BENTHIC COMMUNITY DEVELOPMENT IN BOCA DE QUADRA, ALASKA

A

THESIS

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MASTER OF SCIENCE

By

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BENTHIC COMMUNITY DEVELOPMENT IN BOCA DE QUADRA, ALASKA

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ABSTRACT

The purpose of this experiment was to find ways of evaluating the community development in Boca de Quadra, a fjord in southeast Alaska, after a severe physical disturbance. Containers of defaunated sediment were used near the head of the fjord to simulate the benthic habitat after such a disturbance. Important features of community development were described, potential indicator taxa were selected, and the extent of community development was examined. Seasonal variations tended to mask the developmental trends. However, samples collected during the same season, but representing various lengths of colonization, allowed developmental trends to be observed in faunal composition, numbers of taxa, density, biomass, and diversity. Maldanidae, Nematoda, *Lumbrineris luti*, *Leitoscoloplos pugettensis*, *Pholoe minuta*, and Spionidae are potential indicators of community maturity.

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"O Lord, how manifold are thy works!
In wisdom hast thou made them all;
the earth is full of thy creatures.

Yonder is the sea, great and wide,
which teems with things innumerable,
living things both small and great."

Psalms 104: 24-25

INTRODUCTION

Background

Boca de Quadra, a southeast Alaskan fjord, is a potential marine dumping site for the proposed Quartz Hill molybdenum mine. This study represents a first attempt in Boca de Quadra at evaluating the benthic community's response to disturbances, such as localized catastrophic burial. Containers of defaunated natural sediment were used to simulate the benthic habitat after a disturbance. Animals were allowed to colonize these containers and subsequent development of the community was monitored. This work was designed to provide a better understanding of benthic colonization; such understanding is essential for predicting the effects of various man-made and natural disturbances. Natural disturbances are considered to be very important in structuring shallow, subtidal communities in temperate regions. Some ecosystems can be viewed as a patchwork of communities in various successional stages (Whittaker and Levin, 1977). This patchwork results from disturbances. Communities themselves can be successional mosaics (Johnson, 1970; Grassle and Sanders, 1973; Whittaker and Levin, 1977). Recolonization of soft-bottom habitats following periods of hypoxia (Leppakoski, 1969, 1971; Santos and Simon, 1980*a*,*b*; Arntz, 1981), red tides

(Dauer and Simon, 1976; Simon and Dauer, 1977), feeding pit formation by rays (VanBlaricom, 1982; Sherman et al. 1983), production of fecal mounds (Thistle, 1980), sediment erosion caused by storms (Rachor and Gerlach, 1978; Glémarec, 1978-79; Ballantine, 1984), and a submarine landslide (VanBlaricom, 1978) attest to the variety of natural disturbances and the importance of the disturbances to community structure. Sugai and Burrell (1985) reported sediment slumping down the steep sides of Boca de Quadra: these are likely to be natural patch-forming disturbances.

Man-made disturbances in coastal areas of the sea are becoming more important as the human population increases and utilizes more of the earth's resources. Succession following disturbances caused by organic enrichment (Rosenberg, 1973, 1976; Pearson and Rosenberg, 1978; Sanders et al. 1980), industrial wastes (Dean and Haskin, 1964), dredging (Pfitzenmeyer, 1970; Kaplan et al. 1975; Stickney and Perlmutter, 1975; Oliver et al. 1977; Connor and Simon, 1979; Subrahmanyam and Kruczynski, 1979; Van Dolah et al. 1979; Bonsdorff, 1980; Swartz et al. 1980), and mine tailings disposal (Kathman et al. 1984a) has been documented. Such studies have only been made where large-scale disturbances and management decisions have already taken place. These studies differ from each other not only in source of disturbance, but also in size of the disturbed area, degree of defaunation, persistence of alterations made in the environment, and types of colonists available for recolonization. Such differences make it difficult to find underlying schemes which are common to all colonization processes. In a review of succession relating to disturbances by organic enrichment, Pearson and Rosenberg (1978) suggest a common scheme with three successional stages: 1) a peak of opportunists, with few species in great numbers, 2) an ecotone point, where abundance is low and evenness diversity high, and 3) a transition stage with initially great fluctuations of population abundances progressing toward a more stable "normal" community. This scheme is common to succession following disturbances caused by organic enrichment, but succession following many of the disturbances from other sources may not follow the same pattern (Thistle, 1981; Sherman et al. 1983; Widbom, 1983).

The use of containers of defaunated sediment to simulate a post-disturbance habitat allows investigation and experimentation on colonization to be carried out in non-disturbed areas, and in a relatively uniform manner (uniform area, degree of defaunation, etc.). The macrofaunal colonization of soft sediments in the subtidal environment has been studied through the use of sediment containers in a number of experiments (Grassle and Grassle, 1974; Brunswig *et al*. 1976; Richter and Sarnthein, 1977; McCall, 1977, 1978; Zajac and Whitlatch, 1982*a*,*b*; Arntz and Rumohr, 1982). The present study is unique among sediment container experiments because of its location in an, as yet, unpolluted fjord environment.

Techniques for monitoring changes in the benthos can be examined by using containers which eliminate many experimental variables. One of the most frequently used techniques for evaluating changes in the benthos is to compare diversity values. The theory is that a progression from simple, low diversity communities to complex, high diversity communites will occur with increasing time after a major physical disturbance (Odum, 1969). Shaw *et al*. (1983) examined one aspect of diversity, the dominance structure of a community, in order to detect pollution-induced disturbance. Another technique is to look at the distribution of individuals among species (Patrick, 1967; Gray and Mirza, 1979; Gray, 1981); the distribution is expected to change with disturbance. Indicator species are also used to monitor changes. Gray and Pearson (1982) and Pearson *et al*. (1983) have used the distribution of individuals among species to objectively select indicator species. Other methods of selecting indicator species have also been used. McCall (1977) and Rhoads *et al*. (1978) selected groups of species with particular successional responses. Grassle and Grassle (1974) found species with opportunistic life histories to be indicative of disturbed conditions.

During community development later colonists may have different life history characteristics than do initial colonizing species. The life history characteristics that are most likely to differ are those affecting a species role in succession. The attributes of a species which are vital to its role in succession have been termed "vital attributes" by Noble and Slatyer (1980). The most important vital attributes for succession in terrestrial plant communities (but applicable to a wide range of community types) include: 1) ability to persist during a disturbance or method of arrival at a site after a disturbance, 2) ability to establish and grow to maturity in the context of a developing community, and 3) time taken for the species to reach critical life stages. Several life history characteristics may be responsible for a particular vital attribute. In marine benthic communities adult and larval mobility, development type of the young, and brood protection capabilities of a species all influence the arrival at a site following a disturbance. Grassle and Grassle (1974) characterize the polychaete species that respond rapidly to environmental perturbations as those combining some sort of brood protection and planktonic larvae, so the newly released larvae can settle immediately to the bottom or delay metamorphosis for widespread dispersal. Life history characteristics, such as method of feeding and presence or absence of a tube, influence a species ability to establish and grow to maturity in a developing community. For example, in Buzzards Bay, Massachusetts, filter feeders are available for colonization, but are unable to establish and grow in some areas of the bay because of filter clogging due to intensive sediment reworking by the established deposit feeding community (Rhoads and Young, 1970). Rhoads and Boyer (1982) have suggested that the tubes of some polychaetes allow the worms to establish and grow in a newly-disturbed substrate by providing a controlled micro-environment within which to function. The time taken to reach critical life stages, such as reproductive maturity, is largely unknown for species in Boca de Quadra. Conceptually, however, early colonists should take less time to mature than later colonists (Odum, 1969; Rhoads et al. 1978).

Objectives

The general purpose of this sediment container experiment was to study development of a shallow benthic community following a localized catastrophic disturbance in Boca de Quadra. The specific objectives of the study were as follows:

I. Describe the temporal development of the community.

   1. Describe successional changes in species number, density, biomass, and species composition.

   2. Describe the colonization trends in structural properties of the community such as diversity, dominance, and the distribution of individuals among species.

   3. Describe seasonal variations in colonization.

II. Describe the roles of species and particular groups of species in colonization.

   1. Describe colonization trends for selected species.

   2. Look for marked differences in life history characteristics between initial species to colonize a disturbed area and later colonists.

III. Evaluate the extent of community development.

   1. Look for species equilibrium.

   2. Qualitatively compare tray species assemblages with the ambient community, realizing the limitations inherent in comparing two different sampling techniques.

STUDY SITE

The colonization experiment was carried out at 15 m depth near the head of Boca de Quadra, a southeast Alaskan fjord (55°19.6' N, 130°28.6' W). Boca de Quadra (Fig. 1) is located in a pristine, mountainous region within the boundaries of the Misty Fjords National Monument. The fjord is non-glaciated, 60 km in length, and has 3 sills. The maximum depth in the fjord is 390 m in the central basin. The average annual precipitation is 400 to >500 cm $year^{-1}$. The Keta River drains into Boca de Quadra 0.8 km from the study site; Aronitz Creek drains into the fjord approximately 100 m from the study site. Water column salinity at the study site ranged from 28‰, during the fall heavy rainfall period, to 32‰ in February. Water temperatures were between 6° and 11°C. The study site was in the euphotic zone on a steep, sand and silt slope. The slope was more gradual, however, than were the slopes in most other shallow, subtidal areas of the fjord. There were no macrophytes growing at the study site. The large seastar, *Pycnopodia helianthoides*, and the Dungeness crab, *Cancer magister*, were common in the area.

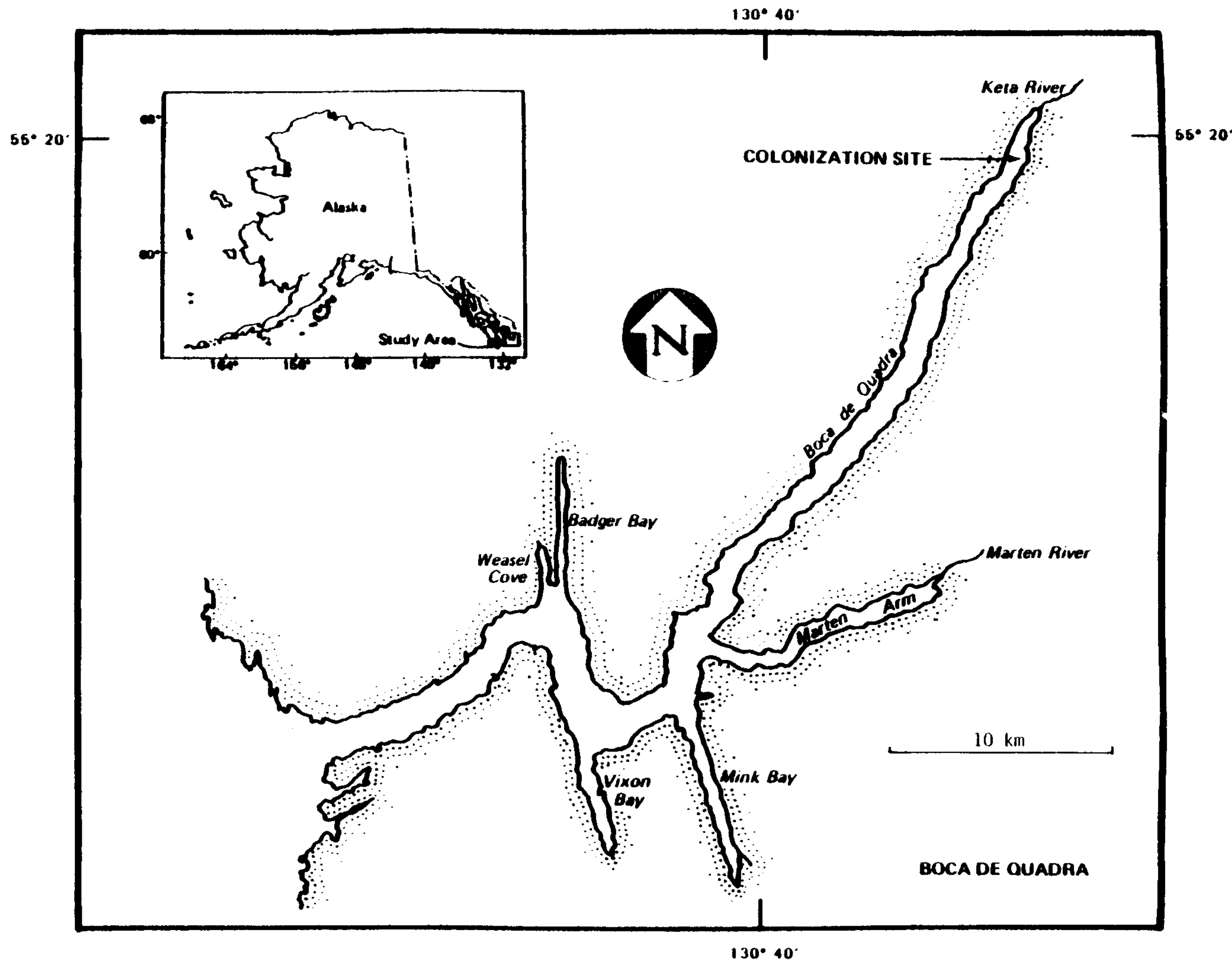

Fig. 1. Study site in Boca de Quadra, a fjord in southeast Alaska.

Materials and Methods

Plastic containers of defaunated sediment were placed directly on the natural bottom to simulate the benthic habitat after a severe, local disturbance. Weighted PVC frames kept the containers in place. Each container had a surface area of 0.1 m^2 and a depth of 12 cm. The sediment used in the containers was obtained from oceanographic station BQ3B (55°17.1' N, 130°31.8' W, Burrell et al. 1979) at 155 m depth. The sediment was defaunated by onshore storage for several months in open plastic buckets and then by a sequence of freezing and thawing. The sediment had a water content of 50%, was 86% silt-clay, and had an organic carbon content of 4.1% at the time of placement. The sediment in the containers was finer than the natural sediment in the study area.

One sampling unit consisted of one container of sediment. Two containers were collected for each colonization period. The sampling scheme is shown in Fig. 2. Samples have been labeled throughout this work by the number of weeks during which they were colonized and the date of their collection.

The containers were positioned and collected by SCUBA divers. Plastic lids were placed on the containers before they were transported between the bottom and the surface. For each colonization period, an empty container was

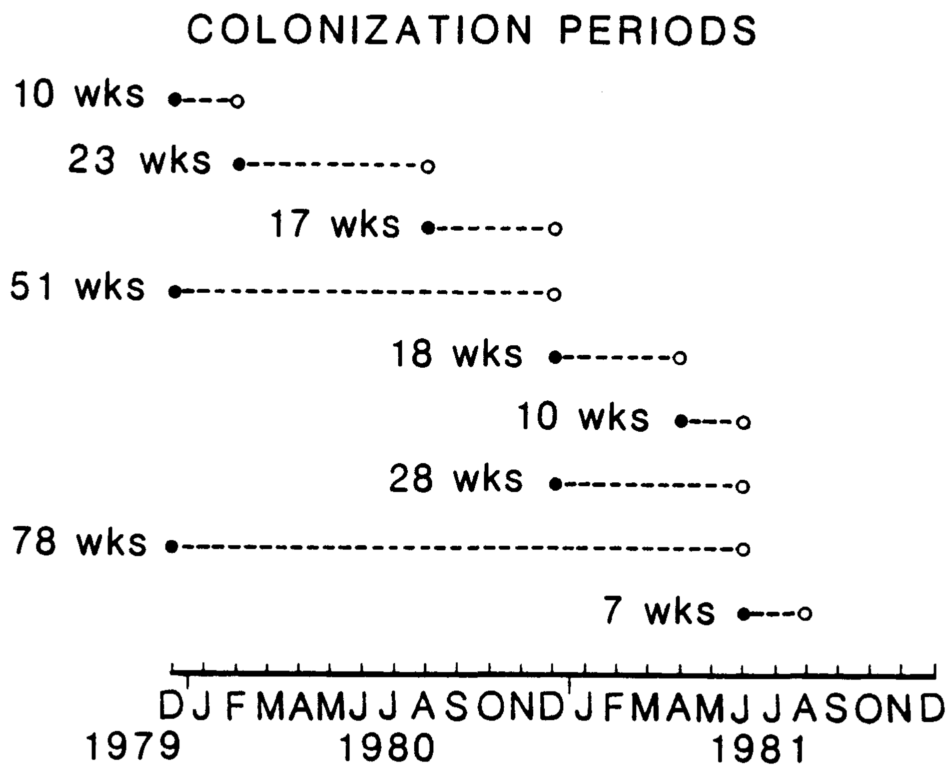

Fig. 2. Periods when sediment containers were at 15 m depth in Boca de Quadra. The closed circle (●) represents the time of container placement and the open circle (o) shows the time of collection.

positioned alongside the sediment containers within the frame, to provide an estimation of sedimentation levels. Two van Veen grabs of 0.1 m^2 each were taken from the natural sea bottom in the area of the study site on August 30, 1982, at 15 m depth, for a qualitative species comparison with the experimental samples.

Both container and grab samples were washed through a 0.5 mm sieve. The sieve residue was preserved in 10% buffered formalin and stained with rose bengal for transport to the laboratory. There the organisms were sorted from the residual material under a binocular dissection microscope at 120 X, identified to the lowest taxa, counted, freeze-dried, and weighed.

The Czekanowski coefficient was used to calculate a similarity matrix for normal cluster analysis with samples as the entities to be classified and species as their attributes.

$$Cs_{1,2} = \frac{2W}{A + B}$$

where A = the sum of the abundances of sample one

B = the sum of the abundances of sample two

W = the sum of the lesser abundances for each species shared by samples one and two.

The Czekanowski coefficient tends to emphasize the effect of dominant species, so natural logarithm transformed abundance data, $y = \ln(x+1)$, were used to reduce the influence of dominant species on the similarity determination. Taxa which could not be identified to genus, and those which may have included more than one species, were eliminated from the analysis. A dendrogram was constructed from the similarity matrix using a group average agglomerative hierarchical cluster analysis (Lance and Williams, 1966).

Diversity was calculated by the following form of the Shannon-Wiener information statistic (Shannon and Weaver, 1949):

$$H' = -\sum_{i=1}^{s} p_i \ln p_i$$

where $p_i = n_i/N$

s = total number of species

n_i = number of individuals of the ith species

N = total number of individuals

Rank species abundance curves were use to show dominance-diversity (as in Shaw et al. 1983). These curves were made by ranking the species in order of abundance and plotting species abundance (as the percentage of the total abundance of all species) against species rank for the 10 most common species.

The method for determining the distribution of individuals among species followed Gray and Pearson (1982) and Pearson et al. (1983). Plots were made of the number of species against the number of individuals per species in geometric classes. A x2 scale was used for the geometric classes, i.e. class I = 1 individual per species, class II = 2 to 3 individuals per species, class III = 4 to 7 individuals per species, class IV = 8 to 15 individuals per species, etc. Data for this analysis were based on two 0.1 m^2 containers taken for each time period and the sample abundance numbers were raised to numbers per m^2 in order to maintain comparability with other studies. This made an amalgamation of the first three geometric scale units which may have distorted the graph at the left end.

Gray and Pearson (1982) use the moderately abundant species from geometric abundance classes V and VI as indicator species. In addition to using the methods of Gray and Pearson to select indicator species, a comprehensive search for indicator species was made. Taxa present in three or more sampling periods and having 10 or more individuals per container in at least one period were selected. From this select group, animals for which there were taxonomic problems and those not identified to the species level were eliminated or grouped. An example of animals grouped because of problems with their identification was the family Spionidae. Small specimens of this family were difficult to completely identify, especially Prionospio steenstrupi and Prionospio cirrifera which were often damaged in the sieving process. The abundance patterns and time of occurrence of the remaining animals and groups were graphed and visually inspected for temporal and seasonal trends. Only the animals whose abundance patterns followed an obvious trend, i.e. appeared non-random, were included here in the results.

