

# Ecology of juvenile chum salmon from Norton Sound, Alaska

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# **Ecology of juvenile chum salmon from Norton Sound, Alaska**

by

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## **EXECUTIVE SUMMARY**

Safety Sound, an estuary on the northern edge of Norton Sound in western Alaska, was surveyed between June 30 and July 21, 2002 to describe juvenile chum salmon presence, basic environmental conditions in the estuary, and to estimate the feasibility of future chum salmon studies. Fyke nets were fished at six different locations in the estuary; juvenile chum salmon were caught at three of these sites, ranging from July 2 to July 20. Catches peaked in the third week of July, when the chum catch rate reached as high as 2 fish per hr. If some chum exit the estuary at ice break-up, as anecdotal evidence suggests, the 2002 chum run from the estuary would have lasted at least seven weeks. Diet analysis of 55 chum stomachs indicated that chum were actively feeding, that stomach fullness indices were similar to those reported in the literature, and that mysids and insects were the most important food items. Foraging chum appeared to be strongly selecting for mysids and insects and strongly avoiding calanoids and echinoderms available in the surrounding water. Chum lengths and preliminary growth rate estimates were similar to those reported for chum from Kotzebue Sound and from Cook Inlet. Safety Sound also appeared to function as an environmental transition zone, with temperature and salinity differing between the inlet and outlet areas of the Sound. In July, outlet areas had temperatures ( $\approx 12^{\circ}\text{C}$ ) and salinities ( $\approx 31$  ppt) similar to the ocean, whereas the inlet sites had temperatures ( $\approx 18^{\circ}\text{C}$ ) similar to the inlet river and salinities indicative of brackish systems ( $\approx 12$  ppt). Overall, the results indicate that juvenile chum salmon exiting the study watershed had normal size and growth rates, that the estuary environment may serve as a transition zone between freshwater and the ocean, and that juvenile chum may reside in this estuary for extended periods of time instead of migrating through as soon as they acclimate to saltwater. Sampling should be conducted in future years over a broader range of time to quantify estuarine residence time of juvenile chum salmon, estimate emigration timing to and from the estuary, and to describe growth rates, food use, and food availability over the course of the run.

## INTRODUCTION

Early marine residence is a critical phase in the life cycle of Pacific salmonids and can influence ocean growth, survival, and the subsequent return of spawning adults. Coastal estuaries are an important aspect of this early marine phase because they can provide environmental transition zones (Salo 1991), early opportunities for feeding and growth (Salo 1991), and predator refuge (Pearcy 1992). As environmental transition zones, brackish estuaries allow out-migrant salmon to acclimate from lower-salinity freshwater to higher-salinity marine water (Iwata and Komatsu 1984) and between waters of differing temperature. Estuaries often provide the first substantial opportunity for feeding and growth (Salo 1991) for species that migrate to sea soon after hatching, such as chum salmon, and typically have higher food productivities than adjacent ocean or freshwater (Odum 1959). Estuaries may thus offer the opportunity for enhanced growth or size at ocean entry, which is known to correlate with salmon marine survival (Healey 1991; Mortensen et al. 2000), and can thereby potentially increase the abundance of returning adult salmon. Finally, estuaries frequently have fewer predators on juvenile salmon, either because there are fewer predator species, or because many predators are also in a less piscivorous juvenile stage (Pearcy 1992).

The estuarine ecology of juvenile chum salmon is well-understood in many areas of the North Pacific (Pearcy 1992), but knowledge along the western coast of Alaska north of Bristol Bay is limited to a few studies disjunct in time and space. Off the coast of the Yukon River, Martin et al. (1986) found that juvenile chum salmon did not use the nearshore delta habitat and speculated that the small fish were displaced to the offshore area, away from estuaries, by the large current plume of the river. Along the coast of Norton Sound, Tetra Tech (1981) found a notable absence of juvenile chum along the nearshore zone in late June. In Kotzebue Sound, Merritt and Raymond (1983) found that chum emigration from the Noatak River into Kotzebue Sound was in mid-June, and that chum appeared to have migrated from the nearshore area by mid-July. Although these studies provide some insight into the nearshore ecology of juvenile chum salmon, they are spread over a great geographic distance and apply to populations that may have substantially different life history characteristics. Overall, there is still relatively little known about the estuarine ecology of juvenile chum salmon from any or all of the chum-producing regions along the northwestern coast of Alaska.

An improved understanding of estuarine ecology is especially important now because of substantial declines in chum salmon populations that are important to people in the region. Norton Sound residents have historically had a heavy reliance on chum salmon, both for subsistence and for cash income (NSSTC 2002). This reliance has been jeopardized by an apparent decrease in chum abundance from 1980 to 1999 (Sandone 2001), followed by some of the lowest returns on record from 1999 through 2002. The 1999 harvest was the lowest one to that date, resulting in a declaration of disaster by the U.S. Secretary of Commerce (Sandone 2001). The declines have continued since 1999, altering chum salmon management (Brennan et al. 2003), restricting harvests (Sandone 2001), and displacing subsistence users in many parts of the Norton Sound region (Magdanz et al. 2003). The declines have also generated strong interest in understanding their causes, whether they be anthropogenic or environmental (Sandone 2001), and of marine or freshwater origin. Increased understanding of chum salmon juvenile life history is a necessary precursor to identifying these

causes of change (NS RRP 2002).

This project is intended to increase the understanding of Norton Sound chum salmon by studying the estuarine ecology of juvenile chum salmon from important Norton Sound watersheds. The overall goal is to evaluate the importance of estuarine habitats by characterizing estuarine environmental conditions and determining their use by juvenile chum. The project will phase in objectives over a three-year period (2002-2004), and will focus on Safety Sound, which is the estuary for the Eldorado/Flambeau River watershed. This report describes the first year of the project, 2002, in which the objectives were to determine:

- 1) Seasonal patterns of juvenile chum salmon movement from fresh to marine waters;
- 2) Chum salmon size and body condition during the estuarine period;
- 3) Chum salmon diet and food availability in the estuary, and;
- 4) The direction of movement of chum salmon migrating from the estuary.

## METHODS

### Study Area

The chosen study area was Safety Sound, approximately 30 km (20 miles) east of the town of Nome (Figures 1 and 2). The Sound is oval-shaped, with the long axis ( $\approx 12$  km) running SW to NE and the short axis ( $\approx 3$  km) running NW to SE (Figure 2). Water enters the Sound from the Eldorado/Flambeau River in the NW corner and exits to Norton Sound about 6 km to the ESE via a narrow ( $\approx 300$  m wide) strait (Figure 2). Water also enters Safety Sound from the SE corner of the sound via Bonanza channel, which contains approximately half the water from the Bonanza River. Water volume from this source however, is much less than from the Eldorado/Flambeau River, and fish biota from the Bonanza River are thought to be negligible in comparison. Safety Sound has uniformly shallow water depths (avg. water depth  $\approx 2$  m) with a muddy and sandy bottom (data from this report). There are also extensive beds of eel-grass throughout Safety Sound. In July of 2002, the Sound had a mesohaline temperature and salinity profile near the inlet of the river and a polyhaline to marine profile at the outlet (Odum 1959; data from this report). The tidal cycle occurs twice per day, with differences between high and low daily tides rarely exceeding 1 m (Appendix C).

### Site Selection and Sampling Gear

Fyke nets were used to capture all fish in 2002. Each fyke net assemblage consisted of paired cod end traps of 1.27 m (0.5 in) stretched-mesh netting, supported by stainless steel frames (1.7 m x 1.8 m, or 67 in x 71 in). The cod-end frames were joined side-by-side. A lead net bisected the pair of frames so that fish from either side of the lead would go into one of the two cod-ends. The lead was made of 2.5 cm (1.0 in) knotless nylon mesh, was 2 m (79 in) deep, and ran 60 m (197 ft) to the shoreline when fully extended. A single 15m (49 ft) wing extended from the outside edge of each cod-end frame, at an angle approximately  $45^\circ$  to the lead net. The entire assemblage was installed so

that the lead ran perpendicular from shore to cod-end entrances set parallel to shore (Figure 3). This arrangement allowed the detection of the original movement direction of fish entering each cod-end (i.e., fish caught in the west-side cod end were traveling east).

Suitable characteristics for fyke net stations were areas with water depths ranging from 1.0 m to 2.0 m (3.3 ft to 6.6 ft), gradually sloping bottoms, smooth substrate, some shoreline protection from wind- and current-driven debris, and located in areas of Safety Sound in which juvenile salmon might pass in the course of migrating from the river system into Norton Sound (Figure 2). Optimally, sites were 1.5 m (4.9 ft) deep at a distance 80 m (262 ft) from shore, with a smooth bottom that sloped uniformly up to the shoreline. All sites in the main areas of interest were monitored throughout the study to observe how changes in water level, water currents, and debris load altered the sites' suitabilities for fyke net use.

In 2002, one fyke net station was operated continuously at the exit of Safety Sound while two others were moved among multiple other sites. Moving the nets among multiple sites yielded more data on site feasibility and allowed more areas to be checked for salmon presence. Holding one net at a constant site allowed us to test whether catch differences reflected differences in salmon abundance among sites or a real change in salmon abundance throughout Safety Sound.

## **Fish Capture and Sampling**

### ***Fish capture and processing***

Nets were checked twice daily, at approximately 12 hour intervals. At each check, fish were removed from each cod-end trap and held in floating net pens for processing (Figure 4). All fish were identified to species and counted. All juvenile chum, coho, chinook, and sockeye salmon were measured to the nearest mm (total length; Carlander and Smith, Jr. 1945), and a subsample was retained for diet analysis. Fish in these subsamples were selected without known bias. Once retained, the fish were euthanized with clove oil diluted in ethanol and were slit from the anus to the anterior side of the pelvic fin to expose the stomach. Specimens were placed in individual 4 oz Nalgene bottles with approximately 2 oz of 37% formalin solution, enough to moisten the fish and its exposed stomach. These samples were then transported to base camp where each salmon was patted dry with a towel and weighed to the nearest 0.01 g. The bottles were labeled, sealed, and shipped to Inverte, Inc. (Susquehanna, Pennsylvania) for stomach contents analysis. A subsample of these fish were examined under a microscope to verify species identification using the descriptions in Pollard et al. (1997) and the keys in Mecklenburg et al. (2002).

Fishing effort was calculated in two ways. First, the effort needed to obtain a given catch was calculated as the number of hours the net was fished to obtain the catch. This number was typically the time interval since the last check, less any time the nets were inoperable. The number of fish from a given catch was divided by the catch effort to obtain the catch per unit effort (CPUE), which was used as an indicator of change in fish presence over time. Second, the number of hours fished on a given calendar day was computed to indicate fishing time by date across sites and to indicate

days in which nets were not fully fished due to repairs, bad weather, and other reasons. This calendar effort was computed by calculating the number of hours the net fished from midnight to midnight on each calendar date.

### **Data analysis - fish CPUE, length, and growth**

Chum salmon catch was evaluated post-hoc using length frequency histograms, catch by date, and a table recording the number of fish caught in each length class by date. This evaluation was used to identify potential fish groups based on run timing and length. The partitioning of fish into groups also helped to estimate potential growth rates despite the potential replacement of larger fish exiting the system by smaller fish entering the system (e.g., Moulton 1997). Differences in mean length among stations were estimated with analysis of variance (ANOVA) and Tukey's multiple comparisons test was used to test all pairwise combinations.

Growth was calculated based on change in length over the course of the season, both for the entire run and for potential sub-groups identified post hoc using the graphs described above. Growth was calculated according to the formula:

$$\Delta L = (L_t - L_{t-1})/t$$

where  $L_t$  = mean length at time  $t$ ,  $L_{t-1}$  = mean length at prior event, and  $t$  = elapsed time in days (Yerokhin and Shershneva 2000). Outliers and dates with small sample sizes (< 3 fish) were removed for the growth computations so that they would not unduly influence larger sample groups.

## **Diet and Food Availability**

### **Diet sampling**

The weight of each fish and of each stomach when full and when empty was measured to the nearest 0.001g. Stomach content weight was calculated as the difference between the stomach weight when full and when empty. A stomach fullness index was calculated by dividing the stomach content weight by the fish body weight (Moulton 1997), and stomach fullness was categorized in 25% increments. Stomach contents were then identified to major taxonomic group and classified by life stage. Individual body parts (e.g., insect legs) were noted. Prey were counted and weighed, and the total number and biomass of each taxon was recorded. All taxa grouping, identification, counts, and biomass estimates were performed by Inverte, Inc.

For each taxon, the percent frequency of occurrence (%FO) was then calculated as the proportion of stomachs in which the taxon was found, the total number (%N) was calculated as the proportion of prey by number that the taxon comprised, and the % biomass (%W) was calculated as the proportion of biomass that each taxon comprised (Cailliet 1976; Moulton 1997). An index of relative importance (IRI) was calculated for each taxon by adding %N and %W, then multiplying the result by %FO (Cailliet 1976; Table 1).

### **Prey availability**

Zooplankton were sampled at four fixed stations that were marked with a Global Positioning System (GPS) receiver (Venture model, Garmin International, Olathe, KS). The first two stations, E2 and E3, were located near the outlet of Safety Sound and were sampled nine times between July 2 and July 20. Two more stations, E7 and E8, were located near the inlet of Safety Sound, near the entrance of the Eldorado/Flambeau River, and were sampled four times between July 14 and July 20 (Figure 5; Table 2; Table 3).

Vertical plankton tows were conducted using a WaterMark plankton net with a 50-cm (diameter) mouth, a 150-cm length, and with 250- $\mu$  mesh. Four to five tows were conducted at each site, and the volume of water sampled calculated as the product of the net volume (Table 3). Net contents were rinsed from the plankton net and cod ends with distilled water into collection bottles and preserved in 37% formalin. The bottles were labeled, sealed, and shipped to Inverte, Inc. for plankton analysis and identification. All taxa grouping, identification, counts, and biomass estimates were performed by Inverte, Inc.

Contents from the plankton bottles were identified to major taxonomic group, as described for diet analysis, above. Most taxa were described to order; calanoids, cladocerans, and hydrozoans were identified to genus.

The density (count/liter) of each taxon was calculated by dividing the abundance estimate by the volume of water collected to obtain the sample. The proportion that each taxon comprised of the total content of the zooplankton samples (%N) was used as an estimate of the relative availability for feeding fish. Densities were plotted against date for taxa that accounted for either the largest proportions of the zooplankton samples (Figures 6-8).

### **Diet selectivity**

The food selection index developed by Strauss (1979) was used to estimate food selection by chum salmon for individual prey taxa. Strauss's index was calculated as

$$L_i = r_i - p_i$$

where  $r_i$  is the relative proportion of prey taxon  $i$  in the predator stomach and  $p_i$  is the relative proportion of the same taxon in the environment. Index values range from -1 to 1, with 1 indicating strong selectivity for the prey item, -1 indicating avoidance or inaccessibility of the item, and 0 indicating neutral selection or random feeding. Strauss's index (i.e.,  $L_i$ ) was used because it is normally distributed and is therefore relatively robust (Williams et al. 2003) and useful for comparison among populations (Ready et al. 1985).  $L_i$  is easily interpretable (Strauss 1979) and has been widely used in other feeding studies (e.g., Hansen and Wahl 1981; Ready et al. 1985; Dahl-Hansen et al. 1994; Williams et al. 2003).

## Environmental Sampling

Salinity, temperature, and dissolved oxygen were measured at eight fixed stations that were marked as waypoints with the GPS (Table 2). Measurements were taken at the water surface and the bottom.

Four of these stations (E2, E3, E7, E8) were also sampled for zooplankton, as described above. The first five stations, E1 to E5, ran from the outlet strait northward towards the north shoreline of Safety Sound, and were sampled nine times between July 2 and July 20. Station E6 was established on July 17 in nearshore Norton Sound, approximately 100 m (328 feet) from the end of the strait leading to Safety Sound. The two final stations, E7 and E8, were located and sampled as described for zooplankton sampling, above (Figure 5).

Wind direction, wind speed, and cloud cover were estimated during each check at each net (Appendix B). Salinity (ppt), temperature (C), and dissolved oxygen (DO: mg/l) were also recorded at the water surface and the bottom once per day at each net with a YSI Model 85 multi-meter (Yellow Springs Instrument Company, Yellow Springs, OH). Maximum depth at the cod end was also recorded once per day at each fyke net site.

Wind and precipitation records for the period of the study, 30 June – 21 July 2002, were acquired from hourly weather observations recorded at the Nome Airport (Appendix D).

# RESULTS

## Study Area and Site Selection

Beginning on June 28, the shoreline and prominent sand bars of Safety Sound were surveyed for suitable fyke net fishing locations. Emphasis was placed on the shorelines at the entrance of the Eldorado/Flambeau Rivers, along the entire north shoreline of Safety Sound, the shoreline on either side of the outlet strait, the shorelines along Bonanza Channel, and the island sand bars between the Eldorado/Flambeau River entrance and the outlet strait (Figure 2). Eleven locations throughout Safety Sound were identified as potential fyke net sites and were logged with the GPS system. Six of the sites were fished during the 2002 study (Figure 9, Table 4). The remaining sites were monitored until the end of the study to assess their suitability as water levels and debris loads changed.

The first net was installed on June 30, 2002 on the west side of the outlet strait connecting Safety Sound and Norton Sound, approximately 100m south of the highway bridge across the strait. This (Site F6) was fished continuously until July 21, with the exception of when the net was dismantled and moved several meters to the south on July 11. The remaining nets were fished among the five other sites (Figure 9) for various lengths of time, ranging from 14 hrs to 189 hrs (Table 4).

The Eldorado/Flambeau River was also surveyed for approximately 8 km upstream of the confluence with Safety Sound on several days between June 28 and July 21 (Figure 2). Sites in the river were

not as suitable for fyke netting as those in Safety Sound because of steep channel profiles, high debris loads, and potential interference to river boat traffic by subsistence fishers.

The shoreline of Norton Sound was also surveyed by boat and from shore between June 28 and July 18, for approximately 8 km NE and SW from the connection with Safety Sound (Figure 2). The shoreline had several sites that were potentially suitable for fishing a fyke net in calm weather. Such calm periods were rare, however, and most of the time a fyke net would have been exposed to heavy wave action. Such conditions would have made checking the cod-end difficult, and would have resulted in the fyke net being buried in shifting sand. Unless an area sheltered from the wind and waves can be found, fyke netting does not appear to be suitable along this stretch of the Norton Sound shoreline.

## **Fish Capture and Sampling**

### ***Fish capture and processing***

Eighteen identifiable fish species were captured in the fyke nets in 2002. In addition, there were 14 individual fish of unknown species, 46 unidentified juvenile salmon and 53 unidentified sculpins (Table 5). Juvenile chum salmon were captured at three stations, from July 2 to July 20 (Table 6, Table 7). The greatest proportion (169 of 213 juvenile chum) was caught at the outlet station, F6, located in the narrow strait connecting Safety Sound and Norton Sound. Fish were captured at this station throughout the sampling period. Fewer juvenile chum salmon were captured at the inlet station, F4 (20 of 213 total chum), and at station F3 (24 of 213). At stations F3 and F4, only one chum was captured after July 9 (Table 6).

### ***Data analysis - fish CPUE, length, and growth***

Average CPUE and standard deviations (SD) for chum salmon were 0.11 (0.19) at F3, 0.4 (1.1) at F4, and 0.35 (0.64) at F6 (Table 8). The highest sustained CPUE was at F6, where chum CPUE averaged 0.70 (0.80) from July 13 to July 20. Mean chum salmon CPUE did not differ among sites F3, F4, and F6 over the course of the season (ANOVA  $F=0.45$ ,  $P=0.64$ ,  $df=2$ ), possibly due to the large variation in catch rate.

Chum salmon lengths ranged primarily from 55 to 75 mm (mean=63.3, SD=8.0; Table 9), with a few individuals as small as 45 mm and as large as 100 mm (Figure 10). Lengths differed among stations (ANOVA  $F=25.05$ ,  $p<0.001$ ,  $df=2$ ). Chum salmon from station F3 (in the middle of Safety Sound) were longer than chum from stations F4 (inlet station) and F6 (outlet station), and chum from F6 were longer than chum from F4 (Tukey's multiple comparison test; Table 9).

The data plots of catch by date indicated two potential ways to group chum salmon caught in 2002 (Table 10; Figure 11). The first grouping used the catch timing plot and divided fish into an early group from July 2 to July 11 and a late group from July 13 to July 20 (Figure 11). The second grouping summed the number of chum salmon by length class for each date (Table 10), resulting in a

split of early and late groups at July 9 when captured fish were clustered into two distinct length groups. Based on this grouping, the four larger fish caught on July 9 would be included in the early group and the seven smaller fish would be included in the later group (Table 10).

Three different calculations were run for chum salmon growth, one for the entire season and one for each of the two groupings described above. All three of the models were calculated after excluding days in which two or fewer salmon were captured, thereby retaining 192 of the 201 (96%) of the chum salmon measured. Based on the first model, chum salmon fork lengths declined slightly over the course of the season (mean=-0.48 mm/d, SD=3.58; Figure 12A). Based on the second model, the early group of fish (July 1-11) decreased (mean=-3.2 mm/d, SD=0.01) and the late group of fish (July 12-21) increased (mean=0.43 mm/day, SD= 3.75; Figure 12B). Based on the third model, both groups of fish grew over the course of the season, with the early group (July 1-9) increasing an average of 0.62 mm/day (SD=5.41) and the late group (July 9-21) an average of 0.97 mm/d (SD=4.07; Figure 12C).

## **Diet and Food Availability**

### ***Diet sampling***

Stomachs were sampled from 55 juvenile chum salmon captured from July 12 to July 19, 2002. Three of the stomachs (5%) were empty and the rest had identifiable contents. Most (37 of 55) stomachs were at least 25% full of prey (Table 11), and most prey (51 of 52 stomachs with prey) were at least 50% digested (Table 12). The most dominant prey items were invertebrates from the class Insecta and the order Mysidacea. Insects were found in 44 (71%) of the 55 stomachs and accounted for 42% of the prey by number (%N) and 21% of the prey by biomass (%W). Mysids were found in 29 of the 55 stomachs (53%) and accounted for 40% N and 72% W (Table 1). Four other taxa groups (amphipods, calanoids, cumaceans, and nematodes) accounted for the remaining portions of the diets (Table 1). Indices of Relative Importance (IRI) were similar for mysids (5,896) and insects (5,869), and were one to two orders of magnitude lower for all other taxa groups (Table 1). The stomach fullness index averaged 1.20 (SD=1.43; Table 13).

Stomach samples were randomly arranged four times to determine sample size adequacy. For each of the four iterations, the cumulative number of prey groups was plotted against the stomach samples (Cailliet 1976; Craig et al. 1984). Fifteen to 23 stomachs were needed to account for 5 of the 7 prey taxa, and a total of 37 to 47 were needed to account for all 7 taxa (Figure 13). The 6<sup>th</sup> and 7<sup>th</sup> taxa groups were cumaceans and calanoids, each of which had low presence in the diet (1.8%FO, 0.7%N, each). In all four iterations, 23 stomachs would have been sufficient to identify nearly all of the prey (98%FO, 99%N) in the diet.

### ***Prey availability***

Prey samples were collected 4 times at the two inlet sites (stations ES2 and ES3) and 8 times at the 2 outlet sites (stations E7 and E8). The eight inlet samples were collected from July 14 to July 20 and

the 16 outlet samples were collected from July 4 to July 20. The most abundant invertebrates as sampled with the zooplankton net were from the order Calanoida, comprising 53% of the total prey sampled, and from the phylum Echinodermata, comprising 22% of the total prey sampled. An additional 12 groups comprised the remaining 25%, with each accounting for less than 6% of the total number of prey sampled (Table 14).

Mysids, which were the largest taxa by weight in chum salmon diets, had densities ranging from 0.0/l to 0.7/l over the course of the season, with a mean of 0.04/l (SE=0.3; Figure 6). Mysid densities did not differ between inlet and outlet sites ( $T=-1.04$ ,  $P=0.32$ ,  $df=14$ ) during the July 14-20 comparison period. Calanoid densities ranged from 0.3 per l to 98.8 per l over the course of the season, with a mean of 22.4/L (SE=6.1; Figure 7). Calanoid densities were higher at the inlet sites than at the outlet sites ( $T = -4.5$ ,  $P<0.05$ ,  $df=14$ ) during the July 14-20 comparison period. Echinoderm densities ranged from 0.0 per l to 5.4 per l during the course of sampling season, with a mean of 0.6/L (SE=0.2; Figure 8). Echinoderm densities did not differ between inlet and outlet sites ( $T=1.76$ ,  $P=0.10$ ,  $df=14$ ).

### **Diet selectivity**

Chum salmon diets were compared to prey collected from July 14-20, when most (95%) of the stomachs were sampled. Overall, 98% of the chum diet was composed of three taxa (mysids, insects, and amphipods); these three comprised less than 1% of the available prey as sampled with the zooplankton net (Table 14). The highest selectivities were for insects ( $L_i = 0.416$ ) and mysids ( $L_i = 0.393$ ; Figure 14). These were the main prey organisms, and because they were rarely sampled in the environment, their  $L_i$  values were close or equal to their proportion in the diet.  $L_i$  values were positive for 3 other taxa groups, ranging from 0.003 to 0.101 (Table 14).

Over 99% of the available prey groups comprised less than 1% of the chum salmon diet. The highest avoidance was for calanoids, which comprised 53% of available prey but only 0.7% of the diet ( $L_i = -0.52$ ), and for echinoderms, which comprised 22% of available prey but were not found in any chum stomachs ( $L_i = -0.22$ ; Figure 14).  $L_i$  values were neutral to slightly negative for 9 other taxa groups, ranging from 0 to -0.06 (Table 14).

### **Environmental Sampling**

Water temperatures within Safety Sound increased steadily during the sampling period from July 2 to July 20 (Figure 15A). Mean (SD) temperatures rose from 9.6 °C (0.9) to 16.2 °C (1.9) at the outlet sites (July 2 to July 20), and from 16.6 °C (0.3) to 19.6 °C (0.1) at the inlet sites (July 14 to July 20). During the comparison period of July 14 to July 20, inlet sites were significantly warmer than outlet sites ( $T=3.59$ ,  $P=0.012$ ,  $df=6$ ).

Water salinities at the outlet sites were relatively constant over the course of the sampling period, averaging 30.7 ppt (SD=1.4) from July 2 to July 20 (Figure 15B). Inlet sites salinities averaged 14.4 ppt (SD=4.5) and were significantly lower than outlet site salinities during the July 14 to July 20

comparisons period ( $T=-9.73$ ,  $P=<0.01$ ,  $df=6$ ). Salinities in nearshore Norton Sound were similar to those in the Safety Sound outlet sites, but the few sampling dates (July 17 and July 20) did not permit statistical comparison (Figure 15B).

