED		1.00			
TOTAL (NO., %, WT.ug)		0.00			2100.00

STATION:	SHO324A	SIZE CLASS:	5-6.9CMS		
TIME:	0330HRS	DEPTH:	10M		
COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00
DINOFLAGELLATES			0.00		0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00
	>4000-4500		0.00		0.00
	>3500-4000		0.00		0.00
	>3000-3500		0.00		0.00
	>2500-3000		0.00		0.00
	>2000-2500		0.00		0.00
	>1500-2000		0.00		0.00
	>1000-1500	46.00	83.64		2007.43
	>500-1000	9.00	16.36		90.20
	250-500		0.00		0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00
	250-500		0.00		0.00
CLADOCERANS			0.00		0.00
"			0.00		0.00
OSTRACODS			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(lengths)			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
"			0.00		0.00
EUPHAUSIIDS			0.00		0.00
(eye diams)			0.00		0.00
"			0.00		0.00
DECAPODS			0.00		0.00
MYSIDS			0.00		0.00
AMPHIPODS			0.00		0.00
PTEROPODS (SHELLED)			0.00		0.00
PTEROPODS (NAKED)			0.00		0.00
BIVALVE LARVAE			0.00		0.00
SQUIDS			0.00		0.00
CHAETOGNATHS			0.00		0.00
FISH			0.00		0.00
NAUPLII			0.00		0.00
EGGS			0.00		0.00
UNIDENTIFIED MATERIAL					13600.00
STANDARD FISH LENGTH		5-6.9CMS			
NUMBER EMPTY		9.00			
NUMBER OF FISH		10.00			
NUMBER EXAMINED		1.00			
TOTAL (NO., %, WT.ug)		55.00	100.00		15697.63

STATION:	SHO324A	SIZE CLASS:	7-8.9CMS		
TIME:	0330HRS	DEPTH:	10M		
COMMENT:	AWLL STOMACHS EMPTY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS					0.00
DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500				0.00
	>3500-4000				0.00
	>3000-3500				0.00
	>2500-3000				0.00
	>2000-2500				0.00
	>1500-2000				0.00
	>1000-1500				0.00
	>500-1000				0.00
	250-500				0.00
CYCLOPOID COPEPODS	>500-1000				0.00
	250-500				0.00
CLADOCERANS					0.00
"					0.00
OSTRACODS					0.00
EUPHAUSIIDS					0.00
(lengths)					0.00
"					0.00
"					0.00
"					0.00
"					0.00
EUPHAUSIIDS					0.00
(eye diams)					0.00
"					0.00
DECAPODS					0.00
MYSIDS					0.00
AMPHIPODS					0.00
PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)					0.00
BIVALVE LARVAE					0.00
SQUIDS					
CHAETOGNATHS					0.00
FISH					0.00
NAUPLII					0.00
EGGS					0.00
UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH		7-8.9CMS			
NUMBER EMPTY		10.00			
NUMBER OF FISH		10.00			
NUMBER EXAMINED		0.00			
TOTAL (NO., %, WT.mg)		0.00			0.00

STATION:	SHO-406	SIZE CLASS:	5-6.9CMS			STATION:		SIZE CLASS:			
TIME:	0710HRS	DEPTH:	14M			TIME:		DEPTH:			
COMMENT:						COMMENT:					
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00	DIATOMS					0.00
DINOFLAGELLATES			0.00		0.00	DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00	CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500		0.00		0.00		>4000-4500				0.00
	>3500-4000		0.00		0.00		>3500-4000				0.00
	>3000-3500		0.00		0.00		>3000-3500				0.00
	>2500-3000		0.00		0.00		>2500-3000				0.00
	>2000-2500		0.00		0.00		>2000-2500				0.00
	>1500-2000		0.00		0.00		>1500-2000				0.00
	>1000-1500		0.00		0.00		>1000-1500				0.00
	>500-1000	529.00	54.20		5301.70		>500-1000				0.00
	250-500	300.00	30.74		408.43		250-500				0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00	CYCLOPOID COPEPODS	>500-1000				0.00
	250-500		0.00		0.00		250-500				0.00
CLADOCERANS		7.00	0.72	0.50	7.00	CLADOCERANS					0.00
"			0.00		0.00	"					0.00
OSTRACODS		1.00	0.10	0.90	30.00	OSTRACODS					0.00
EUPHAUSIIDS			0.00		0.00	EUPHAUSIIDS					0.00
(lengths)			0.00		0.00	(lengths)					0.00
"			0.00		0.00	"					0.00
"			0.00		0.00	"					0.00
"			0.00		0.00	"					0.00
"			0.00		0.00	"					0.00
EUPHAUSIIDS			0.00		0.00	EUPHAUSIIDS					0.00
(eye diams)			0.00		0.00	(eye diams)					0.00
"			0.00		0.00	"					0.00
DECAPODS			0.00		0.00	DECAPODS					0.00
MYSIDS			0.00		0.00	MYSIDS					0.00
AMPHIPODS			0.00		0.00	AMPHIPODS					0.00
PTEROPODS (SHELLED)			0.00		0.00	PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)			0.00		0.00	PTEROPODS (NAKED)					0.00
BIVALVE LARVAE		139.00	14.24		6950.00	BIVALVE LARVAE					0.00
SQUIDS			0.00		0.00	SQUIDS					
CHAETOGNATHS			0.00		0.00	CHAETOGNATHS					0.00
FISH			0.00		0.00	FISH					0.00
NAUPLII			0.00		0.00	NAUPLII					0.00
EGGS			0.00		0.00	EGGS					0.00
UNIDENTIFIED MATERIAL					13600.00	UNIDENTIFIED MATERIAL					
STANDARD FISH LENGTH		5-6.9CMS				STANDARD FISH LENGTH					
NUMBER EMPTY		0.00				NUMBER EMPTY					
NUMBER OF FISH		10.00				NUMBER OF FISH					
NUMBER EXAMINED		10.00				NUMBER EXAMINED					
TOTAL (NO., %, WT.ug)		976.00	100.00		26297.12	TOTAL (NO., %, WT.ug)			0.00		0.00