In order to examine seasonality, each sampling period was assigned to a particular season. The seasonal designations used for the samples of 18 weeks and shorter duration were based on the net colonization rates (total number of individuals/week) for these periods (Table 1). The 17 week sample spanning the period from August to December had nearly the same overall net colonization rate as the 18 week sample from the December to pre-bloom April period, and the same rate as the 10 week, December to February period. Therefore, these three sampling periods were designated parts of the winter season. No separate fall season was designated. The seasonal designations used for the longer duration samples (>18 wks) were based on the

Table 1. Seasonal designations for short duration samples based on net colonization rates.

Sample duration and collection date	Net colonization rate (individuals/week)	Season
10 wk, February	19	Winter
17 wk, December	19	Winter
18 wk, April	22	Winter
10 wk, June	193	Spring
7 wk, August	99	Summer

short duration colonization rates for the time period in which the long-term samples were collected. For example, the 78 week sample, placed in December and collected in June, was considered a spring sample because of the very high April-June colonization rate.

RESULTS

Community Development

Common animals: One hundred seventy six taxa were collected during the course of this study (Appendix A), and 60% of these were identified to species. Species present during every colonization period included: *Lumbrineris luti* Berkeley and Berkeley, *Pholoe minuta* (Fabricius), *Leitoscoloplos pugettensis* (Pettibone), *Prionospio* spp., and *Pectinaria granulata* (Linnaeus). The top five numerically dominant species based on all samples were (in rank order) *Harpacticus uniremis* Kroyer, *Spiophanes berkeleyorum* Pettibone, *Pholoe minuta*, *Lamprops serrata* Hart, and *Lumbrineris luti*. These five dominant species included 43% of the total number of individuals collected.

Phylum dominance: Dominance of the overall faunal composition fluctuated between polychaete and crustacean populations (Fig. 3). In general, the polychaetes were dominant in samples collected in winter and the crustaceans dominated samples collected in spring and summer. In samples collected at the same time (the set of three June samples; the set of two December samples), the relative percentages of polychaetes increased and crustaceans decreased as the colonization period lengthened. The mollusks remained a low and relatively constant percentage

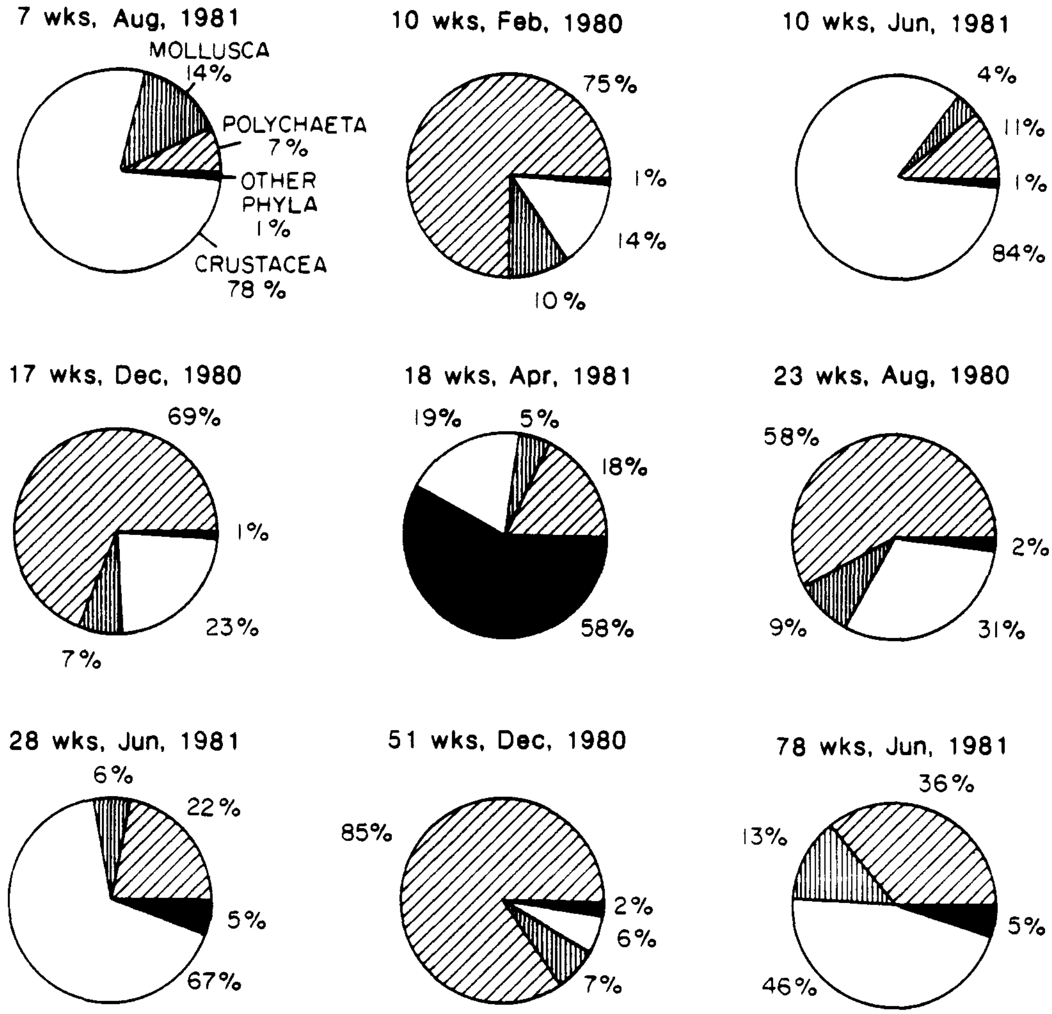

Fig. 3. Percentages of the total number of individuals from each colonization period belonging to the major phyla. Each sample is labelled with the duration and collection date.

of numerical composition at all times. The ambient community also had a very small percentage of mollusks (only 1%). The composition of the 18-week sample collected in April 1981, had an unusually high percentage of individuals in the category "other phyla", primarily because of a large number of Foraminifera.

Colonization curves: The total number of taxa, density, and biomass increased with the length of the colonization period (Figs. 4A, B, C). The best fitting simple curves for the three colonization variables were straight lines. The line, $y = 31 + 0.75\ x$, for the colonization by taxa and the line, $y = 52 + 9\ x$, for the biomass colonization were both significant at the 0.01 level ($F = 14.1$, $r^2 = 0.669$ and $F = 72.7$, $r^2 = 0.912$, respectively). The line for the density of individuals, $y = 390 + 41\ x$, was significant at the 0.05 level ($F = 10.9$, $r^2 = 0.608$). After 78 weeks of colonization, equilibria in terms of number of taxa, density, or biomass had not developed. There was a seasonal trend, as well as a colonization trend, in the number of taxa (Table 2). Containers collected in the spring had more taxa than did winter collected containers from the most closely comparable lengths of colonization.

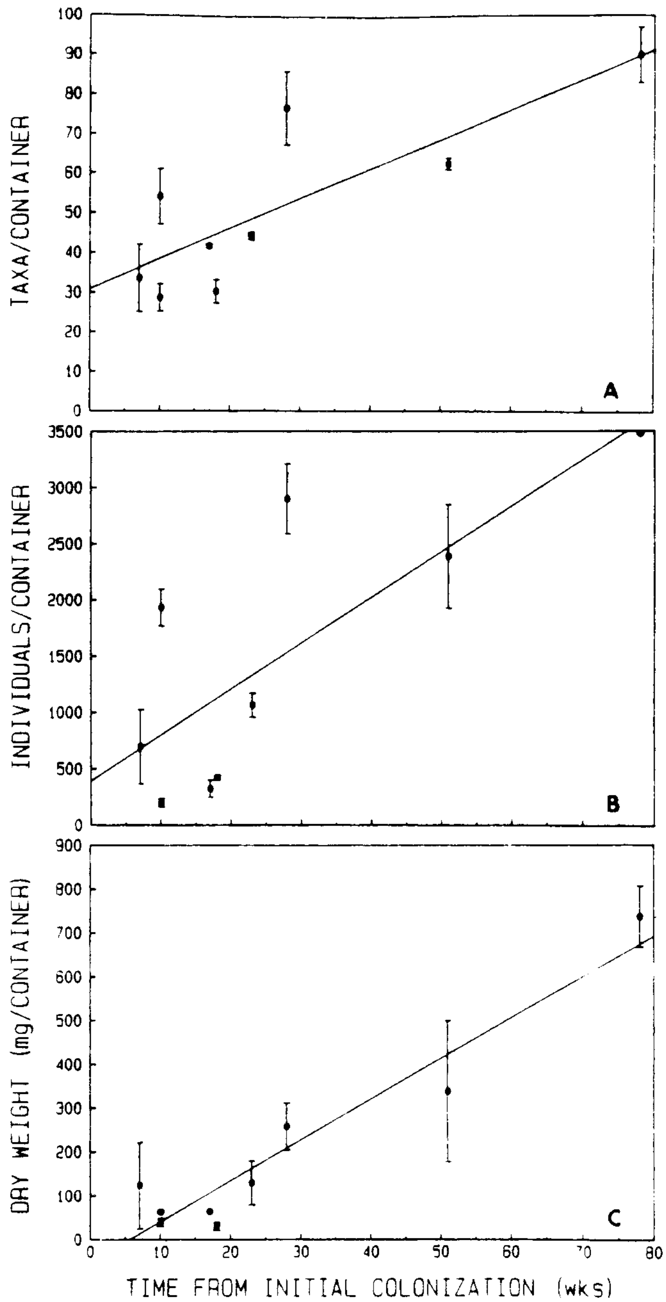

Fig. 4. Colonization trends in A) number of taxa, B) density, and C) biomass. Points are means of two sampling units, error bars show standard error of the mean.

Table 2. Seasonal pattern of the number of taxa.

Colonization period (weeks)	Number of taxa ($\bar{x} \pm 1$ S.E.)		
	Spring	Summer	Winter
7		34 ± 8	
10	54 ± 7		28 ± 3
17			42 ± 1
18			30 ± 3
23		44 ± 1	
28	76 ± 9		
51			62 ± 1
78	90 ± 7		

Temporal cluster analysis: Samples from the longer colonization periods (28, 51, and 78 weeks) were more similar to each other, in number of individuals of each species, than were the shorter term samples (7 weeks, Aug.; 10 weeks, Feb.; and 10 weeks, Jun.) to each other; even though the differences in length of colonization period were greater among the longer term samples (Fig. 5). For example, the 28- and 78-week samples, differing by 50 weeks of colonizing time, clustered at the 64% level of similarity, while the 7 week, Aug. and 10 week, Jun. samples, differing by 3 weeks, clustered at only 42% similarity.

Diversity: Shannon-Wiener diversity increased with increasing colonization periods for samples collected during the same season (Table 3). For example, diversity increased with increasing colonization period among the three samples collected in springtime. For samples having similar colonization lengths, the diversity values were relatively high in the winter, and lower in the spring. The lowest diversity (H' = 1.27) was for the 7-week sample collected in August 1981. At that time a high proportion (52%) of the individuals belonged to a single harpacticoid copepod species, _Harpacticus uniremis_. The seasonal variations in _H_. _uniremis_ abundance (Fig. 6) greatly influenced the diversity patterns.

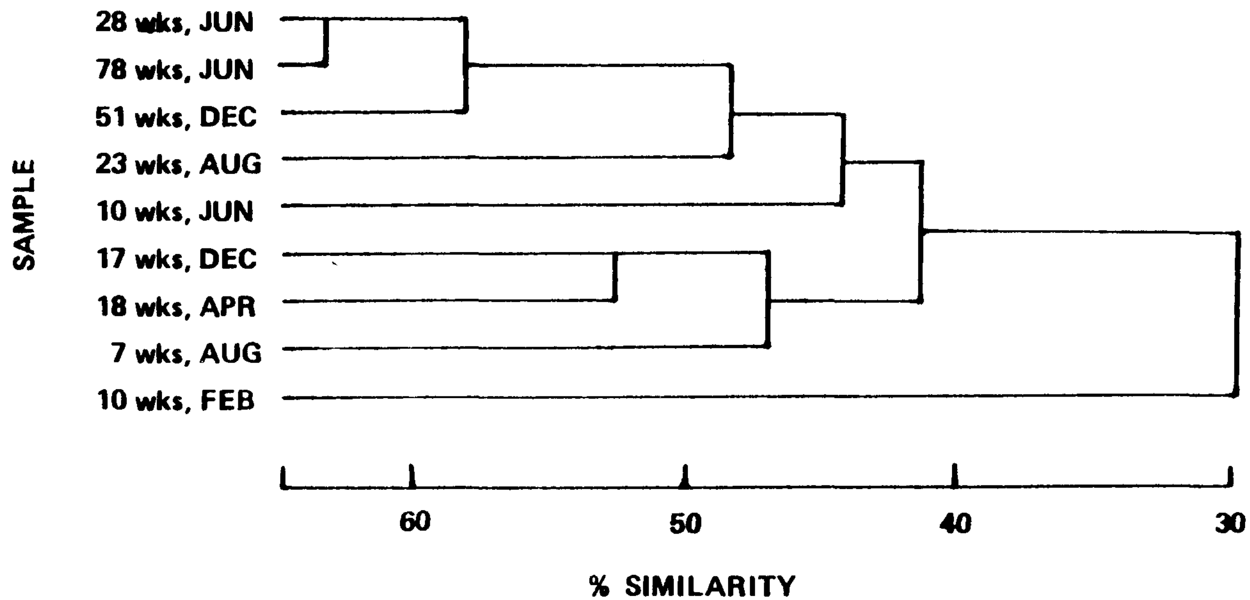

Fig. 5. Dendogram produced by cluster analysis using the Czekanowski similarity coefficient.

Table 3. Seasonal pattern of Shannon-Wiener diversity values.

Colonization period (weeks)	Diversity index (H')		
	Spring	Summer	Winter
7		1.27	
10	1.30		2.24
17			2.28
18			2.29
23		2.21	
28	1.72		
51			2.79
78	2.38		

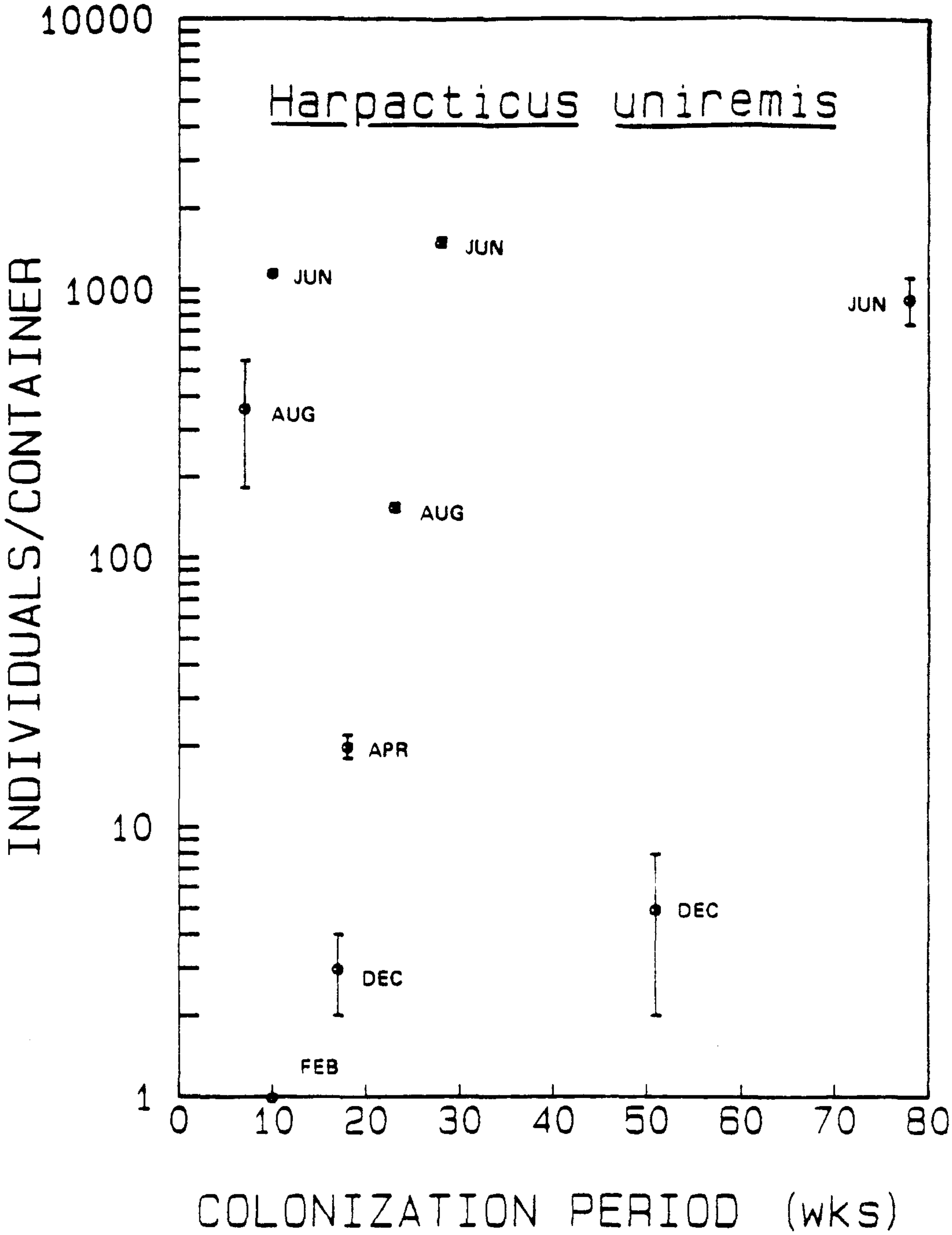

Fig. 6. Variations in abundance of Harpacticus uniremis with length of colonization period and seasons of sample collection (collection months shown next to points). Abundance values are mean number of individuals per container ± 1 standard error of the mean.

Harpacticus uniremis was extremely abundant in samples collected in June: 26-60% of the total individuals in these samples were members of that one species. In contrast, samples collected during the winter had between 0-5% *H. uniremis*. It was not surprising then, that species diversity was low during the spring when *H. uniremis* was present in large numbers and higher during the winter when *H. uniremis* was scarce. Similarly, dominance, as shown by the rank species abundance curves (Fig. 7), was also tied to the relative abundance of *H. uniremis*. Samples collected at the same time in June, 1981 (10, 28, and 78 weeks) showed a decrease in dominance with increasing lengths of colonization.