Dissolved oxygen (DO) levels in Safety Sound were relatively constant over time, decreasing from 8.7 mg/l to 8.3 mg/l at the outlet sites (mean=8.8 mg/l, SD=1.1) and from 9.5 mg/l to 8.3 mg/l (mean=8.8 mg/l SD=0.91) at the inlet sites (Figure 15C). Dissolved oxygen levels did not differ significantly between outlet and inlet sites during the comparison period ( $T=-1.46$ ,  $P=0.195$ ,  $df=6$ ).

## DISCUSSION

### Study Area and Site Selection

Overall, the shallow water, slow currents, and small tidal fluctuations make fyke nets an effective sampling tool in Safety Sound. Nets can be fished along the margins of the inlet and outlet areas, and off of sand bars in the interior part of the Sound. All of these sites, however, were susceptible to heavy loads of eelgrass in early July and to algae in mid-July. In addition, large sections of the coastline along the main part of the Sound were too shallow for fyke nets. Although the fyke nets work well in some places, the proportion of chum that they catch is unknown. Given their small area relative to the entire coastline, they probably do not catch a large proportion of the fry and are thus better suited for descriptive studies or abundance indexing than for population estimates.

In the Eldorado/Flambeau River, the channel width is narrow enough to sample a large proportion of the river, but the depth is too great to sample with a fyke net. Water current velocity is low, however, and would probably be suitable for a rotary screw trap. Potential locations for such a trap will be scouted in 2003.

Offshore in the main area of Norton Sound, water is too rough to fish a fyke net consistently. A seine or trawl net would be the best gear with which to capture juvenile chum in this environment. Such a net would need to be deployed from a shallow-draft vessel because of these water depths.

### Fish Sampling

#### *Fish capture and processing*

The fish assemblage and CPUE clearly differed among sites at the inlet to the sound (F4 and F5), those in the middle (F1, F2, F3), and those at the outlet of Safety Sound (F6). The middle and outlet sites had large numbers of Arctic flounder, threespine stickleback, and saffron cod. At the inlet sites, Arctic flounder were also abundant, but numbers of saffron cod and threespine stickleback were lower and numbers of Bering cisco, least cisco, and Dolly Varden were higher. Water temperature and salinity differed between the inlet and other areas throughout the study, and may have been partially responsible for the observed differences in the fish assemblages.

Although chum salmon comprised just 2.5% of the overall catch, they comprised nearly 6% of the catch at the outlet site. The outlet channel is the only major exit from Safety Sound and all chum salmon would have to pass through this area to reach Norton Sound. This probably accounted for the higher catch of chum at this station relative to the other stations within the Sound. The outlet channel is also deeper and has higher velocities than most other areas of the Sound, and juvenile chum may thus have been more concentrated along the edges, where the fyke net fished. Based on CPUE numbers, the outlet site appeared to capture the peak July emigration of juvenile chum from the Sound (Table 8). It is also possible that the run continued later into the season because the net was pulled just two days after the second-highest CPUE of 1.77 on July 19. Chum salmon may also emigrate in June (ADF&G, Nome staff); if so, there would have been at least two distinct emigration pulses in 2002, separated by the period from July 1 to July 12. In future studies, nets should be fished at the outlet site continuously to detect all emigration peaks throughout June and July.

### ***Fish length and growth***

An important long-term objective of the study is to describe the residence time of juvenile chum in Safety Sound to determine how long fish use the estuarine system before migrating seaward. The length-frequency data for chum salmon at different sites in Safety Sound in 2002 provide some initial indications that chum may spend differing amounts of time in the Sound rather than travelling through at a relatively uniform rate. If chum enter the Sound from the Eldorado and Flambeau rivers during a relatively narrow time window (e.g., two weeks), it would be expected that chum that remain in the Sound longest and exit last would be larger than chum that migrate directly through the Sound to the outlet. Chum exiting the Sound at the end of the study (site F6), however, were significantly smaller than chum captured a week earlier in the interior of the Sound (site F3), suggesting that at least some chum may remain within the Sound for a long enough time to be significantly larger than other fish. Other alternative explanations could be that chum salmon may segregate based on size in the Sound or that growth rates of chum may vary in different parts of the Sound. The number of sampling days and fish sample sizes will both need to be increased in future years to better address these possibilities.

Chum salmon lengths measured in Safety Sound in 2002 were similar to those reported for other areas in Alaska at comparable times of the season. Chum from Cook Inlet averaged 52.7 mm FL (July 8-12) and 57.7 mm FL (July 13-17; Moulton 1987), which compare favorably to the average TL of 63.3 for chum salmon caught in Safety Sound in 2002. In Kotzebue Sound, Merritt and Raymond (1983) reported chum salmon lengths ranging from approximately 35 mm FL in early June 1980 to approximately 52 mm FL in mid-July 1980. Kotzebue Sound chum lengths were more variable than those observed in Safety Sound in 2002.

Although the short 2002 sampling season precluded a rigorous analysis of chum salmon growth rates, several factors indicate that the third growth model (Figure 12C) may be a useful indicator of growth and is probably a better estimate than the first two models. The first two growth rate models show either flat (Figure 12A) or variable (Figure 12B) rates and are probably best explained by continuous emigration, in which larger fish exit the system and are replaced by smaller fish that enter

later in the season. Such a process obscures real growth, and has been noted in other salmon studies in which repeat sampling is performed over the course of a season (e.g., Moulton 1997). Further complicating the analysis, fish depicted in Figures 12A and 12B were combined from different sites and almost certainly had spent different lengths of time in the Sound. The third model improves on the first two by splitting length-frequency groups into two obvious date groups, thereby identifying two potential groups from within the continuous emigration. This model also combines fish from different sites in a logical way. For both groups, the smaller fish caught earlier came from the Sound inlet and the larger fish caught later came from the outlet area. Under this model, both groups showed growth rates similar to those found in the literature (Moulton 1997). Growth estimates can be improved in the future by sampling over a greater course of time and by implementing a mark-recapture program.

## **Diet and Food Availability**

### ***Chum diet analysis***

Juvenile chum from Safety Sound were actively feeding, had reasonable stomach fullness indices, and were chiefly exploiting mysid and insect prey. Although stomach contents were typically highly digested, most stomachs (37 of 55) were still at least 25% full, and fullness indices were comparable to equivalent-sized chum collected from Cook Inlet (Moulton 1987) and Kotzebue Sound (Merritt and Raymond 1983) during similar time periods. Insects and mysids were the most important prey by weight and by number. Bias due to digestion did not appear to influence results in 2002 because, although many of the samples did show advanced digestion, the stomach contents were similar among stomachs of differing digestive states. In addition, the samples identified in the stomachs were mostly mysids and insects, which should have been as susceptible to digestion as many of the organisms available to the chum but not found in their stomachs (e.g., copepods, echinoderms). Copepod exoskeletons, for example, should have been digested at similar rates as mysids and insects.

The poor match between available and utilized prey (Table 14) resulted in extreme (positive and negative)  $L_i$  scores. This may have reflected either strong selectivity by chum, inadequacy of prey sampling methods, or some combination of both. Vertical zooplankton tows would have been sub-optimal for capturing epibenthic mysids because of their ability to avoid nets. If mysids found in chum stomachs were on the sea floor when zooplankton tows were conducted, it is probable that they were more abundant than indicated by the sampling data. Adjustments to the mysid availability estimates would have altered the  $L_i$  scores of other taxa, lowering the high ones and raising the low ones. The zooplankton tows should have been effective for capturing most other taxa, however, so it would not have changed the overall indicators of selectivity for or against the organism by Safety Sound chum salmon. Calanoids would have still been present only in the Sound and not in the stomachs, for example, and would still have a negative  $L_i$  value.

Overall, data from 2002 probably provided an accurate estimate of chum diets because stomachs were relatively full, easily-digestible prey were still present in the stomachs, and sample size

analysis indicated that the number of stomachs analyzed was sufficient to identify major prey (Figure 13). Mysids and insect were clearly the most important prey, but true electivity will need to be estimated again when better mysid sampling estimates can be incorporated. Chum fry feeding in Kotzebue Sound fed heavily on insects, but not on mysids (Merritt and Raymond 1983). In the future, sampling (both for chum and in the Sound) should be conducted over a broader range of time to describe change in diet and food availability for the entire time in which juvenile chum feed in Safety Sound.

## **Environmental Sampling**

An important long-term study objective is to evaluate the role of estuaries as environmental transition zones for chum salmon migrating to Norton Sound. In July of 2002, Safety Sound appeared to function as a possible transition zone, with strong temperature and salinity gradients moving from the north and west to the east and south. Sampling stations at the outlet had oceanic temperatures and salinities, stations at the inlet had more riverine temperatures and salinities, and stations in the middle were intermediate. Tidal fluctuations are low in Norton Sound (e.g., +/- 1 m; Figure 16; Appendix C), and water levels in Safety Sound appeared to be driven more by wind than by the tidal cycle. Regardless of source, horizontal water movement was not enough to make the sound uniform, and inlet areas remained lower in salinity and higher in temperature than the outlet areas throughout the three- week sampling period. Water was uniformly shallow and well-mixed vertically throughout the study period, which may benefit chum fry if it increases their ability to feed throughout the water column. The abundance of epibenthic mysids in the chum diets indicates that chum salmon are able to feed low in the water column in Safety Sound, and this ability may be enhanced by the lack of a high-salinity lens on the floor of the Sound.

It is important to note that although the inlet stations were lower in salinity than the other regions of Safety Sound, the inlet stations still had high salinities relative to freshwater. It is possible that inlet stations would have much lower salinity in June, when water discharges from Norton Sound rivers are higher. If so, the salinity and temperature gradient in Norton Sound should be even more pronounced than that indicated by the July, 2002 sampling.

## **FUTURE RECOMMENDATIONS**

### **Fish Sampling**

Sampling in 2003 should begin as soon as possible after ice break-up and extend until at least mid-July, requiring a field season of approximately seven weeks. This extension of the sampling season should yield improved information on run timing, larger samples sizes for estimating growth, and the ability to detect temporal patterns in diet. Inlet stations should be fished as early as possible to document migration timing from the river to the Sound. Optimally, a net at both the inlet and the outlet area would be fished constantly throughout the season to detect true changes in timing while a third net would be moved among sites to identify local areas of increased chum abundance. Nets

should be fished at some of the same sites during the same dates fished in 2002 to evaluate consistency among years. There may be some value to capturing fish in the river in addition to the sound; if so, sampling done in the river itself would probably need to be done with a rotary screw trap instead of fyke nets because of the water current and channel shape.

For the biosampling, approximately 30 chum salmon should be collected per week for diet samples. These samples should be split as evenly as possible from the inlet and outlet sites. A marking system should also be implemented to measure growth of fish marked and measured at a known time. This will realistically entail batch marking at an inlet site, and would also yield information on residence time within the Sound. The potential for using strontium ratios in the otoliths to estimate estuarine residence time should also be pursued; if it is feasible, otolith analysis may be the easiest and least expensive way to estimate estuarine use by juvenile Norton Sound chum salmon.

### **Environmental Sampling**

Sampling in 2003 should begin as soon as possible after ice break-up and continue through the end of the fish sampling season. Sampling stations should be selected based on results from 2002, should target different areas of the Sound to identify potential chum salmon rearing areas, and should be sampled repeatedly over the course of the season. An optimal design would be to implement stations in Norton Sound, in the Eldorado/Flambeau River, and in several areas within Safety Sound that appear likely to have different conditions. Salinity, zooplankton, and temperature should all be measured at these stations. Sampling should be done approximately twice per week and all samples should be taken as temporally close to one another as possible. Some sampling should also be conducted at night to evaluate diurnal zooplankton abundance. Finally, a transect running across the sound should be sampled for temperature and salinity to describe basic changes across a contiguous area of the Sound.

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Table 1. Stomach contents from chum salmon captured in Safety Sound, 2002. Prey taxa are presented as percentages of total number (%N) of prey, percentages of total weight (%W) of prey, by the proportion of salmon stomachs in which they were found (%FO), and by the index of relative importance (IRI).

Prey Group	%N	%W	%FO	IRI
Amphipoda	10.1	0.9	10.9	119.9
Calanoida	0.7	0.0	1.8	1.3
Cumacea	0.7	0.0	1.8	1.3
Insecta	47.7	25.7	80.0	5872.0
Mysidacea	39.6	72.2	52.7	5891.9
Nematode	1.3	1.2	3.6	9.0
Total	100.0	100.0	150.9	
Empty stomachs		3		
Stomachs with prey		52		
Total stomachs		55		

Table 2. Coordinates of fyke net and environmental station locations, Safety Sound, 2002. (Datum NAD27 Alaska)

Station	Latitude (°N)	Longitude (°W)
F1	64.47745	164.73647
F2	64.47845	164.72070
F3	64.49053	164.69853
F4	64.47516	164.88835
F5	64.49657	164.90059
F6	64.47110	164.74487
E1	64.47820	164.73462
E2	64.48375	164.73480
E3	64.48946	164.73338
E4	64.49853	164.73062
E5	64.50721	164.72830
E6	64.47200	164.71423
E7	64.47378	164.89178
E8	64.47248	164.89488

Table 3. Volume (liters) of water sampled for zooplankton at sampling stations in Safety Sound, 2002.

Date	Station							
	E1	E2	E3	E4	E5	E6	E7	E8
2-Jul	100	200	300	390				
4-Jul	100	200	300	300				
6-Jul	150	250	300	300				
8-Jul	340	250	300	390				
11-Jul	50	200	250	300	250			
14-Jul	50	150	250	300	300		250	250
16-Jul	50	250	300	250	300		250	250
17-Jul						300		
18-Jul	50	200	200	250	300		250	200
20-Jul	100	200	250	300	340	300	250	250

Table 4. Total hours fished and number of times net emptied per 24 hour day at each station in Safety Sound, 2002.

Date	Station											
	F1		F2		F3		F4		F5		F6	
	hours	times	hours	times	hours	times	hours	times	hours	times	hours	times
30-Jun	12.0	1									10.3	1
1-Jul	24.0	2									24.0	2
2-Jul	10.6	1	13.6	1							24.0	2
3-Jul			24.0	2							21.6	2
4-Jul			11.8	1	9.8	1					23.5	2
5-Jul					24.0	2					24.0	2
6-Jul					24.0	2					24.0	2
7-Jul					24.0	2					24.0	2
8-Jul					24.0	2					24.0	2
9-Jul					24.0	2	6.4	1			24.0	2
10-Jul					24.0	2	5.6	1			22.9	2
11-Jul					24.0	2	3.0	1			6.0	1
12-Jul					11.5	1					24.0	2
13-Jul							15.3	2			24.0	2
14-Jul											24.0	2
15-Jul							8.3	2	6.0	1	24.0	2
16-Jul							6.7	1	8.2	1	24.0	2
17-Jul											24.0	2
18-Jul							19.0	2			24.0	2
19-Jul							6.9	1			24.0	2
20-Jul											24.0	2
21-Jul											9.3	1
Total	46.6	4	49.3	4	189.3	16	71.2	11	14.2	2	477.5	41

Table 5. Total catch by species and life stage for fish captured with fyke nets in Safety Sound, 2002.

Scientific Name	Common Name	Project code	Life stage <sup>a</sup>	F1 # caught	F2 # caught	F3 # caught	F4 # caught	F5 # caught	F6 # caught	Grand Total # caught	% of total
<i>Oncorhynchus keta</i>	Chum salmon	ACHU	a	1					9	10	0.1%
<i>Oncorhynchus gorbuscha</i>	Pink salmon	APNK	a	98	64	1	6		123	292	3.5%
<i>Pleuronectes glacialis</i>	Arctic flounder	ARFL	a	13	108	384	902	807	800	3014	36.0%
<i>Coregonus laurettae</i>	Bering Cisco	BRCS	a	4	17	309	462	100	98	990	11.8%
<i>Mallotus villosus</i>	Capelin	CASM	a						2	2	0.0%
<i>Oncorhynchus keta</i>	Chum salmon	CHUM	j			24	20		169	213	2.5%
<i>Oncorhynchus kisutch</i>	Coho salmon	COHO	j		2	7				9	0.1%
<i>Blepsias bilobus</i>	Crested sculpin	CRSC	a						1	1	0.0%
<i>Salvelinus malma</i>	Dolly Varden	DLVD	a	1	8	6	194	4	15	228	2.7%
<i>Myoxocephalus quadricornis</i>	Fourhorn sculpin	FHSC	a		15	15	89	5	161	285	3.4%
<i>Clupea pallasii</i>	Pacific herring	HERR	a		12				7	19	0.2%
<i>Oncorhynchus tshawytscha</i>	King salmon	KING	j				2			2	0.0%
<i>Coregonus sardinella</i>	Least cisco	LSCS	a	19	54	23	346	28	138	608	7.3%
<i>Osmerus mordax</i>	Rainbow smelt	RBSM	a	32	29	304	116	1	33	515	6.2%
Salmonid	unidentified juvenile	SALM	j		6		3	2	35	46	0.5%
Sculpin	unidentified sculpin	SCSP	a	1	2		21		29	53	0.6%
<i>Eleginus navaga</i>	Saffron cod	SFCD	a	3	415	288	42		797	1545	18.5%
<i>Oncorhynchus nerka</i>	Sockeye salmon	SOCK	j				8			8	0.1%
<i>Platichthys stellatus</i>	Starry flounder	STFL	a		15	11	26	1	32	85	1.0%
<i>Gasterosteus aculeatus</i>	Threespine stickleback	THSB	a	6	8	7	29	2	363	415	5.0%
<i>Pallasina barbata</i>	Tube-nose poacher	TUPO	a			1	3		15	19	0.2%
Unknown	unidentified fish	UNKN	a				4	9	1	14	0.2%
Total fish caught:				178	755	1380	2273	959	2828	8373	100.0%

<sup>a</sup>Life stage: a = adult; j = juvenile

Table 6. Juvenile chum salmon catch at sampling stations in Safety Sound, 2002.

Date	Station			Daily total
	F6	F3	F4	
2-Jul	1			1
4-Jul	2			2
5-Jul		9		9
6-Jul		11		11
7-Jul	1	1		2
9-Jul		3	19	22
12-Jul	1			1
13-Jul	6			6
14-Jul	9			9
15-Jul	47		1	48
16-Jul	39			39
17-Jul	15			15
19-Jul	45			45
20-Jul	3			3
Total	169	24	20	213

Table 7. Juvenile salmon catch, by station, in Safety Sound, 2002.

Species	Station						Total
	F1	F2	F3	F4	F5	F6	
Chum	0	0	24	20	0	169	213
Coho	0	2	7	0	0	0	9
King	0	0	0	2	0	0	2
Sockeye	0	0	0	8	0	0	8
Unidentified salmon	0	6	0	3	2	35	46
Total	0	8	31	33	2	204	278

Table 8. Catch per unit effort (CPUE) by date for various fish groups at stations sampled in Safety Sound, 2002. Empty cell indicates no fishing time on that date.

Date	All salmon						All chum						All fish					
	F6	F1	F2	F3	F4	F5	F6	F1	F2	F3	F4	F5	F6	F1	F2	F3	F4	F5
30-Jun	0.00	0					0.00	0					3.15	5.15				
1-Jul	0.00	0					0.00	0					5.04	2.84				
2-Jul	0.37	0	0.85				0.05	0	0.00				3.99	4.39	2.45			
3-Jul	0.00		0				0.00		0.00				5.94		22.49			
4-Jul	0.19		0	0.00			0.19		0.00	0.00			4.31		9.50	66.21		
5-Jul	0.00			0.35			0.00			0.35			4.33			11.89		
6-Jul	0.00			0.50			0.00			0.50			8.21			3.60		
7-Jul	0.04			0.20			0.04			0.04			4.01			4.87		
8-Jul	0.00			0.00			0.00			0.00			6.01			4.67		
9-Jul	1.06			0.27	3.13		0.00			0.13	3.13		6.34			5.01	30.16	
10-Jul	0.00			0.00	1.09		0.00			0.00	0.00		3.65			3.70	74.95	
11-Jul				0.00	0.34					0.00	0.00					3.38	10.82	
12-Jul	0.04			0.00	0.00		0.04			0.00	0.00		3.03			3.16	20.83	
13-Jul	0.24				0.32		0.24				0.08		2.29				40.19	
14-Jul	0.51				0.00		0.46				0.00		3.56				19.49	
15-Jul	2.12				0.00	0.34	2.12			0.00	0.00		4.25				30.31	74.06
16-Jul	1.50				0.08	0.00	1.50			0.00	0.00		4.83				27.37	87.59
17-Jul	0.73						0.73						15.21					
18-Jul	0.05						0.00						11.19					
19-Jul	1.77						1.77						12.76					
20-Jul	0.13						0.13						9.59					
21-Jul	0.00						0.00						7.47					

Table 9. Average length of chum salmon, by station, captured in Safety Sound in 2002.

	Station			Total
	F6	F3	F4	
N	168	24	9	201
Average length (mm)	62.60	71.75	54.00	63.30
SD (length)	6.67	6.06	15.44	7.99

Table 10. Table showing the number of chum salmon by length class captured in Safety Sound on each date in July 2002. On dates without cell entries, sampling was conducted but no chum salmon were caught. One outlier was excluded.

Fish Length (mm)	July																	Total
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
41-45						3												3
46-50						4												4
51-55												2	6			11		19
56-60			1							1	1	21	17	2		10	1	54
61-65		1		1						3	7	14	5	4		11	2	48
66-70	2	2	6	1					1	2	1	4	9	2		9		39
71-75		3	4									6	1	4		4		22
76-80		3				2						1		2				8
81-85						1							1					2
86-90						1												1
Total	2	9	11	2	0	11	0	0	1	6	9	48	39	14	0	45	3	200

Table 11. Number of stomachs in each fullness category from chum salmon sampled from Safety Sound in 2002.

Fullness category	Number
Empty	3
Trace	9
Trace - 25%	6
25 - 50%	16
50 - 75%	9
75 - 100%	12
Total	55

Table 12. Digestive state of chum salmon prey from Safety Sound, 2002.

Digestive state	Number
NA (empty stomach)	3
0-25%	0
25-50%	1
50-75%	11
75-100%	40
Total	55

Table 13. Stomach fullness index by date for chum salmon sampled from Safety Sound in 2002.

Date	Mean	SD	N
12-Jul	0.01	0.02	3
14-Jul	0.66	0.39	9
15-Jul	0.79	0.93	24
16-Jul	2.25	1.96	13
17-Jul	2.97	2.11	2
19-Jul	1.43	1.52	5
Total	1.20	1.43	56

Table 14. Chum salmon diet, available prey, and electivity values from Safety Sound, July 14 - 20, 2002. Prey taxa are presented as percentages of total number (%N) of prey, percentages of total weight (%W) of prey, by the proportion of salmon stomachs in which they were found (%FO), by the index of relative importance (IRI), as the percent of total prey sampled in the water (% Avail (N)), and by electivity (Li).

Prey Group	%N	%W	%FO	IRI	% Avail (N)	Li	Variance
Amphipoda	10.1	0.9	10.9	119.40	0	0.101	0.000608
Calanoida	0.7	0.0	1.8	1.27	52.56	-0.519	0.000046
Cumacea	0.7	0.0	1.8	1.22	0.33	0.003	0.000045
Insecta	47.7	25.7	80.0	5869.54	0.00	0.477	0.001674
Mysidacea	39.6	72.2	52.7	5896.18	0.33	0.393	0.001605
Nematode	1.3	1.2	3.6	9.07	0.00	0.013	0.000089
Bivalvia					3.78	-0.038	0.000000
Cladoceran					5.93	-0.059	0.000000
Cyclopoida					0.04	0.000	0.000000
Decapoda					0.51	-0.005	0.000000
Echinodermata					21.99	-0.220	0.000001
Gastropoda					0.38	-0.004	0.000000
Harpacticoida					0.44	-0.004	0.000000
Hydrozoan					5.80	-0.058	0.000000
Ostracoda					0.77	-0.008	0.000000
Other					5.11	-0.051	0.000000
Polychaeta					2.02	-0.020	0.000000
Total	100.00	100.00	150.91		99.99		

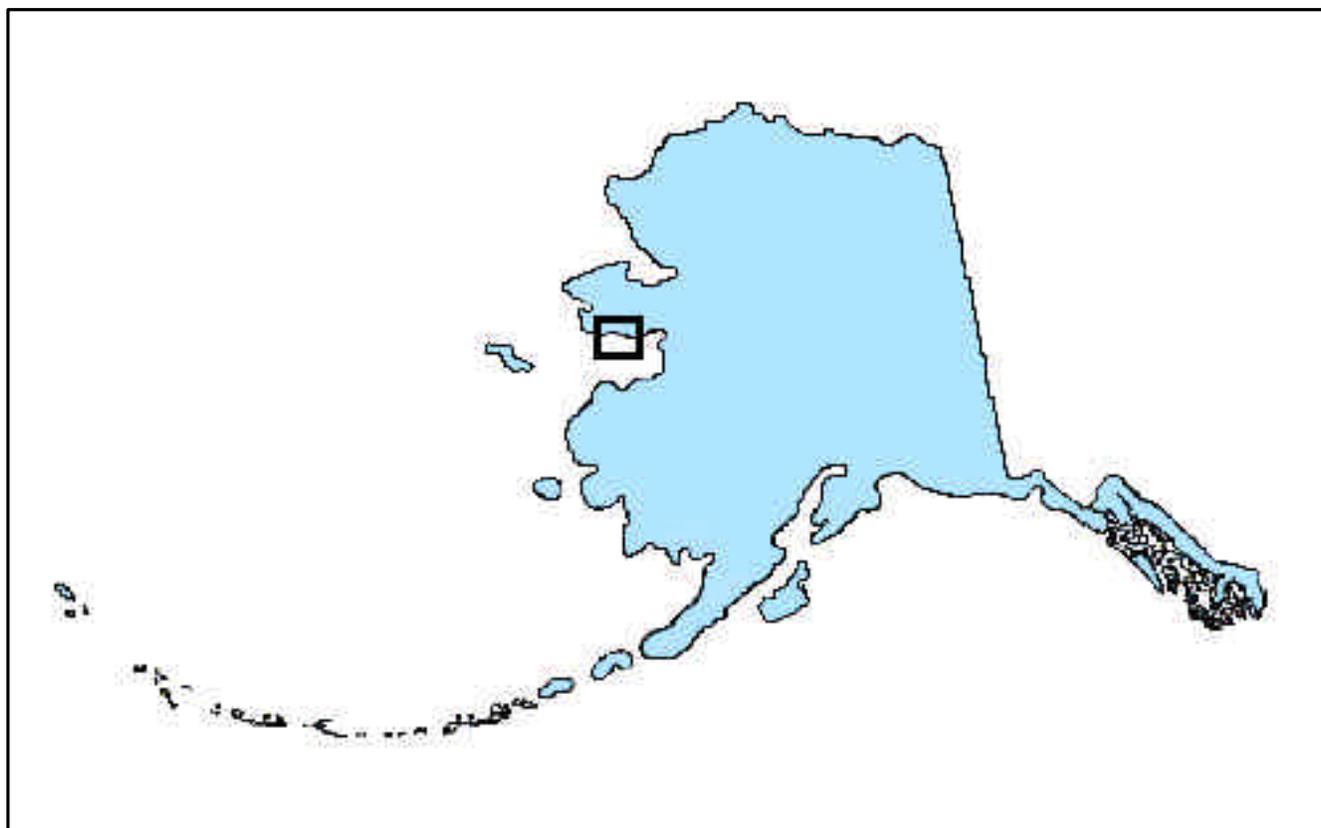


Figure 1. Map of Alaska showing the study region in Norton Sound (box).