STATION:	SHO-412A	SIZE CLASS:	7-8.9CMS			STATION:	SHO-412A	SIZE CLASS:	9-10.9CMS		
TIME:	1210HRS	DEPTH:	9M			TIME:	1210HRS	DEPTH:	9M		
COMMENT:						COMMENT:	HIGHLY DIGESTED MATERIAL ONLY.				
FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:	FOOD ITEM:	SIZE CLASS:	NUMBER:	% NUMBER:	LENGTH:	DRY WT:
DIATOMS			0.00		0.00	DIATOMS					0.00
DINOFLAGELLATES			0.00		0.00	DINOFLAGELLATES					0.00
CALANOID COPEPODS	>4500-5000		0.00		0.00	CALANOID COPEPODS	>4500-5000				0.00
	>4000-4500		0.00		0.00		>4000-4500				0.00
	>3500-4000		0.00		0.00		>3500-4000				0.00
	>3000-3500		0.00		0.00		>3000-3500				0.00
	>2500-3000		0.00		0.00		>2500-3000				0.00
	>2000-2500		0.00		0.00		>2000-2500				0.00
	>1500-2000	135.00	15.83		15526.23		>1500-2000				0.00
	>1000-1500	143.00	16.76		6240.50		>1000-1500				0.00
	>500-1000	19.00	2.23		190.42		>500-1000				0.00
	250-500		0.00		0.00		250-500				0.00
CYCLOPOID COPEPODS	>500-1000		0.00		0.00	CYCLOPOID COPEPODS	>500-1000				0.00
	250-500		0.00		0.00		250-500				0.00
CLADOCERANS		24.00	2.81	0.50	24.00	CLADOCERANS					0.00
"		34.00	3.99	0.40	34.00	"					0.00
OSTRACODS			0.00		0.00	OSTRACODS					0.00
EUPHAUSIIDS			0.00		0.00	EUPHAUSIIDS					0.00
(lengths)			0.00		0.00	(lengths)					0.00
"			0.00		0.00	"					0.00
"			0.00		0.00	"					0.00
"			0.00		0.00	"					0.00
"			0.00		0.00	"					0.00
EUPHAUSIIDS			0.00		0.00	EUPHAUSIIDS					0.00
(eye diams)			0.00		0.00	(eye diams)					0.00
"			0.00		0.00	"					0.00
DECAPODS			0.00		0.00	DECAPODS					0.00
MYSIDS			0.00		0.00	MYSIDS					0.00
AMPHIPODS		322.00	37.75	2.00	6907.52	AMPHIPODS					0.00
PTEROPODS (SHELLED)			0.00		0.00	PTEROPODS (SHELLED)					0.00
PTEROPODS (NAKED)			0.00		0.00	PTEROPODS (NAKED)					0.00
BIVALVE LARVAE		11.00	1.29		550.00	BIVALVE LARVAE					0.00
SQUIDS		1.00	0.12	8.00	1200.00	SQUIDS					
CHAETOGNATHS		163.00	19.11	55.00	1223373.43	CHAETOGNATHS					0.00
FISH		1.00	0.12	30.00	12274.46	FISH					0.00
NAUPLII			0.00		0.00	NAUPLII					0.00
EGGS			0.00		0.00	EGGS					0.00
UNIDENTIFIED MATERIAL					13600.00	UNIDENTIFIED MATERIAL					59300.00
STANDARD FISH LENGTH		7-8.9CMS				STANDARD FISH LENGTH		9-10.9CMS			
NUMBER EMPTY		0.00				NUMBER EMPTY		0.00			
NUMBER OF FISH		9.00				NUMBER OF FISH		5.00			
NUMBER EXAMINED		9.00				NUMBER EXAMINED		5.00			
TOTAL (NO., %, WT.ug)		853.00	100.00		1279920.56	TOTAL (NO., %, WT.ug)		0.00			0.00