Distribution of individuals among species: It was not possible to discern a trend in the distribution of individuals among species along the community development gradient (Fig. 8). There were also no apparent seasonal trends in the distribution of individuals among species. None of the distribution patterns showed indications, such as few rare species or widely separated species groups, of an extremely disturbed community. Geometric classes V and VI (Appendix C) from the 10- and 78-week samples collected in June included 36 species, but, as discussed later, only two of these species (*Lumbrineris luti* and *Leitoscoloplos pugettensis*) had abundance trends which could be associated

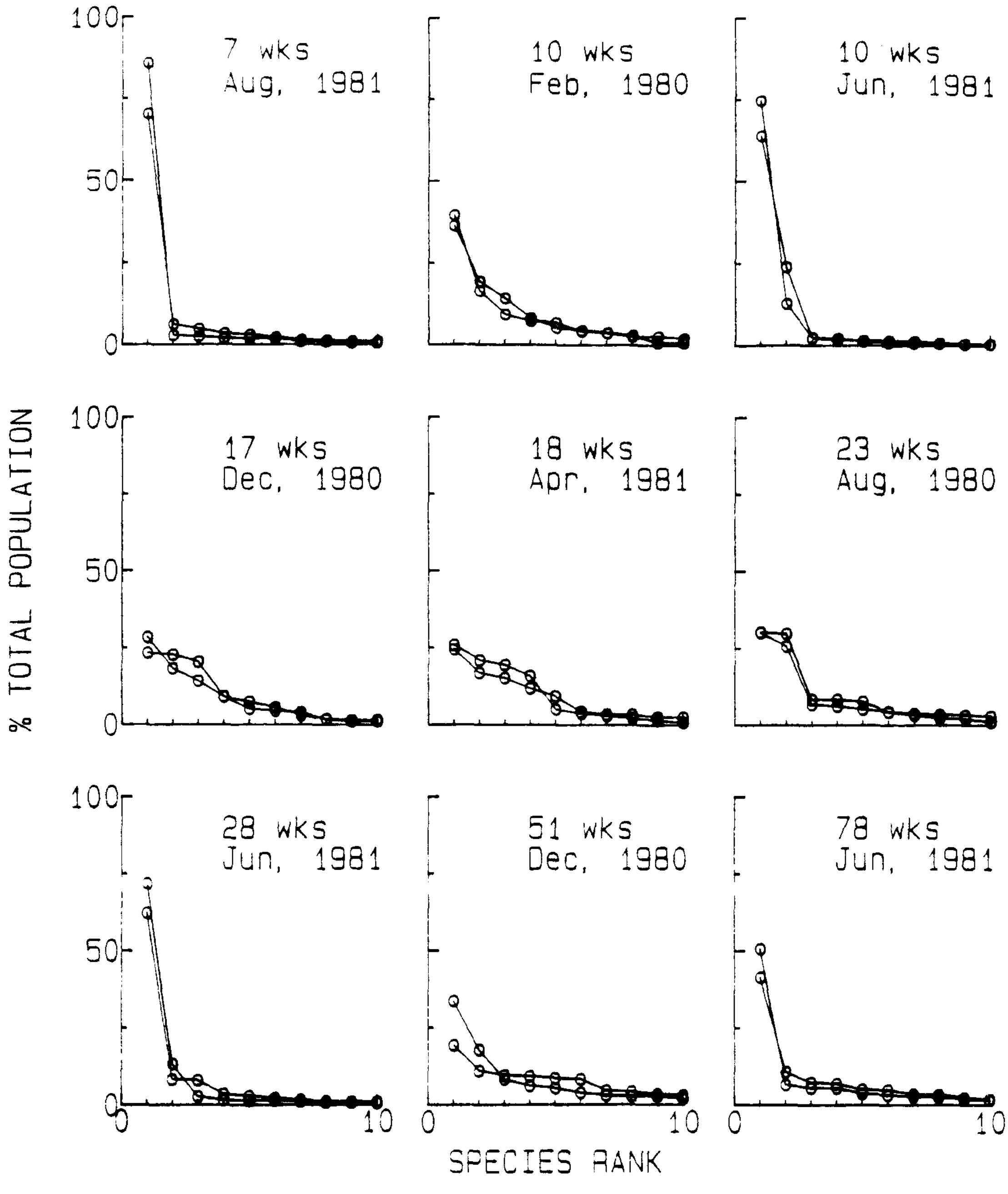

Fig. 7. Numerical dominance of species: only the 10 most abundant species are considered from each sample. The two curves on each graph represent the rank species abundance of the two replicate containers making up a sample.

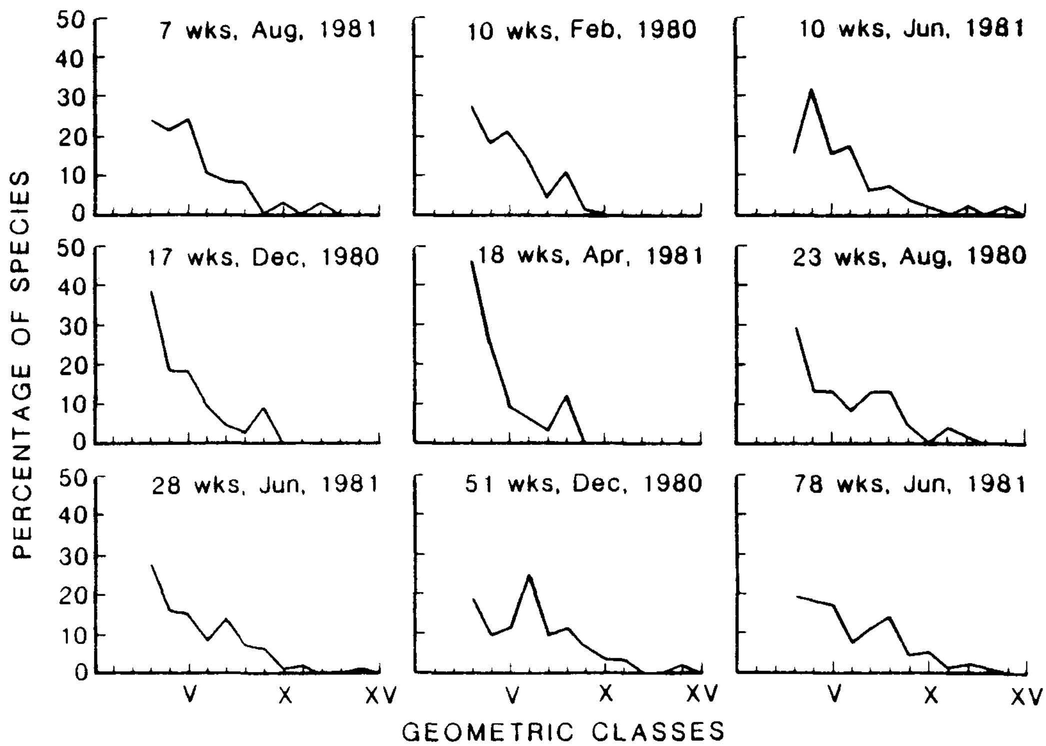

Fig. 8. Distribution of individuals among species for colonization periods from 7 to 78 weeks in length.

with duration of colonization and which might serve as good indicators of community developmental phases.

Selected Species

Indicator organisms: The comprehensive search for potential indicator species produced a few species abundance patterns which were correlated with the length of the colonization period. Axiothella rubrocincta (Johnson), Crucigera zygophora (Johnson), and Euryte longicauda Philippi were rare in short term samples but became increasingly abundant in samples of longer duration (Figs. 9A, B, C). The phylum Nematoda (Fig. 9D) also increased in abundance in samples of longer duration. Nematode abundance in the ambient community was two orders of magnitude higher than in the longest duration samples from the experimental containers. Neither A. rubrocincta, C. zygophora, nor E. longicauda were present in the ambient community samples. However, a member of the Maldanidae (other than A. rubrocincta), Euclymene sp., which was not present in the containers, was present in the ambient community. The Euclymene specimens were similar in size to the A. rubrocincta from the 78-week containers.

Lumbrineris luti and Leitoscoloplos pugettensis (both in geometric class VI, June, 10 week sample: Appendix C) and Pholoe minuta had initial population increases followed

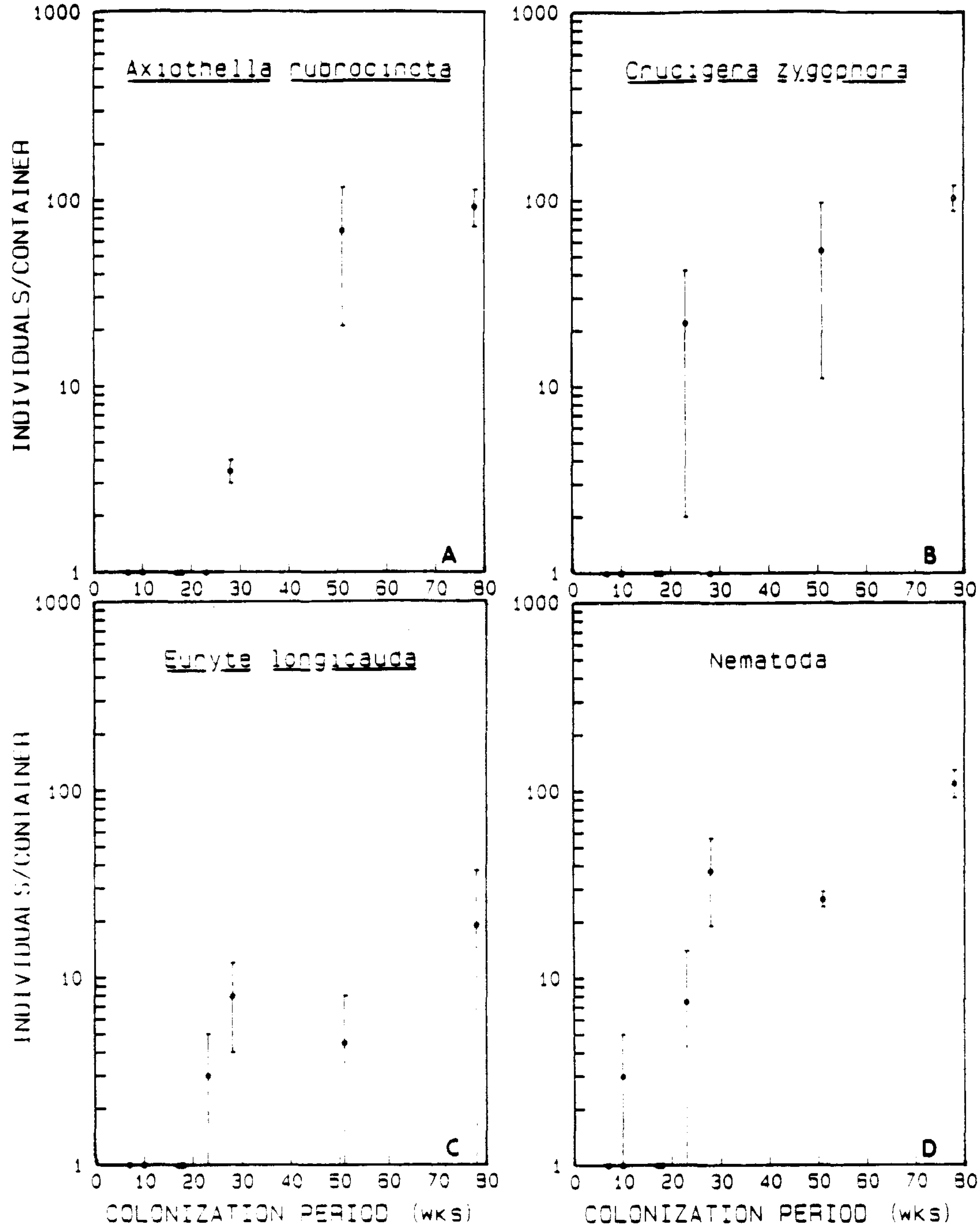

Fig. 9. Increasing abundance patterns of potential indicator taxa (mean $\pm$ 1 standard error of the mean).

by decreases in longer term samples (Figs. 10A, B, C). This same pattern applied to the total abundance of the polychaete family Spionidae (Fig. 10D). Lumbrineris luti, L. pugettensis, and Spionidae were all present in the ambient community in numbers as low as, or lower than, those found in the 78-week experimental samples. Pholoe minuta was also present in the ambient community, but in numbers closer to its peak density in the experimental containers (23-week sample). No species showed an overall negative relationship between abundance and length of colonization. Neither were there any species abundance patterns with an extremely high peak early in colonization, a pattern that has been cited (see Introduction) as characteristic of abundance patterns of opportunistic species. The abundance of Capitella capitata (Fabricius), a well-known opportunistic species, was not well correlated with duration or season in Boca de Quadra (Fig. 11). It was absent from the shortest duration sample (7 week) and was at a relatively high level of abundance after 78 weeks.

Life histories: The most abundant species from the total of all samples were, generally, motile as adults, non-tube dwellers, and deposit feeders (Table 4). There were about as many species with some form of brooding as there were species with entirely planktonic larvae (non-brooding

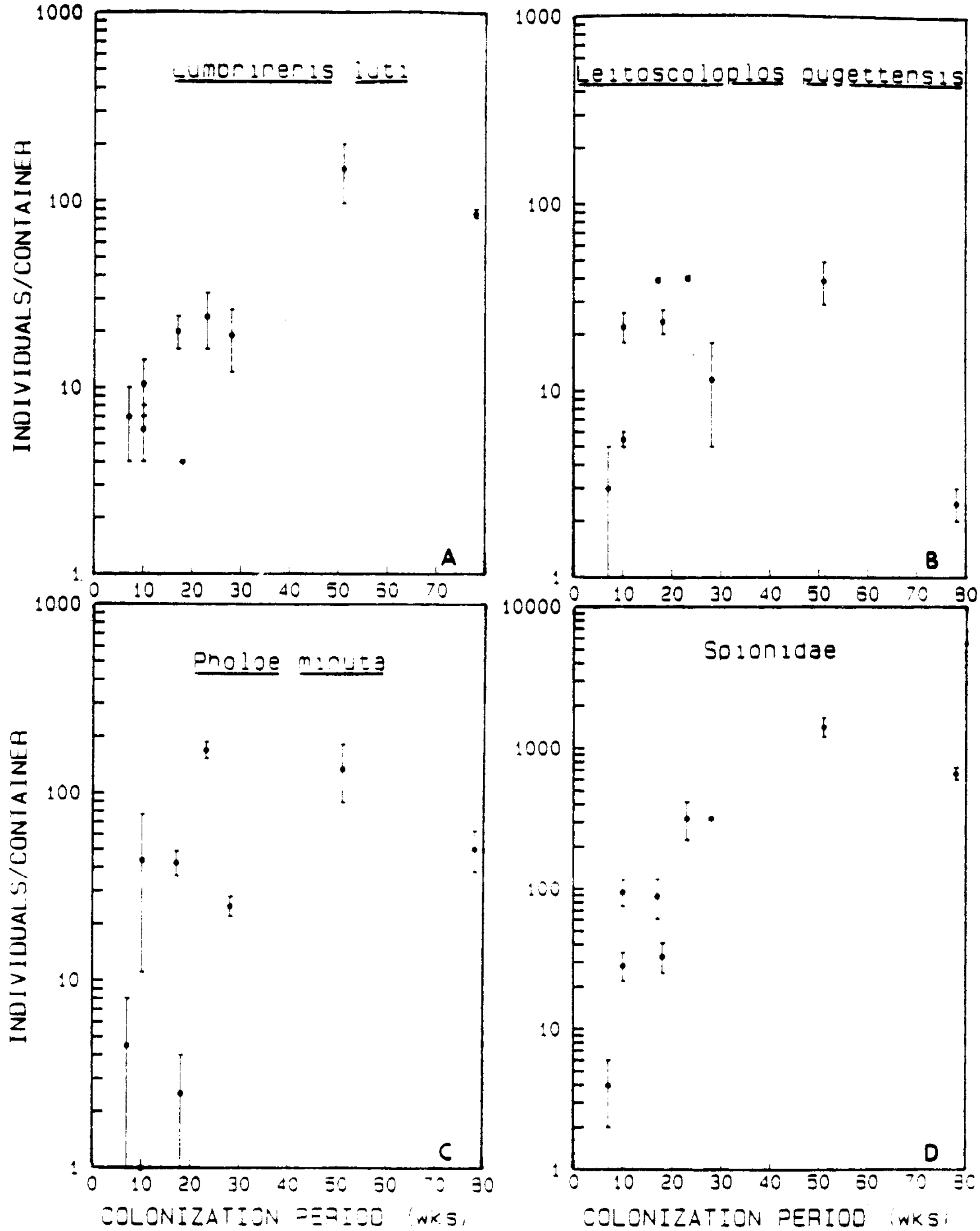

Fig. 10. Potential indicator taxa with abundance patterns of initial increases, followed by a decrease in one or more longer term samples. Scale change on D. Values are mean number of individuals per container ± standard error of the mean.

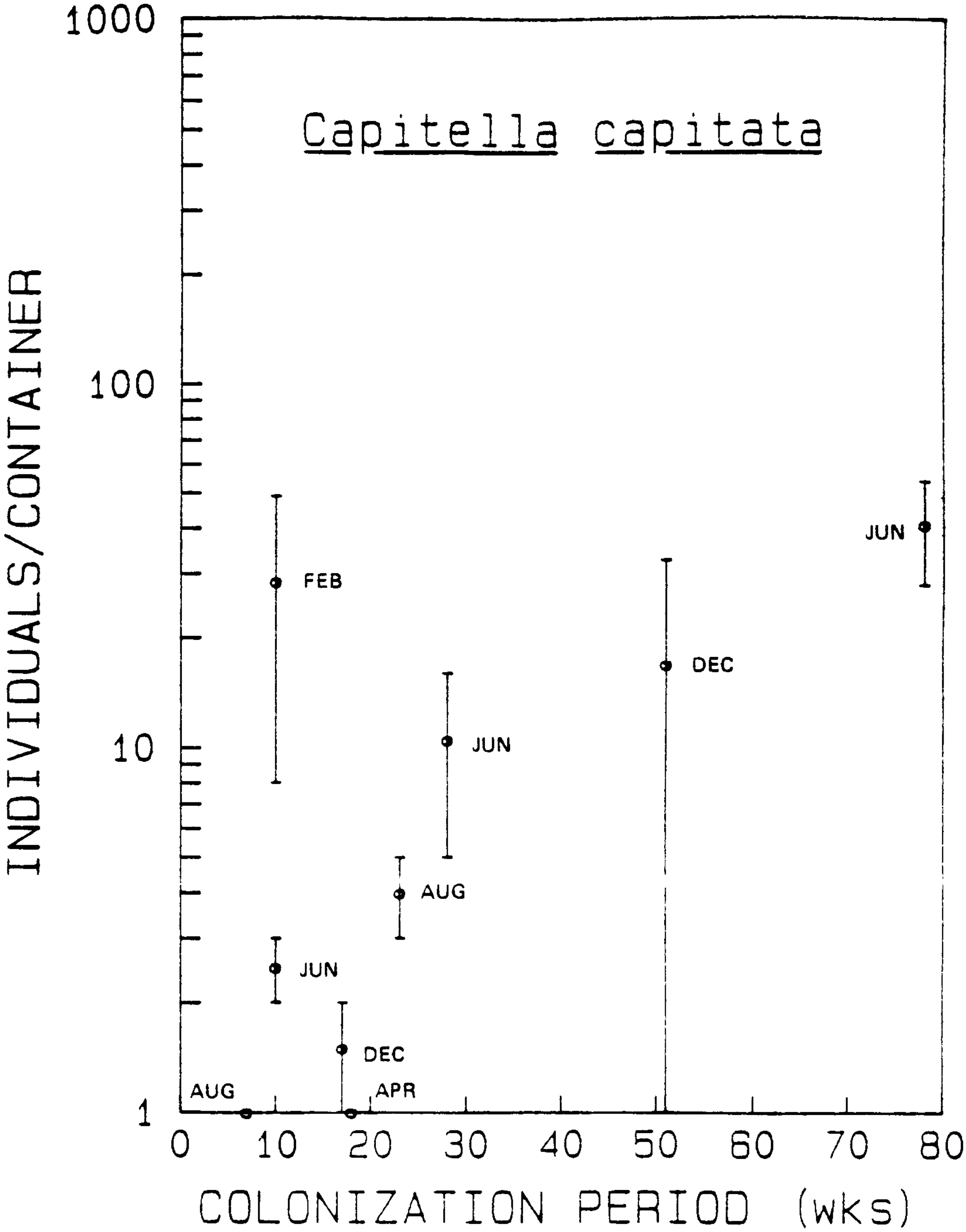

Fig. 11. Variations in abundance of Capitella capitata with length of colonization period. Abundance values are mean number of individuals per container $\pm$ 1 standard error of the mean.