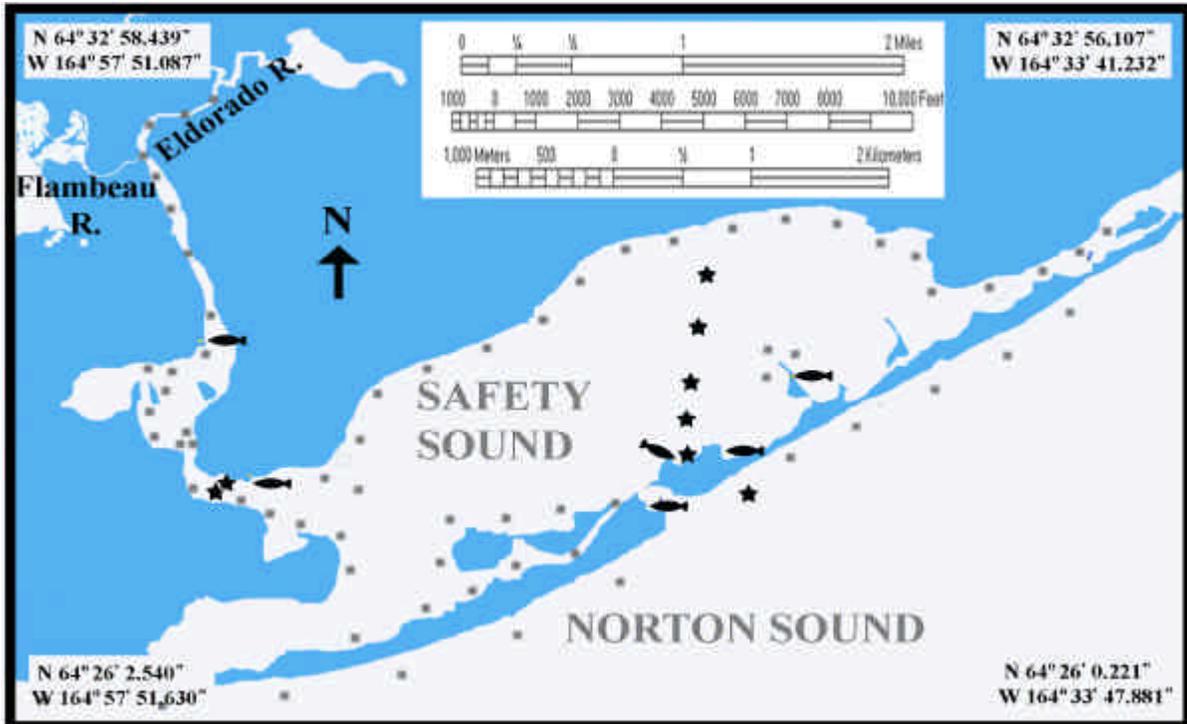


Figure 2. Map of Safety Sound, showing sites used for fish (fish) and for environmental (stars) sampling in 2002. Gray dots represent locations checked for fyke net suitability.

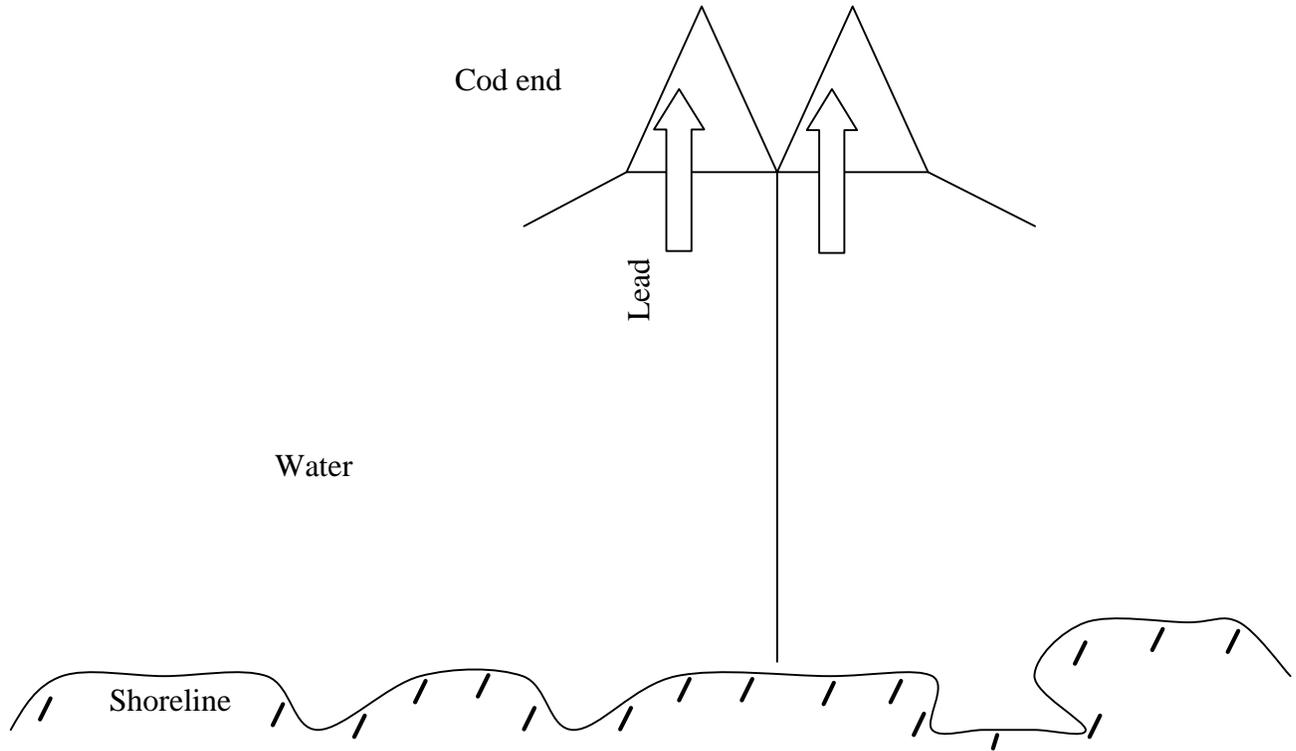


Figure 3. Design and arrangement of a typical fyke net used in Safety Sound in 2002. Fish traveling along the lead enter the cod ends of nets at locations shown by arrows.



Figure 4. Sorting pen used for holding fish collected from fyke nets, with fyke net cod ends in background.



Figure 5. Map of Safety Sound, showing stations at which salinity, dissolved oxygen, temperature, and zooplankton were measured in 2002.

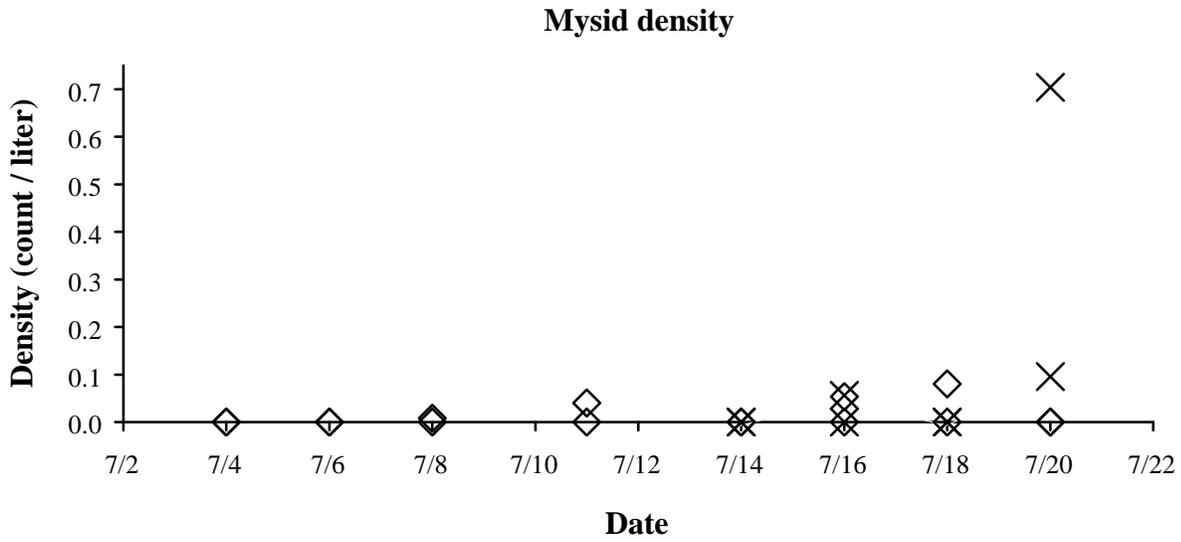


Figure 6. Density of mysids in zooplankton samples taken from 2 inlet and 2 outlet sites of Safety Sound in 2002. Diamonds represent outlet sites and x's represent inlet sites.

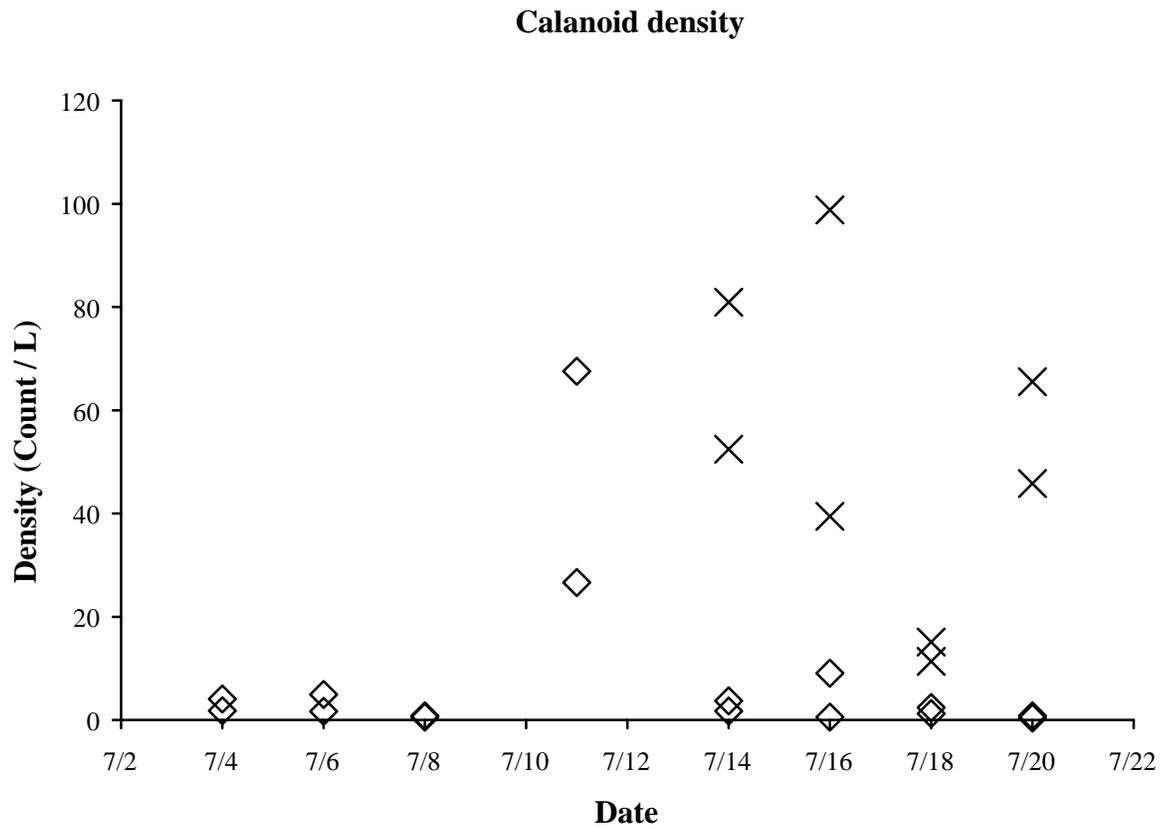


Figure 7. Density of calanoids in zooplankton samples taken from 2 inlet and 2 outlet sites of Safety Sound in 2002. Diamonds represent outlet sites and x's represent inlet sites.

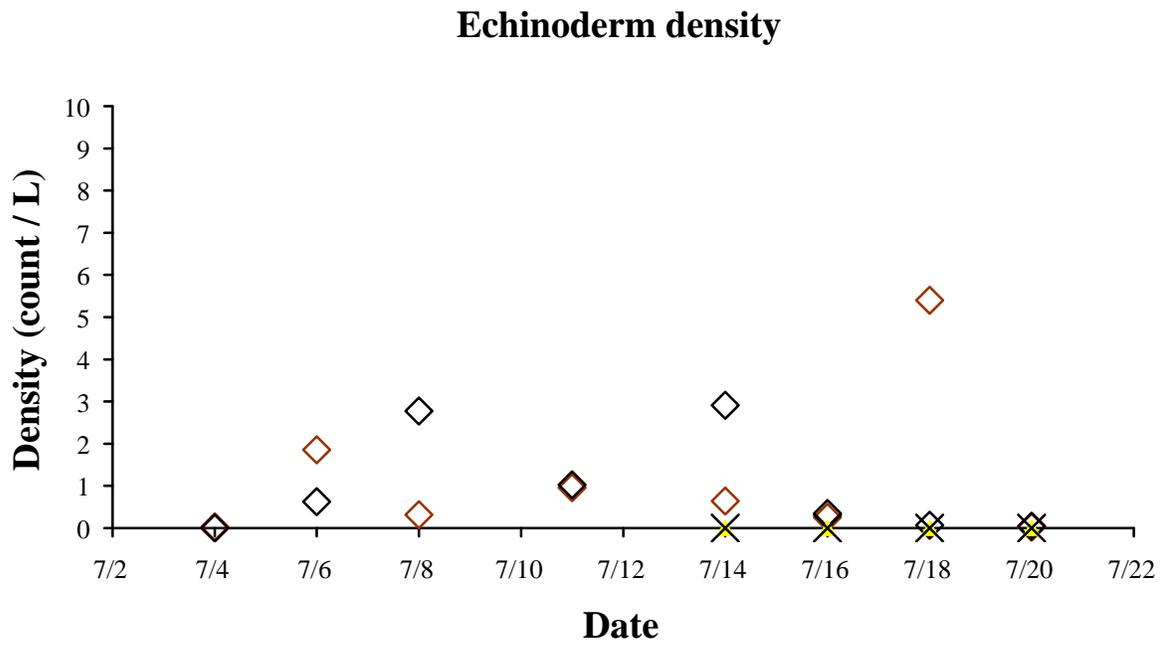


Figure 8. Density of echinoderms in zooplankton samples taken from 2 inlet and 2 outlet sites of Safety Sound in 2002. Diamonds represent outlet sites and x's represent inlet sites.



Figure 9. Map of Safety Sound, showing locations of fyke nets operated in 2002.

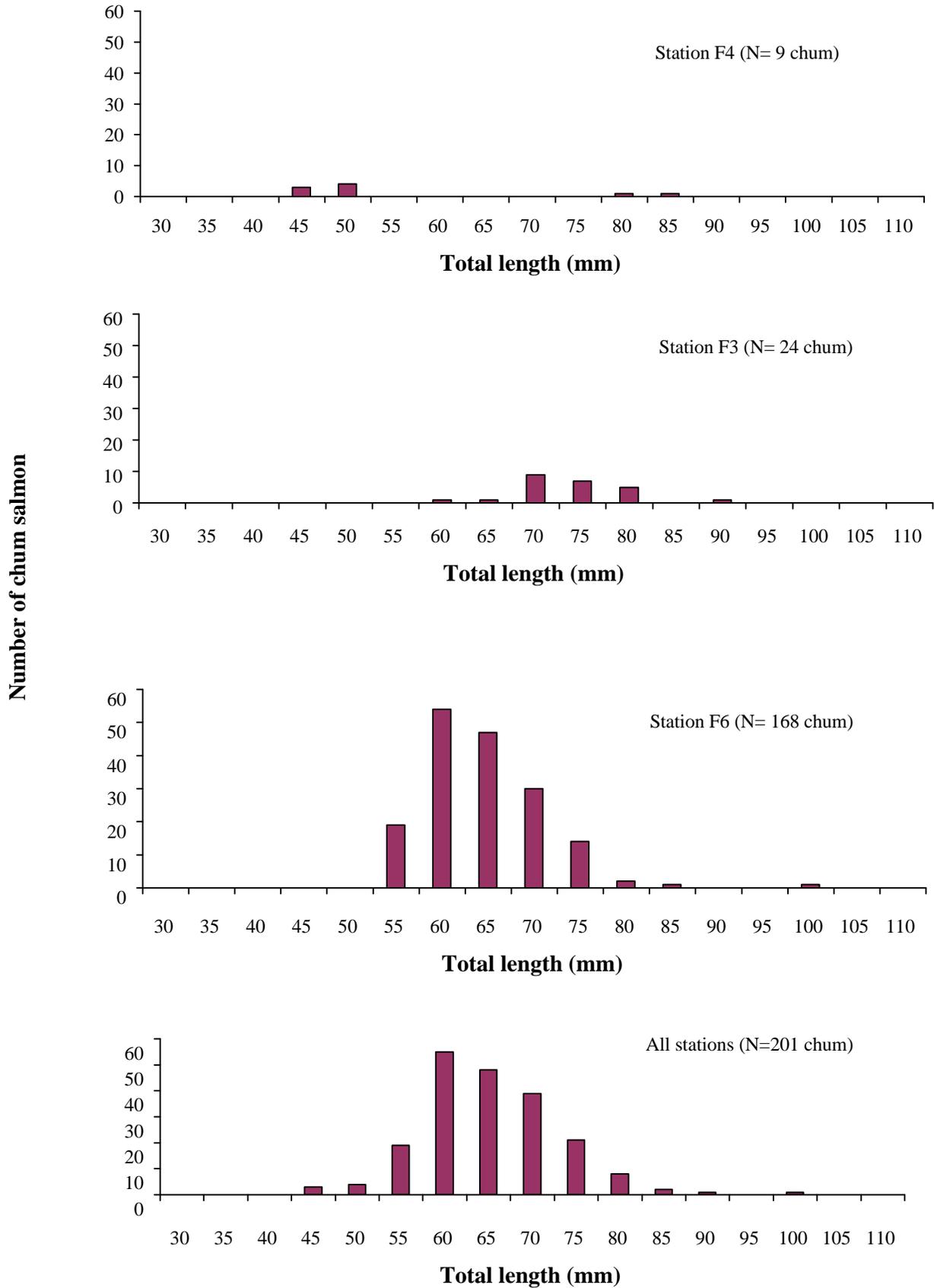


Figure 10. Length frequencies of juvenile chum salmon captured at all stations and at three individual stations in Safety Sound in 2002.

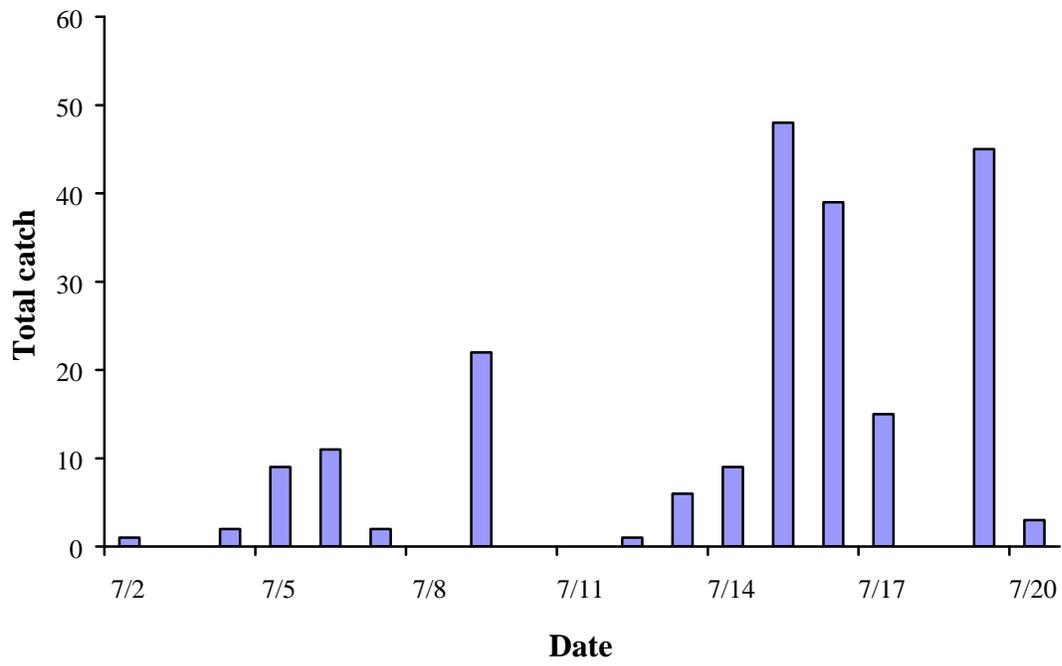
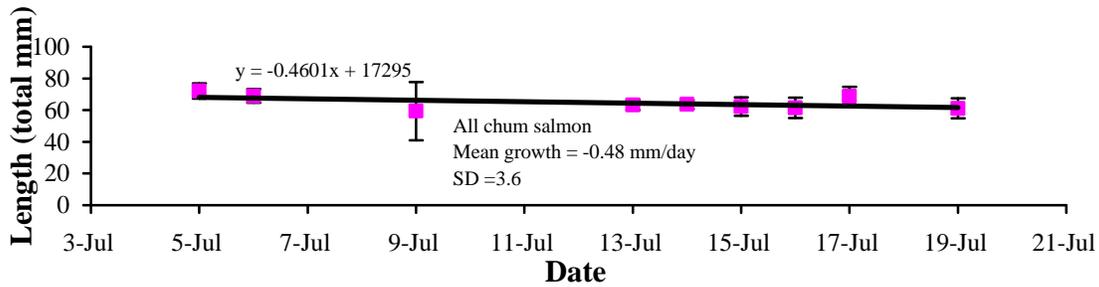
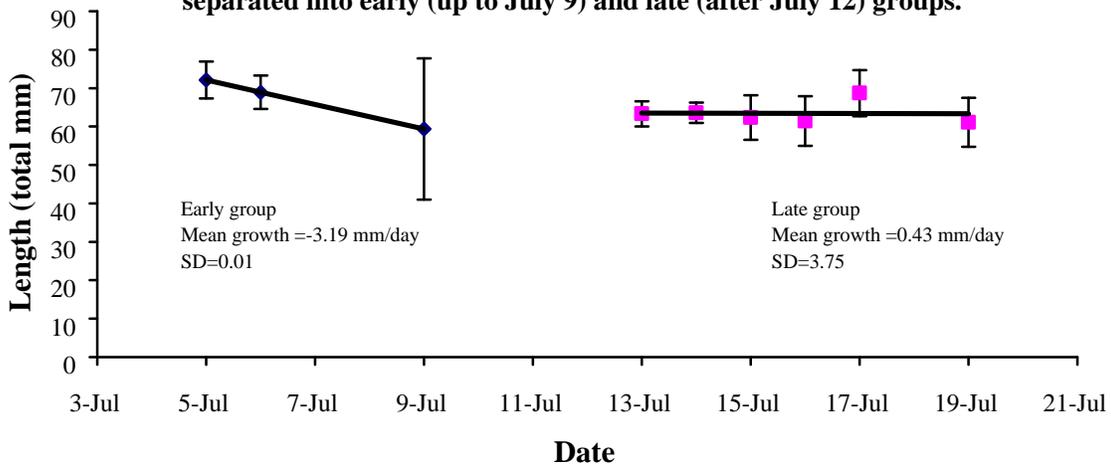


Figure 11. Chum salmon catch by date in Safety Sound, 2002.

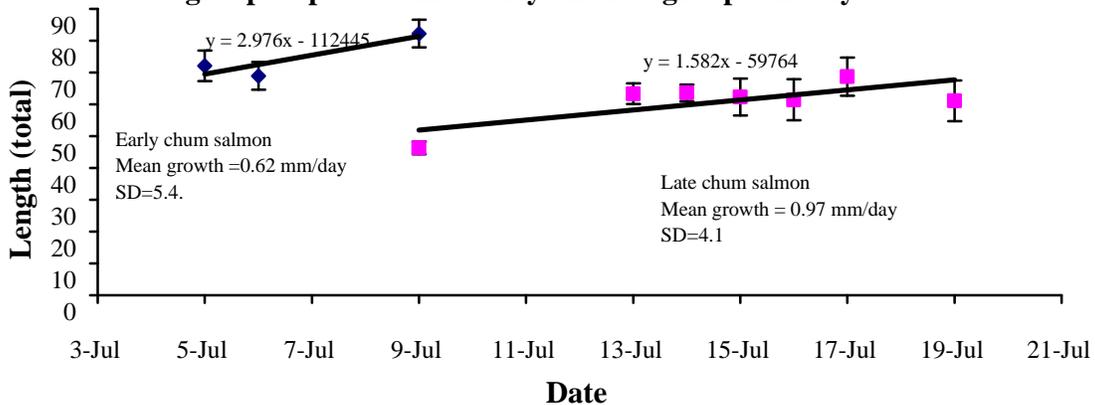
**12A. Model 1 - Average daily length, all chum salmon combined.**



**12B. Model 2 - Average daily length and growth, two chum salmon groups separated into early (up to July 9) and late (after July 12) groups.**



**12C. Model 3 - Average daily length and growth, two chum salmon groups separated into early and late groups on July 9.**



Figures 12A-12C. Average length by date for chum salmon captured in Safety Sound in 2002, using changes in average daily length as estimates of growth for all chum (12A) and different temporal groups of salmon (12B and 12C), see text.