Table 4. Some life history information on the samples.

Rank	Species	Phylum	Motility	Tube
1	Harpacticus uniremis	C	M	–
2	Spiophanes berkeleyorum	P	DM	+
3	Pholoe minuta	P	M	–
4	Lamprops serrata	C	M	–
5	Lumbrineris luti	P	M	–
6	Leitoscoloplos pugettensis	P	M	–
7	Crucigera zygophora	P	S	+
8	Prionospio steenstrupi	P	DM	+

ten most abundant species from all container

Feeding type	Development type	Sources
Herb.	Egg sacs/ indirect	Jewett and Feder (1977)
DF ?	Planktonic larvae ?	
Carn.	Planktonic larvae	Blake (1975); Christie (1982); Pleijel (1982)
DF ?	Brooding/ direct	This study
DF	Planktonic larvae ?	Fauchald and Jumars (1979)
DF	Benthic cocoons/direct	Blake (1980)
FF	Unknown	This study
DF ?	Planktonic larvae	Bhaud (1972)

Table 4 (continued)

Rank	Species	Phylum	Motility	Tube	Feeding type	Development type	Sources
9	*Amphiascopsis cinctus*	C	M	-	Unknown	Egg sac/ indirect ?	
10	*Axiothella rubrocincta*	P	S	+	DF	Demersal larvae and/or brooding	Woodin (1974); Wilson (1983)

? = Hypothetical mode, based on other members of the same genus or phylum with somewhat similar morphology
M = Motile
DM = Discretely motile
S = Sessile
DF = Deposit feeder
FF = Filter feeder
C = Crustacea
P = Polychaeta
E = Echinodermata
- = Absent
+ = Present
Carn. = Carnivorous
Herb. = Herbivorous

species). The five most abundant early colonists (species first found in the 7- and 10-week samples) were all motile species, conversely, 4 of the 5 most abundant late arrivals (species first found in the 28- to 78-week samples) were discretely motile or sessile species (Table 5). Discretely motile organisms are generally sessile, but capable of movement to escape unfavorable situations(Jumars and Fauchald, 1977).

Variations of colonists between short-term samples: The early colonists varied in presence, abundance, and dominance between the short-term samples collected in different seasons. There were many more taxa (Table 2) and individuals (Appendix B) in the 10-week sample collected in June than in the 10-week sample collected in February. Of the 52 species identified from these short-term samples, only 9 species were present at both times (Appendix B). Different organisms were dominant, in terms of abundance and dry weight, in the 10 week, June sample, than in the 10 week, February sample (Tables 6A, B). Only Prionospio spp. were among the most abundant organisms at both collection times. Lumbrineris luti, alone, was among the 5 dominants by weight at both collection times. Further comparison of the abundant animals from the two collection times revealed almost no differences in the life histories of these early colonists, when the attributes being compared were feeding

Table 5. Life history characteristics of the most abundant

Duration	Species	Phylum	Motility	Tube	Feeding type
7-10 wks	Harpacticus uniremis	C	M	-	Herb.
	Lamprops serrata	C	M	-	DF ?
	Centropages abdominalis	C	M	-	DF
	Glycera capitata	P	M	-	DF
	Capitella capitata	P	M	+	DF
28-78 wks	Chone infundibuliformis	P	DM	+	FF
	Crucigera irregularis	P	S	+	FF
	Asabellides lineata	P	S ?	+	DF ?

new arrivals to the containers.

Development type	Sources
Egg sacs/ indirect	Jewett and Feder (1977)
Brooding/ direct	This study
Planktonic larvae	Sazhin (1984)
Planktonic larvae	Banse and Hobson (1968); Levsky (1970); Hartmann-Schroder (1971);
Planktonic or Benthic larvae	Tenor (1975); Grassle and Grassle (1976)
Unknown	Pearson (1971)
Unknown	Fauchald and Jumars (1979)
Unknown	

Table 5 (continued)

Duration	Species	Phylum	Motility	Tube	Feeding type	Development type	Sources
	Platyneris bicanaliculata	P	DM	+	Herb.	Planktonic larvae	Blake (1975); Morris *et al*. (1980)
	Ophiura lutkeni	E	M	-	DF ?	Planktonic larvae ?	

? = Hypothetical mode, based on other members of the same genus or phylum with somewhat similar morphology
M = Motile
DM = Discretely motile
S = Sessile
DF = Deposit feeder
FF = Filter feeder
C = Crustacea
P = Polychaeta
E = Echinodermata
\- = Absent
\+ = Present
Carn. = Carnivorous
Herb. = Herbivorous

Table 6. Five most dominant organisms in short-term (10 week duration) samples collected in February and June.

A. Dominance by abundance

10 weeks, February, 1980	10 weeks, June, 1981
Pholoe minuta	Harpacticus uniremis
Capitella capitata	Lamprops serrata
Prionospio spp.	Prionospio spp.
Leitoscoloplos pugettensis	Centropages abdominalis
Lumbrineris luti	Glycera capitata

B. Dominance by weight

10 weeks, February, 1980	$\bar{x}$ dry wt./ sample	10 weeks, June, 1981	$\bar{x}$ dry wt./ sample
Lumbrineris luti	8.96 mg	Harpacticus uniremis	25.63 mg
Leitoscoloplos pugettenis	6.76 mg	Melinna cristata	8.94 mg
Capitella capitata	3.33 mg	Lumbrineris luti	8.01 mg
Prionospio spp.	1.98 mg	Nephtys spp.	5.76 mg
Armandia brevis	1.37 mg	Lamprops serrata	2.19 mg

type, development type, adult motility and presence or absence of a tube. As expected, the one grazing-herbivore in these groups, Harpacticus uniremis, was dominant in June rather than in February.

Container vs. Ambient Seafloor Communities

Even though the grab sample data, from the ambient community, were not strictly comparable with the container sample data (for reasons given in the "Discussion"), several attributes of the grab data had values that fell within the range of values for the container samples (Table 7). The number of taxa and the number of individuals in the grab sample from the ambient community were, if the Nematoda were not included in the total, higher than those in the 7-week sample, but lower than those in the 78-week sample. The large numbers of small Nematoda in the ambient sample made the total number of individuals much higher there than in any other sample when the Nematoda were included in the count. Diversity (which did not take the Nematoda into account because they were not identified to species) was higher in the ambient sample than in the 7- or 78-week samples. All of the samples compared (Table 7) were collected in the spring and summer. The ambient diversity was lower than the highest winter diversity value from the 51-week containers (winter diversity values given

Table 7. Container and grab sample comparison.

Attribute	7 weeks, August, 1981	23 weeks, August, 1980	78 weeks, June, 1981	Ambient August, 1982
No. of taxa	34 ± 8	44 ± 1	90 ± 7	65 ± 5
No. of individuals	695 ± 330	1,062 ± 153	3,476 ± 4	17,280 ± 14,379
No. of individuals without Nematoda	695 ± 330	1,055 ± 143	3,476 ± 15	1,176 ± 88
H'	1.27	2.21	2.38	2.41
Dominant species	*Harpacticus uniremis*	*Pholoe minuta*	*Harpacticus uniremis*	*Pholoe minuta*
Dominant taxa	*Harpacticus uniremis*	*Prinospio* spp.	*Harpacticus uniremis*	Nematoda

in Table 3). The ambient community was dominated by Nematoda. The 7 week, August sample shared 18 species with the ambient grab sample. This represented 33% of all the taxa in the samples being compared. The 78 week, June sample shared 30 species with the ambient sample, or 36% of the total taxa being compared. Again, for the attributes of feeding type, development type, adult motility, and presence or absence of a tube, there were no major differences between the most abundant species from the containers and the grab sample.

DISCUSSION

The Method

The use of sediment containers for the study of colonization has many advantages. As previously mentioned, containers can be used in undisturbed areas and containers provide a uniform experimental habitat. However, use of this method may influence the results obtained in some of the following ways:

1) Containers isolate the experimental sediment from the surrounding seafloor. This may restrict the colonization by species with limited motility and non-pelagic larvae.

2) Containers may locally disrupt the normal flow of water over the sea bottom. This might encourage colonization by species preferring environments with slower currents.

3) Containers may trap organic matter. Thistle (1981) suggested that the colonization response in many container studies could be related to the provision of a resource i.e., organic matter. The containers in this study were filled nearly to the rim with sediment, which would lessen the "trap effect". Although the sediment initially had a relatively high organic carbon content, no peak of

opportunistic species responding to organic enrichment was observed.

4) Containers provide environmental heterogeneity. This may increase the diversity of the community. The hard substrate provided by the plastic rim and walls of the containers in this study provided a new substrate for colonization by Serpulidae.

Community Development

Phylum dominance: Several colonization studies have suggested that progressive change in numerical dominance of different phyla occurs as a community matures. Kathman *et al*. (1984*a*) observed a dominance shift from polychaetes to mollusks in Alice Arm, a Canadian fjord in proximity to Boca de Quadra. Shifts from motile crustaceans to polychaetes to mollusks have also been noted (Brunswig *et al*. 1976; VanBlaricom, 1978). In Boca de Quadra, the faunal composition pattern indicated a change with maturity from crustaceans to polychaetes, but this pattern was only evident when the seasonal variations in dominance were in effect removed by comparing samples collected at one time. A shift to mollusks did not take place during the 78 weeks of this study, probably because very few mollusks were available for recruitment from the ambient environment.

Complexity: The increases in number of taxa, number of individuals, and biomass are evidence that the community was becoming more complex. Increasing these variables leads to more frequent inter- and intra-specific encounters, and interactions, and to more intense competition for limited resources, thus, making increased complexity. There were seasonal variations as well as colonization trends in complexity. Few studies have attempted to identify both seasonal and successional trends, on either soft substrates (Arntz and Rumohr, 1982; Zajac and Whitlatch, 1982a,b) or on hard substrates (Osman, 1977; Dean and Hurd, 1980). The results of benthic sampling schemes lacking any means of differentiating between the effects of season and development phase in shallow temperate latitude environments should be interpreted with caution.

Diversity: Shannon-Wiener diversity was another example of the importance of relating season and community development. Odum's (1969) prediction of increasing species diversity during development was supported by the results from samples of increasing maturity collected during the same season. Failure to take the seasons into account would have resulted in an apparent (but unreal) lack of correlation between diversity and length of colonization. A comparison of the seasonal trends in number of taxa and diversity also shows the importance of the evenness component of diversity. The diversity was higher in the winter, even though the number of taxa (richness) was higher in the spring. Huston (1979) predicted that a major determinant of diversity in non-equilibrium situations is the level of population growth rates of competitors, highest diversity occurring when growth rates are lowest. The results of this study support Huston's model. Diversity was highest in winter, the season of lowest community growth rates (i.e., colonization rates). The rank species abundance curves showed a slight trend with duration of colonization, but Shannon-Wiener diversity was a more sensitive indicator of changes.

Distribution of individuals among species: The distributions of individuals among species did not show a trend with season or development. This contrasts with trends in examples of disturbed and undisturbed communities described by Pearson et al. (1983). They reported curves becoming jagged, groups along the geometric class axis becoming well separated, increasing numbers of species in the high abundance classes, and decreasing numbers of rare species, as the communities became more disturbed. The same trends were expected, but in reverse, as the community recovered from disturbance in Boca de Quadra. However, these trends were not evident. Perhaps the sample size was too small or the community had already recovered enough by the end of the first 7 to 10 weeks to obscure the trends. Pearson *et al*. (1983) reported a number of studies in which geometric abundance classes V and VI included species that increased or decreased markedly in numbers following disturbance. These species would make good indicators of community disturbance. Most of the species in geometric classes V and VI in the present study in Boca de Quadra were not present consistently enough to show a trend, or were present in almost constant abundance, varied seasonally, or varied unpredictably in abundance. These species would not make good disturbance indicators, therefore, another more comprehensive search for indicator species was made and is discussed below.

Role of Selected Species in Development

Potential indicators of disturbance and community maturity level: Of the taxa for which it was possible to correlate abundance with community development, *Axiothella rubrocincta* and Nematoda had the most potential as indicator taxa. Since *A. rubrocincta* was replaced in the ambient community by another Maldanid, *Euclymene* sp., the total Maldanidae abundance might serve as an even better indicator. While Nematoda was correlated with development, it probably was not sampled quantitatively by the 0.5 mm sieve. Furthermore, the large number of nematodes in the ambient community were time consuming to count. Therefore, Nematoda has potential as an indicator group, but the sampling methods will need to be revised before Nematoda can be used practically. Crucigera zygophora and Euryte longicauda were not considered especially good indicators because they were neither present nor replaced by similar species in the ambient sediment community. The serpulid polychaete, C. zygophora, does not occur in soft sediments and hence was absent from the ambient samples, although it is common on rock outcroppings near the study site. Crucigera zygophora was able to colonize by cementing its tubes to the hard plastic walls of the containers.

All taxa having abundance patterns which initially increased as the colonization period lengthened and then decreased in longer term samples, have indicator potential. One of these, the Spionidae, was occasionally present in large numbers. The relatively well defined trend and small standard errors of the mean shown by the Spionidae might make the extra counting effort worthwhile.

Opportunistic colonization response: A large peak in abundance of an opportunistic species (as described by Grassle and Grassle, 1974; McCall, 1977; Rhoads et al. 1978) was not observed in this study. This could have been because the peaking occurred before the shortest duration samples were collected. VanBlaricom (1982) reported the highest abundance peak at 7-21 days of colonization, for a study site along the southern California coastline. Rhoads et al. (1978) saw the highest peak in abundance at their colonization tray site in Long Island Sound at 10-29 days, and Grassle and Grassle (1974) observed opportunistic peaks within one month in mud-box populations off West Falmouth, Massachusetts. Alternatively, it is possible that there simply were no opportunistic responses in this Boca de Quadra community, even though species which have been described as opportunists were present. The pattern of abundance of *Capitella capitata* was opposite from the expected pattern for an opportunist. *Capitella capitata* has responded opportunistically in areas of organic enrichment (Pearson and Rosenberg, 1978; Kathman et al. 1984b), but has not responded opportunistically in some areas where there were coarse sediments (Swartz et al. 1980), unstable sediments, or high sedimentation rates (McGrorty and Reading, 1984). The sediment initially placed in the Boca de Quadra containers was fine-grained, of relatively high organic carbon content, and well consolidated. Empty containers placed next to the sediment containers showed no evidence of unusually high sedimentation levels. So, either C. capitata peaked before the first samples were taken or the reason for its failure to opportunistically colonize the containers has not yet been elucidated. Capitella capitata has been identified as a species complex (Grassle and Grassle, 1976), with sibling species having somewhat different life histories. Which members of the complex were present in Boca de Quadra is unknown.

Life histories in colonization: The life histories of the most abundant species in the containers make them well adapted for being colonists of a soft sediment environment. Motile, deposit feeders are common in soft sediments. The estimated proportion of abundant species with a planktonic larval stage (40-50%) is about what would be expected for 55° N latitude along the Pacific coast. Thorson (1966) reported that 55-65% of benthic species in the boreo-atlantic region have planktotrophic pelagic larvae. There are no comparable figures for the boreo-pacific. However, Levin (1984) found brooding behavior to be very common among small taxa in intertidal or shallow mud communities along the Pacific coast at Kendall-Frost mudflat, Mission Bay, CA; Lawson's Flat, Tomales Bay, CA;

and False Bay, San Juan Island, WA. Thorson's report is based on sampling using a 2 mm mesh sieve. The 0.5 mm sieve used in this study in Boca de Quadra may have collected proportionally fewer species with pelagic larvae because more of the small animals are brooders (Barnes and Hughes, 1982; Strathmann and Strathmann, 1982). Therefore, the percentage of species with planktonic larvae may be slightly lower in the containers in Boca de Quadra than Thorson's reported percentage because a smaller mesh size was used in Boca de Quadra or because of the location in the high boreo-pacific region.

The life histories of the abundant late arrivals differed mainly from the abundant early colonists in motility. The two (early and late) arrival groups could not be distinguished by feeding modes or developmental types, but available life hisory information was insufficient to make a full comparison.

Short-term colonization: The life history attributes of the abundant early colonists were very similar for both 10 week samples even though different species were present during different seasons. The timing of various life history events is not known for most of the organisms in Boca de Quadra. It is possible that the timing was more important than the attributes that were compared, in determining which species were able to colonize at a particular time. It was not possible to predict what the 10 week community would be like in June from the 10 week community in February. More sampling would be needed to see whether a short-term colonization in June could be predicted from the short-term June community of another year. A question that still needs to be addressed (but which was outside the scope of this study) is whether early colonization is always unpredictable or is occurring in a cyclic pattern on a longer time scale. Some of the variations in early colonization can easily be attributed to the different seasons. For example, the greater number of colonists in June than in February is probably due to seasonal reproductive cycles. But, differences in the species composition might be attributed to either seasonal availability of colonists or to the instability or unpredictability of the immature communities.

The Extent of Community Development

The fact that the long-term samples were more similar to each other than the short-term samples were to each other is evidence that the community was becoming more mature with time from the simulated disturbance. The community was becoming more predictable as it matured.

Predictability or stability is often considered one of the characteristics of a mature community (Sutherland, 1974; Gray, 1981).

Further evidence that the community was maturing was found in the comparison between the grab sample from the ambient community and the container samples. Despite many sources of variation, the changes in compared values from the short to the long-term container samples were in the direction of the ambient community. The problem in comparing container and grab samples was that it was impossible to know how much of the variation in values was due to differences in sampling method, sediment size, year of collection, or the maturity of the community. For example, were the nematodes more abundant in the grab sample than in the containers because the ambient community was more mature, or because the sediment was more coarse, or both?

The positive slopes of the colonization curves were further evidence that development was in progress. However, failure to reach an equilibrium in total number of taxa, density, or biomass suggests that development may not have been completed after 78 weeks. An equilibrium has developed during several other colonization studies (Schoener, 1974; Brunswig _et_ _al_. 1976; Simon and Dauer, 1977; McCall, 1978). In each of these studies species equilibrium was reached in less than 78 weeks. But, as Huston (1979) suggested, equilibrium may actually be a rare event in natural communities.

Summarizing the available evidence for development makes it clear that development was in progress by 78 weeks (Table 8). If one accepts an equilibrium as criterion for a mature community, then the container community in Boca de Quadra had not yet matured. If one accepts the results of the comparison of container and grab samples, then the community may or may not have reached maturity. However, it may not be reasonable to expect an equilibrium and the container and grab samples may not be comparable. Regardless of whether the community did or did not reach maturity, one may ask whether development should have been complete after 78 weeks. Some of the major factors affecting the time needed for a community to develop fully following a disturbance are: 1) size of the disturbed area, 2) intensity of the perturbation, 3) persistence of the alterations to the environment, and 4) resilience of the populations. In colonization studies similar in size and intensity of perturbations to this study, complete development has taken from less than a month to longer than 3 years (Table 9). The rate of development in the current study was not highly unusual.

Table 8. Clues to the extent of community development.