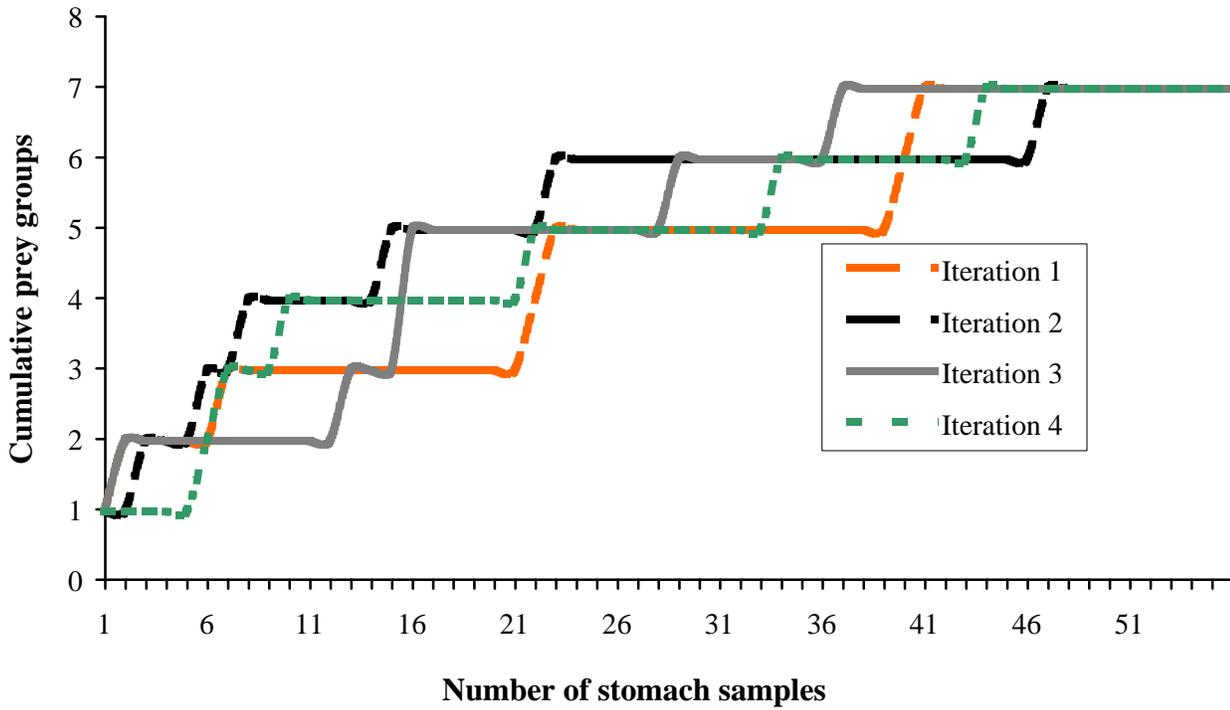


Figure 13. Cumulative number of prey groups versus number of chum salmon stomachs from Safety Sound. Curves reflect four iterations of randomly selected groups of stomachs.

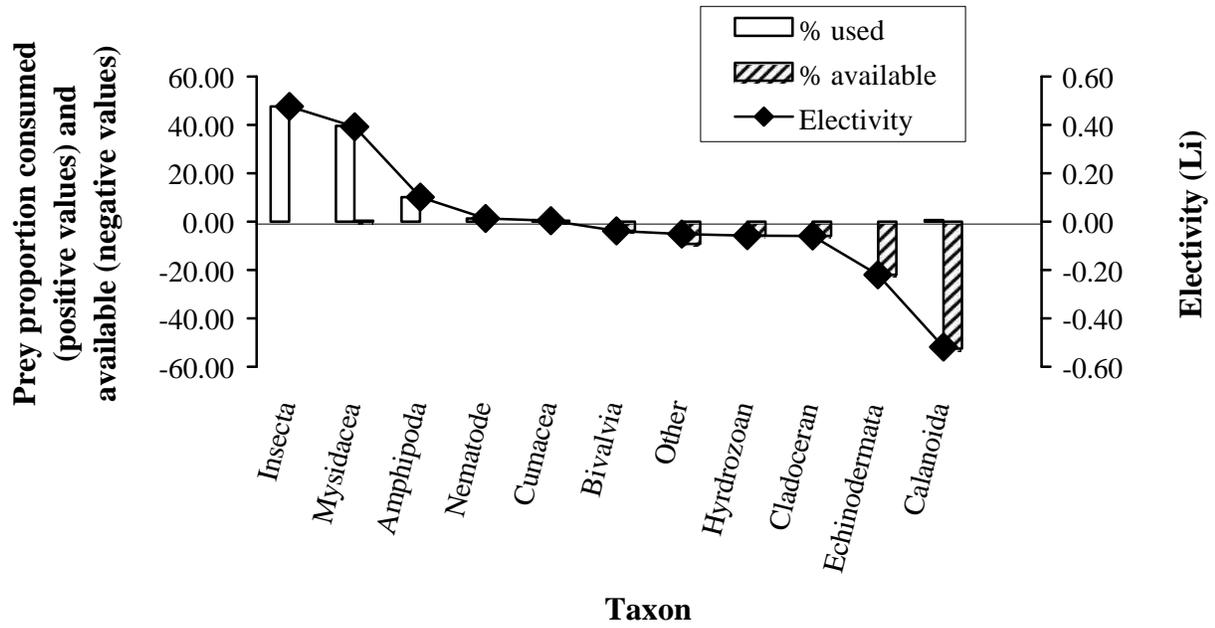
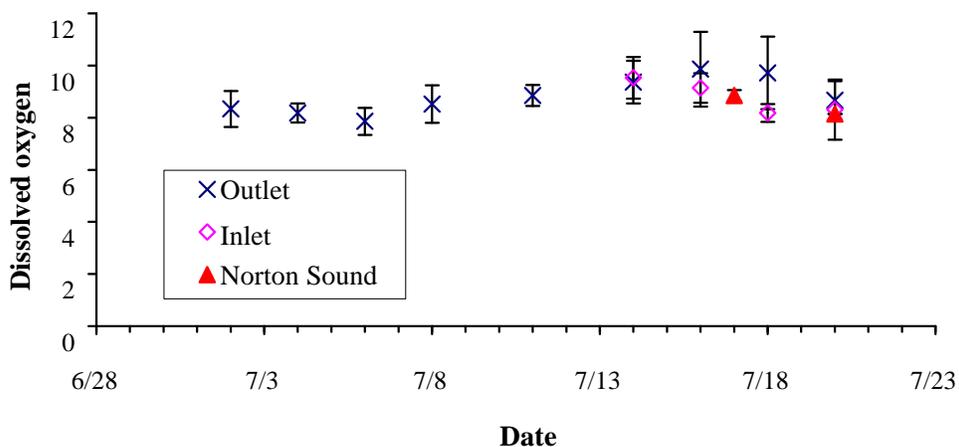
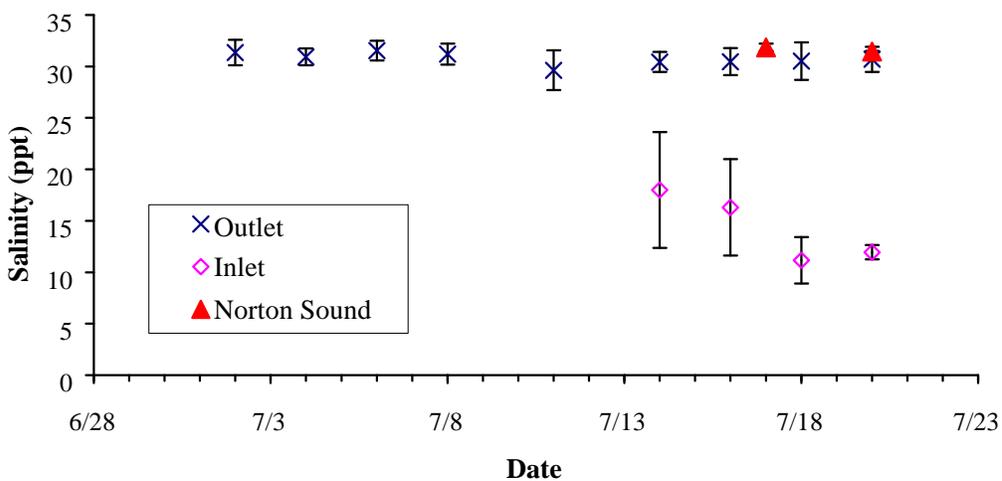
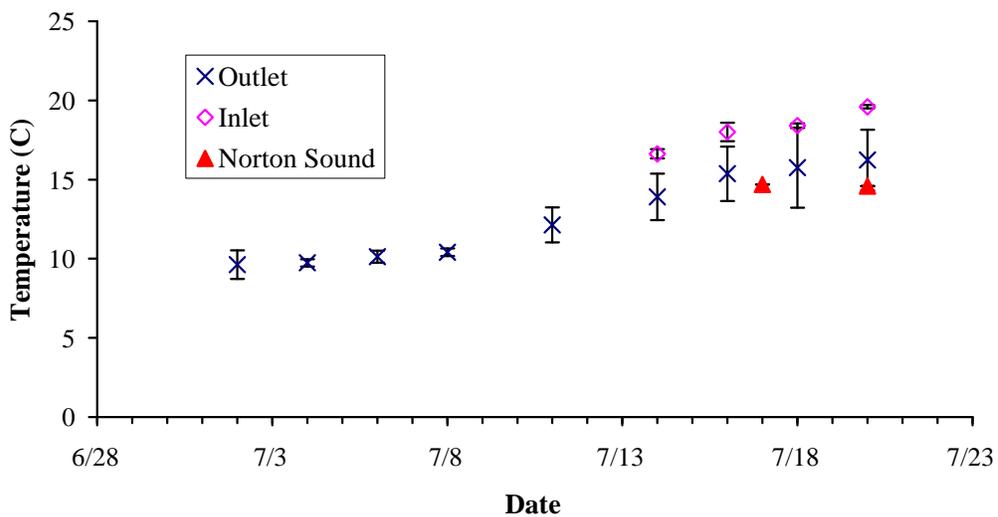


Figure 14. Prey consumed vs. prey availability, with resulting electivity computations, for chum salmon from Safety Sound in 2002.



Figures 15A-15C. Average temperature, salinity, and dissolved oxygen by date at inlet sites (diamonds) and outlet sites (x's) in Safety Sound, and in nearshore Norton Sound (triangles). Bars represent one standard deviation.

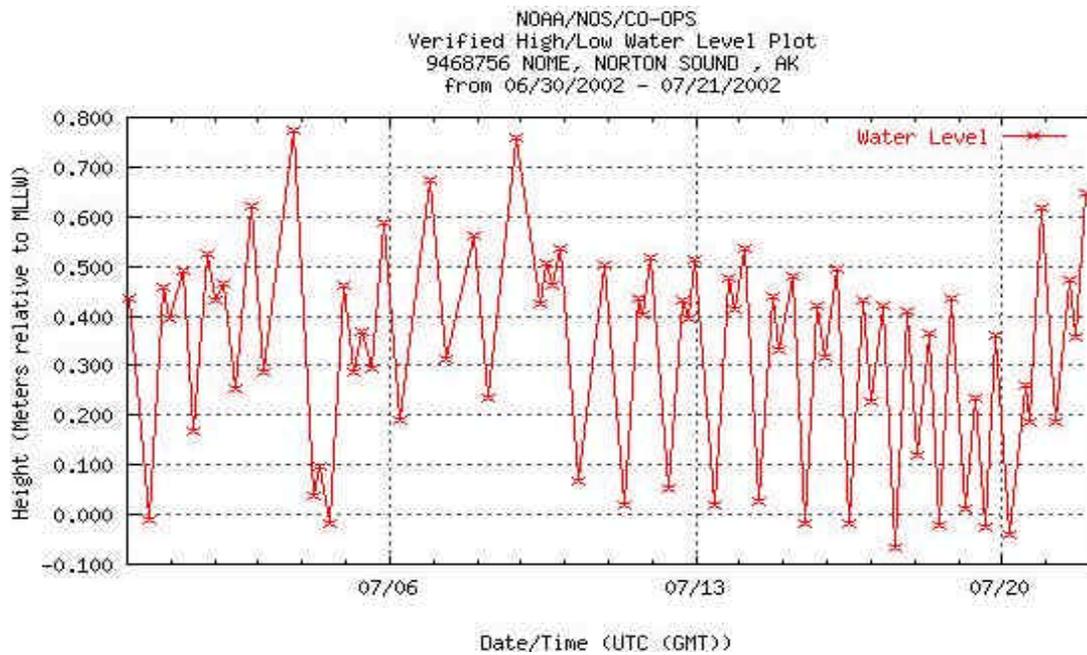


Figure 16. Observed tide levels for Norton Sound at Nome, Alaska, during the study period from June 30 to July 21, 2002 (<http://www.tidesandcurrents.noaa.gov/>).

Appendix A. Fish catch record from Safety Sound in July of 2002. Species codes are listed in Table 5.

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
1	F6	S	30-Jun	30-Jun	13:45	23:55	0:00:00	10.17	d			ARFL	11			
1	F6	S	30-Jun	30-Jun	13:45	23:55	0:00:00	10.17	d			HERR	1			
1	F6	S	30-Jun	30-Jun	13:45	23:55	0:00:00	10.17	d			BRCS	4			
1	F6	S	30-Jun	30-Jun	13:45	23:55	0:00:00	10.17	d			LSCS	5			
1	F6	S	30-Jun	30-Jun	13:45	23:55	0:00:00	10.17	d			THSB	3			
2	F6	N	30-Jun	30-Jun	13:45	23:55	0:00:00	10.17	d			LSCS	3			
2	F6	N	30-Jun	30-Jun	13:45	23:55	0:00:00	10.17	d			BRCS	5			
3	F1	W	30-Jun	30-Jun	12:00	23:34	0:00:00	11.57	d			RBSM	1			gobs of eelgrass in net
4	F1	E	30-Jun	30-Jun	12:00	23:20	0:00:00	11.33	d			APNK	26			
4	F1	E	30-Jun	30-Jun	12:00	23:20	0:00:00	11.33	d			RBSM	29			
4	F1	E	30-Jun	30-Jun	12:00	23:20	0:00:00	11.33	d			DLVD	1	148		
4	F1	E	30-Jun	30-Jun	12:00	23:20	0:00:00	11.33	d			ARFL	1			
4	F1	E	30-Jun	30-Jun	12:00	23:20	0:00:00	11.33	d			SFCD	1			
5	F6	S	30-Jun	1-Jul	23:55	14:04	0:00:00	14.15	n			LSCS	8			
5	F6	S	30-Jun	1-Jul	23:55	14:04	0:00:00	14.15	n			APNK	1			
5	F6	S	30-Jun	1-Jul	23:55	14:04	0:00:00	14.15	n			THSB	48			
5	F6	S	30-Jun	1-Jul	23:55	14:04	0:00:00	14.15	n			FHSC	2			
5	F6	S	30-Jun	1-Jul	23:55	14:04	0:00:00	14.15	n			ARFL	7			
5	F6	S	30-Jun	1-Jul	23:55	14:04	0:00:00	14.15	n			BRCS	1			
5	F6	S	30-Jun	1-Jul	23:55	14:04	0:00:00	14.15	n			DLVD	2			
5	F6	S	30-Jun	1-Jul	23:55	14:04	0:00:00	14.15	n			SCSP	2			
6	F6	N	1-Jul	1-Jul	0:03	14:20	0:00:00	14.28	d			BRCS	2			
6	F6	N	1-Jul	1-Jul	0:03	14:20	0:00:00	14.28	d			LSCS	1			
6	F6	N	1-Jul	1-Jul	0:03	14:20	0:00:00	14.28	d			THSB	1			
7	F1	W	30-Jun	1-Jul	23:34	13:05	0:00:00	13.52	n			ARFL	5			
7	F1	W	30-Jun	1-Jul	23:34	13:05	0:00:00	13.52	n			LSCS	2			
7	F1	W	30-Jun	1-Jul	23:34	13:05	0:00:00	13.52	n			THSB	4			
7	F1	W	30-Jun	1-Jul	23:34	13:05	0:00:00	13.52	n			SFCD	2			
8	F1	E	30-Jun	1-Jul	23:20	12:55	0:00:00	13.58	n			APNK	42			
8	F1	E	30-Jun	1-Jul	23:20	12:55	0:00:00	13.58	n			LSCS	1			
8	F1	E	30-Jun	1-Jul	23:20	12:55	0:00:00	13.58	n			ACHU	1			
8	F1	E	30-Jun	1-Jul	23:20	12:55	0:00:00	13.58	n			ARFL	3			
9	F6	N	1-Jul	1-Jul	14:20	22:43	0:00:00	8.38	d			ARFL	1			
9	F6	N	1-Jul	1-Jul	14:20	22:43	0:00:00	8.38	d			LSCS	1			
10	F6	S	1-Jul	1-Jul	14:04	22:33	0:00:00	8.48	d			SCSP	1			
10	F6	S	1-Jul	1-Jul	14:04	22:33	0:00:00	8.48	d			ARFL	1			
10	F6	S	1-Jul	1-Jul	14:04	22:33	0:00:00	8.48	d			APNK	1			
10	F6	S	1-Jul	1-Jul	14:04	22:33	0:00:00	8.48	d			LSCS	1	256		
10	F6	S	1-Jul	1-Jul	14:04	22:33	0:00:00	8.48	d			LSCS	1	235		

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
10	F6	S	1-Jul	1-Jul	14:04	22:33	0:00:00	8.48	d			LSCS	9			
10	F6	S	1-Jul	1-Jul	14:04	22:33	0:00:00	8.48	d			THSB	1			
10	F6	S	1-Jul	1-Jul	14:04	22:33	0:00:00	8.48	d			STFL	1			
11	F1	W	1-Jul	1-Jul	13:05	22:06	0:00:00	9.02	d			NONE	0			lots of eelgrass in net mouth
12	F1	E	1-Jul	1-Jul	12:55	21:53	0:00:00	8.97	d			APNK	2			
12	F1	E	1-Jul	1-Jul	12:55	21:53	0:00:00	8.97	d			RBSM	2			
13	F1	W	1-Jul	2-Jul	22:06	10:38	0:00:00	12.53	n			LSCS	16			
13	F1	W	1-Jul	2-Jul	22:06	10:38	0:00:00	12.53	n			ARFL	1			
13	F1	W	1-Jul	2-Jul	22:06	10:38	0:00:00	12.53	n			APNK	1			
13	F1	W	1-Jul	2-Jul	22:06	10:38	0:00:00	12.53	n			SCSP	1			
13	F1	W	1-Jul	2-Jul	22:06	10:38	0:00:00	12.53	n			THSB	2			
14	F1	E	1-Jul	2-Jul	21:53	10:26	0:00:00	12.55	n			APNK	27			
14	F1	E	1-Jul	2-Jul	21:53	10:26	0:00:00	12.55	n			BRCS	4			
14	F1	E	1-Jul	2-Jul	21:53	10:26	0:00:00	12.55	n			ARFL	3			
15	F6	S	1-Jul	2-Jul	22:33	9:40	0:00:00	11.12	n			BRCS	10			
15	F6	S	1-Jul	2-Jul	22:33	9:40	0:00:00	11.12	n			APNK	18			
15	F6	S	1-Jul	2-Jul	22:33	9:40	0:00:00	11.12	n			LSCS	11			
15	F6	S	1-Jul	2-Jul	22:33	9:40	0:00:00	11.12	n			THSB	20			
15	F6	S	1-Jul	2-Jul	22:33	9:40	0:00:00	11.12	n			ACHU	1			
15	F6	S	1-Jul	2-Jul	22:33	9:40	0:00:00	11.12	n			SCSP	3			
16	F6	N	1-Jul	2-Jul	22:43	9:55	0:00:00	11.20	n			SALM	6			
16	F6	N	1-Jul	2-Jul	22:43	9:55	0:00:00	11.20	n			FHSC	1			
16	F6	N	1-Jul	2-Jul	22:43	9:55	0:00:00	11.20	n			RBSM	1			
16	F6	N	1-Jul	2-Jul	22:43	9:55	0:00:00	11.20	n		1	SALM	1	74		
17	F6	S	2-Jul	2-Jul	9:55	20:21	0:00:00	10.43	d			LSCS	2			
17	F6	S	2-Jul	2-Jul	9:55	20:21	0:00:00	10.43	d			ARFL	1			
17	F6	S	2-Jul	2-Jul	9:55	20:21	0:00:00	10.43	d			THSB	5			
17	F6	S	2-Jul	2-Jul	9:55	20:21	0:00:00	10.43	d			SCSP	1			
18	F6	N	2-Jul	2-Jul	9:40	20:31	0:00:00	10.85	d			ARFL	1			
18	F6	N	2-Jul	2-Jul	9:40	20:31	0:00:00	10.85	d			APNK	1			
18	F6	N	2-Jul	2-Jul	9:40	20:31	0:00:00	10.85	d			STFL	1			
18	F6	N	2-Jul	2-Jul	9:40	20:31	0:00:00	10.85	d			LSCS	1			
18	F6	N	2-Jul	2-Jul	9:40	20:31	0:00:00	10.85	d			BRCS	1			
18	F6	N	2-Jul	2-Jul	9:40	20:31	0:00:00	10.85	d		1	CHUM	1	100		
19	F2	W	2-Jul	2-Jul	10:38	20:01	0:00:00	9.38	d			LSCS	1			
19	F2	W	2-Jul	2-Jul	10:38	20:01	0:00:00	9.38	d			RBSM	2			
19	F2	W	2-Jul	2-Jul	10:38	20:01	0:00:00	9.38	d			ARFL	6			
19	F2	W	2-Jul	2-Jul	10:38	20:01	0:00:00	9.38	d			THSB	4			
19	F2	W	2-Jul	2-Jul	10:38	20:01	0:00:00	9.38	d			FHSC	1			
19	F2	W	2-Jul	2-Jul	10:38	20:01	0:00:00	9.38	d		1	COHO	1	129		
20	F2	E	2-Jul	2-Jul	10:26	19:50	0:00:00	9.40	d			SALM	6			

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
20	F2	E	2-Jul	2-Jul	10:26	19:50	0:00:00	9.40	d			LSCS	1			
20	F2	E	2-Jul	2-Jul	10:26	19:50	0:00:00	9.40	d		1	COHO	1	112		
21	F2	W	2-Jul	3-Jul	20:01	16:42	0:00:00	20.68	n			APNK	17			
21	F2	W	2-Jul	3-Jul	20:01	16:42	0:00:00	20.68	n			LSCS	11			
21	F2	W	2-Jul	3-Jul	20:01	16:42	0:00:00	20.68	n			SFCD	251			
21	F2	W	2-Jul	3-Jul	20:01	16:42	0:00:00	20.68	n			ARFL	22			
21	F2	W	2-Jul	3-Jul	20:01	16:42	0:00:00	20.68	n			STFL	6			
21	F2	W	2-Jul	3-Jul	20:01	16:42	0:00:00	20.68	n			BRCS	2			
21	F2	W	2-Jul	3-Jul	20:01	16:42	0:00:00	20.68	n			HERR	6			
21	F2	W	2-Jul	3-Jul	20:01	16:42	0:00:00	20.68	n			FHSC	7			
21	F2	W	2-Jul	3-Jul	20:01	16:42	0:00:00	20.68	n			THSB	2			
21	F2	W	2-Jul	3-Jul	20:01	16:42	0:00:00	20.68	n			SCSP	1			
21	F2	W	2-Jul	3-Jul	20:01	16:42	0:00:00	20.68	n	1		RBSM	1			
22	F2	E	2-Jul	3-Jul	19:50	16:30	0:00:00	20.67	n			APNK	36			
22	F2	E	2-Jul	3-Jul	19:50	16:30	0:00:00	20.67	n			LSCS	9			
22	F2	E	2-Jul	3-Jul	19:50	16:30	0:00:00	20.67	n			BRCS	5			
22	F2	E	2-Jul	3-Jul	19:50	16:30	0:00:00	20.67	n			DLVD	3			
22	F2	E	2-Jul	3-Jul	19:50	16:30	0:00:00	20.67	n			SFCD	145			
22	F2	E	2-Jul	3-Jul	19:50	16:30	0:00:00	20.67	n			HERR	5			
22	F2	E	2-Jul	3-Jul	19:50	16:30	0:00:00	20.67	n			SCSP	1			
22	F2	E	2-Jul	3-Jul	19:50	16:30	0:00:00	20.67	n			STFL	4			
22	F2	E	2-Jul	3-Jul	19:50	16:30	0:00:00	20.67	n			ARFL	29			
22	F2	E	2-Jul	3-Jul	19:50	16:30	0:00:00	20.67	n			RBSM	2			
22	F2	E	2-Jul	3-Jul	19:50	16:30	0:00:00	20.67	n			FHSC	4			
22	F2	E	2-Jul	3-Jul	19:50	16:30	0:00:00	20.67	n			THSB	2			
23	F6	S	2-Jul	3-Jul	20:21	15:32	0:00:00	19.18	n			APNK	22			gobs of eelgrass in net
23	F6	S	2-Jul	3-Jul	20:21	15:32	0:00:00	19.18	n			LSCS	10			
23	F6	S	2-Jul	3-Jul	20:21	15:32	0:00:00	19.18	n			THSB	3			
23	F6	S	2-Jul	3-Jul	20:21	15:32	0:00:00	19.18	n			SFCD	3			
23	F6	S	2-Jul	3-Jul	20:21	15:32	0:00:00	19.18	n			DLVD	1			
23	F6	S	2-Jul	3-Jul	20:21	15:32	0:00:00	19.18	n			HERR	1			
23	F6	S	2-Jul	3-Jul	20:21	15:32	0:00:00	19.18	n			ACHU	1			
23	F6	S	2-Jul	3-Jul	20:21	15:32	0:00:00	19.18	n			BRCS	2			
23	F6	S	2-Jul	3-Jul	20:21	15:32	0:00:00	19.18	n			STFL	1			
23	F6	S	2-Jul	3-Jul	20:21	15:32	0:00:00	19.18	n			FHSC	4			
23	F6	S	2-Jul	3-Jul	20:21	15:32	0:00:00	19.18	n			ARFL	3			
23	F6	S	2-Jul	3-Jul	20:21	15:32	0:00:00	19.18	n			SCSP	1			
24	F6	N	2-Jul	3-Jul	20:31	15:15	0:00:00	18.73	n			LSCS	5			
24	F6	N	2-Jul	3-Jul	20:31	15:15	0:00:00	18.73	n			APNK	33			
24	F6	N	2-Jul	3-Jul	20:31	15:15	0:00:00	18.73	n			ACHU	2			
24	F6	N	2-Jul	3-Jul	20:31	15:15	0:00:00	18.73	n			STFL	5			

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
24	F6	N	2-Jul	3-Jul	20:31	15:15	0:00:00	18.73	n			SFCD	19			
24	F6	N	2-Jul	3-Jul	20:31	15:15	0:00:00	18.73	n			HERR	4			
24	F6	N	2-Jul	3-Jul	20:31	15:15	0:00:00	18.73	n			SCSP	4			
24	F6	N	2-Jul	3-Jul	20:31	15:15	0:00:00	18.73	n			DLVD	3			
24	F6	N	2-Jul	3-Jul	20:31	15:15	0:00:00	18.73	n			ARFL	1			
24	F6	N	2-Jul	3-Jul	20:31	15:15	0:00:00	18.73	n			BRCS	1			
24	F6	N	2-Jul	3-Jul	20:31	15:15	0:00:00	18.73	n			THSB	12			
24	F6	N	2-Jul	3-Jul	20:31	15:15	0:00:00	18.73	n			FHSC	3			
24	F6	N	2-Jul	3-Jul	20:31	15:15	0:00:00	18.73	n	1		APNK	1			
24	F6	N	2-Jul	3-Jul	20:31	15:15	0:00:00	18.73	n	1		LSCS	1			
25	F6	N	3-Jul	3-Jul	15:15	22:30	0:00:00	7.25	d			APNK	2			extremely low tide, major eelgrass, wing knocked off and partially blocking trap
25	F6	N	3-Jul	3-Jul	15:15	22:30	0:00:00	7.25	d			STFL	1			
25	F6	N	3-Jul	3-Jul	15:15	22:30	0:00:00	7.25	d			FHSC	2			
25	F6	N	3-Jul	3-Jul	15:15	22:30	0:00:00	7.25	d			ARFL	1			
26	F6	S	3-Jul	3-Jul	15:32	22:35	0:00:00	7.05	d			LSCS	1			
26	F6	S	3-Jul	3-Jul	15:32	22:35	0:00:00	7.05	d			FHSC	1			
26	F6	S	3-Jul	3-Jul	15:32	22:35	0:00:00	7.05	d			RBSM	1			
27	F2	E	3-Jul	3-Jul	16:30	23:07	0:00:00	6.62	d			APNK	10			
27	F2	E	3-Jul	3-Jul	16:30	23:07	0:00:00	6.62	d			LSCS	9			
27	F2	E	3-Jul	3-Jul	16:30	23:07	0:00:00	6.62	d			ARFL	5			
27	F2	E	3-Jul	3-Jul	16:30	23:07	0:00:00	6.62	d			BRCS	1			
27	F2	E	3-Jul	3-Jul	16:30	23:07	0:00:00	6.62	d			DLVD	1			
27	F2	E	3-Jul	3-Jul	16:30	23:07	0:00:00	6.62	d			RBSM	1			
27	F2	E	3-Jul	3-Jul	16:30	23:07	0:00:00	6.62	d			SFCD	2			
27	F2	E	3-Jul	3-Jul	16:30	23:07	0:00:00	6.62	d			STFL	1			
28	F2	W	3-Jul	3-Jul	16:42	23:15	0:00:00	6.55	d			FHSC	2			
28	F2	W	3-Jul	3-Jul	16:42	23:15	0:00:00	6.55	d			ARFL	7			
28	F2	W	3-Jul	3-Jul	16:42	23:15	0:00:00	6.55	d			SFCD	1			
28	F2	W	3-Jul	3-Jul	16:42	23:15	0:00:00	6.55	d	1		HERR	1			
28	F2	W	3-Jul	3-Jul	16:42	23:15	0:00:00	6.55	d	1		DLVD	1			
29	F2	E	3-Jul	4-Jul	23:07	11:40	0:00:00	12.55	n			RBSM	15			
29	F2	E	3-Jul	4-Jul	23:07	11:40	0:00:00	12.55	n			STFL	4			
29	F2	E	3-Jul	4-Jul	23:07	11:40	0:00:00	12.55	n			APNK	1			
29	F2	E	3-Jul	4-Jul	23:07	11:40	0:00:00	12.55	n			LSCS	9			
29	F2	E	3-Jul	4-Jul	23:07	11:40	0:00:00	12.55	n			ARFL	12			
29	F2	E	3-Jul	4-Jul	23:07	11:40	0:00:00	12.55	n			SFCD	13			

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
29	F2	E	3-Jul	4-Jul	23:07	11:40	0:00:00	12.55	n			BRCS	8			SIZE RANGE FROM 100 - 160 MM
29	F2	E	3-Jul	4-Jul	23:07	11:40	0:00:00	12.55	n			DLVD	3			
29	F2	E	3-Jul	4-Jul	23:07	11:40	0:00:00	12.55	n	6		RBSM	6			
30	F2	W	3-Jul	4-Jul	23:15	11:45	0:00:00	12.50	n			LSCS	14			BOTTOM DO RANGED 0.28 - 3.42 FOR 1 MIN; SURFACE RANGED 4.5 - 7.9
30	F2	W	3-Jul	4-Jul	23:15	11:45	0:00:00	12.50	n			BRCS	1			
30	F2	W	3-Jul	4-Jul	23:15	11:45	0:00:00	12.50	n			ARFL	27			
30	F2	W	3-Jul	4-Jul	23:15	11:45	0:00:00	12.50	n			SFCD	3			
30	F2	W	3-Jul	4-Jul	23:15	11:45	0:00:00	12.50	n			RBSM	2			
30	F2	W	3-Jul	4-Jul	23:15	11:45	0:00:00	12.50	n			FHSC	1			
31	F6	N	4-Jul	4-Jul	0:30	10:59	0:00:00	10.48	d			ARFL	5	67	2.69	"LATE" START TIME BECAUSE NET WAS RE-ADJUSTED LAST NIGHT
31	F6	N	4-Jul	4-Jul	0:30	10:59	0:00:00	10.48	d			APNK	1	67	2.69	
31	F6	N	4-Jul	4-Jul	0:30	10:59	0:00:00	10.48	d		1	CHUM	1	67	2.69	
32	F6	S	4-Jul	4-Jul	0:30	10:55	0:00:00	10.42	d			FHSC	1			
32	F6	S	4-Jul	4-Jul	0:30	10:55	0:00:00	10.42	d			LSCS	6			
32	F6	S	4-Jul	4-Jul	0:30	10:55	0:00:00	10.42	d			ARFL	5			
32	F6	S	4-Jul	4-Jul	0:30	10:55	0:00:00	10.42	d			THSB	1			
33	F6	S	4-Jul	4-Jul	10:55	19:04	0:00:00	8.15	d			APNK	5			
33	F6	S	4-Jul	4-Jul	10:55	19:04	0:00:00	8.15	d			LSCS	3			
33	F6	S	4-Jul	4-Jul	10:55	19:04	0:00:00	8.15	d			ARFL	6			
33	F6	S	4-Jul	4-Jul	10:55	19:04	0:00:00	8.15	d			BRCS	4			
33	F6	S	4-Jul	4-Jul	10:55	19:04	0:00:00	8.15	d			THSB	3			
33	F6	S	4-Jul	4-Jul	10:55	19:04	0:00:00	8.15	d		1	CHUM	1	67	2.8	
34	F6	N	4-Jul	4-Jul	10:59	19:24	0:00:00	8.42	d			LSCS	1			
34	F6	N	4-Jul	4-Jul	10:59	19:24	0:00:00	8.42	d			BRCS	1			
34	F6	N	4-Jul	4-Jul	10:59	19:24	0:00:00	8.42	d			ARFL	1			
35	F3	N	4-Jul	4-Jul	14:15	20:43	0:00:00	6.47	d			SFCD	2			
35	F3	N	4-Jul	4-Jul	14:15	20:43	0:00:00	6.47	d			RBSM	19			
35	F3	N	4-Jul	4-Jul	14:15	20:43	0:00:00	6.47	d			ARFL	6			
35	F3	N	4-Jul	4-Jul	14:15	20:43	0:00:00	6.47	d			DLVD	1			
35	F3	N	4-Jul	4-Jul	14:15	20:43	0:00:00	6.47	d	1		SFCD	1			
36	F3	S	4-Jul	4-Jul	14:15	20:50	0:00:00	6.58	d			BRCS	266			BRCS RANGED 80 - 150MM

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
36	F3	S	4-Jul	4-Jul	14:15	20:50	0:00:00	6.58	d			RBSM	128			
36	F3	S	4-Jul	4-Jul	14:15	20:50	0:00:00	6.58	d			ARFL	1			
36	F3	S	4-Jul	4-Jul	14:15	20:50	0:00:00	6.58	d			LSCS	8			
37	F3	S	4-Jul	5-Jul	20:50	11:08	0:00:00	14.30	n			BRCS	5			
37	F3	S	4-Jul	5-Jul	20:50	11:08	0:00:00	14.30	n			SFCD	45			
37	F3	S	4-Jul	5-Jul	20:50	11:08	0:00:00	14.30	n			RBSM	107			
37	F3	S	4-Jul	5-Jul	20:50	11:08	0:00:00	14.30	n			STFL	3			
37	F3	S	4-Jul	5-Jul	20:50	11:08	0:00:00	14.30	n			ARFL	8			
37	F3	S	4-Jul	5-Jul	20:50	11:08	0:00:00	14.30	n			THSB	1			
37	F3	S	4-Jul	5-Jul	20:50	11:08	0:00:00	14.30	n			FHSC	1			
38	F3	N	4-Jul	5-Jul	20:43	11:59	0:00:00	15.27	n			SFCD	56			
38	F3	N	4-Jul	5-Jul	20:43	11:59	0:00:00	15.27	n			LSCS	5			
38	F3	N	4-Jul	5-Jul	20:43	11:59	0:00:00	15.27	n			ARFL	25			
38	F3	N	4-Jul	5-Jul	20:43	11:59	0:00:00	15.27	n			RBSM	3			
38	F3	N	4-Jul	5-Jul	20:43	11:59	0:00:00	15.27	n			DLVD	2			
38	F3	N	4-Jul	5-Jul	20:43	11:59	0:00:00	15.27	n			FHSC	1			
39	F6	N	4-Jul	5-Jul	19:24	10:30	0:00:00	15.10	n			APNK	7			
39	F6	N	4-Jul	5-Jul	19:24	10:30	0:00:00	15.10	n			LSCS	2			
39	F6	N	4-Jul	5-Jul	19:24	10:30	0:00:00	15.10	n			RBSM	1			
39	F6	N	4-Jul	5-Jul	19:24	10:30	0:00:00	15.10	n			BRCS	1			
39	F6	N	4-Jul	5-Jul	19:24	10:30	0:00:00	15.10	n			ARFL	2			
39	F6	N	4-Jul	5-Jul	19:24	10:30	0:00:00	15.10	n			THSB	3			
39	F6	N	4-Jul	5-Jul	19:24	10:30	0:00:00	15.10	n			FHSC	1			
40	F6	S	4-Jul	5-Jul	19:04	10:37	0:00:00	15.55	n			APNK	11			
40	F6	S	4-Jul	5-Jul	19:04	10:37	0:00:00	15.55	n			ACHU	3			
40	F6	S	4-Jul	5-Jul	19:04	10:37	0:00:00	15.55	n			LSCS	7			
40	F6	S	4-Jul	5-Jul	19:04	10:37	0:00:00	15.55	n			DLVD	1			
40	F6	S	4-Jul	5-Jul	19:04	10:37	0:00:00	15.55	n			STFL	1			
40	F6	S	4-Jul	5-Jul	19:04	10:37	0:00:00	15.55	n			THSB	11			
40	F6	S	4-Jul	5-Jul	19:04	10:37	0:00:00	15.55	n			BRCS	4			
40	F6	S	4-Jul	5-Jul	19:04	10:37	0:00:00	15.55	n			FHSC	5			
40	F6	S	4-Jul	5-Jul	19:04	10:37	0:00:00	15.55	n			ARFL	14			
41	F3	N	5-Jul	5-Jul	11:59	22:12	0:00:00	10.22	d			ARFL	7			
41	F3	N	5-Jul	5-Jul	11:59	22:12	0:00:00	10.22	d			STFL	1			
41	F3	N	5-Jul	5-Jul	11:59	22:12	0:00:00	10.22	d			SFCD	3			
41	F3	N	5-Jul	5-Jul	11:59	22:12	0:00:00	10.22	d			FHSC	1			
41	F3	N	5-Jul	5-Jul	11:59	22:12	0:00:00	10.22	d			THSB	1			
42	F3	S	5-Jul	5-Jul	11:08	22:10	0:00:00	11.03	d			RBSM	7			
42	F3	S	5-Jul	5-Jul	11:08	22:10	0:00:00	11.03	d			SFCD	1			
42	F3	S	5-Jul	5-Jul	11:08	22:10	0:00:00	11.03	d			ARFL	8			
42	F3	S	5-Jul	5-Jul	11:08	22:10	0:00:00	11.03	d			BRCS	1			

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
42	F3	S	5-Jul	5-Jul	11:08	22:10	0:00:00	11.03	d			DLVD	1			
42	F3	S	5-Jul	5-Jul	11:08	22:10	0:00:00	11.03	d			CHUM	1	66		
42	F3	S	5-Jul	5-Jul	11:08	22:10	0:00:00	11.03	d			CHUM	1	64		
42	F3	S	5-Jul	5-Jul	11:08	22:10	0:00:00	11.03	d		1	CHUM	1	74	3.36	
42	F3	S	5-Jul	5-Jul	11:08	22:10	0:00:00	11.03	d		1	CHUM	1	77	3.68	
42	F3	S	5-Jul	5-Jul	11:08	22:10	0:00:00	11.03	d		1	CHUM	1	76	3.95	
42	F3	S	5-Jul	5-Jul	11:08	22:10	0:00:00	11.03	d		1	CHUM	1	75	3.65	
42	F3	S	5-Jul	5-Jul	11:08	22:10	0:00:00	11.03	d		1	CHUM	1	76	3.8	
42	F3	S	5-Jul	5-Jul	11:08	22:10	0:00:00	11.03	d		1	CHUM	1	73	3.51	ENCIRCLED SK NEXT TO SP, LENGTH AND WT
42	F3	S	5-Jul	5-Jul	11:08	22:10	0:00:00	11.03	d			CHUM	1	68		
43	F6	S	5-Jul	5-Jul	10:37	21:15	0:00:00	10.63	d			ARFL	23			
43	F6	S	5-Jul	5-Jul	10:37	21:15	0:00:00	10.63	d			LSCS	1			
43	F6	S	5-Jul	5-Jul	10:37	21:15	0:00:00	10.63	d			BRCS	1			
43	F6	S	5-Jul	5-Jul	10:37	21:15	0:00:00	10.63	d			THSB	1			
44	F6	N	5-Jul	5-Jul	10:30	21:23	0:00:00	10.88	d			STFL	1			THROAT JAMMED WITH EELGRASS, ANOTHER EXTREMELY LOW TIDE
44	F6	N	5-Jul	5-Jul	10:30	21:23	0:00:00	10.88	d			LSCS	3			
44	F6	N	5-Jul	5-Jul	10:30	21:23	0:00:00	10.88	d			BRCS	5			
44	F6	N	5-Jul	5-Jul	10:30	21:23	0:00:00	10.88	d			THSB	3			
44	F6	N	5-Jul	5-Jul	10:30	21:23	0:00:00	10.88	d			ARFL	1			
45	F6	S	5-Jul	6-Jul	21:15	10:16	0:00:00	13.02	n			APNK	5			
45	F6	S	5-Jul	6-Jul	21:15	10:16	0:00:00	13.02	n			STFL	2			
45	F6	S	5-Jul	6-Jul	21:15	10:16	0:00:00	13.02	n			ACHU	1			
45	F6	S	5-Jul	6-Jul	21:15	10:16	0:00:00	13.02	n			RBSM	9			
45	F6	S	5-Jul	6-Jul	21:15	10:16	0:00:00	13.02	n			FHSC	2			
45	F6	S	5-Jul	6-Jul	21:15	10:16	0:00:00	13.02	n			LSCS	4			
45	F6	S	5-Jul	6-Jul	21:15	10:16	0:00:00	13.02	n			SFCD	4			
45	F6	S	5-Jul	6-Jul	21:15	10:16	0:00:00	13.02	n			ARFL	11			
45	F6	S	5-Jul	6-Jul	21:15	10:16	0:00:00	13.02	n			DLVD	1			
45	F6	S	5-Jul	6-Jul	21:15	10:16	0:00:00	13.02	n			THSB	117			
45	F6	S	5-Jul	6-Jul	21:15	10:16	0:00:00	13.02	n	1		RBSM	1			
46	F6	N	5-Jul	6-Jul	21:23	10:29	0:00:00	13.10	n			APNK	5			
46	F6	N	5-Jul	6-Jul	21:23	10:29	0:00:00	13.10	n			FHSC	1			
46	F6	N	5-Jul	6-Jul	21:23	10:29	0:00:00	13.10	n			ARFL	8			
46	F6	N	5-Jul	6-Jul	21:23	10:29	0:00:00	13.10	n			LSCS	1			
46	F6	N	5-Jul	6-Jul	21:23	10:29	0:00:00	13.10	n			THSB	4			

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
47	F3	N	5-Jul	6-Jul	22:12	11:33	0:00:00	13.35	n			RBSM	4			
47	F3	N	5-Jul	6-Jul	22:12	11:33	0:00:00	13.35	n			ARFL	17			
47	F3	N	5-Jul	6-Jul	22:12	11:33	0:00:00	13.35	n			SFCD	5			
47	F3	N	5-Jul	6-Jul	22:12	11:33	0:00:00	13.35	n			THSB	1			
48	F3	S	5-Jul	6-Jul	22:10	11:42	0:00:00	13.53	n			RBSM	2			
48	F3	S	5-Jul	6-Jul	22:10	11:42	0:00:00	13.53	n			ARFL	11			
48	F3	S	5-Jul	6-Jul	22:10	11:42	0:00:00	13.53	n			SFCD	16			
48	F3	S	5-Jul	6-Jul	22:10	11:42	0:00:00	13.53	n			LSCS	1			
48	F3	S	5-Jul	6-Jul	22:10	11:42	0:00:00	13.53	n			STFL	1			
48	F3	S	5-Jul	6-Jul	22:10	11:42	0:00:00	13.53	n			CHUM	1	75		
48	F3	S	5-Jul	6-Jul	22:10	11:42	0:00:00	13.53	n		1	CHUM	1	72	3.24	
48	F3	S	5-Jul	6-Jul	22:10	11:42	0:00:00	13.53	n		1	CHUM	1	70	2.94	
48	F3	S	5-Jul	6-Jul	22:10	11:42	0:00:00	13.53	n		1	CHUM	1	66	2.44	
48	F3	S	5-Jul	6-Jul	22:10	11:42	0:00:00	13.53	n		1	CHUM	1	72	3	
48	F3	S	5-Jul	6-Jul	22:10	11:42	0:00:00	13.53	n		1	CHUM	1	74	3.28	
48	F3	S	5-Jul	6-Jul	22:10	11:42	0:00:00	13.53	n		1	CHUM	1	68	2.89	
48	F3	S	5-Jul	6-Jul	22:10	11:42	0:00:00	13.53	n		1	CHUM	1	66	2.55	
48	F3	S	5-Jul	6-Jul	22:10	11:42	0:00:00	13.53	n		1	CHUM	1	69	2.94	
48	F3	S	5-Jul	6-Jul	22:10	11:42	0:00:00	13.53	n		1	CHUM	1	66	2.51	
48	F3	S	5-Jul	6-Jul	22:10	11:42	0:00:00	13.53	n		1	CHUM	1	60	1.8	
49	F6	S	6-Jul	6-Jul	10:16	20:46	0:00:00	10.50	d			ARFL	2			
49	F6	S	6-Jul	6-Jul	10:16	20:46	0:00:00	10.50	d			STFL	1			
49	F6	S	6-Jul	6-Jul	10:16	20:46	0:00:00	10.50	d			LSCS	2			
49	F6	S	6-Jul	6-Jul	10:16	20:46	0:00:00	10.50	d			FHSC	1			
49	F6	S	6-Jul	6-Jul	10:16	20:46	0:00:00	10.50	d			SCSP	1			
50	F6	N	6-Jul	6-Jul	10:29	20:40	0:00:00	10.18	d			LSCS	2			
50	F6	N	6-Jul	6-Jul	10:29	20:40	0:00:00	10.18	d			ARFL	2			
50	F6	N	6-Jul	6-Jul	10:29	20:40	0:00:00	10.18	d			FHSC	5			
51	F3	N	6-Jul	6-Jul	11:33	20:25	0:00:00	8.87	d			ARFL	5			
52	F3	S	6-Jul	6-Jul	11:42	20:21	0:00:00	8.65	d			ARFL	5			
52	F3	S	6-Jul	6-Jul	11:42	20:21	0:00:00	8.65	d			RBSM	1			
53	F3	N	6-Jul	7-Jul	20:25	10:02	0:00:00	13.62	n			ARFL	12			
53	F3	N	6-Jul	7-Jul	20:25	10:02	0:00:00	13.62	n			RBSM	6			
53	F3	N	6-Jul	7-Jul	20:25	10:02	0:00:00	13.62	n			SFCD	25			
53	F3	N	6-Jul	7-Jul	20:25	10:02	0:00:00	13.62	n			LSCS	2			
53	F3	N	6-Jul	7-Jul	20:25	10:02	0:00:00	13.62	n			FHSC	2			
54	F3	S	6-Jul	7-Jul	20:21	10:04	0:00:00	13.72	n			SFCD	18			
54	F3	S	6-Jul	7-Jul	20:21	10:04	0:00:00	13.72	n			ARFL	20			
54	F3	S	6-Jul	7-Jul	20:21	10:04	0:00:00	13.72	n			BRCS	5			
54	F3	S	6-Jul	7-Jul	20:21	10:04	0:00:00	13.72	n			RBSM	2			
54	F3	S	6-Jul	7-Jul	20:21	10:04	0:00:00	13.72	n			THSB	1			

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
54	F3	S	6-Jul	7-Jul	20:21	10:04	0:00:00	13.72	n		1	CHUM	1	69	2.79	
55	F6	S	6-Jul	7-Jul	20:46	10:42	0:00:00	13.93	n			ARFL	4			
55	F6	S	6-Jul	7-Jul	20:46	10:42	0:00:00	13.93	n			STFL	2			
55	F6	S	6-Jul	7-Jul	20:46	10:42	0:00:00	13.93	n			LSCS	5			
55	F6	S	6-Jul	7-Jul	20:46	10:42	0:00:00	13.93	n			BRCS	6			
55	F6	S	6-Jul	7-Jul	20:46	10:42	0:00:00	13.93	n			RBSM	9			
55	F6	S	6-Jul	7-Jul	20:46	10:42	0:00:00	13.93	n			FHSC	5			
55	F6	S	6-Jul	7-Jul	20:46	10:42	0:00:00	13.93	n			THSB	4			
55	F6	S	6-Jul	7-Jul	20:46	10:42	0:00:00	13.93	n			SFCD	4			
56	F6	N	6-Jul	7-Jul	20:40	10:52	0:00:00	14.20	n			ARFL	6			
56	F6	N	6-Jul	7-Jul	20:40	10:52	0:00:00	14.20	n			LSCS	3			
56	F6	N	6-Jul	7-Jul	20:40	10:52	0:00:00	14.20	n			FHSC	1			
56	F6	N	6-Jul	7-Jul	20:40	10:52	0:00:00	14.20	n			SCSP	1			
56	F6	N	6-Jul	7-Jul	20:40	10:52	0:00:00	14.20	n			THSB	2			
57	F6	N	7-Jul	7-Jul	10:52	21:25	0:00:00	10.55	d			ARFL	4			wind ranged from 15 - 20
57	F6	N	7-Jul	7-Jul	10:52	21:25	0:00:00	10.55	d			LSCS	1			
57	F6	N	7-Jul	7-Jul	10:52	21:25	0:00:00	10.55	d	1		CHUM	1	61	2.38	
58	F6	S	7-Jul	7-Jul	10:42	21:23	0:00:00	10.68	d			ARFL	26			
58	F6	S	7-Jul	7-Jul	10:42	21:23	0:00:00	10.68	d			LSCS	1			
58	F6	S	7-Jul	7-Jul	10:42	21:23	0:00:00	10.68	d			THSB	6			
58	F6	S	7-Jul	7-Jul	10:42	21:23	0:00:00	10.68	d			BRCS	6			
58	F6	S	7-Jul	7-Jul	10:42	21:23	0:00:00	10.68	d			FHSC	2			
59	F3	S	7-Jul	7-Jul	10:04	20:37	0:00:00	10.55	d			ARFL	3			
59	F3	S	7-Jul	7-Jul	10:04	20:37	0:00:00	10.55	d			THSB	1			
59	F3	S	7-Jul	7-Jul	10:04	20:37	0:00:00	10.55	d			BRCS	2			
59	F3	S	7-Jul	7-Jul	10:04	20:37	0:00:00	10.55	d			DLVD	1			
59	F3	S	7-Jul	7-Jul	10:04	20:37	0:00:00	10.55	d			RBSM	1			
59	F3	S	7-Jul	7-Jul	10:04	20:37	0:00:00	10.55	d		1	COHO	1	131	22.82	SPECIES QUESTION
59	F3	S	7-Jul	7-Jul	10:04	20:37	0:00:00	10.55	d		1	COHO	1	128	19.45	
59	F3	S	7-Jul	7-Jul	10:04	20:37	0:00:00	10.55	d		1	COHO	1	118	15.95	
59	F3	S	7-Jul	7-Jul	10:04	20:37	0:00:00	10.55	d		1	COHO	1	77	5.23	
60	F3	N	7-Jul	7-Jul	10:02	21:04	0:00:00	11.03	d			ARFL	10			
60	F3	N	7-Jul	7-Jul	10:02	21:04	0:00:00	11.03	d			SFCD	2			
60	F3	N	7-Jul	7-Jul	10:02	21:04	0:00:00	11.03	d			RBSM	1			
61	F6	N	7-Jul	8-Jul	21:25	9:58	0:00:00	12.55	n			LSCS	4			
61	F6	N	7-Jul	8-Jul	21:25	9:58	0:00:00	12.55	n			STFL	2			
61	F6	N	7-Jul	8-Jul	21:25	9:58	0:00:00	12.55	n			ARFL	32			
61	F6	N	7-Jul	8-Jul	21:25	9:58	0:00:00	12.55	n			BRCS	4			
61	F6	N	7-Jul	8-Jul	21:25	9:58	0:00:00	12.55	n			SFCD	16			
61	F6	N	7-Jul	8-Jul	21:25	9:58	0:00:00	12.55	n			THSB	25			