			Mature Community Indicated
1.	Ambient seafloor qualitatively compared to containers:		
	A.	Diversity	Yes ?
	B.	Dominant species (same as 23 wk, August)	Yes ?
	C.	Dominant taxa	No
	D.	Species composition	No
2.	Equilibrium (containers compared to containers):		
	A.	No. of taxa	No
	B.	No. of individuals	No
	C.	Biomass	No
	D.	Species composition	No

Table 9. Times taken for communities colonizing sediment containers to fully develop. Development is defined as complete when container values match those of the surrounding seafloor.

Sources	Density	Biomass	Species Composition	Diversity
Widbom, 1983 (meiofauna)	>18 mos.	>18 mos.	-	-
Arntz and Rumohr, 1982	-	-	-	24 mos.
Zajac and Whitlatch, 1982b	-	-	½-1 mo.	-
Rhoads *et al.*, 1978	5-7 mos.	-	10-12 mos.	-
Brunswig *et al.*, 1976	-	>3 yrs.	-	-
This study	>18 mos.†	-	>18 mos.	≃18 mos.‡

†If nematode densities are not included in seafloor count, then this could be as short as 6 months.

‡Estimate based on winter, 51 week, and spring, 78 week diversity values from containers compared with summer diversity value from the surrounding seafloor.

CONCLUSIONS

1. Important features of community development.

Shallow, benthic community development in Boca de Quadra was characterized by a progressive change from crustaceans to polychaetes and an increase in complexity and diversity. In order to accurately assess the developmental characteristics, it was necessary to identify seasonal variations in the community. An analysis of the distribution of individuals among species was not an effective means of monitoring the community development after the simulated disturbance in this study.

2. Roles of species and particular groups of species in colonization.

Patterns of abundance for a few select taxa may provide an indication of the community maturity level. The abundant early colonists were more motile than the later colonists. The colonization in Boca de Quadra did not show an opportunistic species abundance peak between 7 and 78 weeks , even though opportunistic species were available. Many of the abundant colonists were brooders.

3. Community development.

The community was maturing, but may or may not have completed development after 18 months. The community was becoming more predictable and more like the ambient community, but an equilibrium was not attained. The development rate did not appear unusual when compared to other similar studies.

RECOMMENDATIONS FOR FURTHER STUDY

Future studies should include some shorter duration samples (much shorter than 7 weeks), in order to gain an understanding of very early colonization. They should also include longer duration samples (longer than 78 weeks) to follow colonization until a definitive mature community is attained. Much work needs to be done on the life histories and ecology of the common animals in Boca de Quadra before their role in colonization can be fully understood. Most of all, a technique for quickly sorting the animals from the mud needs to be developed.

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APPENDIX A: MASTER TAXON LIST

MASTER TAXON LIST

Taxa from sediment containers, sediment collection containers, and van Veen grab samples (15m and 155m depths).

Phylum Annelida

Class Polychaeta

Family Polynoidae
Harmothoe imbricata
Eunoe senta
unidentified Polynoids

Family Sigalionidae
Pholoe minuta

Family Phyllodocidae
Eteone longa
Phyllodoce castanea
Phyllodoce sp.
unidentified Phyllodocids

Family Hesionidae
Micropodarke dubia
Gyptis brevipalpa
unidentified Hesionids

Family Syllidae
Exogone gemmifera
unidentified Syllids

Family Nereidae
Platynereis bicanaliculata
Nereis sp.
unidentified Nereids

Family Nephtyidae
Nephtys cornuta franciscana
Nephtys cornuta cornuta
Nephtys punctata
Nephtys ciliata
Nephtys sp.

Family Sphaerodoridae
Sphaerodoropsis sphaerulifer
Sphaerodoropsis minuta

Family	Glyceridae *Glycera capitata*
Family	Goniadidae *Glycinde picta* *Glycinde armigera*
Family	Lumbrineridae *Lumbrineris luti* *Lumbrineris* sp.
Family	Dorvilleidae *Protodorvillea gracilis* *Dorvillea* sp. unidentified Dorvilleids
Family	Orbiniidae *Leitoscoloplos pugettensis*
Family	Paraonidae *Aricidea lopezi* *Aricidea* sp. *Tauberia gracilis*
Family	Spionidae *Prionospio steenstrupi* *Prionospio cirrifera* *Prionospio* spp. *Spiophanes berkeleyorum* *Spio* sp. *Spio filicornis* *Spio cirrifera* *Polydora socialis* *Polydora brachycephala* *Polydora* sp. unidentified Spionids
Family	Magelonidae *Magelona longicornis* cf.
Family	Cirratulidae *Cirratulus cirratus* *Tharyx* sp. unidentified Cirratulids
Family	Cossuridae *Cossura* sp.

Family	Flabelligeridae
	Pherusa plumosa
	unidentified Flabelligerids
Family	Scalibregmidae
	Scalibregma inflatum
Family	Opheliidae
	Travisia forbesii
	Armandia brevis
	Ophelina acuminata
	Ophelia limacina
	juvenile Opheliids
Family	Capitellidae
	Capitella capitata
	Notomastus lineatus
	unidentified Capitellids
Family	Maldanidae
	Axiothella rubrocincta
	Euclymene sp.
	juvenile Maldanids
	unidentified Maldanids
Family	Oweniidae
	Myriochele oculata
Family	Amphictenidae
	Pectinaria granulata
Family	Ampharetidae
	Amage anops
	Lysippe labiata
	Asabellides lineata
	Asabellides sp.
	Melinna cristata
	unidentified Ampharetids
Family	Terebellidae
	Pista brevibranchiata
	Pista cristata
	Polycirrus sp.
	Lanassa venusta venusta
	unidentified Terebellids
Family	Trichobranchidae
	Terebellides stroemi
	Trichobranchus glacialis

Family Sabellidae
Megalomma splendida
Chone sp.
Chone infundibuliformis cf.
Euchone sp.
unidentified Sabellids

Family Serpulidae
Crucigera zygophora
Crucigera irregularis
Crucigera sp.
Pseudochitinopoma occidentalis
unidentified Serpulids

unidentified Polychaetes

Class Hirudinea
unidentified leech

Phylum Arthropoda

Subphylum Crustacea

Class Branchiopoda

Suborder Cladocera
Podon sp.
Evadne sp.

Class Ostracoda

Family Cylindroleberidae
Cylindroleberis mariae

Family Cytheridae
Cythere sp.

Family Cypridae
Pontocypris sp.

other Ostracods

Class Copepoda

Order Calanoida

Family Acartiidae
Acartia clausi
Acartia longiremis
Acartia sp.

Family Metridiidae
Metridia okhotensis
Metridia sp.

Family Tortanidae
Tortanus discaudatus

Family Calanidae
Calanus sp.

Family Pseudocalanidae
Pseudocalanus sp.
Microcalanus sp.

Family Centropagidae
Centropages abdominalis

Family Aetideidae
Aetideopsis rostrata
Aetideopsis sp.
unidentified Aetideids

Family Temoridae
Eurytemora thompsoni

Family Stephidae
Stephos scotti cf.

unidentified Calanoids

Order Harpacticoida

Family Peltidiidae
Paralteutha simile
unidentified Peltidiids

Family Porcellidiidae
Porcellidium sp.

Family Harpacticadae
Harpacticus uniremis
Harpacticus sp.

Family Diosaccidae
Amphiascopsis cinctus
Diosaccus spinatus

Family Cletodidae
Acrenhydrosoma karlingi

Family Laophontidae
Heterolaophonte discophora cf.
Paralaophonte pacifica
unidentified Laophontids

Family Tachidiidae
Danielssenia sp.

Family Thalestridae
Dactylopodia sp.
Diarthrodes sp.
Parthalestris sp.
unidentified Thalestrids

Family Ectinosomidae
Halectinosoma finmarchium
Pseudobradya crassipes
unidentified Ectinosomids

Family Anchorabolidae
Anchorabolus mirabilis

unidentified Harpacticoids

Order Cyclopoida

Family Cyclopidae
Euryte longicauda

Family Lichomolgidae
Pseudomolgus cf.

Family Oncaeidae
Oncaea sp.

unidentified Cyclopoids

Order Monstrilloida

Family Monstrillidae
unidentified Monstrillids

Order Caligoida
unidentified Caligoids

Class Cirripedia
Balanus crenatus
Balanus sp.
unidentified Cirripedia larvae

Class Malacostraca

Order Leptostraca
unidentified Leptostracans

Order Mysidacea
juvenile Mysids

Order Cumacea

Family Diastylidae
Diastylis koreana
Diastylis alaskensis
unidentified Diastylids

Family Lampropidae
Lamprops serrata
Lamprops sp.

Family Nannastacidae
Cumella vulgaris
Cumella sp.
Campylaspis rufa

Family Leuconidae
Eudorellopsis biplicata
Eudorellopsis sp.
Eudorella emarginata
Eudorella pacifica
Eudorella sp.
Leucon nasica

Order Tanaidacea
unidentified Tanaids

Order Isopoda
unidentified Asellotidae

Order Amphipoda

Family Oedicerotidae
Synchelidium shoemakeri
Synchelidium rectipalmum
Synchelidium sp.
Monoculodes zernovi
Monoculodes sp.
Bathymedon sp.
Westwoodilla sp.
unidentified Oedicerotids

Family	Dexaminidae
	<u>Guernea</u> <u>nordenskioldi</u>
	<u>Guernea</u> sp.
Family	Pleustidae
	<u>Pleusymtea</u> <u>uncigera</u>
	<u>Parapleustes</u> sp.
	unidentified Pleustids
Family	Eusiridae
	<u>Pontogeneia</u> <u>ivanovi</u>
	<u>Pontogeneia</u> sp.
Family	Lysianassidae
	<u>Anonyx</u> <u>nugax</u>
	<u>Orchomene</u> <u>pacifica</u>
	<u>Orchomene</u> <u>minuta</u>
	<u>Orchomene</u> sp.
	unidentified Lysianassids
Family	Stenothoidae
	<u>Metopella</u> sp.
	unidentified Stenothoids
Family	Corophiidae
	<u>Corophium</u> sp.
Family	Gammaridae
	<u>Anisogammarus</u> <u>pugettensis</u>
Family	Synopiidae
	<u>Tiron</u> <u>biocelata</u>
Family	Phoxocephalidae
	<u>Heterophoxus</u> <u>oculatus</u>
	<u>Heterophoxus</u> sp.
	<u>Foxiphalus</u> <u>similis</u>
	unidentified Phoxocephalids
Family	Ampeliscidae
	<u>Ampelisca</u> <u>pugetica</u>
Family	Aeginellidae
	<u>Mayerella</u> <u>banksia</u> cf.

unidentified Amphipods

Order Decapoda

Family Pandalidae
Pandalus hypsinotus
Pandalus tridens
Pandalus platyceros

Family Hippolytidae
Lebbeus groenlandicus
unidentified Hippolytids

Family Majidae
Oregonia bifurca
Hyas lyratus cf.

Family Paguridae
unidentified Pagurids

Family Cancridae
Cancer magister
unidentified juvenile Cancrids

Class Insecta
Chironomid larvae
Beetles
Flying insects

Class Arachnida
Pink mites
Brown mites
Spiders

Phylum Mollusca

Class Gastropoda

Velutina velutina
Odostomia sp.
Natica clausa
Oenopota spp.
Margarites pupillus
Margarites sp.
Alvania spp.
Littorina sitkana
Fusitriton sp.
Cryptobranchia concentrica
unidentified coiled Gastropods
unidentified patellate Gastropods
Gastropteron pacificum
unidentified Opisthobranchs

Class Aplacophora

Chaetoderma robusta

Class Bivalvia

Delectopecten sp.
Thyasira flexuosa
Nuculana sp.
Saxidomus gigantea
Mytilus edulis
Clinocardium sp.
Axinopsida viridis
Macoma balthica
Macoma elimata
Macoma sp.
Mya arenaria
unidentified round Bivalves
unidentified oval Bivalves
unidentified rectangular Bivalves
other unidentified Bivalves

Phylum Sarcodina

Order Foraminifera
unidentified Foraminiferans

Phylum Porifera
unidentified sponges

Phylum Platyhelminthes
unidentified flatworms

Phylum Nemertinea (Rhynchocoela)
unidentified Nemerteans

Phylum Nematoda
unidentified Nematodes

Phylum Echinodermata

Pycnopodia helianthoides
unidentified Asteroids
Ophiura lutkeni
unidentified Ophiuroids
unidentified Echinoids

Phylum Bryozoa
unidentified colonial Bryozoans

Phylum Chordata

Class Ascidiacea
unidentified Ascidians

Class Osteichthyes

Family Cottidae
Asemichthys taylori
unidentified Sculpins

Family Pholidae
Pholis laeta

APPENDIX B: ORIGINAL DATA

Table 1. Number of individuals per container of each taxon.

Cruise number:	RT005	RT005	RT005	RT005	RT005	RT005	RT010	RT010	RT014	RT014
Replicate:	NS1	NS2	SP1	SP2	VVG1	VVG2	NS1	NS2	NS1	NS2
Collection date:	2/80	2/80	2/80	2/80	2/80	2/80	8/80	8/80	12/80	12/80
Colonization period or grab depth:	10 wks	10 wks	10 wks	10 wks	155 m	155 m	23 wks	23 wks	17 wks	17 wks
Taxon:										
C. Polychaeta										
F. Polynoidae										
Harmothoe imbricata	1	2	2	2	-	-	-	-	-	1
Eunoe senta	-	-	-	-	-	-	-	-	-	1
unid. Polynoids	-	-	-	-	-	-	3	-	-	-
F. Sigalionidae										
Pholoe minuta	11	77	28	38	2	-	187	152	36	49
F. Phyllodocidae										
Eteone longa	-	-	1	1	-	-	1	-	-	3
Phyllodoce castanea	-	-	-	-	-	-	-	-	-	-
Phyllodoce sp.	-	-	-	-	-	-	-	-	-	-
unid. Phyllodocids	-	-	-	-	-	-	-	1	-	-
F. Hesionidae										
Micropodarke dubia	-	-	-	-	-	-	-	-	-	-
Gyptis brevipalpa	-	-	-	1	1	-	-	-	-	-
unid. Hesionids	2	2	1	2	-	-	-	-	-	-
F. Syllidae										
Exogone gemmifera	-	-	-	1	-	-	-	-	-	-
unid. Syllids	-	-	-	-	-	-	-	-	-	-
F. Nereidae										
Platynereis bicanaliculata	-	-	-	-	-	-	-	-	-	-
Nereis sp.	-	-	-	-	-	-	-	-	-	-
unid. Nereids	-	-	-	2	-	-	-	2	-	-

Table 1. (continued)

Cruise number:	RT014	RT014	RT017	RT017
Replicate:	NS3	NS4	NS1	NS2
Collection date:	12/80	12/80	4/81	4/81
Colonization period or grab depth:	51 wks	51 wks	18 wks	18 wks
Taxon:				
F. Polynoidae				
Harmothoe imbricata	-	-	-	-
Eunoe senta	-	1	-	-
unid. Polynoids	-	1	-	-
F. Sigalionidae				
Pholoe minuta	89	181	4	-
F. Phyllodocidae				
Eteone longa	-	6	-	-
Phyllodoce castanea	-	-	-	-
Phyllodoce sp.	1	-	-	1
unid. Phyllodocids	-	2	-	-
F. Hesionidae				
Micropodarke dubia	-	-	-	-
Gyptis brevipalpa	-	-	-	-
unid. Hesionids	-	1	-	-
F. Syllidae				
Exogone gemmifera	-	-	-	-
unid. Syllids	-	-	-	-
F. Nereidae				
Platynereis bicanaliculata	1	-	-	-
Nereis sp.	1	-	-	-
unid. Nereids	-	-	-	1

RT019 NS3 6/81 10 wks	RT019 NS4 6/81 10 wks	RT019 SP1 6/81 10 wks	RT019 SP2 6/81 10 wks	RT019 NSLL 6/81 28 wks	RT019 NS12 6/81 28 wks
3	-	8	17	17	-
-	-	-	1	13	29
-	2	-	5	-	-
-	1	5	6	28	22
-	-	2	-	-	-
-	-	-	-	-	-
2	-	-	-	11	5
-	-	-	-	-	-
-	-	-	-	4	-
-	-	-	-	-	-
-	-	-	2	-	-
-	-	-	1	-	-
-	-	-	-	2	-
-	-	-	3	9	2
-	-	-	-	-	-
-	-	-	-	-	-

Table 1. (continued)

Cruise number: Replicate: Collection date: Colonization period or grab depth:	RT019 NS8 6/81 78 wks	RT019 NS10 6/81 78 wks	RT021 NS12 8/81 7 wks	RT021 NS14 8/81 7 wks	RT021 SP6 8/81 7 wks	RT021 SP7 8/81 7 wks	RT029 VVC1 8/82 15 m	RT029 VVC2 8/82 15 m
Taxon:								
F. Polynoidae								
Harmothoe imbricata	4	11	3	-	1	-	-	-
Eunoe senta	5	40	-	-	-	-	8	1
unid. Polynoids	76	-	-	-	-	-	-	-
F. Sigalionidae								
Pholoe minuta	63	38	8	1	-	-	356	88
F. Phyllodocidae								
Eteone longa	4	-	1	-	-	-	6	4
Phyllodoce castanea	-	-	-	-	-	-	1	-
Phyllodoce sp.	5	5	-	-	-	-	-	-
unid. Phyllodocids	-	1	-	-	-	-	-	-
F. Hesionidae								
Micropodarke dubia	3	15	-	-	-	-	-	-
Gyptis brevipalpa	-	-	-	-	-	-	-	-
unid. Hesionids	-	-	-	-	-	-	-	1
F. Syllidae								
Exogone gemmifera	-	1	-	-	-	-	-	-
unid. Syllids	4	-	-	-	-	-	2	1
F. Nereidae								
Platynereis bicanaliculata	14	12	-	-	-	-	8	-
Nereis sp.	-	1	-	-	-	-	-	-
unid. Nereids	1	1	-	-	-	-	-	-

Table 1. (continued)

Cruise number:	RT005
Replicate:	NS1
Collection date:	2/80
Colonization period or grab depth:	10 wks
Taxon:	
F. Nephtyidae	
Nephtys cornuta franciscana	-
Nephtys cornuta cornuta	-
Nephtys punctata	-
Nephtys ciliata	-
Nephtys sp.	-
F. Sphaerodoridae	
Sphaerodoropsis sphaerulifer	-
Sphaerodoropsis minuta	-
F. Glyceridae	
Glycera capitata	-
F. Goniadidae	
Glycinde picta	-
Glycinde armigera	-
F. Lumbrineridae	
Lumbrineris luti	7
Lumbrineris sp.	-
F. Dorvilleidae	
Protodorvillea gracilis	-
Dorvillea sp.	-
unid. Dorvilleids	-
F. Orbiniidae	
Leitoscoloplos pugettensis	26

RT005 NS2 2/80 10 wks	RT005 SP1 2/80 10 wks	RT005 SP2 2/80 10 wks	RT005 VVG1 2/80 155 m	RT005 VVG2 2/80 155 m	RT010 NS1 8/80 23 wks	RT010 NS2 8/80 23 wks	RT014 NS1 12/80 17 wks	RT014 NS2 12/80 17 wks
1	-	-	-	-	-	-	-	-
-	-	-	6	6	-	-	-	-
-	-	-	-	1	-	-	-	-
-	-	-	-	-	-	-	1	-
-	-	-	1	-	-	1	-	-
-	-	-	-	-	-	-	-	-
-	1	-	-	-	-	-	1	1
-	-	-	-	-	9	21	-	-
3	1	-	2	-	-	-	2	4
-	2	-	2	1	3	-	-	2
14	6	2	-	-	32	16	16	24
-	-	-	3	2	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	5	-	-	-	-	-	-
18	10	5	-	-	41	39	40	38