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
61	F6	N	7-Jul	8-Jul	21:25	9:58	0:00:00	12.55	n			FHSC	7			
61	F6	N	7-Jul	8-Jul	21:25	9:58	0:00:00	12.55	n			RBSM	2			
62	F6	S	7-Jul	8-Jul	21:23	10:12	0:00:00	12.82	n			FHSC	1			
63	F3	S	7-Jul	8-Jul	20:37	11:11	0:00:00	14.57	n			SFCD	30			
63	F3	S	7-Jul	8-Jul	20:37	11:11	0:00:00	14.57	n			ARFL	15			
63	F3	S	7-Jul	8-Jul	20:37	11:11	0:00:00	14.57	n			STFL	1			
63	F3	S	7-Jul	8-Jul	20:37	11:11	0:00:00	14.57	n			BRCS	9			
63	F3	S	7-Jul	8-Jul	20:37	11:11	0:00:00	14.57	n			RBSM	3			
64	F3	N	7-Jul	8-Jul	21:04	11:16	0:00:00	14.20	n			SFCD	14			
64	F3	N	7-Jul	8-Jul	21:04	11:16	0:00:00	14.20	n			RBSM	9			
64	F3	N	7-Jul	8-Jul	21:04	11:16	0:00:00	14.20	n			ARFL	24			
65	F6	N	8-Jul	8-Jul	9:58	21:14	0:00:00	11.27	d			APNK	9			wind range 20 - 25
65	F6	N	8-Jul	8-Jul	9:58	21:14	0:00:00	11.27	d			LSCS	2			
65	F6	N	8-Jul	8-Jul	9:58	21:14	0:00:00	11.27	d			SFCD	2			
65	F6	N	8-Jul	8-Jul	9:58	21:14	0:00:00	11.27	d			STFL	1			
65	F6	N	8-Jul	8-Jul	9:58	21:14	0:00:00	11.27	d			ARFL	3			
65	F6	N	8-Jul	8-Jul	9:58	21:14	0:00:00	11.27	d			SCSP	1			
66	F6	S	8-Jul	8-Jul	10:12	21:48	0:00:00	11.60	d			ARFL	7			FORCE OF OUTGOING TIDE CONSTRICTING COD ENDS
66	F6	S	8-Jul	8-Jul	10:12	21:48	0:00:00	11.60	d			STFL	5			
66	F6	S	8-Jul	8-Jul	10:12	21:48	0:00:00	11.60	d			SFCD	14			
66	F6	S	8-Jul	8-Jul	10:12	21:48	0:00:00	11.60	d			LSCS	3			
66	F6	S	8-Jul	8-Jul	10:12	21:48	0:00:00	11.60	d			THSB	1			
66	F6	S	8-Jul	8-Jul	10:12	21:48	0:00:00	11.60	d			FHSC	4			
67	F3	N	8-Jul	8-Jul	11:16	21:13	0:00:00	9.95	d			LSCS	1			
68	F3	S	8-Jul	8-Jul	11:11	21:15	0:00:00	10.07	d			RBSM	3			
68	F3	S	8-Jul	8-Jul	11:11	21:15	0:00:00	10.07	d			BRCS	1			
68	F3	S	8-Jul	8-Jul	11:11	21:15	0:00:00	10.07	d			LSCS	1			
68	F3	S	8-Jul	8-Jul	11:11	21:15	0:00:00	10.07	d			FHSC	1			
68	F3	S	8-Jul	8-Jul	11:11	21:15	0:00:00	10.07	d			SFCD	2			
69	F3	N	8-Jul	9-Jul	21:13	9:19	0:00:00	12.10	n			ARFL	19			
69	F3	N	8-Jul	9-Jul	21:13	9:19	0:00:00	12.10	n			APNK	1			
69	F3	N	8-Jul	9-Jul	21:13	9:19	0:00:00	12.10	n			SFCD	8			
69	F3	N	8-Jul	9-Jul	21:13	9:19	0:00:00	12.10	n			SFCD	1	195		MEASURED FISH RANDOMLY SELECTED
69	F3	N	8-Jul	9-Jul	21:13	9:19	0:00:00	12.10	n			SFCD	1	117		
69	F3	N	8-Jul	9-Jul	21:13	9:19	0:00:00	12.10	n			SFCD	1	196		

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
69	F3	N	8-Jul	9-Jul	21:13	9:19	0:00:00	12.10	n			SFCD	1	196		
69	F3	N	8-Jul	9-Jul	21:13	9:19	0:00:00	12.10	n			SFCD	1	215		
69	F3	N	8-Jul	9-Jul	21:13	9:19	0:00:00	12.10	n			SFCD	1	200		
69	F3	N	8-Jul	9-Jul	21:13	9:19	0:00:00	12.10	n			SFCD	1	100		
69	F3	N	8-Jul	9-Jul	21:13	9:19	0:00:00	12.10	n			SFCD	1	106		
69	F3	N	8-Jul	9-Jul	21:13	9:19	0:00:00	12.10	n			SFCD	1	182		
69	F3	N	8-Jul	9-Jul	21:13	9:19	0:00:00	12.10	n			SFCD	1	118		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	2			
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			ARFL	15			
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			LSCS	2			
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	235		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	210		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	203		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	168		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	195		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	202		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	212		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	198		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	186		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	198		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	199		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	201		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	120		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	220		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	224		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	185		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	196		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	203		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	187		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n			SFCD	1	192		
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n		1	CHUM	1	88	4.01	
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n		1	CHUM	1	80	3.21	
70	F3	S	8-Jul	9-Jul	21:15	9:25	0:00:00	12.17	n		1	CHUM	1	78	3.45	
71	F6	N	8-Jul	9-Jul	21:41	10:08	0:00:00	12.45	n			LSCS	1			
71	F6	N	8-Jul	9-Jul	21:41	10:08	0:00:00	12.45	n			STFL	1			
71	F6	N	8-Jul	9-Jul	21:41	10:08	0:00:00	12.45	n			ARFL	1			
71	F6	N	8-Jul	9-Jul	21:41	10:08	0:00:00	12.45	n			SFCD	1	258		
72	F6	S	8-Jul	9-Jul	21:48	10:13	0:00:00	12.42	n			ARFL	15			
72	F6	S	8-Jul	9-Jul	21:48	10:13	0:00:00	12.42	n			STFL	2			
72	F6	S	8-Jul	9-Jul	21:48	10:13	0:00:00	12.42	n			LSCS	4			
72	F6	S	8-Jul	9-Jul	21:48	10:13	0:00:00	12.42	n			RBSM	3			

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
72	F6	S	8-Jul	9-Jul	21:48	10:13	0:00:00	12.42	n			FHSC	7			
72	F6	S	8-Jul	9-Jul	21:48	10:13	0:00:00	12.42	n			THSB	17			
72	F6	S	8-Jul	9-Jul	21:48	10:13	0:00:00	12.42	n			SFCD	2			
72	F6	S	8-Jul	9-Jul	21:48	10:13	0:00:00	12.42	n			SFCD	1	213		
72	F6	S	8-Jul	9-Jul	21:48	10:13	0:00:00	12.42	n			SFCD	1	217		
72	F6	S	8-Jul	9-Jul	21:48	10:13	0:00:00	12.42	n			SFCD	1	196		
72	F6	S	8-Jul	9-Jul	21:48	10:13	0:00:00	12.42	n			SFCD	1	190		
72	F6	S	8-Jul	9-Jul	21:48	10:13	0:00:00	12.42	n			SFCD	1	188		
73	F6	N	9-Jul	9-Jul	10:08	22:08	0:00:00	12.00	d			ARFL	2			WIND <5
73	F6	N	9-Jul	9-Jul	10:08	22:08	0:00:00	12.00	d			SALM	25			ADULT? WIND <5
73	F6	N	9-Jul	9-Jul	10:08	22:08	0:00:00	12.00	d			LSCS	1			WIND <5
73	F6	N	9-Jul	9-Jul	10:08	22:08	0:00:00	12.00	d			FHSC	2			WIND <5
73	F6	N	9-Jul	9-Jul	10:08	22:08	0:00:00	12.00	d			SFCD	2			WIND <5
73	F6	N	9-Jul	9-Jul	10:08	22:08	0:00:00	12.00	d			BRCS	1			WIND <5
73	F6	N	9-Jul	9-Jul	10:08	22:08	0:00:00	12.00	d	1		LSCS	1			WIND <5
73	F6	N	9-Jul	9-Jul	10:08	22:08	0:00:00	12.00	d			DLVD	1	208		WIND <5
73	F6	N	9-Jul	9-Jul	10:08	22:08	0:00:00	12.00	d			SALM	1	49		WIND <5
74	F6	S	9-Jul	9-Jul	10:13	22:15	0:00:00	12.03	d			ARFL	47			TIDE WAY DOWN, STRONG CURRENT
74	F6	S	9-Jul	9-Jul	10:13	22:15	0:00:00	12.03	d			APNK	1			
74	F6	S	9-Jul	9-Jul	10:13	22:15	0:00:00	12.03	d			BRCS	1			
74	F6	S	9-Jul	9-Jul	10:13	22:15	0:00:00	12.03	d			LSCS	4			
74	F6	S	9-Jul	9-Jul	10:13	22:15	0:00:00	12.03	d			FHSC	3			
74	F6	S	9-Jul	9-Jul	10:13	22:15	0:00:00	12.03	d			THSB	2			
74	F6	S	9-Jul	9-Jul	10:13	22:15	0:00:00	12.03	d			SFCD	2			
75	F3	N	9-Jul	9-Jul	9:19	19:46	0:00:00	10.45	d			ARFL	7			
75	F3	N	9-Jul	9-Jul	9:19	19:46	0:00:00	10.45	d			LSCS	1			
75	F3	N	9-Jul	9-Jul	9:19	19:46	0:00:00	10.45	d			THSB	1			
75	F3	N	9-Jul	9-Jul	9:19	19:46	0:00:00	10.45	d		1	COHO	1	127	20.75	
75	F3	N	9-Jul	9-Jul	9:19	19:46	0:00:00	10.45	d		1	COHO	1	134	20.93	
75	F3	N	9-Jul	9-Jul	9:19	19:46	0:00:00	10.45	d		1	COHO	1	122	18.22	
76	F3	S	9-Jul	9-Jul	9:25	19:48	0:00:00	10.38	d			BRCS	8			WIND <3
76	F3	S	9-Jul	9-Jul	9:25	19:48	0:00:00	10.38	d			LSCS	1			
76	F3	S	9-Jul	9-Jul	9:25	19:48	0:00:00	10.38	d			ARFL	12			
77	F4	E	9-Jul	9-Jul	15:01	20:45	0:00:00	5.73	d			LSCS	53			
77	F4	E	9-Jul	9-Jul	15:01	20:45	0:00:00	5.73	d			BRCS	17			
77	F4	E	9-Jul	9-Jul	15:01	20:45	0:00:00	5.73	d			DLVD	1			
77	F4	E	9-Jul	9-Jul	15:01	20:45	0:00:00	5.73	d			THSB	9			
77	F4	E	9-Jul	9-Jul	15:01	20:45	0:00:00	5.73	d			ARFL	4			
77	F4	E	9-Jul	9-Jul	15:01	20:45	0:00:00	5.73	d			FHSC	1			

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
77	F4	E	9-Jul	9-Jul	15:01	20:45	0:00:00	5.73	d		1	KING	1	14.43		
78	F4	W	9-Jul	9-Jul	15:01	21:25	0:00:00	6.40	d			CHUM	11			
78	F4	W	9-Jul	9-Jul	15:01	21:25	0:00:00	6.40	d			LSCS	33			
78	F4	W	9-Jul	9-Jul	15:01	21:25	0:00:00	6.40	d			BRCS	35			
78	F4	W	9-Jul	9-Jul	15:01	21:25	0:00:00	6.40	d			STFL	1			
78	F4	W	9-Jul	9-Jul	15:01	21:25	0:00:00	6.40	d			ARFL	5			
78	F4	W	9-Jul	9-Jul	15:01	21:25	0:00:00	6.40	d			THSB	2			
78	F4	W	9-Jul	9-Jul	15:01	21:25	0:00:00	6.40	d			DLVD	1	220		
78	F4	W	9-Jul	9-Jul	15:01	21:25	0:00:00	6.40	d		1	CHUM	1	45		
78	F4	W	9-Jul	9-Jul	15:01	21:25	0:00:00	6.40	d		1	CHUM	1	46	0.69	SK (INITIALS?) BY DATA
78	F4	W	9-Jul	9-Jul	15:01	21:25	0:00:00	6.40	d		1	CHUM	1	46	0.75	
78	F4	W	9-Jul	9-Jul	15:01	21:25	0:00:00	6.40	d		1	CHUM	1	44	0.59	
78	F4	W	9-Jul	9-Jul	15:01	21:25	0:00:00	6.40	d		1	CHUM	1	45	0.65	
78	F4	W	9-Jul	9-Jul	15:01	21:25	0:00:00	6.40	d		1	CHUM	1	49	1.01	
78	F4	W	9-Jul	9-Jul	15:01	21:25	0:00:00	6.40	d		1	CHUM	1	49	0.92	"?" By weight
78	F4	W	9-Jul	9-Jul	15:01	21:25	0:00:00	6.40	d		1	KING	1	73	3.98	"?" By weight, SK (INITIALS?) BY DATA
78	F4	W	9-Jul	9-Jul	15:01	21:25	0:00:00	6.40	d		1	CHUM	1	83	4.31	SK (INITIALS?) BY DATA
79	F3	N	9-Jul	10-Jul	19:46	10:04	0:00:00	14.30	n			ARFL	23			
79	F3	N	9-Jul	10-Jul	19:46	10:04	0:00:00	14.30	n			SFCD	7			
79	F3	N	9-Jul	10-Jul	19:46	10:04	0:00:00	14.30	n			FHSC	1			
79	F3	N	9-Jul	10-Jul	19:46	10:04	0:00:00	14.30	n			RBSM	3			
79	F3	N	9-Jul	10-Jul	19:46	10:04	0:00:00	14.30	n			THSB	1			
80	F3	S	9-Jul	10-Jul	19:48	10:10	0:00:00	14.37	n			ARFL	23			
80	F3	S	9-Jul	10-Jul	19:48	10:10	0:00:00	14.37	n			SFCD	8			
80	F3	S	9-Jul	10-Jul	19:48	10:10	0:00:00	14.37	n			RBSM	1			
81	F6	N	9-Jul	10-Jul	22:08	9:11	0:00:00	11.05	n			ARFL	1			CODEND FILLED W/EELGRASS
81	F6	N	9-Jul	10-Jul	22:08	9:11	0:00:00	11.05	n			FHSC	1			
81	F6	N	9-Jul	10-Jul	22:08	9:11	0:00:00	11.05	n			TUPO	1			
82	F6	S	9-Jul	10-Jul	22:15	9:20	0:00:00	11.08	n			ARFL	4			
82	F6	S	9-Jul	10-Jul	22:15	9:20	0:00:00	11.08	n			THSB	12			
82	F6	S	9-Jul	10-Jul	22:15	9:20	0:00:00	11.08	n			FHSC	2			
82	F6	S	9-Jul	10-Jul	22:15	9:20	0:00:00	11.08	n			LSCS	1			
82	F6	S	9-Jul	10-Jul	22:15	9:20	0:00:00	11.08	n			BRCS	1			
82	F6	S	9-Jul	10-Jul	22:15	9:20	0:00:00	11.08	n			SFCD	2			
82	F6	S	9-Jul	10-Jul	22:15	9:20	0:00:00	11.08	n			RBSM	1			

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
83	F3	S	10-Jul	10-Jul	10:10	22:31	0:00:00	12.35	d			ARFL	19			
83	F3	S	10-Jul	10-Jul	10:10	22:31	0:00:00	12.35	d			LSCS	1			
83	F3	S	10-Jul	10-Jul	10:10	22:31	0:00:00	12.35	d			RBSM	1			
83	F3	S	10-Jul	10-Jul	10:10	22:31	0:00:00	12.35	d			DLVD	1	155		
84	F3	N	10-Jul	10-Jul	10:04	22:35	0:00:00	12.52	d			ARFL	4			
84	F3	N	10-Jul	10-Jul	10:04	22:35	0:00:00	12.52	d			RBSM	3			
84	F3	N	10-Jul	10-Jul	10:04	22:35	0:00:00	12.52	d			FHSC	3			
85	F6	S	10-Jul	10-Jul	9:20	22:51	0:00:00	13.52	d			ARFL	38			
85	F6	S	10-Jul	10-Jul	9:20	22:51	0:00:00	13.52	d			FHSC	5			
85	F6	S	10-Jul	10-Jul	9:20	22:51	0:00:00	13.52	d			SFCD	16			
85	F6	S	10-Jul	10-Jul	9:20	22:51	0:00:00	13.52	d			BRCS	1			
85	F6	S	10-Jul	10-Jul	9:20	22:51	0:00:00	13.52	d			THSB	2			
85	F6	S	10-Jul	10-Jul	9:20	22:51	0:00:00	13.52	d			DLVD	1	175		
85	F6	S	10-Jul	10-Jul	9:20	22:51	0:00:00	13.52	d			DLVD	1	178		
86	F6	N	10-Jul	10-Jul	9:11	22:51	0:00:00	13.67	d			NONE	0			THROATS COMPLETELY CLOGGED WITH EELGRASS
87	F4	W	10-Jul	10-Jul	15:53	21:17	0:00:00	5.40	d			ARFL	9			
87	F4	W	10-Jul	10-Jul	15:53	21:17	0:00:00	5.40	d			BRCS	69			
87	F4	W	10-Jul	10-Jul	15:53	21:17	0:00:00	5.40	d			RBSM	1			
87	F4	W	10-Jul	10-Jul	15:53	21:17	0:00:00	5.40	d			SOCK	1			
87	F4	W	10-Jul	10-Jul	15:53	21:17	0:00:00	5.40	d			LSCS	1			
87	F4	W	10-Jul	10-Jul	15:53	21:17	0:00:00	5.40	d			STFL	1			
87	F4	W	10-Jul	10-Jul	15:53	21:17	0:00:00	5.40	d			SFCD	1			
87	F4	W	10-Jul	10-Jul	15:53	21:17	0:00:00	5.40	d	2		BRCS	2			
87	F4	W	10-Jul	10-Jul	15:53	21:17	0:00:00	5.40	d			SOCK	1	55		
87	F4	W	10-Jul	10-Jul	15:53	21:17	0:00:00	5.40	d			SOCK	1	74		
87	F4	W	10-Jul	10-Jul	15:53	21:17	0:00:00	5.40	d	1		BRCS	1	60		
87	F4	W	10-Jul	10-Jul	15:53	21:17	0:00:00	5.40	d	1		BRCS	1	59		
87	F4	W	10-Jul	10-Jul	15:53	21:17	0:00:00	5.40	d	1		BRCS	1	56		
87	F4	W	10-Jul	10-Jul	15:53	21:17	0:00:00	5.40	d	1		BRCS	1	57		
87	F4	W	10-Jul	10-Jul	15:53	21:17	0:00:00	5.40	d			DLVD	1	67		
87	F4	W	10-Jul	10-Jul	15:53	21:17	0:00:00	5.40	d			BRCS	1	55		
88	F4	E	10-Jul	10-Jul	15:53	21:27	0:00:00	5.57	d			APNK	6			
88	F4	E	10-Jul	10-Jul	15:53	21:27	0:00:00	5.57	d			STFL	8			
88	F4	E	10-Jul	10-Jul	15:53	21:27	0:00:00	5.57	d			LSCS	20			
88	F4	E	10-Jul	10-Jul	15:53	21:27	0:00:00	5.57	d			BRCS	65			3 BRCS SIZE CLASSES: 1=70, 2=110, 3=20

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
88	F4	E	10-Jul	10-Jul	15:53	21:27	0:00:00	5.57	d			ARFL	14			
88	F4	E	10-Jul	10-Jul	15:53	21:27	0:00:00	5.57	d			THSB	10			
88	F4	E	10-Jul	10-Jul	15:53	21:27	0:00:00	5.57	d			RBSM	3			
88	F4	E	10-Jul	10-Jul	15:53	21:27	0:00:00	5.57	d			SOCK	3			
88	F4	E	10-Jul	10-Jul	15:53	21:27	0:00:00	5.57	d	1		BRCS	1	100		3 BRCS SIZE CLASSES: 1=70, 2=110, 3=20
88	F4	E	10-Jul	10-Jul	15:53	21:27	0:00:00	5.57	d	1		LSCS	1	230		
88	F4	E	10-Jul	10-Jul	15:53	21:27	0:00:00	5.57	d	1		BRCS	1	100		
88	F4	E	10-Jul	10-Jul	15:53	21:27	0:00:00	5.57	d	1		BRCS	1	110		
88	F4	E	10-Jul	10-Jul	15:53	21:27	0:00:00	5.57	d			DLVD	185			
NA	F6	S	10-Jul	11-Jul	22:51	18:00	19:09:00	0.00	n							
NA	F6	N	10-Jul	11-Jul	22:51	18:00	19:09:00	0.00	n							
89	F3	N	10-Jul	11-Jul	22:35	10:18	0:00:00	11.72	n			ARFL	7			
89	F3	N	10-Jul	11-Jul	22:35	10:18	0:00:00	11.72	n			SFCD	3			
90	F3	S	10-Jul	11-Jul	22:31	10:20	0:00:00	11.82	n			ARFL	30			
90	F3	S	10-Jul	11-Jul	22:31	10:20	0:00:00	11.82	n			SFCD	3			
90	F3	S	10-Jul	11-Jul	22:31	10:20	0:00:00	11.82	n			BRCS	3			
90	F3	S	10-Jul	11-Jul	22:31	10:20	0:00:00	11.82	n			STFL	4			
91	F3	N	11-Jul	11-Jul	10:18	18:20	0:00:00	8.03	d			ARFL	3			
92	F3	S	11-Jul	11-Jul	10:20	18:22	0:00:00	8.03	d			ARFL	8			
92	F3	S	11-Jul	11-Jul	10:20	18:22	0:00:00	8.03	d			FHSC	5			
92	F3	S	11-Jul	11-Jul	10:20	18:22	0:00:00	8.03	d			STFL	1			
93	F4	W	11-Jul	11-Jul	16:10	19:05	0:00:00	2.92	d			BRCS	6			
93	F4	W	11-Jul	11-Jul	16:10	19:05	0:00:00	2.92	d			ARFL	5			
93	F4	W	11-Jul	11-Jul	16:10	19:05	0:00:00	2.92	d			FHSC	2			
93	F4	W	11-Jul	11-Jul	16:10	19:05	0:00:00	2.92	d	4		BRCS	4			
93	F4	W	11-Jul	11-Jul	16:10	19:05	0:00:00	2.92	d	1		THSB	1			
93	F4	W	11-Jul	11-Jul	16:10	19:05	0:00:00	2.92	d	1		SOCK	1	58		
94	F4	E	11-Jul	11-Jul	16:10	19:10	0:00:00	3.00	d			BRCS	4			
94	F4	E	11-Jul	11-Jul	16:10	19:10	0:00:00	3.00	d			LSCS	1			
94	F4	E	11-Jul	11-Jul	16:10	19:10	0:00:00	3.00	d			THSB	2			
94	F4	E	11-Jul	11-Jul	16:10	19:10	0:00:00	3.00	d			ARFL	3			
94	F4	E	11-Jul	11-Jul	16:10	19:10	0:00:00	3.00	d			STFL	1			
94	F4	E	11-Jul	11-Jul	16:10	19:10	0:00:00	3.00	d			DLVD	1	208		
94	F4	E	11-Jul	11-Jul	16:10	19:10	0:00:00	3.00	d			DLVD	1	188		
95	F6	S	11-Jul	12-Jul	18:00	10:28	0:00:00	16.47	n			ARFL	24			
95	F6	S	11-Jul	12-Jul	18:00	10:28	0:00:00	16.47	n			BRCS	1			
95	F6	S	11-Jul	12-Jul	18:00	10:28	0:00:00	16.47	n			LSCS	1			
95	F6	S	11-Jul	12-Jul	18:00	10:28	0:00:00	16.47	n			FHSC	1			
95	F6	S	11-Jul	12-Jul	18:00	10:28	0:00:00	16.47	n			SFCD	6			