Table 1. (continued)

Cruise number:	RT014
Replicate:	NS3
Collection date:	12/80
Colonization period or grab depth:	51 wks
Taxon:	
F. Nephtyidae	
Nephtys cornuta franciscana	-
Nephtys cornuta cornuta	-
Nephtys punctata	-
Nephtys ciliata	-
Nephtys sp.	-
F. Sphaerodoridae	
Sphaerodoropsis sphaerulifer	5
Sphaerodoropsis minuta	-
F. Glyceridae	
Glycera capitata	9
F. Goniadidae	
Glycinde picta	12
Glycinde armigera	6
F. Lumbrineridae	
Lumbrineris luti	202
Lumbrineris sp.	-
F. Dorvilleidae	
Protodorvillea gracilis	-
Dorvillea sp.	-
unid. Dorvilleids	-
F. Orbiniidae	
Leitoscoloplos pugettensis	49

RT014 NS4 12/80 51 wks	RT017 NS1 4/81 18 wks	RT017 NS2 4/81 18 wks	RT019 NS3 6/81 10 wks	RT019 NS4 6/81 10 wks	RT019 SP1 6/81 10 wks	RT019 SP2 6/81 10 wks	RT019 NSLL 6/81 28 wks	RT019 NS12 6/81 28 wks
-	-	-	1	1	-	-	-	-
3	-	-	-	-	-	-	-	-
-	-	-	2	2	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	2	-	-	-	-	
-	-	-	2	-	-	-	2	-
2	1	3	-	3	1	-	18	8
2	-	-	40	25	4	3	55	30
10	-	-	-	-	-	-	-	1
2	-	-	-	-	-	-	1	-
96	4	4	8	4	1	4	26	12
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
29	20	27	6	5	-	-	5	18

Table 1. (continued)

Cruise number:	RT019	RT019
Replicate:	NS8	NS10
Collection date:	6/81	6/81
Colonization period or grab depth:	78 wks	78 wks
Taxon:		
F. Nephtyidae		
Nephtys cornuta franciscana	-	-
Nephtys cornuta cornuta	-	-
Nephtys punctata	-	-
Nephtys ciliata	-	-
Nephtys sp.	-	-
F. Sphaerodoridae		
Sphaerodoropsis sphaerulifer	1	-
Sphaerodoropsis minuta	-	-
F. Glyceridae		
Glycera capitata	18	29
F. Goniadidae		
Glycinde picta	2	2
Glycinde armigera	-	1
F. Lumbrineridae		
Lumbrineris luti	89	80
Lumbrineris sp.	-	-
F. Dorvilleidae		
Protodorvillea gracilis	-	-
Dorvillea sp.	-	-
unid. Dorvilleids	-	-
F. Orbiniidae		
Leitoscoloplos pugettensis	3	2

RT021 NS12 8/81 7 wks	RT021 NS14 8/81 7 wks	RT021 SP6 8/81 7 wks	RT021 SP7 8/81 7 wks	RT029 VVG1 8/82 15 m	RT029 VVG2 8/82 15 m
-	-	-	-	2	-
-	-	-	-	-	-
1	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	2	1
4	1	-	-	3	-
-	-	1	-	24	21
2	1	1	-	1	5
-	-	-	-	11	25
10	4	1	-	60	14
-	-	-	-	-	-
-	-	-	-	-	4
-	-	-	-	1	-
-	-	-	-	-	-
5	-	-	-	-	7

Table 1. (continued)

Cruise number:	RT005
Replicate:	NS1
Collection date:	2/80
Colonization period or grab depth:	10 wks
Taxon:	
F. Paraonidae	
Aricidea lopezi	-
Aricidea sp.	-
Tauberia gracilis	-
F. Spionidae	
Prionospio steenstrupi	19
Prionospio cirrifera	-
Prionospio spp.	3
Spiophanes berkeleyorum	-
Spio filicornis	-
Spio cirrifera	-
Spio sp.	-
Polydora socialis	-
Polydora brachycephala	-
Polydora sp.	-
unid. Spionids	-
F. Magelonidae	
Magelona longicornis cf.	-
F. Cirratulidae	
Cirratulus cirratus	-
Tharyx sp.	-
unid. Cirratulids	-
F. Cossuridae	
Cossura sp.	-

RT005 NS2 2/80 10 wks	RT005 SP1 2/80 10 wks	RT005 SP2 2/80 10 wks	RT005 VVG1 2/80 155 m	RT005 VVG2 2/80 155 m	RT010 NS1 8/80 23 wks	RT010 NS2 8/80 23 wks	RT014 NS1 12/80 17 wks	RT014 NS2 12/80 17 wks
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	3	1	-	-	-	-
32	3	11	2	4	-	-	1	-
-	-	-	-	-	21	-	-	-
1	-	-	-	-	193	416	19	41
-	-	-	-	-	9	-	41	76
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
2	1	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	1	-	-
-	-	-	-	-	-	-	2	2
-	-	-	1	-	-	2	-	-
-	-	-	1	2	-	-	-	-

Table 1. (continued)

Cruise number: Replicate: Collection date: Colonization period or grab depth:	RT014 NS3 12/80 51 wks	RT014 NS4 12/80 51 wks	RT017 NS1 4/81 18 wks	RT017 NS2 4/81 18 wks	RT019 NS3 6/81 10 wks	RT019 NS4 6/81 10 wks	RT019 SP1 6/81 10 wks	RT019 SP2 6/81 10 wks	RT019 NS11 6/81 28 wks	RT019 NS12 6/81 28 wks
Taxon:										
F. Paraonidae										
Aricidea lopezi	-	-	-	-	-	-	-	-	-	-
Aricidea sp.	-	-	-	-	2	2	-	-	-	-
Tauberia gracilis	-	-	-	-	-	7	-	-	-	-
F. Spionidae										
Prionospio steenstrupi	44	33	11	5	-	3	9	25	72	-
Prionospio cirrifera	-	1	-	-	-	-	-	-	1	-
Prionospio spp.	1501	1132	-	-	96	48	-	-	42	49
Spiophanes berkeleyorum	100	44	14	36	15	22	3	1	203	266
Spio filicornis	3	-	-	-	-	1	-	-	5	-
Spio cirrifera	-	-	-	-	-	-	-	-	1	-
Spio sp.	-	-	-	-	3	-	-	-	-	-
Polydora socialis	-	-	-	-	2	1	-	-	-	-
Polydora brachycephala	-	-	-	-	-	-	-	-	-	-
Polydora sp.	-	-	-	-	-	-	-	-	-	-
unid. Spionids	-	-	-	-	-	-	-	-	-	-
F. Magelonidae										
Magelona longicornis cf.	1	1	-	-	-	-	-	-	-	-
F. Cirratulidae										
Cirratulus cirratus	-	-	-	-	1	-	-	-	-	-
Tharyx sp.	-	-	-	-	-	-	-	-	2	-
unid. Cirratulids	-	-	-	-	-	1	-	-	-	-
F. Cossuridae										
Cossura sp.	9	10	-	-	15	12	-	-	-	-

Table 1. (continued)

Cruise number:	RT019	RT019
Replicate:	NS8	NS10
Collection date:	6/81	6/81
Colonization period or grab depth:	78 wks	78 wks
Taxon:		
F. Paraonidae		
Aricidea lopezi	-	-
Aricidea sp.	-	-
Tauberia gracilis	-	-
F. Spionidae		
Prionospio steenstrupi	-	120
Prionospio cirrifera	10	8
Prionospio spp.	532	330
Spiophanes berkeleyorum	188	142
Spio filicornis	-	-
Spio cirrifera	-	-
Spio sp.	-	-
Polydora socialis	-	-
Polydora brachycephala	-	1
Polydora sp.	-	3
unid. Spionids	-	-
F. Magelonidae		
Magelona longicornis cf.	-	-
F. Cirratulidae		
Cirratulus cirratus	-	-
Tharyx sp.	-	-
unid. Cirratulids	-	-
F. Cossuridae		
Cossura sp.	-	9

RT021 NS12 8/81 7 wks	RT021 NS14 8/81 7 wks	RT021 SP6 8/81 7 wks	RT021 SP7 8/81 7 wks	RT029 VVC1 8/82 15 m	RT029 VVC2 8/82 15 m
-	-	-	-	8	-
-	-	-	-	-	-
-	-	-	-	6	3
6	-	1	-	3	28
-	-	-	-	2	-
-	2	-	-	273	223
-	-	-	-	7	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	1	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	1	-
-	-	-	-	-	-
-	-	-	-	9	4
-	-	-	-	-	-
-	-	-	-	-	1
-	-	-	-	1	-
-	-	-	-	-	-

Table 1. (continued)

Cruise number:	RT005	RT005	RT005	RT005	RT005	RT005	RT010	RT010	RT014	RT014
Replicate:	NS1	NS2	SP1	SP2	VVG1	VVG2	NS1	NS2	NS1	NS2
Collection date:	2/80	2/80	2/80	2/80	2/80	2/80	8/80	8/80	12/80	12/80
Colonization period or grab depth:	10 wks	10 wks	10 wks	10 wks	155 m	155 m	23 wks	23 wks	17 wks	17 wks
Taxon:										
F. Flabelligeridae										
Pherusa plumosa	-	-	-	-	-	-	-	-	-	-
unid. Flabelligerids	-	-	-	-	-	-	-	-	-	1
F. Scalibregmidae										
Scalibregma inflatum	-	-	-	-	1	-	1	-	3	3
F. Opheliidae										
Travisia forbesii	-	-	-	-	-	-	-	-	-	-
Armandia brevis	4	4	2	5	-	-	1	-	1	5
Ophelina acuminata	-	-	-	-	-	-	-	-	1	-
Ophelia limacina	-	-	-	-	-	-	-	-	-	-
juvenile Opheliids	-	-	-	-	-	-	-	-	-	-
F. Capitellidae										
Capitella capitata	49	8	1	63	-	1	3	5	1	2
Notomastus lineatus	-	-	-	-	-	-	-	-	-	-
unid. Capitellids	-	-	-	-	-	-	-	-	-	-
F. Maldanidae										
Axiothella rubrocincta	-	-	-	-	-	-	-	-	-	-
Euclymene sp.	-	-	-	-	-	-	-	-	-	-
juvenile Maldanids	-	3	-	-	-	-	-	-	-	4
unid. Maldanids	-	-	-	-	-	-	-	1	2	-
F. Oweniidae										
Myriochele oculata	-	-	-	-	-	-	1	1	-	-
F. Amphictenidae										
Pectinaria granulata	-	5	-	-	-	-	9	10	2	3

Table 1. (continued)

Cruise number:	RT014	RT014
Replicate:	NS3	NS4
Collection date:	12/80	12/80
Colonization period or grab depth:	51 wks	51 wks
Taxon:		
F. Flabelligeridae		
Pherusa plumosa	-	-
unid. Flabelligerids	-	-
F. Scalibregmidae		
Scalibregma inflatum	2	4
F. Opheliidae		
Travisia forbesii	-	-
Armandia brevis	14	5
Ophelina acuminata	3	-
Ophelia limacina	1	-
juvenile Opheliids	-	-
F. Capitellidae		
Capitella capitata	33	-
Notomastus lineatus	-	-
unid. Capitellids	-	19
F. Maldanidae		
Axiothella rubrocincta	116	21
Euclymene sp.	-	-
juvenile Maldanids	-	-
unid. Maldanids	-	-
F. Oweniidae		
Myriochele oculata	3	2

RT017 NS1 4/81 18 wks	RT017 NS2 4/81 18 wks	RT019 NS3 6/81 10 wks	RT019 NS4 6/81 10 wks	RT019 SP1 6/81 10 wks	RT019 SP2 6/81 10 wks	RT019 NS11 6/81 28 wks	RT019 NS12 6/81 28 wks
–	–	–	–	–	–	3	–
–	–	–	–	–	–	–	–
–	1	–	–	–	–	–	2
–	–	–	–	–	–	–	–
–	–	–	–	–	2	–	2
–	–	–	–	40	31	5	1
–	–	–	–	–	–	–	–
–	–	5	1	–	–	–	2
–	1	3	2	443	1012	16	5
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
–	–	–	–	–	1	4	3
–	–	–	–	–	–	–	–
–	–	–	–	–	–	58	–
–	1	2	–	–	–	–	–
–	–	1	1	–	–	–	–

Table 1. (continued)

Cruise number:	RT019	RT019
Replicate:	NS8	NS10
Collection date:	6/81	6/81
Colonization period or grab depth:	78 wks	78 wks
Taxon:		
F. Flabelligeridae		
Pherusa plumosa	-	-
unid. Flabelligerids	-	-
F. Scalibregmidae		
Scalibregma inflatum	3	1
F. Opheliidae		
Travisia forbesii	-	-
Armandia brevis	1	3
Ophelina acuminata	-	2
Ophelia limacina	2	1
juvenile Opheliids	-	5
F. Capitellidae		
Capitella capitata	28	54
Notomastus lineatus	-	-
unid. Capitellids	1	-
F. Maldanidae		
Axiothella rubrocincta	112	71
Euclymene sp.	-	-
juvenile Maldanids	-	-
unid. Maldanids	-	2
F. Oweniidae		
Myriochele oculata	4	2

RTO21 NS12 8/81 7 wks	RTO21 NS14 8/81 7 wks	RTO21 SP6 8/81 7 wks	RTO21 SP7 8/81 7 wks	RTO29 VVG1 8/82 15 m	RTO29 VVG2 8/82 15 m
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	1
–	–	–	–	–	1
11	6	–	1	14	146
2	2	–	–	3	–
–	–	–	–	–	12
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	8	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	39	4
–	–	–	–	–	–
1	–	–	–	–	–
–	–	–	–	7	1

Table 1. (continued)

Cruise number:	RT005	RT005	RT005
Replicate:	NS1	NS2	SP1
Collection date:	2/80	2/80	2/80
Colonization period or grab depth:	10 wks	10 wks	10 wks
Taxon:			
F. Ampharetidae			
Amage anops	-	-	-
Lysippe labiata	-	-	-
Asabellides lineata	-	-	-
Asabellides sp.	-	-	-
Melinna cristata	-	-	-
unid. Ampharetids	-	-	-
F. Terebellidae			
Pista cristata	-	-	-
Pista brevibranchiata	-	-	-
Polycirrus sp.	-	-	-
Lanassa venusta venusta	-	-	-
unid. Terebellids	-	-	-
F. Trichobranchidae			
Terebellides stroemi	-	-	-
Trichobranchus glacialis	-	-	-
F. Sabellidae			
Megalomma splendida	-	-	-
Chone infundibuliformis cf.	-	-	-
Chone sp.	-	-	-
Euchone sp.	-	-	-
unid. Sabellids	-	1	-

RT005 SP2 2/80 10 wks	RT005 VVG1 2/80 155 m	RT005 VVG2 2/80 155 m	RT010 NS1 8/80 23 wks	RT010 NS2 8/80 23 wks	RT014 NS1 12/80 17 wks	RT014 NS2 12/80 17 wks
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	8	–	2	–
–	–	1	–	–	–	–
–	–	–	–	1	–	1
–	–	–	–	–	–	–
–	–	–	–	–	–	8
–	–	–	–	–	–	–
–	–	–	–	–	–	1
–	–	–	–	–	2	–
–	–	1	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–

Table 1. (continued)

Cruise number:	RT014	RT014	RT017	RT017	RT019	RT019	RT019	RT019	RT019	RT019
Replicate:	NS3	NS4	NS1	NS2	NS3	NS4	SP1	SP2	NS11	NS12
Collection date:	12/80	12/80	4/81	4/81	6/81	6/81	6/81	6/81	6/81	6/81
Colonization period or grab depth:	51 wks	51 wks	18 wks	18 wks	10 wks	10 wks	10 wks	10 wks	28 wks	28 wks
Taxon:										
F. Amphictenidae										
Pectinaria granulata	21	15	1	-	22	23	35	27	41	10
F. Ampharetidae										
Amage anops	-	-	-	-	-	-	-	-	-	-
Lysippe labiata	-	-	-	-	-	-	-	-	-	-
Asabellides lineata	28	9	-	-	-	-	-	-	-	-
Asabellides sp.	-	-	3	-	-	-	-	-	-	7
Melinna cristata	-	-	-	-	2	2	-	-	-	-
unid. Ampharetids	-	-	-	-	-	-	-	-	10	-
F. Terebellidae										
Pista cristata	-	-	-	-	-	-	-	-	-	-
Pista brevibranchiata	8	-	-	-	-	-	-	-	8	-
Polycirrus sp.	-	-	-	-	-	-	-	-	-	-
Lanassa venusta venusta	-	-	-	-	-	-	-	-	5	-
unid. Terebellids	-	-	-	-	-	-	-	-	-	-
F. Trichobranchidae										
Terebellides stroemi	-	-	-	-	-	-	-	-	-	-
Trichobranchus glacialis	-	-	-	-	-	-	-	-	-	-
F. Sabellidae										
Megalomma splendida	-	-	-	-	-	-	-	-	1	-
Chone infundibuliformis cf.	-	-	-	-	-	-	-	-	87	-
Chone sp.	14	-	-	-	1	2	1	1	-	25
Euchone sp.	-	-	-	-	-	-	-	-	11	10
unid. Sabellids	-	-	5	7	-	-	-	-	-	18

Table 1. (continued)

Cruise number: Replicate: Collection date: Colonization period or grab depth:	RT019 NS8 6/81 78 wks	RT019 NS10 6/81 78 wks	RT021 NS12 8/81 7 wks
Taxon:			
F. Amphictenidae			
Pectinaria granulata	31	21	17
F. Ampharetidae			
Amage anops	-	-	-
Lysippe labiata	-	-	-
Asabellides lineata	-	-	-
Asabellides sp.	11	4	-
Melinna cristata	-	-	-
unid. Ampharetids	-	1	4
F. Terebellidae			
Pista cristata	-	-	-
Pista brevibranchiata	-	-	-
Polycirrus sp.	-	-	-
Lanassa venusta venusta	-	-	-
unid. Terebellids	-	-	-
F. Trichobranchidae			
Terebellides stroemi	-	-	-
Trichobranchus glacialis	-	-	-
F. Sabellidae			
Megalomma splendida	-	1	-
Chone infundibuliformis cf.	1	-	-
Chone sp.	-	7	-
Euchone sp.	-	-	-
unid. Sabellids	1	3	4

RTO21 NS14 8/81 7 wks	RTO21 SP6 8/81 7 wks	RTO21 SP7 8/81 7 wks	RTO29 VVG1 8/82 15 m	RTO29 VVG2 8/82 15 m
5	8	3	15	7
–	–	–	1	–
–	–	–	1	–
–	–	–	–	–
2	–	–	–	–
–	–	–	–	–
–	1	–	12	1
–	–	–	8	2
–	–	–	–	–
–	–	–	9	4
–	–	–	1	–
–	–	–	–	–
–	–	–	3	–
–	–	–	3	–
–	–	–	–	–
–	–	–	–	–
–	–	–	21	40
–	–	–	16	–
1	–	–	–	–

Table 1. (continued)

Cruise number:	RT005	RT005	RT005
Replicate:	NS1	NS2	SP1
Collection date:	2/80	2/80	2/80
Colonization period or grab depth:	10 wks	10 wks	10 wks
Taxon:			
F. Serpulidae			
Crucigera zygophora	-	-	-
Crucigera irregularis	-	-	-
Crucigera sp.	-	-	-
Pseudochitinopoma occidentalis	-	-	-
unid. Serpulids	-	-	-
Unid. Polychaetes	-	-	-
C. Hirudinea			
unid. leech	-	-	-
S.P. Crustacea			
C. Branchiopoda			
S.O. Cladocera			
Podon sp.	-	-	-
Evadne sp.	-	-	-
C. Ostracoda			
F. Cylindroleberidae			
Cylindroleberis mariae	-	-	-
F. Cytheridae			
Cythere sp.	-	-	-
F. Cypridae			
Pontocypris sp.	-	-	-
Other Ostracods	11	5	8

RT005 SP2 2/80 10 wks	RT005 VVG1 2/80 155 m	RT005 VVG2 2/80 155 m	RT010 NS1 8/80 23 wks	RT010 NS2 8/80 23 wks	RT014 NS1 12/80 17 wks	RT014 NS2 12/80 17 wks
–	–	–	2	42	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	38	42	9	20
–	–	–	7	24	–	2
–	–	–	1	–	–	–
11	–	–	–	–	–	–

Table 1. (continued)

Cruise number:	RT014	RT014
Replicate:	NS3	NS4
Collection date:	12/80	12/80
Colonization period or grab depth:	51 wks	51 wks
Taxon:		
F. Serpulidae		
Crucigera zygophora	97	11
Crucigera irregularis	37	3
Crucigera sp.	-	-
Pseudochitinopoma occidentalis	7	1
unid. Serpulids	-	-
Unid. Polychaetes	5	3
C. Hirudinea		
unid. leech	1	-
S.P. Crustacea		
C. Branchiopoda		
S.O. Cladocera		
Podon sp.	-	-
Evadne sp.	-	-
C. Ostracoda		
F. Cylindroleberidae		
Cylindroleberis mariae	15	15
F. Cytheridae		
Cythere sp.	17	21
F. Cypridae		
Pontocypris sp.	1	8
Other Ostracods	-	5

RT017 NS1 4/81 18 wks	RT017 NS2 4/81 18 wks	RT019 NS3 6/81 10 wks	RT019 NS4 6/81 10 wks	RT019 SP1 6/81 10 wks	RT019 SP2 6/81 10 wks	RT019 NS11 6/81 28 wks	RT019 NS12 6/81 28 wks
-	-	-	-	-	-	1	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	2
-	-	-	-	-	-	-	1
-	-	-	-	-	1	-	-
-	-	1	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	1	1	-	-	-	-
-	-	-	-	-	-	-	-
5	7	14	21	-	4	21	29
-	1	4	-	13	16	118	108
-	-	-	-	3	2	4	2
-	-	-	-	-	-	2	2

Table 1. (continued)

Cruise number:	RT019
Replicate:	NS8
Collection date:	6/81
Colonization period or grab depth:	78 wks
Taxon:	
F. Serpulidae	
Crucigera zygophora	87
Crucigera irregularis	7
Crucigera sp.	-
Pseudochitinopoma occidentalis	1
unid. Serpulids	-
Unid. Polychaetes	-
C. Hirudinea	
unid. leech	-
S.P. Crustacea	
C. Branchiopoda	
S.O. Cladocera	
Podon sp.	-
Evadne sp.	-
C. Ostracoda	
F. Cylindroleberidae	
Cylindroleberis mariae	31
F. Cytheridae	
Cythere sp.	351
F. Cypridae	
Pontocypris sp.	51
Other Ostracods	-

RT019 NS10 6/81 78 wks	RT021 NS12 8/81 7 wks	RT021 NS14 8/81 7 wks	RT021 SP6 8/81 7 wks	RT021 SP7 8/81 7 wks	RT029 VVG1 8/82 15 m	RT029 VVG2 8/82 15 m
120	-	-	-	-	-	-
27	-	-	-	-	-	-
-	-	-	-	-	-	-
2	-	-	-	-	-	-
-	-	-	-	-	1	-
-	-	-	-	-	3	5
-	-	-	-	-	-	-
-	-	-	-	-	1	30
-	-	-	-	-	-	13
24	26	4	3	-	12	-
250	3	-	-	-	13	22
25	-	-	-	-	-	-
-	-	-	-	-	5	74

Table 1. (continued)

Cruise number:	RT005	RT005	RT005	RT005	RT005	RT005	RT010	RT010	RT014	RT014
Replicate:	NS1	NS2	SP1	SP2	VVG1	VVG2	NS1	NS2	NS1	NS2
Collection date:	2/80	2/80	2/80	2/80	2/80	2/80	8/80	8/80	12/80	12/80
Colonization period or grab depth:	10 wks	10 wks	10 wks	10 wks	155 m	155 m	23 wks	23 wks	17 wks	17 wks
Taxon:										
C. Copepoda										
O. Calanoida										
F. Acartiidae										
Acartia clausi	-	-	-	-	-	-	-	-	-	-
Acartia longiremis	-	-	-	-	-	-	-	-	-	-
Acartia sp.	-	-	-	-	-	-	-	-	-	-
F. Metridiidae										
Metridia okhotensis	-	-	-	-	-	-	-	-	-	-
Metridia sp.	-	-	-	-	-	-	-	-	-	-
F. Tortanidae										
Tortanus discaudatus	-	-	-	-	-	-	-	-	-	-
F. Calanidae										
Calanus sp.	-	-	-	-	-	-	-	-	-	-
F. Pseudocalanidae										
Pseudocalanus sp.	-	-	-	-	-	-	-	-	-	-
Microcalanus sp.	-	-	-	-	-	-	-	-	-	-
F. Centropagidae										
Centropages abdonimalis	-	-	-	-	-	-	-	-	-	-
F. Aetideidae										
Aetideopsis rostrata	5	-	10	-	-	-	-	-	-	-
Aetideopsis sp.	-	-	-	-	-	-	-	-	-	-
unid. Aetideids	-	-	-	-	-	-	-	-	6	1

Table 1. (continued)

Cruise number:	RT014	RT014	RT017
Replicate:	NS3	NS4	NS1
Collection date:	12/80	12/80	4/81
Colonization period or grab depth:	51 wks	51 wks	18 wks
Taxon:			
C. Copepoda			
O. Calanoida			
F. Acartiidae			
Acartia clausi	-	-	-
Acartia longiremis	-	-	-
Acartia sp.	-	-	-
F. Metridiidae			
Metridia okhotensis	-	-	-
Metridia sp.	-	-	-
F. Tortanidae			
Tortanus discaudatus	-	-	-
F. Calanidae			
Calanus sp.	-	-	-
F. Pseudocalanidae			
Pseudocalanus sp.	-	-	-
Microcalanus sp.	-	-	-
F. Centropagidae			
Centropages abdominalis	-	-	-
F. Aetideidae			
Aetideopsis rostrata	-	-	-
Aetideopsis sp.	-	-	1
unid. Aetideids	-	1	-

RT017 NS2 4/81 18 wks	RT019 NS3 6/81 10 wks	RT019 NS4 6/81 10 wks	RT019 SP1 6/81 10 wks	RT019 SP2 6/81 10 wks	RT019 NS11 6/81 28 wks	RT019 NS12 6/81 28 wks
-	5	7	-	-	-	-
-	9	3	-	-	-	-
-	-	-	-	-	1	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	4	4	-	-	-	-
-	1	-	-	1	-	-
-	4	-	-	-	1	-
-	-	-	-	-	2	-
-	39	35	-	-	-	1
-	-	-	-	-	-	-
-	-	-	-	-	-	-
4	-	-	-	-	-	-

Table 1. (continued)

Cruise number:	RT019	RT019
Replicate:	NS8	NS10
Collection date:	6/81	6/81
Colonization period or grab depth:	78 wks	78 wks
Taxon:		
C. Copepoda		
O. Calanoida		
F. Acartiidae		
Acartia clausi	-	6
Acartia longiremis	-	9
Acartia sp.	-	-
F. Metridiidae		
Metridia okhotensis	-	-
Metridia sp.	-	-
F. Tortanidae		
Tortanus discaudatus	-	4
F. Calanidae		
Calanus sp.	-	-
F. Pseudocalanidae		
Pseudocalanus sp.	-	1
Microcalanus sp.	-	-
F. Centropagidae		
Centropages abdominalis	-	10
F. Aetideidae		
Aetideopsis rostrata	-	-
Aetideopsis sp.	-	-
unid. Aetideids	5	-

RT021 NS12 8/81 7 wks	RT021 NS14 8/81 7 wks	RT021 SP6 8/81 7 wks	RT021 SP7 8/81 7 wks	RT029 VVG1 8/82 15 m	RT029 VVG2 8/82 15 m
-	-	-	-	-	-
-	-	-	-	1	-
-	-	-	-	-	75
-	-	-	-	1	-
-	-	-	-	-	4
-	-	-	-	-	-
-	-	-	-	4	-
-	-	-	-	6	25
-	-	-	-	-	-
-	-	-	-	-	-
5	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Table 1. (continued)

Cruise number:	RT005	RT005
Replicate:	NS1	NS2
Collection date:	2/80	2/80
Colonization period or grab depth:	10 wks	10 wks
Taxon:		
F. Temoridae		
Eurytemora thompsoni	-	-
F. Stephidae		
Stephos scotti cf.	-	-
Unid. Calanoids	-	-
O. Harpacticoida		
F. Peltidiidae		
Paralteutha simile	-	-
unid. Peltidiids	-	-
F. Porcellidiidae		
Porcellidium sp.	-	-
F. Harpacticadae		
Harpacticus uniremis	-	-
Harpacticus sp.	-	-
F. Diosaccidae		
Amphiascopsis cinctus	-	-
Diosaccus spinatus	-	-
F. Cletodidae		
Acrenhydrosoma karlingi	-	-
F. Laophontidae		
Heterolaophonte discophora cf.	-	-
Paralaophonte pacifica	-	-
unid. Laophontids	-	-

RT005 SP1 2/80 10 wks	RT005 SP2 2/80 10 wks	RT005 VVG1 2/80 155 m	RT005 VVG2 2/80 155 m	RT010 NS1 8/80 23 wks	RT010 NS2 8/80 23 wks	RT014 NS1 12/80 17 wks	RT014 NS2 12/80 17 wks
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	1
–	–	–	–	4	–	–	–
3	1	–	–	2	–	–	1
–	–	–	–	–	–	–	–
1	–	–	–	6	11	2	3
–	–	–	–	159	149	2	4
–	–	–	–	–	–	1	–
–	–	–	–	1	–	–	–
–	–	–	–	–	–	–	–
–	–	–	–	4	–	–	1
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–

Table 1. (continued)

Cruise number:	RT014	RT014	RT017	RT017
Replicate:	NS3	NS4	NS1	NS2
Collection date:	12/80	12/80	4/81	4/81
Colonization period or grab depth:	51 wks	51 wks	18 wks	18 wks
Taxon:				
F. Temoridae				
Eurytemora thompsoni	-	-	-	-
F. Stephidae				
Stephos scotti cf.	-	-	1	-
Unid. Calanoids	1	-	-	-
O. Harpacticoida				
F. Peltidiidae				
Paralteutha simile	-	-	1	-
unid. Peltidiids	-	-	-	-
F. Porcellidiidae				
Porcellidium sp.	3	5	-	1
F. Harpacticadae				
Harpacticus uniremis	8	2	18	22
Harpacticus sp.	-	-	-	-
F. Diosaccidae				
Amphiascopsis cinctus	-	-	-	-
Diosaccus spinatus	-	-	-	-
F. Cletodidae				
Acrenhydrosoma karlingi	1	6	-	-
F. Laophontidae				
Heterolaophonte discophora cf.	-	-	-	-
Paralaophonte pacifica	-	-	-	-
unid. Laophontids	-	-	-	-

RT019 NS3 6/81 10 wks	RT019 NS4 6/81 10 wks	RT019 SP1 6/81 10 wks	RT019 SP2 6/81 10 wks	RT019 NS11 6/81 28 wks	RT019 NS12 6/81 28 wks
-	-	-	-	1	-
5	-	3	17	-	-
9	2	-	-	-	-
4	5	-	1	1	8
-	-	-	-	-	-
-	-	-	1	-	-
1125	1173	10	60	1547	1433
1	-	-	-	-	8
4	7	2	-	200	54
1	-	-	-	-	-
-	-	-	-	1	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	3	-	1	-

Table 1. (continued)

Cruise number:	RT019
Replicate:	NS8
Collection date:	6/81
Colonization period or grab depth:	78 wks
Taxon:	
F. Temoridae	
Eurytemora thompsoni	3
F. Stephidae	
Stephos scotti cf.	-
Unid. Calanoids	-
O. Harpacticoida	
F. Peltidiidae	
Paralteutha simile	42
unid. Peltidiids	-
F. Porcellidiidae	
Porcellidium sp.	1
F. Harpacticadae	
Harpacticus uniremis	737
Harpacticus sp.	-
F. Diosaccidae	
Amphiascopsis cinctus	-
Diosaccus spinatus	-
F. Cletodidae	
Acrenhydrosoma karlingi	-
F. Laophontidae	
Heterolaophonte discophora cf.	1
Paralaophonte pacifica	-
unid. Laophontids	-

RT019 NS10 6/81 78 wks	RT021 NS12 8/81 7 wks	RT021 NS14 8/81 7 wks	RT021 SP6 8/81 7 wks	RT021 SP7 8/81 7 wks	RT029 VVG1 8/82 15 m	RT029 VVG2 8/82 15 m
-	-	-	-	-	-	-
2	-	-	-	-	-	-
-	-	-	-	-	-	3
7	6		-	-	-	-
-	-	-	-	-	-	6
1	-	-	-	-	-	-
1103	543	182	1	-	26	13
1	-	-	-	-	-	-
59	8	-	-	-	1	1
-	-	-	-	-	-	-
4	-	-	-	-	1	-
6	-	-	-	-	-	-
2	-	-	-	-	-	-
-	-	-	-	-	2	1

Table 1. (continued)

Cruise number: Replicate: Collection date: Colonization period or grab depth:	RT005 NS1 2/80 10 wks	RT005 NS2 2/80 10 wks	RT005 SP1 2/80 10 wks	RT005 SP2 2/80 10 wks	RT005 VVG1 2/80 155 m	RT005 VVG2 2/80 155 m	RT010 NS1 8/80 23 wks	RT010 NS2 8/80 23 wks	RT014 NS1 12/80 17 wks	RT014 NS2 12/80 17 wks
<u>Taxon</u>:										
F. Tachidiidae										
<u>Danielssenia</u> sp.	-	-	-	-	-	-	-	-	-	-
F. Thalestridae										
<u>Dactylopodia</u> sp.	-	-	-	-	-	-	-	-	-	-
<u>Parthalestris</u> sp.	-	-	-	-	-	-	-	-	1	-
<u>Diarthrodes</u> sp.	-	-	-	-	-	-	-	-	-	-
unid. Thalestrids	-	-	-	-	-	-	-	-	-	-
F. Ectinosomidae										
<u>Halectinosoma</u> <u>finmarchium</u>	-	-	-	-	-	-	27	11	-	-
<u>Pseudobradya</u> <u>crassipes</u>	-	-	-	-	-	-	-	-	-	-
unid. Ectinosomids	-	-	-	-	-	-	-	-	-	-
F. Anchorabolidae										
<u>Anchorabolus</u> <u>mirabilis</u>	-	-	-	-	-	-	-	-	-	-
Unid. Harpacticoids	-	-	4	3	-	-	2	20	-	-
O. Cyclopoida										
F. Cyclopidae										
<u>Euryte</u> <u>longicauda</u>	-	-	-	-	-	-	5	1	1	-
F. Lichomolgidae										
<u>Pseudomolgus</u> cf.	-	-	-	-	-	-	-	3	3	8
F. Oncaeidae										
<u>Oncaea</u> sp.	-	-	-	-	-	-	-	-	-	-
Unid. Cyclopoids	-	-	-	-	-	-	-	-	-	-

Table 1. (continued)

Cruise number: Replicate: Collection date: Colonization period or grab depth:	RT014 NS3 12/80 51 wks	RT014 NS4 12/80 51 wks	RT017 NS1 4/81 18 wks
Taxon:			
F. Tachidiidae			
Danielssenia sp.	13	-	-
F. Thalestridae			
Dactylopodia sp.	-	-	-
Parthalestris sp.	-	-	-
Diarthrodes sp.	-	-	-
unid. Thalestrids	-	-	-
F. Ectinosomidae			
Halectinosoma finmarchium	7	2	1
Pseudobradya crassipes	-	-	-
unid. Ectinosomids	-	-	-
F. Anchorabolidae			
Anchorabolus mirabilis	-	-	-
Unid. Harpacticoids	1	6	-
O. Cyclopoida			
F. Cyclopidae			
Euryte longicauda	8	1	-
F. Lichomolgidae			
Pseudomolgus cf.	1	2	-
F. Oncaeidae			
Oncaea sp.	-	-	-
Unid. Cyclopoids	-	-	1

RT017 NS2 4/81 18 wks	RT019 NS3 6/81 10 wks	RT019 NS4 6/81 10 wks	RT019 SP1 6/81 10 wks	RT019 SP2 6/81 10 wks	RT019 NS11 6/81 28 wks	RT019 NS12 6/81 28 wks
-	2	-	-	-	20	7
-	-	-	-	-	-	1
-	-	-	-	-	1	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	12	2	13	3
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	1	-	-	-	1	-
-	1	-	-	-	9	-
-	1	1	4	13	4	12
-	-	-	1	-	1	-
-	-	-	-	-	-	-
-	2	-	-	-	1	-

Table 1. (continued)

Cruise number:	RT019	RT019
Replicate:	NS8	NS10
Collection date:	6/81	6/81
Colonization period or grab depth:	78 wks	78 wks
Taxon:		
F. Tachidiidae		
Danielssenia sp.	31	8
F. Thalestridae		
Dactylopodia sp.	-	4
Parthalestris sp.	-	-
Diarthrodes sp.	-	9
unid. Thalestrids	-	-
F. Ectinosomidae		
Halectinosoma finmarchium	26	25
Pseudobradya crassipes	-	2
unid. Ectinosomids	-	-
F. Anchorabolidae		
Anchorabolus mirabilis	-	-
Unid. Harpacticoids	-	2
O. Cyclopoida		
F. Cyclopidae		
Euryte longicauda	-	37
F. Lichomolgidae		
Pseudomolgus cf.	-	-
F. Oncaeidae		
Oncaea sp.	-	-
Unid. Cyclopoids	2	-

RT021 NS12 8/81 7 wks	RT021 NS14 8/81 7 wks	RT021 SP6 8/81 7 wks	RT021 SP7 8/81 7 wks	RT029 VVG1 8/82 15 m	RT029 VVG2 8/82 15 m
1	–	–	–	5	–
–	–	–	–	–	–
–	–	–	–	–	1
–	–	–	–	–	–
–	–	–	–	9	17
–	–	–	–	2	23
–	–	–	–	–	–
–	–	–	–	1	6
–	–	–	–	–	–
–	–	–	–	2	4
1	–	–	–	–	–
3	–	–	–	–	–
–	–	–	–	–	2
–	–	–	–	–	–

Table 1. (continued)