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
95	F6	S	11-Jul	12-Jul	18:00	10:28	0:00:00	16.47	n			SCSP	2			
95	F6	S	11-Jul	12-Jul	18:00	10:28	0:00:00	16.47	n			THSB	2			
96	F6	N	11-Jul	12-Jul	18:00	10:35	0:00:00	16.58	n			SCSP	3			
96	F6	N	11-Jul	12-Jul	18:00	10:35	0:00:00	16.58	n			LSCS	1			
96	F6	N	11-Jul	12-Jul	18:00	10:35	0:00:00	16.58	n			SFCD	1			
96	F6	N	11-Jul	12-Jul	18:00	10:35	0:00:00	16.58	n			TUPO	1			
97	F3	S	11-Jul	12-Jul	18:22	11:22	0:00:00	17.00	n			BRCS	9			
97	F3	S	11-Jul	12-Jul	18:22	11:22	0:00:00	17.00	n			ARFL	30			
97	F3	S	11-Jul	12-Jul	18:22	11:22	0:00:00	17.00	n			SFCD	3			
97	F3	S	11-Jul	12-Jul	18:22	11:22	0:00:00	17.00	n			TUPO	1			
98	F3	N	11-Jul	12-Jul	18:20	11:30	0:00:00	17.17	n			ARFL	7			
98	F3	N	11-Jul	12-Jul	18:20	11:30	0:00:00	17.17	n			SFCD	4			
99	F6	N	12-Jul	12-Jul	10:35	20:38	0:00:00	10.05	d			LSCS	1			
99	F6	N	12-Jul	12-Jul	10:35	20:38	0:00:00	10.05	d			SFCD	5			
99	F6	N	12-Jul	12-Jul	10:35	20:38	0:00:00	10.05	d			ARFL	1			
99	F6	N	12-Jul	12-Jul	10:35	20:38	0:00:00	10.05	d			SCSP	1			
100	F6	S	12-Jul	12-Jul	10:28	20:51	0:00:00	10.38	d			ARFL	17			
100	F6	S	12-Jul	12-Jul	10:28	20:51	0:00:00	10.38	d			RBSM	1			
100	F6	S	12-Jul	12-Jul	10:28	20:51	0:00:00	10.38	d			THSB	2			
100	F6	S	12-Jul	12-Jul	10:28	20:51	0:00:00	10.38	d			SFCD	8			
100	F6	S	12-Jul	12-Jul	10:28	20:51	0:00:00	10.38	d			SCSP	1			
100	F6	S	12-Jul	12-Jul	10:28	20:51	0:00:00	10.38	d		1	CHUM	1	66	2.58	
101	F6	N	12-Jul	13-Jul	20:38	9:56	0:00:00	13.30	n			ARFL	4			
101	F6	N	12-Jul	13-Jul	20:38	9:56	0:00:00	13.30	n			SCSP	1			
101	F6	N	12-Jul	13-Jul	20:38	9:56	0:00:00	13.30	n			THSB	2			
101	F6	N	12-Jul	13-Jul	20:38	9:56	0:00:00	13.30	n			SFCD	1			
102	F6	S	12-Jul	13-Jul	20:51	10:15	0:00:00	13.40	n			ARFL	6			
102	F6	S	12-Jul	13-Jul	20:51	10:15	0:00:00	13.40	n			SFCD	3			
102	F6	S	12-Jul	13-Jul	20:51	10:15	0:00:00	13.40	n			SCSP	2			
102	F6	S	12-Jul	13-Jul	20:51	10:15	0:00:00	13.40	n			CHUM	1	59	1.88	
102	F6	S	12-Jul	13-Jul	20:51	10:15	0:00:00	13.40	n		1	CHUM	1	63	2.33	
102	F6	S	12-Jul	13-Jul	20:51	10:15	0:00:00	13.40	n		1	CHUM	1	66	2.23	
102	F6	S	12-Jul	13-Jul	20:51	10:15	0:00:00	13.40	n			CHUM	1	68	2.38	
103	F4	E	12-Jul	13-Jul	23:15	8:08	0:00:00	8.88	n			ARFL	36			
103	F4	E	12-Jul	13-Jul	23:15	8:08	0:00:00	8.88	n			LSCS	15			
103	F4	E	12-Jul	13-Jul	23:15	8:08	0:00:00	8.88	n			SFCD	21			
103	F4	E	12-Jul	13-Jul	23:15	8:08	0:00:00	8.88	n			SCSP	13			
103	F4	E	12-Jul	13-Jul	23:15	8:08	0:00:00	8.88	n			RBSM	10			
103	F4	E	12-Jul	13-Jul	23:15	8:08	0:00:00	8.88	n			BRCS	4			
104	F4	W	12-Jul	13-Jul	23:15	8:15	0:00:00	9.00	n			LSCS	9			
104	F4	W	12-Jul	13-Jul	23:15	8:15	0:00:00	9.00	n			SCSP	1			

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
104	F4	W	12-Jul	13-Jul	23:15	8:15	0:00:00	9.00	n			SFCD	2			
104	F4	W	12-Jul	13-Jul	23:15	8:15	0:00:00	9.00	n			ARFL	14			
104	F4	W	12-Jul	13-Jul	23:15	8:15	0:00:00	9.00	n			BRCS	1			
104	F4	W	12-Jul	13-Jul	23:15	8:15	0:00:00	9.00	n			RBSM	5			
104	F4	W	12-Jul	13-Jul	23:15	8:15	0:00:00	9.00	n			DLVD	1			
105	F6	N	13-Jul	13-Jul	9:56	22:00	0:00:00	12.07	d			LSCS	1			
105	F6	N	13-Jul	13-Jul	9:56	22:00	0:00:00	12.07	d			ARFL	3			
105	F6	N	13-Jul	13-Jul	9:56	22:00	0:00:00	12.07	d			SFCD	8			
105	F6	N	13-Jul	13-Jul	9:56	22:00	0:00:00	12.07	d			SCSP	1			
105	F6	N	13-Jul	13-Jul	9:56	22:00	0:00:00	12.07	d		1	CHUM	1	61	1.75	
106	F6	S	13-Jul	13-Jul	10:15	22:08	0:00:00	11.88	d		1	CHUM	1	63	2.06	
106	F6	S	13-Jul	13-Jul	10:15	22:08	0:00:00	11.88	d			SFCD	10			
106	F6	S	13-Jul	13-Jul	10:15	22:08	0:00:00	11.88	d			LSCS	2			
106	F6	S	13-Jul	13-Jul	10:15	22:08	0:00:00	11.88	d			ARFL	6			
106	F6	S	13-Jul	13-Jul	10:15	22:08	0:00:00	11.88	d			THSB	1			
106	F6	S	13-Jul	13-Jul	10:15	22:08	0:00:00	11.88	d			SCSP	1			
107	F4	E	13-Jul	13-Jul	16:45	23:40	0:00:00	6.92	d			ARFL	77			
107	F4	E	13-Jul	13-Jul	16:45	23:40	0:00:00	6.92	d			BRCS	1			
107	F4	E	13-Jul	13-Jul	16:45	23:40	0:00:00	6.92	d			RBSM	1			
107	F4	E	13-Jul	13-Jul	16:45	23:40	0:00:00	6.92	d			SCSP	2			
107	F4	E	13-Jul	13-Jul	16:45	23:40	0:00:00	6.92	d			STFL	1			
108	F4	W	13-Jul	13-Jul	16:45	23:50	0:00:00	7.08	d			ARFL	107			
108	F4	W	13-Jul	13-Jul	16:45	23:50	0:00:00	7.08	d			RBSM	1			
108	F4	W	13-Jul	13-Jul	16:45	23:50	0:00:00	7.08	d			SCSP	5			
108	F4	W	13-Jul	13-Jul	16:45	23:50	0:00:00	7.08	d			STFL	2			
108	F4	W	13-Jul	13-Jul	16:45	23:50	0:00:00	7.08	d			TUPO	3			
109	F6	S	13-Jul	14-Jul	22:08	11:28	0:00:00	13.33	n			ARFL	14			
109	F6	S	13-Jul	14-Jul	22:08	11:28	0:00:00	13.33	n			SFCD	7			
109	F6	S	13-Jul	14-Jul	22:08	11:28	0:00:00	13.33	n			FHSC	3			
110	F6	N	13-Jul	14-Jul	22:00	11:38	0:00:00	13.63	n			ARFL	1			
110	F6	N	13-Jul	14-Jul	22:00	11:38	0:00:00	13.63	n			LSCS	1			
110	F6	N	13-Jul	14-Jul	22:00	11:38	0:00:00	13.63	n			SFCD	4			
110	F6	N	13-Jul	14-Jul	22:00	11:38	0:00:00	13.63	n			SCSP	2			
110	F6	N	13-Jul	14-Jul	22:00	11:38	0:00:00	13.63	n		1	CHUM	1	63	2.62	
110	F6	N	13-Jul	14-Jul	22:00	11:38	0:00:00	13.63	n		1	CHUM	1	68	3.13	
110	F6	N	13-Jul	14-Jul	22:00	11:38	0:00:00	13.63	n		1	CHUM	1	64	2.29	
110	F6	N	13-Jul	14-Jul	22:00	11:38	0:00:00	13.63	n		1	CHUM	1	64	2.42	
110	F6	N	13-Jul	14-Jul	22:00	11:38	0:00:00	13.63	n		1	CHUM	1	64	2.4	
110	F6	N	13-Jul	14-Jul	22:00	11:38	0:00:00	13.63	n		1	CHUM	1	65	2.66	
110	F6	N	13-Jul	14-Jul	22:00	11:38	0:00:00	13.63	n		1	CHUM	1	62	2.28	
110	F6	N	13-Jul	14-Jul	22:00	11:38	0:00:00	13.63	n		1	CHUM	1	64	3.46	

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
110	F6	N	13-Jul	14-Jul	22:00	11:38	0:00:00	13.63	n		1	CHUM	1	58	1.95	
111	F6	N	14-Jul	14-Jul	11:38	23:58	0:00:00	12.33	d			ARFL	3			
111	F6	N	14-Jul	14-Jul	11:38	23:58	0:00:00	12.33	d			SFCD	23			
111	F6	N	14-Jul	14-Jul	11:38	23:58	0:00:00	12.33	d			TUPO	1			
111	F6	N	14-Jul	14-Jul	11:38	23:58	0:00:00	12.33	d			CRSC	1			
111	F6	N	14-Jul	14-Jul	11:38	23:58	0:00:00	12.33	d	1		SALM	1			
112	F6	S	14-Jul	15-Jul	11:28	0:27	0:00:00	12.98	n			ARFL	2			
112	F6	S	14-Jul	15-Jul	11:28	0:27	0:00:00	12.98	n			THSB	1			
113	F4	W	14-Jul	15-Jul	19:48	1:15	0:00:00	5.45	n			BRCS	12			
113	F4	W	14-Jul	15-Jul	19:48	1:15	0:00:00	5.45	n			ARFL	126			
113	F4	W	14-Jul	15-Jul	19:48	1:15	0:00:00	5.45	n			RBSM	17			
113	F4	W	14-Jul	15-Jul	19:48	1:15	0:00:00	5.45	n			LSCS	29			
113	F4	W	14-Jul	15-Jul	19:48	1:15	0:00:00	5.45	n			STFL	1			
113	F4	W	14-Jul	15-Jul	19:48	1:15	0:00:00	5.45	n		1	CHUM	1	79	4.4	
114	F4	E	14-Jul	15-Jul	19:48	1:41	0:00:00	5.88	n			ARFL	75			
114	F4	E	14-Jul	15-Jul	19:48	1:41	0:00:00	5.88	n			RBSM	5			
114	F4	E	14-Jul	15-Jul	19:48	1:41	0:00:00	5.88	n			BRCS	50			
114	F4	E	14-Jul	15-Jul	19:48	1:41	0:00:00	5.88	n			LSCS	49			
114	F4	E	14-Jul	15-Jul	19:48	1:41	0:00:00	5.88	n			SFCD	1			
114	F4	E	14-Jul	15-Jul	19:48	1:41	0:00:00	5.88	n			STFL	2			
114	F4	E	14-Jul	15-Jul	19:48	1:41	0:00:00	5.88	n			SOCK	1	55		
115	F6	S	15-Jul	15-Jul	0:27	11:20	0:00:00	10.88	d			ARFL	5			
115	F6	S	15-Jul	15-Jul	0:27	11:20	0:00:00	10.88	d			FHSC	3			
115	F6	S	15-Jul	15-Jul	0:27	11:20	0:00:00	10.88	d			SFCD	6			
115	F6	S	15-Jul	15-Jul	0:27	11:20	0:00:00	10.88	d			THSB	2			
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n			SFCD	1			
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n			FHSC	2			
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n			ARFL	1			
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	62	2.18	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	73	3.47	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	59	1.87	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	61	2.14	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	60	1.94	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	71	2.86	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	58	2.17	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	57	1.99	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	55	1.92	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	62	2.38	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	67	2.61	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	57	2.18	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	60	2.26	

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	61	2.19	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	73	4.24	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	69	2.65	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	60	2.14	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	60	2.25	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	63	2.3	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	64	2.67	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	74	4.17	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	74	3.83	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	60	2.24	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	61	2.5	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	58	2.09	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	62	2.73	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	66	3.07	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	61	2.16	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	74	4.16	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	59	2.15	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	60	2.11	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	63	2.74	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	58	1.76	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	56	2.08	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	58	2.24	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	66	3.37	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	54	1.85	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	56	1.72	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	60	2.1	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	56	2.2	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	61	2.42	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	64	2.83	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	58	1.8	
116	F6	N	14-Jul	15-Jul	23:58	11:29	0:00:00	11.52	n		1	CHUM	1	57	2.13	
117	F6	N	15-Jul	15-Jul	11:27	20:21	0:00:00	8.90	d	1		CHUM	1	60		
117	F6	N	15-Jul	15-Jul	11:27	20:21	0:00:00	8.90	d	1		CHUM	1	62		
117	F6	N	15-Jul	15-Jul	11:27	20:21	0:00:00	8.90	d	1	1	CHUM	1	63	2.16	
117	F6	N	15-Jul	15-Jul	11:27	20:21	0:00:00	8.90	d			ARFL	1			
117	F6	N	15-Jul	15-Jul	11:27	20:21	0:00:00	8.90	d			FHSC	3			
117	F6	N	15-Jul	15-Jul	11:27	20:21	0:00:00	8.90	d			SFCD	9			
118	F6	S	15-Jul	15-Jul	11:20	20:32	0:00:00	9.20	d			ARFL	5			
118	F6	S	15-Jul	15-Jul	11:20	20:32	0:00:00	9.20	d			SFCD	4			
118	F6	S	15-Jul	15-Jul	11:20	20:32	0:00:00	9.20	d			STFL	1			
118	F6	S	15-Jul	15-Jul	11:20	20:32	0:00:00	9.20	d			DLVD	1			

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
119	F4	E	15-Jul	15-Jul	14:30	21:09	0:00:00	6.65	d			ARFL	69			
119	F4	E	15-Jul	15-Jul	14:30	21:09	0:00:00	6.65	d	3		BRCS	18			
119	F4	E	15-Jul	15-Jul	14:30	21:09	0:00:00	6.65	d			FHSC	4			
119	F4	E	15-Jul	15-Jul	14:30	21:09	0:00:00	6.65	d			STFL	5			
119	F4	E	15-Jul	15-Jul	14:30	21:09	0:00:00	6.65	d			LSCS	2			
119	F4	E	15-Jul	15-Jul	14:30	21:09	0:00:00	6.65	d			SFCD	1			
119	F4	E	15-Jul	15-Jul	14:30	21:09	0:00:00	6.65	d			RBSM	1			
119	F4	E	15-Jul	15-Jul	14:30	21:09	0:00:00	6.65	d			THSB	2			
119	F4	E	15-Jul	15-Jul	14:30	21:09	0:00:00	6.65	d			SALM	1			
120	F4	W	15-Jul	15-Jul	14:30	21:21	0:00:00	6.85	d			ARFL	13			
120	F4	W	15-Jul	15-Jul	14:30	21:21	0:00:00	6.85	d			LSCS	2			
120	F4	W	15-Jul	15-Jul	14:30	21:21	0:00:00	6.85	d			DLVD	2			
120	F4	W	15-Jul	15-Jul	14:30	21:21	0:00:00	6.85	d			FHSC	4			
120	F4	W	15-Jul	15-Jul	14:30	21:21	0:00:00	6.85	d			BRCS	2			
120	F4	W	15-Jul	15-Jul	14:30	21:21	0:00:00	6.85	d			RBSM	3			
120	F4	W	15-Jul	15-Jul	14:30	21:21	0:00:00	6.85	d			SALM	1			
121	F5	N	15-Jul	15-Jul	16:45	22:35	0:00:00	5.83	d			ARFL	31			
121	F5	N	15-Jul	15-Jul	16:45	22:35	0:00:00	5.83	d			DLVD	2			
121	F5	N	15-Jul	15-Jul	16:45	22:35	0:00:00	5.83	d			BRCS	5			
121	F5	N	15-Jul	15-Jul	16:45	22:35	0:00:00	5.83	d			LSCS	9			
121	F5	N	15-Jul	15-Jul	16:45	22:35	0:00:00	5.83	d			FHSC	1			
121	F5	N	15-Jul	15-Jul	16:45	22:35	0:00:00	5.83	d			RBSM	1			
122	F5	S	15-Jul	15-Jul	16:45	22:42	0:00:00	5.95	d			ARFL	341			
122	F5	S	15-Jul	15-Jul	16:45	22:42	0:00:00	5.95	d			LSCS	13			
122	F5	S	15-Jul	15-Jul	16:45	22:42	0:00:00	5.95	d	1		BRCS	24			
122	F5	S	15-Jul	15-Jul	16:45	22:42	0:00:00	5.95	d			DLVD	1			
122	F5	S	15-Jul	15-Jul	16:45	22:42	0:00:00	5.95	d			FHSC	1			
122	F5	S	15-Jul	15-Jul	16:45	22:42	0:00:00	5.95	d			THSB	1			
122	F5	S	15-Jul	15-Jul	16:45	22:42	0:00:00	5.95	d			SALM	2			
123	F6	S	15-Jul	16-Jul	20:32	9:11	0:00:00	12.65	n			ARFL	2			
123	F6	S	15-Jul	16-Jul	20:32	9:11	0:00:00	12.65	n			SFCD	2			
123	F6	S	15-Jul	16-Jul	20:32	9:11	0:00:00	12.65	n			FHSC	1			
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n			SFCD	14			
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n			BRCS	1			
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n			STFL	1			
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n			FHSC	2			
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	72	2.99	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	66	2.81	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	56	2.11	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	69	2.84	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	60	1.96	

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	65	2.43	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	59	1.58	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	59	2.14	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	59	2.06	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	62	2.5	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	69	3.31	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	59	2.16	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	59	2.32	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	67	3.03	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	68	2.93	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	66	2.43	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	60	2.03	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	63	2.41	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	54	1.9	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	69	2.98	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	58	1.83	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	57	1.82	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	52	1.37	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	57	1.93	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	84	4.81	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	63	2.52	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	68	3	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	58	2.14	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	56	1.72	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	55	1.82	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	58	2.09	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	57	1.92	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	57	1.9	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	55	1.48	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	61	2.38	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	70	3.17	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	54	2.08	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	59	2.14	
124	F6	N	15-Jul	16-Jul	20:21	9:18	0:00:00	12.95	n		1	CHUM	1	55	1.85	
125	F6	N	16-Jul	16-Jul	9:18	22:26	0:00:00	13.13	d			ARFL	2			
125	F6	N	16-Jul	16-Jul	9:18	22:26	0:00:00	13.13	d			LSCS	1			
125	F6	N	16-Jul	16-Jul	9:18	22:26	0:00:00	13.13	d			SFCD	7			
125	F6	N	16-Jul	16-Jul	9:18	22:26	0:00:00	13.13	d			FHSC	2			
126	F6	S	16-Jul	16-Jul	9:11	22:37	0:00:00	13.43	d			ARFL	28			
126	F6	S	16-Jul	16-Jul	9:11	22:37	0:00:00	13.43	d			BRCS	1			
126	F6	S	16-Jul	16-Jul	9:11	22:37	0:00:00	13.43	d			LSCS	1			

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
126	F6	S	16-Jul	16-Jul	9:11	22:37	0:00:00	13.43	d			SFCD	21			
126	F6	S	16-Jul	16-Jul	9:11	22:37	0:00:00	13.43	d			FHSC	1			
127	F5	N	16-Jul	16-Jul	14:43	20:44	0:00:00	6.02	d	3		BRCS	6			
127	F5	N	16-Jul	16-Jul	14:43	20:44	0:00:00	6.02	d			LSCS	5			
127	F5	N	16-Jul	16-Jul	14:43	20:44	0:00:00	6.02	d			THSB	1			
127	F5	N	16-Jul	16-Jul	14:43	20:44	0:00:00	6.02	d			ARFL	11			
128	F5	S	16-Jul	16-Jul	14:43	22:55	0:00:00	8.20	d			ARFL	424			
128	F5	S	16-Jul	16-Jul	14:43	22:55	0:00:00	8.20	d			FHSC	3			
128	F5	S	16-Jul	16-Jul	14:43	22:55	0:00:00	8.20	d			DLVD	1			
128	F5	S	16-Jul	16-Jul	14:43	22:55	0:00:00	8.20	d	26		BRCS	65			
128	F5	S	16-Jul	16-Jul	14:43	22:55	0:00:00	8.20	d			LSCS	1			
128	F5	S	16-Jul	16-Jul	14:43	22:55	0:00:00	8.20	d			STFL	1			
128	F5	S	16-Jul	16-Jul	14:43	22:55	0:00:00	8.20	d			UNKN	9			
129	F4	E	16-Jul	16-Jul	15:13	21:40	0:00:00	6.45	d			ARFL	33			
129	F4	E	16-Jul	16-Jul	15:13	21:40	0:00:00	6.45	d			STFL	2			
129	F4	E	16-Jul	16-Jul	15:13	21:40	0:00:00	6.45	d			LSCS	5			
129	F4	E	16-Jul	16-Jul	15:13	21:40	0:00:00	6.45	d	3		BRCS	27			
129	F4	E	16-Jul	16-Jul	15:13	21:40	0:00:00	6.45	d			THSB	2			
129	F4	E	16-Jul	16-Jul	15:13	21:40	0:00:00	6.45	d			FHSC	1			
129	F4	E	16-Jul	16-Jul	15:13	21:40	0:00:00	6.45	d			UNKN	2			
130	F4	W	16-Jul	16-Jul	15:13	21:54	0:00:00	6.68	d			ARFL	35			
130	F4	W	16-Jul	16-Jul	15:13	21:54	0:00:00	6.68	d			STFL	1			
130	F4	W	16-Jul	16-Jul	15:13	21:54	0:00:00	6.68	d			LSCS	2			
130	F4	W	16-Jul	16-Jul	15:13	21:54	0:00:00	6.68	d	1		BRCS	8			
130	F4	W	16-Jul	16-Jul	15:13	21:54	0:00:00	6.68	d			UNKN	1			
130	F4	W	16-Jul	16-Jul	15:13	21:54	0:00:00	6.68	d			RBSM	4			
130	F4	W	16-Jul	16-Jul	15:13	21:54	0:00:00	6.68	d			FHSC	4			
130	F4	W	16-Jul	16-Jul	15:13	21:54	0:00:00	6.68	d			THSB	1			
131	F6	S	16-Jul	17-Jul	22:37	9:55	0:00:00	11.30	n			ARFL	22			
131	F6	S	16-Jul	17-Jul	22:37	9:55	0:00:00	11.30	n			DLVD	1			
131	F6	S	16-Jul	17-Jul	22:37	9:55	0:00:00	11.30	n			FHSC	5			
131	F6	S	16-Jul	17-Jul	22:37	9:55	0:00:00	11.30	n			SFCD	10			
131	F6	S	16-Jul	17-Jul	22:37	9:55	0:00:00	11.30	n			STFL	2			
131	F6	S	16-Jul	17-Jul	22:37	9:55	0:00:00	11.30	n			THSB	8			
131	F6	S	16-Jul	17-Jul	22:37	9:55	0:00:00	11.30	n			RBSM	1			
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n			ARFL	5			
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n			SFCD	29			
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n			FHSC	2			
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n			TUPO	1			
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n		1	CHUM	1	66		
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n		1	CHUM	1	78		

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n		1	CHUM	1	60		
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n		1	CHUM	1	74		
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n		1	CHUM	1	72		
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n		1	CHUM	1	64		
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n		1	CHUM	1	65		
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n		1	CHUM	1	74		
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n		1	CHUM	1	65		
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n		1	CHUM	1	70		
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n		1	CHUM	1	78		
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n		1	CHUM	1	71		
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n		1	CHUM	1	65		
132	F6	N	16-Jul	17-Jul	22:26	10:00	0:00:00	11.57	n		1	CHUM	1	60		
133	F6	S	17-Jul	17-Jul	9:55	13:20	0:00:00	3.42	d			ARFL	2			
133	F6	S	17-Jul	17-Jul	9:55	13:20	0:00:00	3.42	d			SFCD	154			
133	F6	S	17-Jul	17-Jul	9:55	13:20	0:00:00	3.42	d			FHSC	1			
133	F6	S	17-Jul	17-Jul	9:55	13:20	0:00:00	3.42	d			THSB	1			
134	F6	N	17-Jul	17-Jul	10:00	13:33	0:00:00	3.55	d			SFCD	23			
135	F6	N	17-Jul	17-Jul	13:33	22:25	0:00:00	8.87	d			ARFL	2			
135	F6	N	17-Jul	17-Jul	13:33	22:25	0:00:00	8.87	d			SFCD	5			
135	F6	N	17-Jul	17-Jul	13:33	22:25	0:00:00	8.87	d			FHSC	1			
136	F6	S	17-Jul	17-Jul	13:20	22:30	0:00:00	9.17	d			ARFL	11			
136	F6	S	17-Jul	17-Jul	13:20	22:30	0:00:00	9.17	d			SFCD	8			
136	F6	S	17-Jul	17-Jul	13:20	22:30	0:00:00	9.17	d			RBSM	1			
136	F6	S	17-Jul	17-Jul	13:20	22:30	0:00:00	9.17	d			FHSC	1			
136	F6	S	17-Jul	17-Jul	13:20	22:30	0:00:00	9.17	d			CHUM	1			
137	F4	E	17-Jul	18-Jul	23:50	6:39	0:00:00	6.82	n			ARFL	83			
137	F4	E	17-Jul	18-Jul	23:50	6:39	0:00:00	6.82	n			RBSM	35			
137	F4	E	17-Jul	18-Jul	23:50	6:39	0:00:00	6.82	n			LSCS	31			
137	F4	E	17-Jul	18-Jul	23:50	6:39	0:00:00	6.82	n			BRCS	8			
137	F4	E	17-Jul	18-Jul	23:50	6:39	0:00:00	6.82	n			FHSC	22			
137	F4	E	17-Jul	18-Jul	23:50	6:39	0:00:00	6.82	n			SFCD	2			
138	F4	W	17-Jul	18-Jul	23:50	6:59	0:00:00	7.15	n			ARFL	28			
138	F4	W	17-Jul	18-Jul	23:50	6:59	0:00:00	7.15	n			BRCS	3			
138	F4	W	17-Jul	18-Jul	23:50	6:59	0:00:00	7.15	n			RBSM	3			
138	F4	W	17-Jul	18-Jul	23:50	6:59	0:00:00	7.15	n			FHSC	2			
138	F4	W	17-Jul	18-Jul	23:50	6:59	0:00:00	7.15	n			SFCD	1	205		
138	F4	W	17-Jul	18-Jul	23:50	6:59	0:00:00	7.15	n			SFCD	1	240		
138	F4	W	17-Jul	18-Jul	23:50	6:59	0:00:00	7.15	n			SFCD	1	187		
138	F4	W	17-Jul	18-Jul	23:50	6:59	0:00:00	7.15	n			SFCD	1	275		
138	F4	W	17-Jul	18-Jul	23:50	6:59	0:00:00	7.15	n			SFCD	1	190		
138	F4	W	17-Jul	18-Jul	23:50	6:59	0:00:00	7.15	n			SFCD	1	210		

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
138	F4	W	17-Jul	18-Jul	23:50	6:59	0:00:00	7.15	n			SFCD	1	57		
139	F6	N	17-Jul	18-Jul	22:25	7:33	0:00:00	9.13	n			ARFL	2			
139	F6	N	17-Jul	18-Jul	22:25	7:33	0:00:00	9.13	n			SFCD	27			
139	F6	N	17-Jul	18-Jul	22:25	7:33	0:00:00	9.13	n			FHSC	1			
139	F6	N	17-Jul	18-Jul	22:25	7:33	0:00:00	9.13	n			DLVD	1	205		
139	F6	N	17-Jul	18-Jul	22:25	7:33	0:00:00	9.13	n			SALM	1	60		
140	F6	S	17-Jul	18-Jul	22:30	7:45	0:00:00	9.25	n			ARFL	40			
140	F6	S	17-Jul	18-Jul	22:30	7:45	0:00:00	9.25	n			BRCS	2			
140	F6	S	17-Jul	18-Jul	22:30	7:45	0:00:00	9.25	n			LSCS	1			
140	F6	S	17-Jul	18-Jul	22:30	7:45	0:00:00	9.25	n			SFCD	29			
140	F6	S	17-Jul	18-Jul	22:30	7:45	0:00:00	9.25	n			FHSC	2			
140	F6	S	17-Jul	18-Jul	22:30	7:45	0:00:00	9.25	n			THSB	13			
140	F6	S	17-Jul	18-Jul	22:30	7:45	0:00:00	9.25	n			UNKN	1			
141	F6	S	18-Jul	18-Jul	7:45	19:21	0:00:00	11.60	d			ARFL	23			
141	F6	S	18-Jul	18-Jul	7:45	19:21	0:00:00	11.60	d			THSB	9			
141	F6	S	18-Jul	18-Jul	7:45	19:21	0:00:00	11.60	d			SFCD	65			
142	F6	N	18-Jul	18-Jul	7:33	19:33	0:00:00	12.00	d			ARFL	6			
142	F6	N	18-Jul	18-Jul	7:33	19:33	0:00:00	12.00	d			FHSC	3			
142	F6	N	18-Jul	18-Jul	7:33	19:33	0:00:00	12.00	d			SFCD	8			
142	F6	N	18-Jul	18-Jul	7:33	19:33	0:00:00	12.00	d			CASM	1			
143	F4	E	18-Jul	18-Jul	13:43	18:45	0:00:00	5.03	d			ARFL	53			
143	F4	E	18-Jul	18-Jul	13:43	18:45	0:00:00	5.03	d			LSCS	9			
143	F4	E	18-Jul	18-Jul	13:43	18:45	0:00:00	5.03	d			FHSC	13			
143	F4	E	18-Jul	18-Jul	13:43	18:45	0:00:00	5.03	d	1		BRCS	13			
144	F4	W	18-Jul	18-Jul	13:43	18:40	0:00:00	4.95	d			ARFL	46			
144	F4	W	18-Jul	18-Jul	13:43	18:40	0:00:00	4.95	d			BRCS	1			
144	F4	W	18-Jul	18-Jul	13:43	18:40	0:00:00	4.95	d			RBSM	1			
144	F4	W	18-Jul	18-Jul	13:43	18:40	0:00:00	4.95	d			FHSC	3			
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n			ARFL	9			
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n			SFCD	17			
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n			FHSC	1			
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n			CHUM	1	73		
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n			CHUM	1	61		
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n			CHUM	1	63		
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n		1	CHUM	1	67	2.44	
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n			CHUM	1	64		
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n			CHUM	1	70		
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n			CHUM	1	74		
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n			CHUM	1	68		
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n			CHUM	1	66		
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n			CHUM	1	65		

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n			CHUM	1	69		
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n		1	CHUM	1	73	3.53	
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n		1	CHUM	1	69	2.65	
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n		1	CHUM	1	65	2.46	
145	F6	N	18-Jul	19-Jul	19:33	10:27	0:00:00	14.90	n		1	CHUM	1	57	1.75	
146	F6	S	18-Jul	19-Jul	19:21	10:40	0:00:00	15.32	n			ARFL	64			
146	F6	S	18-Jul	19-Jul	19:21	10:40	0:00:00	15.32	n			SFCD	58			
146	F6	S	18-Jul	19-Jul	19:21	10:40	0:00:00	15.32	n			FHSC	7			
146	F6	S	18-Jul	19-Jul	19:21	10:40	0:00:00	15.32	n			BRCS	13			
146	F6	S	18-Jul	19-Jul	19:21	10:40	0:00:00	15.32	n			LSCS	1			
146	F6	S	18-Jul	19-Jul	19:21	10:40	0:00:00	15.32	n			THSB	11			
146	F6	S	18-Jul	19-Jul	19:21	10:40	0:00:00	15.32	n			RBSM	1			
146	F6	S	18-Jul	19-Jul	19:21	10:40	0:00:00	15.32	n			CHUM	1	68		
146	F6	S	18-Jul	19-Jul	19:21	10:40	0:00:00	15.32	n			CHUM	1	66		
146	F6	S	18-Jul	19-Jul	19:21	10:40	0:00:00	15.32	n			CHUM	1	63		
146	F6	S	18-Jul	19-Jul	19:21	10:40	0:00:00	15.32	n			CASM	1	63		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			ARFL	10			
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			SFCD	28			
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			FHSC	6			
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			TUPO	1			
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			TUPO	1	49		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	60		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	62		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	59		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	52		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	58		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	64		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	57		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	56		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	59		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	55		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	55		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	65		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	51		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	59		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	52		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	62		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	53		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	51		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	67		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	58		

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	57		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	55		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	55		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	63		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	52		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	56		
147	F6	N	19-Jul	19-Jul	10:27	20:35	0:00:00	10.13	d			CHUM	1	55		
148	F6	S	19-Jul	19-Jul	10:40	21:16	0:00:00	10.60	d			SFCD	16			
148	F6	S	19-Jul	19-Jul	10:40	21:16	0:00:00	10.60	d			ARFL	29			
148	F6	S	19-Jul	19-Jul	10:40	21:16	0:00:00	10.60	d			BRCS	2			
148	F6	S	19-Jul	19-Jul	10:40	21:16	0:00:00	10.60	d			FHSC	3			
148	F6	S	19-Jul	19-Jul	10:40	21:16	0:00:00	10.60	d			DLVD	1	240		
149	F4	E	18-Jul	19-Jul	18:58	6:46	0:00:00	11.80	n			ARFL	24			
149	F4	E	18-Jul	19-Jul	18:58	6:46	0:00:00	11.80	n			FHSC	15			
149	F4	E	18-Jul	19-Jul	18:58	6:46	0:00:00	11.80	n			SFCD	3			
149	F4	E	18-Jul	19-Jul	18:58	6:46	0:00:00	11.80	n			BRCS	8			
149	F4	E	18-Jul	19-Jul	18:58	6:46	0:00:00	11.80	n			LSCS	8			
149	F4	E	18-Jul	19-Jul	18:58	6:46	0:00:00	11.80	n			RBSM	3			
150	F4	W	18-Jul	19-Jul	18:58	6:55	0:00:00	11.95	n			ARFL	43			
150	F4	W	18-Jul	19-Jul	18:58	6:55	0:00:00	11.95	n			LSCS	76			
150	F4	W	18-Jul	19-Jul	18:58	6:55	0:00:00	11.95	n	6		BRCS	96			
150	F4	W	18-Jul	19-Jul	18:58	6:55	0:00:00	11.95	n			FHSC	18			
150	F4	W	18-Jul	19-Jul	18:58	6:55	0:00:00	11.95	n			RBSM	23			
150	F4	W	18-Jul	19-Jul	18:58	6:55	0:00:00	11.95	n			SFCD	4			
150	F4	W	18-Jul	19-Jul	18:58	6:55	0:00:00	11.95	n			DLVD	1			
150	F4	W	18-Jul	19-Jul	18:58	6:55	0:00:00	11.95	n			STFL	1			
150	F4	W	18-Jul	19-Jul	18:58	6:55	0:00:00	11.95	n			UNKN	1	295		
150	F4	W	18-Jul	19-Jul	18:58	6:55	0:00:00	11.95	n			SALM	1	62		
151	F6	N	19-Jul	20-Jul	20:35	8:07	0:00:00	11.53	n			ARFL	4			
151	F6	N	19-Jul	20-Jul	20:35	8:07	0:00:00	11.53	n			SFCD	3			
151	F6	N	19-Jul	20-Jul	20:35	8:07	0:00:00	11.53	n			FHSC	1			
151	F6	N	19-Jul	20-Jul	20:35	8:07	0:00:00	11.53	n			TUPO	1			
151	F6	N	19-Jul	20-Jul	20:35	8:07	0:00:00	11.53	n		1	CHUM	1	63	2.02	
151	F6	N	19-Jul	20-Jul	20:35	8:07	0:00:00	11.53	n		1	CHUM	1	63	2.16	
151	F6	N	19-Jul	20-Jul	20:35	8:07	0:00:00	11.53	n		1	CHUM	1	58	1.83	
152	F6	S	19-Jul	20-Jul	21:16	8:19	0:00:00	11.05	n			ARFL	59			
152	F6	S	19-Jul	20-Jul	21:16	8:19	0:00:00	11.05	n			LSCS	0			
152	F6	S	19-Jul	20-Jul	21:16	8:19	0:00:00	11.05	n			SFCD	24			
152	F6	S	19-Jul	20-Jul	21:16	8:19	0:00:00	11.05	n			BRCS	5			
152	F6	S	19-Jul	20-Jul	21:16	8:19	0:00:00	11.05	n			ACHU	1			
152	F6	S	19-Jul	20-Jul	21:16	8:19	0:00:00	11.05	n			STFL	1			

Data sheet #	Station	Net side	Start date	End date	Start time	End time	Down time	Fishing time (hrs)	Fishing interval (d/n)	Mortality (blank = none)	Diet keep (blank = none)	Species code	Total count	Length (mm)	Weight (g)	COMMENTS
152	F6	S	19-Jul	20-Jul	21:16	8:19	0:00:00	11.05	n			THSB	3			
152	F6	S	19-Jul	20-Jul	21:16	8:19	0:00:00	11.05	n			FHSC	18			
152	F6	S	19-Jul	20-Jul	21:16	8:19	0:00:00	11.05	n			TUPO	1			
153	F6	S	20-Jul	20-Jul	8:19	20:43	0:00:00	12.40	d			ARFL	61			
153	F6	S	20-Jul	20-Jul	8:19	20:43	0:00:00	12.40	d			FHSC	6			
153	F6	S	20-Jul	20-Jul	8:19	20:43	0:00:00	12.40	d			LSCS	1			
153	F6	S	20-Jul	20-Jul	8:19	20:43	0:00:00	12.40	d			BRCS	2			
154	F6	N	20-Jul	20-Jul	8:07	20:53	0:00:00	12.77	d			ARFL	7			
154	F6	N	20-Jul	20-Jul	8:07	20:53	0:00:00	12.77	d			SFCD	15			
154	F6	N	20-Jul	20-Jul	8:07	20:53	0:00:00	12.77	d			FHSC	5			
154	F6	N	20-Jul	20-Jul	8:07	20:53	0:00:00	12.77	d			BRCS	3			
154	F6	N	20-Jul	20-Jul	8:07	20:53	0:00:00	12.77	d			LSCS	3			
154	F6	N	20-Jul	20-Jul	8:07	20:53	0:00:00	12.77	d			TUPO	2			
155	F6	N	20-Jul	21-Jul	20:53	9:10	0:00:00	12.28	n			ARFL	5			
155	F6	N	20-Jul	21-Jul	20:53	9:10	0:00:00	12.28	n			SFCD	24			
155	F6	N	20-Jul	21-Jul	20:53	9:10	0:00:00	12.28	n			FHSC	4			
155	F6	N	20-Jul	21-Jul	20:53	9:10	0:00:00	12.28	n			TUPO	3			
156	F6	S	20-Jul	21-Jul	20:43	9:19	0:00:00	12.60	n			ARFL	17			
156	F6	S	20-Jul	21-Jul	20:43	9:19	0:00:00	12.60	n			SFCD	22			
156	F6	S	20-Jul	21-Jul	20:43	9:19	0:00:00	12.60	n			FHSC	7			
156	F6	S	20-Jul	21-Jul	20:43	9:19	0:00:00	12.60	n			HERR	1			
156	F6	S	20-Jul	21-Jul	20:43	9:19	0:00:00	12.60	n			BRCS	6			
156	F6	S	20-Jul	21-Jul	20:43	9:19	0:00:00	12.60	n			RBSM	1			
156	F6	S	20-Jul	21-Jul	20:43	9:19	0:00:00	12.60	n			THSB	1			
156	F6	S	20-Jul	21-Jul	20:43	9:19	0:00:00	12.60	n			TUPO	1	49		
156	F6	S	20-Jul	21-Jul	20:43	9:19	0:00:00	12.60	n			TUPO	1			

Appendix B. Temperature, dissolved oxygen, and salinity measurements at fixed stations sampled in Safety Sound in 2002. Depths greater than 0 m are all on the bottom of Safety Sound.

Date	Station	Region	Sample depth (m)	Temperature (°C)	Dissolved oxygen (mg/l)	Salinity (ppt)
2-Jul-02	E1	Outlet	0.0	9.3	8.60	31.7
2-Jul-02	E1	Outlet	0.5	9.4	8.50	31.2
2-Jul-02	E2	Outlet	0.0	8.9	8.84	32.4
2-Jul-02	E2	Outlet	1.0	8.9	8.40	32.4
2-Jul-02	E3	Outlet	0.0	9.2	8.90	32.0
2-Jul-02	E3	Outlet	1.5	9.2	8.22	32.0
2-Jul-02	E4	Outlet	0.0	11.2	8.50	30.2
2-Jul-02	E4	Outlet	2.0	10.9	6.71	28.9
4-Jul-02	E1	Outlet	0.0	9.6	8.18	31.4
4-Jul-02	E1	Outlet	0.5	9.5	7.78	31.4
4-Jul-02	E2	Outlet	0.0	9.6	8.02	31.4
4-Jul-02	E2	Outlet	1.0	9.6	7.75	31.4
4-Jul-02	E3	Outlet	0.0	9.7	8.35	31.3
4-Jul-02	E3	Outlet	1.5	9.7	8.29	31.3
4-Jul-02	E4	Outlet	0.0	10.1	8.90	29.6
4-Jul-02	E4	Outlet	1.5	10.1	8.19	29.6
6-Jul-02	E1	Outlet	0.0	10.0	7.60	32.0
6-Jul-02	E1	Outlet	0.8	10.0	7.26	32.0
6-Jul-02	E2	Outlet	0.0	9.9	7.74	32.1
6-Jul-02	E2	Outlet	1.3	9.9	7.46	32.0
6-Jul-02	E3	Outlet	0.0	9.9	7.89	32.1
6-Jul-02	E3	Outlet	1.5	9.9	7.63	32.1
6-Jul-02	E4	Outlet	0.0	10.7	8.52	30.0
6-Jul-02	E4	Outlet	1.5	10.8	8.76	30.0
8-Jul-02	E1	Outlet	0.0	10.6	8.68	31.8
8-Jul-02	E1	Outlet	1.8	10.6	8.64	31.8
8-Jul-02	E2	Outlet	0.0	10.6	8.84	31.8
8-Jul-02	E2	Outlet	1.3	10.6	8.92	31.7
8-Jul-02	E3	Outlet	0.0	10.4	8.86	31.7
8-Jul-02	E3	Outlet	1.5	10.4	8.75	31.7
8-Jul-02	E4	Outlet	0.0	10.1	6.76	29.5
8-Jul-02	E4	Outlet	2.0	10.0	8.73	29.6
11-Jul-02	E1	Outlet	0.0	11.0	8.60	31.5
11-Jul-02	E1	Outlet	0.3	11.0	8.55	31.5
11-Jul-02	E2	Outlet	0.0	10.8	8.74	31.6

Date	Station	Region	Sample depth (m)	Temperature (°C)	Dissolved oxygen (mg/l)	Salinity (ppt)
11-Jul-02	E2	Outlet	1.0	10.8	8.57	31.6
11-Jul-02	E3	Outlet	0.0	12.5	8.89	30.0
11-Jul-02	E3	Outlet	1.3	12.5	9.01	30.1
11-Jul-02	E4	Outlet	0.0	13.1	9.58	27.8
11-Jul-02	E4	Outlet	1.5	13.1	9.51	27.8
11-Jul-02	E5	Outlet	0.0	13.3	8.61	27.2
11-Jul-02	E5	Outlet	1.3	13.3	8.44	27.2
14-Jul-02	E1	Outlet	0.0	12.5	9.11	31.2
14-Jul-02	E1	Outlet	0.3	12.5	8.55	31.2
14-Jul-02	E2	Outlet	0.0	12.4	8.70	31.3
14-Jul-02	E2	Outlet	0.8	12.4	8.86	31.3
14-Jul-02	E3	Outlet	0.0	13.6	9.84	30.9
14-Jul-02	E3	Outlet	1.3	13.6	9.53	30.8
14-Jul-02	E4	Outlet	0.0	15.4	8.69	29.3
14-Jul-02	E4	Outlet	1.5	15.4	9.31	29.4
14-Jul-02	E5	Outlet	0.0	15.6	9.73	28.7
14-Jul-02	E5	Outlet	1.5	15.7	11.31	30.2
14-Jul-02	E7	Inlet	0.0	16.4	9.96	13.7
14-Jul-02	E7	Inlet	1.3	17.0	9.99	22.8
14-Jul-02	E8	Inlet	0.0	16.4	9.83	12.6
14-Jul-02	E8	Inlet	1.3	16.7	8.34	22.9
16-Jul-02	E1	Outlet	0.0	14.5	8.65	31.5
16-Jul-02	E1	Outlet	0.3	14.4	8.68	31.5
16-Jul-02	E2	Outlet	0.0	13.7	8.76	31.5
16-Jul-02	E2	Outlet	1.3	13.8	8.49	31.5
16-Jul-02	E3	Outlet	0.0	13.9	9.88	31.4
16-Jul-02	E3	Outlet	1.5	14.0	9.83	31.3
16-Jul-02	E4	Outlet	0.0	17.3	12.06	29.4
16-Jul-02	E4	Outlet	1.3	17.3	12.61	29.4
16-Jul-02	E5	Outlet	0.0	17.4	9.93	28.5
16-Jul-02	E5	Outlet	1.5	17.4	9.69	28.6
16-Jul-02	E7	Inlet	0.0	17.5	9.13	12.6
16-Jul-02	E7	Inlet	1.3	18.4	8.51	20.6
16-Jul-02	E8	Inlet	0.0	17.5	9.02	11.9
16-Jul-02	E8	Inlet	1.3	18.6	9.89	20.1
17-Jul-02	E6	Norton Sound	0.0	14.7	9.00	31.6
17-Jul-02	E6	Norton Sound	1.5		8.70	32.1
18-Jul-02	E1	Outlet	0.0	14.6	8.37	31.9
18-Jul-02	E1	Outlet	0.3	14.6	8.37	31.9

Date	Station	Region	Sample depth (m)	Temperature (°C)	Dissolved oxygen (mg/l)	Salinity (ppt)
18-Jul-02	E2	Outlet	0.0	13.3	8.54	31.9
18-Jul-02	E2	Outlet	1.0	13.3	8.54	31.8
18-Jul-02	E3	Outlet	0.0	13.5	9.19	31.9
18-Jul-02	E3	Outlet	1.0	13.7	9.25	31.8
18-Jul-02	E4	Outlet	0.0	18.5	11.67	29.3
18-Jul-02	E4	Outlet	1.3	18.5	11.91	29.3
18-Jul-02	E5	Outlet	0.0	18.7	10.49	27.7
18-Jul-02	E5	Outlet	1.5	18.8	10.85	27.7
18-Jul-02	E7	Inlet	0.0	18.5	8.55	9.6
18-Jul-02	E7	Inlet	1.3	18.2	8.13	10.1
18-Jul-02	E8	Inlet	0.0	18.4	8.31	10.4
18-Jul-02	E8	Inlet	1.0	18.5	7.74	14.5
20-Jul-02	E1	Outlet	0.0	15.2	8.04	31.3
20-Jul-02	E1	Outlet	0.5	15.2	7.96	31.3
20-Jul-02	E2	Outlet	0.0	15.0	7.91	31.3
20-Jul-02	E2	Outlet	1.0	14.9	7.94	31.4
20-Jul-02	E3	Outlet	0.0	14.9	8.11	31.4
20-Jul-02	E3	Outlet	1.3	14.9	9.28	31.4
20-Jul-02	E4	Outlet	0.0	16.5	9.60	30.9
20-Jul-02	E4	Outlet	1.5	16.3	9.26	31.1
20-Jul-02	E5	Outlet	0.0	19.7	9.01	28.4
20-Jul-02	E5	Outlet	1.8	19.7	9.59	28.4
20-Jul-02	E6	Norton Sound	0.0	14.6	8.14	31.5
20-Jul-02	E6	Norton Sound	1.5	14.6	8.14	31.4
20-Jul-02	E7	Inlet	0.0	19.5	6.93	12.5
20-Jul-02	E7	Inlet	1.3	19.5	9.75	12.6
20-Jul-02	E8	Inlet	0.0	19.7	8.32	11.3
20-Jul-02	E8	Inlet	1.3	19.7	8.23	11.4

Appendix C. Table and graph of observed tide levels for the June 30 - July 21, 2002 study period for Norton Sound at Nome, Alaska (Station # 9468756: N64° 30.0', W165° 25.8'). Data from NOAA (<http://www.tidesandcurrents.noaa.gov/>). LL = lower low water

Date	Time	Height (ft)	Height (m)	Designation
6/30/2002	1:36	1.43	0.44	H
6/30/2002	11:48	-0.04	-0.01	LL
6/30/2002	19:24	1.5	0.46	HH
6/30/2002	23:18	1.29	0.39	L
7/1/2002	6:30	1.61	0.49	H
7/1/2002	12:24	0.55	0.17	LL
7/1/2002	19:48	1.72	0.52	HH
7/2/2002	0:48	1.41	0.43	L
7/2/2002	5:06	1.53	0.47	H
7/2/2002	11:42	0.83	0.25	LL
7/2/2002	20:06	2.03	0.62	HH
7/3/2002	2:48	0.94	0.29	L
7/3/2002	19:48	2.54	0.77	HH
7/4/2002	6:30	0.12	0.04	LL
7/4/2002	9:24	0.32	0.10	H
7/4/2002	15:18	-0.06	-0.02	LL
7/4/2002	22:18	1.52	0.46	HH
7/5/2002	4:42	0.94	0.29	L
7/5/2002	8:42	1.21	0.37	H
7/5/2002	14:24	0.97	0.30	L
7/5/2002	21:00	1.93	0.59	HH
7/6/2002	5:06	0.62	0.19	LL
7/6/2002	21:54	2.21	0.67	HH
7/7/2002	6:30	1.03	0.31	LL
7/7/2002	22:12	1.84	0.56	HH
7/8/2002	5:48	0.76	0.23	LL
7/8/2002	20:54	2.49	0.76	HH
7/9/2002	10:06	1.4	0.43	LL
7/9/2002	14:00	1.67	0.51	H
7/9/2002	17:36	1.51	0.46	L
7/9/2002	21:54	1.76	0.54	HH
7/10/2002	7:54	0.22	0.07	LL
7/10/2002	21:48	1.65	0.50	HH
7/11/2002	8:30	0.07	0.02	LL
7/11/2002	16:42	1.42	0.43	H
7/11/2002	18:42	1.32	0.40	L

Date	Time	Height (ft)	Height (m)	Designation
7/11/2002	22:54	1.7	0.52	HH
7/12/2002	8:54	0.17	0.05	LL
7/12/2002	16:54	1.42	0.43	H
7/12/2002	19:36	1.3	0.40	L
7/12/2002	23:48	1.69	0.52	HH
7/13/2002	9:54	0.06	0.02	LL
7/13/2002	18:00	1.56	0.48	H
7/13/2002	21:00	1.35	0.41	L
7/14/2002	2:54	1.75	0.53	HH
7/14/2002	10:54	0.08	0.02	LL
7/14/2002	18:18	1.44	0.44	H
7/14/2002	22:00	1.09	0.33	L
7/15/2002	4:42	1.58	0.48	HH
7/15/2002	11:24	-0.06	-0.02	LL
7/15/2002	18:48	1.38	0.42	H
7/15/2002	23:12	1.04	0.32	L
7/16/2002	5:30	1.62	0.49	HH
7/16/2002	12:24	-0.06	-0.02	LL
7/16/2002	19:18	1.42	0.43	HH
7/17/2002	0:30	0.75	0.23	L
7/17/2002	6:42	1.37	0.42	H
7/17/2002	13:18	-0.21	-0.06	LL
7/17/2002	19:42	1.34	0.41	HH
7/18/2002	1:54	0.39	0.12	L
7/18/2002	8:00	1.19	0.36	H
7/18/2002	14:00	-0.07	-0.02	LL
7/18/2002	20:00	1.43	0.44	HH
7/19/2002	3:30	0.04	0.01	L
7/19/2002	9:00	0.77	0.23	H
7/19/2002	14:48	-0.09	-0.03	LL
7/19/2002	20:36	1.19	0.36	HH
7/20/2002	4:06	-0.14	-0.04	LL
7/20/2002	12:30	0.85	0.26	H
7/20/2002	15:18	0.61	0.19	L
7/20/2002	21:36	2.02	0.62	HH
7/21/2002	5:00	0.61	0.19	LL
7/21/2002	12:30	1.55	0.47	H
7/21/2002	16:24	1.17	0.36	L
7/21/2002	22:18	2.13	0.65	HH

Appendix D. Average and maximum daily wind speeds recorded for Norton Sound, Alaska during the 2002 study period (NOAA 2003).

Date	Average daily wind speed (m/s)	Maximum daily wind speed (m/s)
30-Jun-02	4.6	8.8
1-Jul-02	4.4	8.5
2-Jul-02	3.9	9.2
3-Jul-02	5.0	13.6
4-Jul-02	4.4	10.5
5-Jul-02	5.4	10.7
6-Jul-02	3.9	7.4
7-Jul-02	3.0	8.6
8-Jul-02	6.6	13.6
9-Jul-02	3.9	13.1
10-Jul-02	0.5	3.5
11-Jul-02	1.4	5.5
12-Jul-02	0.8	6.1
13-Jul-02	1.7	7.1
14-Jul-02	0.8	7.1
15-Jul-02	2.6	6.4
16-Jul-02	2.8	6.1
17-Jul-02	6.4	10.9
18-Jul-02	5.3	12.4
19-Jul-02	4.1	9.6
20-Jul-02	2.4	6.5
21-Jul-02	2.2	6.8