Cruise number: Replicate: Collection date: Colonization period or grab depth:	RT005 NS1 2/80 10 wks	RT005 NS2 2/80 10 wks	RT005 SP1 2/80 10 wks
Taxon:			
O. Monstrilloida			
F. Monstrillidae			
unid. Monstrillids	-	-	-
O. Caligoida			
unid. Caligoids	-	-	-
C. Cirripedia			
O. Thoracica			
Balanus crenatus	-	-	-
Balanus sp.	-	-	-
unid. larvae	-	-	-
C. Malacostraca			
O. Leptostraca			
unid. Leptostracans (Nebaliacea)	-	3	-
O. Mysidacea			
juvenile Mysids	-	-	-
O. Cumacea			
F. Diastylidae			
Diastylis koreana	-	-	-
Diastylis alaskensis	1	-	1
unid. Diastylids	-	-	-
F. Lampropidae			
Lamprops serrata	-	-	-
Lamprops sp.	-	-	-

RT005 SP2 2/80 10 wks	RT005 VVC1 2/80 155 m	RT005 VVC2 2/80 155 m	RT010 NS1 8/80 23 wks	RT010 NS2 8/80 23 wks	RT014 NS1 12/80 17 wks	RT014 NS2 12/80 17 wks
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
1	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	1	–	–
–	–	–	–	–	1	–
–	–	–	–	–	–	–
–	–	–	20	–	–	–
–	–	–	–	34	1	–

Table 1. (continued)

Cruise number:	RT014	RT014	RT017	RT017	RT019	RT019	RT019	RT019	RT019	RT019
Replicate:	NS3	NS4	NS1	NS2	NS3	NS4	SP1	SP2	NS11	NS12
Collection date:	12/80	12/80	4/81	4/81	6/81	6/81	6/81	6/81	6/81	6/81
Colonization period or grab depth:	51 wks	51 wks	18 wks	18 wks	10 wks	10 wks	10 wks	10 wks	28 wks	28 wks
<u>Taxon</u>:										
O. Monstrilloida										
F. Monstrillidae										
unid. Monstrillids	-	1	-	-	-	-	-	-	1	-
O. Caligoida										
unid. Caligoids	-	-	-	-	-	-	1	24	-	-
C. Cirripedia										
O. Thoracica										
<u>Balanus crenatus</u>	-	-	-	-	-	-	-	-	29	-
<u>Balanus</u> sp.	-	-	-	-	-	38	14	8	33	43
unid. larvae	-	-	-	-	20	-	-	-	-	4
C. Malacostraca										
O. Leptostraca										
unid. Leptostracans (Nebaliacea)	-	-	2	-	1	-	1	3	-	-
O. Mysidacea										
juvenile Mysids	-	-	-	-	-	-	-	-	-	-
O. Cumacea										
F. Diastylidae										
<u>Diastylis koreana</u>	-	-	-	-	-	-	-	-	-	-
<u>Diastylis alaskensis</u>	-	2	-	1	-	-	-	-	-	-
unid. Diastylids	-	-	2	-	-	-	-	-	-	-
F. Lampropidae										
<u>Lamprops serrata</u>	-	-	3	-	421	200	-	-	4	16
<u>Lamprops</u> sp.	-	-	-	-	-	-	2	-	-	-

Table 1. (continued)

Cruise number:	RT019	RT019
Replicate:	NS8	NS10
Collection date:	6/81	6/81
Colonization period or grab depth:	78 wks	78 wks
Taxon:		
O. Monstrilloida		
F. Monstrillidae		
unid. Monstrillids	-	-
O. Caligoida		
unid. Caligoids	-	-
C. Cirripedia		
O. Thoracica		
Balanus crenatus	-	-
Balanus sp.	20	38
unid. larvae	2	-
C. Malacostraca		
O. Leptostraca		
unid. Leptostracans (Nebaliacea)	5	-
O. Mysidacea		
juvenile Mysids	-	1
O. Cumacea		
F. Diastylidae		
Diastylis koreana	-	-
Diastylis alaskensis	-	-
unid. Diastylids	-	-
F. Lampropidae		
Lamprops serrata	5	13
Lamprops sp.	-	-

RT021 NS12 8/81 7 wks	RT021 NS14 8/81 7 wks	RT021 SP6 8/81 7 wks	RT021 SP7 8/81 7 wks	RT029 VVG1 8/82 15 m	RT029 VVG2 8/82 15 m
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
87	95	-	-	-	-

Table 1. (continued)

Cruise number: Replicate: Collection date: Colonization period or grab depth:	RT005 NS1 2/80 10 wks	RT005 NS2 2/80 10 wks	RT005 SP1 2/80 10 wks	RT005 SP2 2/80 10 wks	RT005 VVG1 2/80 155 m	RT005 VVG2 2/80 155 m	RT010 NS1 8/80 23 wks	RT010 NS2 8/80 23 wks	RT014 NS1 12/80 17 wks	RT014 NS2 12/80 17 wks
Taxon:										
F. Nannastacidae										
Cumella vulgaris	1	-	1	-	-	-	-	4	-	-
Cumella sp.	-	-	-	-	-	-	5	-	-	-
Campylaspis rufa	-	-	-	-	-	-	-	-	2	-
F. Leuconidae										
Eudorellopsis biplicata	-	-	-	-	-	-	-	-	-	-
Eudorellopsis sp.	-	-	-	-	-	-	-	-	-	-
Eudorella emarginata	-	-	-	-	2	2	-	-	-	-
Eudorella pacifica	-	-	-	-	1	-	-	-	-	-
Eudorella sp.	-	-	-	-	-	-	-	-	-	-
Leucon nasica	-	-	-	-	-	-	-	-	-	-
O. Tanaidacea										
unid. Tanaids	-	-	-	-	-	-	2	-	-	-
O. Isopoda										
unid. Asellotidae	-	-	-	-	-	-	-	-	-	-
O. Amphipoda										
F. Oedicerotidae										
Synchelidium shoemakeri	1	7	21	-	-	1	18	2	7	15
Synchelidium rectipalmum	-	-	-	-	-	-	-	-	-	-
Synchelidium sp.	-	-	-	-	-	-	-	2	-	-
Monoculodes zernovi	-	5	7	-	-	-	-	-	-	-
Monoculodes sp.	-	-	-	-	-	-	-	-	1	-
Bathymedon sp.	-	-	-	-	-	-	3	1	1	-
Westwoodilla sp.	-	-	-	-	-	-	-	-	-	-
unid. Oedicerotids	-	-	-	-	-	-	-	-	4	16

Table 1. (continued)

Cruise number:	RT014
Replicate:	NS3
Collection date:	12/80
Colonization period or grab depth:	51 wks
Taxon:	
F. Nannastacidae	
Cumella vulgaris	-
Cumella sp.	-
Campylaspis rufa	-
F. Leuconidae	
Eudorellopsis biplicata	-
Eudorellopsis sp.	-
Eudorella emarginata	-
Eudorella pacifica	-
Eudorella sp.	-
Leucon nasica	-
O. Tanaidacea	
unid. Tanaids	-
O. Isopoda	
unid. Asellotidae	-
O. Amphipoda	
F. Oedicerotidae	
Synchelidium shoemakeri	17
Synchelidium rectipalmum	-
Synchelidium sp.	-
Monoculodes zernovi	-
Monoculodes sp.	-
Bathymedon sp.	15
Westwoodilla sp.	-
unid. Oedicerotids	2

RT014 NS4 12/80 51 wks	RT017 NS1 4/81 18 wks	RT017 NS2 4/81 18 wks	RT019 NS3 6/81 10 wks	RT019 NS4 6/81 10 wks	RT019 SP1 6/81 10 wks	RT019 SP2 6/81 10 wks	RT019 NS11 6/81 28 wks	RT019 NS12 6/81 28 wks
-	-	2	-	-	-	-	1	-
-	1	-	5	6	-	-	-	4
-	-	-	-	-	-	-	-	-
-	-	-	2	-	-	-	-	2
-	-	-	-	-	-	-	1	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-
-	1	-	3	-	-	-	1	3
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
4	29	29	5	11	-	-	4	2
1	-	-	-	-	3	-	1	6
11	-	-	10	7	-	-	-	-
-	-	-	-	-	-	-	-	-
-	2	4	-	-	-	-	-	2
2	-	-	-	-	-	1	2	1
-	-	-	-	-	-	-	-	-
-	9	5	-	-	-	-	1	-

Table 1. (continued)

Cruise number:	RT019
Replicate:	NS8
Collection date:	6/81
Colonization period or grab depth:	78 wks
Taxon:	
F. Nannastacidae	
Cumella vulgaris	-
Cumella sp.	-
Campylaspis rufa	-
F. Leuconidae	
Eudorellopsis biplicata	2
Eudorellopsis sp.	-
Eudorella emarginata	-
Eudorella pacifica	-
Eudorella sp.	-
Leucon nasica	-
O. Tanaidacea	
unid. Tanaids	-
O. Isopoda	
unid. Asellotidae	1
O. Amphipoda	
F. Oedicerotidae	
Synchelidium shoemakeri	-
Synchelidium rectipalmum	12
Synchelidium sp.	-
Monoculodes zernovi	-
Monoculodes sp.	-
Bathymedon sp.	1
Westwoodilla sp.	-
unid. Oedicerotids	-

RT019 NS10 6/81 78 wks	RT021 NS12 8/81 7 wks	RT021 NS14 8/81 7 wks	RT021 SP6 8/81 7 wks	RT021 SP7 8/81 7 wks	RT029 VVG1 8/82 15 m	RT029 VVG2 8/82 15 m
–	–	–	–	–	–	–
1	3	3	–	–	1	–
–	–	–	–	–	–	–
2	–	–	–	–	–	–
–	1	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
2	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	4	4	1	2	–	–
17	–	–	–	–	–	1
–	–	2	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	3	–	–	–	–	–
–	1	–	–	–	–	–
–	17	11	–	–	–	–

Table 1. (continued)

Cruise number:	RT005	RT005	RT005
Replicate:	NS1	NS2	SP1
Collection date:	2/80	2/80	2/80
Colonization period or grab depth:	10 wks	10 wks	10 wks
Taxon:			
F. Dexaminidae			
Guernea sp.	1	1	-
Guernea nordenskioldi	-	-	-
F. Pleustidae			
Pleusymtes sp.	-	-	-
Parapleustes sp.	-	-	-
Pleusymtes uncigera	-	-	-
unid. Pleustids	1	1	-
F. Eusiridae			
Pontogeneia ivanovi	-	-	-
Pontogeneia sp.	-	-	1
F. Lysianassidae			
Anonyx nugax	-	-	-
Orchomene pacifica	-	1	-
Orchomene minuta	6	-	-
Orchomene sp.	-	1	-
unid. Lysianassids	-	-	-
F. Stenothoidae			
Metopella sp.	-	-	-
unid. Stenothoids	-	-	-
F. Corophiidae			
Corophium sp.	1	-	-
F. Gammaridae			
Anisogammarus pugettensis	1	-	-

RT005 SP2 2/80 10 wks	RT005 VVG1 2/80 155 m	RT005 VVG2 2/80 155 m	RT010 NS1 8/80 23 wks	RT010 NS2 8/80 23 wks	RT014 NS1 12/80 17 wks	RT014 NS2 12/80 17 wks
–	–	–	–	–	–	–
–	–	–	3	4	8	4
–	–	–	–	9	–	–
–	–	–	–	–	1	9
–	–	–	23	–	–	–
9	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
1	–	–	–	–	–	–
2	–	–	–	–	–	–
–	–	–	–	1	–	–
–	–	–	1	–	–	1
–	–	–	–	1	1	5
–	–	–	–	–	–	–
4	–	–	–	–	1	2
–	–	–	–	–	–	–

Table 1. (continued)

Cruise number:	RT014	RT014	RT017
Replicate:	NS3	NS4	NS1
Collection date:	12/80	12/80	4/81
Colonization period or grab depth:	51 wks	51 wks	18 wks
Taxon:			
F. Dexaminidae			
Guernea sp.	-	-	-
Guernea nordenskioldi	-	16	-
F. Pleustidae			
Pleusymtes sp.	-	-	-
Parapleustes sp.	35	-	2
Pleusymtes uncigera	-	6	-
unid. Pleustids	-	-	-
F. Eusiridae			
Pontogeneia ivanovi	-	-	-
Pontogeneia sp.	-	-	-
F. Lysianassidae			
Anonyx nugax	-	-	1
Orchomene pacifica	-	-	-
Orchomene minuta	-	-	-
Orchomene sp.	-	-	-
unid. Lysianassids	-	-	-
F. Stenothoidae			
Metopella sp.	6	3	2
unid. Stenothoids	1	-	-
F. Corophiidae			
Corophium sp.	1	-	-
F. Gammaridae			
Anisogammarus pugettensis	-	-	-

RT017 NS2 4/81 18 wks	RT019 NS3 6/81 10 wks	RT019 NS4 6/81 10 wks	RT019 SP1 6/81 10 wks	RT019 SP2 6/81 10 wks	RT019 NS11 6/81 28 wks	RT019 NS12 6/81 28 wks
-	-	-	-	-	1	-
-	12	2	1	-	-	2
-	-	-	-	-	-	-
-	-	1	6	16	10	20
-	-	-	-	-	-	-
-	-	-	-	3	-	-
-	-	-	-	-	-	-
-	-	-	1	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	10	70	-	-
2	-	-	-	-	2	2
-	-	-	-	-	-	-
-	-	-	-	2	1	2
-	-	-	-	-	-	-
-	-	-	-	1	1	-
-	-	-	-	-	-	-

Table 1. (continued)

Cruise number:	RT019	RT019
Replicate:	NS8	NS10
Collection date:	6/81	6/81
Colonization period or grab depth:	78 wks	78 wks
Taxon:		
F. Dexaminidae		
Guernea sp.	-	-
Guernea nordenskioldi	1	3
F. Pleustidae		
Pleusymtes sp.	-	-
Parapleustes sp.	-	45
Pleusymtes uncigera	61	-
unid. Pleustids	-	-
F. Eusiridae		
Pontogeneia ivanovi	6	-
Pontogeneia sp.	-	7
F. Lysianassidae		
Anonyx nugax	-	-
Orchomene pacifica	-	-
Orchomene minuta	-	-
Orchomene sp.	1	2
unid. Lysianassids	1	-
F. Stenothoidae		
Metopella sp.	9	6
unid. Stenothoids	-	1
F. Corophiidae	-	-
Corophium sp.		
F. Gammaridae		
Anisogammarus pugettensis	-	-

RT021 NS12 8/81 7 wks	RT021 NS14 8/81 7 wks	RT021 SP6 8/81 7 wks	RT021 SP7 8/81 7 wks	RT029 VVG1 8/82 15 m	RT029 VVG2 8/82 15 m
-	-	-	-	-	1
1	-	-	-	7	-
-	-	-	-	-	-
7	-	1	-	-	-
-	-	-	-	-	-
-	1	-	-	1	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
48	-	32	-	-	9
1	4	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Table 1. (continued)

Cruise number:	RT005	RT005	RT005
Replicate:	NS1	NS2	SP1
Collection date:	2/80	2/80	2/80
Colonization period or grab depth:	10 wks	10 wks	10 wks
Taxon:			
F. Synopiidae			
Tiron biocelata	-	-	-
F. Phoxocephalidae			
Heterophoxus oculatus	-	-	-
Heterophoxus sp.	-	-	-
Foxiphalus similis	-	-	-
unid. Phoxocephalids	-	-	-
F. Ampeliscidae			
Ampelisca pugetica	-	-	-
F. Aeginellidae			
Mayerella banksia cf.	1	-	-
Unid. Amphipods	-	-	-
O. Decapoda			
F. Pandalidae			
Pandalus hypsinotus	-	-	-
Pandalus tridens	-	-	-
Pandalus platyceros	-	-	-
F. Hippolytidae			
Lebbeus groenlandicus	-	-	-
unid. Hippolytids	-	-	-
F. Majidae			
Oregonia bifurca	-	-	-
Hyas lyratus cf.	-	-	-

RT005 SP2 2/80 10 wks	RT005 VVC1 2/80 155 m	RT005 VVC2 2/80 155 m	RT010 NS1 8/80 23 wks	RT010 NS2 8/80 23 wks	RT014 NS1 12/80 17 wks	RT014 NS2 12/80 17 wks
-	-	-	-	-	-	-
-	-	-	1	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	1
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

Table 1. (continued)

Cruise number:	RT014	RT014	RT017	RT017	RT019	RT019	RT019	RT019	RT019	RT019
Replicate:	NS3	NS4	NS1	NS2	NS3	NS4	SP1	SP2	NS11	NS12
Collection date:	12/80	12/80	4/81	4/81	6/81	6/81	6/81	6/81	6/81	6/81
Colonization period or grab depth:	51 wks	51 wks	18 wks	18 wks	10 wks	10 wks	10 wks	10 wks	28 wks	28 wks
Taxon:										
F. Synopiidae										
Tiron biocelata	-	1	-	-	-	-	-	-	-	-
F. Phoxocephalidae										
Heterophoxus oculatus	-	-	1	-	-	-	-	-	-	-
Heterophoxus sp.	-	-	-	-	-	-	-	-	-	-
Foxiphalus similis	-	-	-	1	1	1	2	1	4	4
unid. Phoxocephalids	-	-	-	-	-	-	-	-	-	-
F. Ampeliscidae										
Ampelisca pugetica	-	-	-	-	-	-	-	-	-	1
F. Aeginellidae										
Mayerella banksia cf.	-	-	-	-	-	-	-	-	-	-
Unid. Amphipods	1	-	-	-	-	-	-	-	-	-
O. Decapoda										
F. Pandalidae										
Pandalus hypsinotus	-	-	-	-	-	-	-	-	-	-
Pandalus tridens	-	-	-	-	-	-	-	3	-	-
Pandalus platyceros	-	-	-	-	-	-	-	-	-	1
F. Hippolytidae										
Lebbeus groenlandicus	-	-	-	-	-	-	-	1	-	-
unid. Hippolytids	-	-	-	-	-	-	1	-	-	-
F. Majidae										
Oregonia bifurca	-	-	-	-	-	-	-	-	-	-
Hyas lyratus cf.	-	-	-	-	-	-	-	-	-	-

Table 1. (continued)

Cruise number:	RT019	RT019
Replicate:	NS8	NS10
Collection date:	6/81	6/81
Colonization period or grab depth:	78 wks	78 wks
Taxon:		
F. Synopiidae		
Tiron biocelata	-	1
F. Phoxocephalidae		
Heterophoxus oculatus	-	-
Heterophoxus sp.	15	-
Foxiphalus similis	24	21
unid. Phoxocephalids	-	-
F. Ampeliscidae		
Ampelisca pugetica	-	-
F. Aeginellidae		
Mayerella banksia cf.	-	-
Unid. Amphipods	-	-
O. Decapoda		
F. Pandalidae		
Pandalus hypsinotus	2	-
Pandalus tridens	-	3
Pandalus platyceros	-	-
F. Hippolytidae		
Lebbeus groenlandicus	-	-
unid. Hippolytids	-	-
F. Majidae		
Oregonia bifurca	-	1
Hyas lyratus cf.	-	-

RT021 NS12 8/81 7 wks	RT021 NS14 8/81 7 wks	RT021 SP6 8/81 7 wks	RT021 SP7 8/81 7 wks	RT029 VVG1 8/82 15 m	RT029 VVG2 8/82 15 m
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
1	–	–	–	1	1
–	1	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	1	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	1

Table 1. (continued)

Cruise number:	RT005	RT005
Replicate:	NS1	NS2
Collection date:	2/80	2/80
Colonization period or grab depth:	10 wks	10 wks
Taxon:		
F. Paguridae		
unid. Pagurids	-	-
F. Cancridae		
Cancer magister	1	1
unid. juvenile Cancrids	-	-
C. Insecta		
Chironomid larvae	2	-
Beetles	-	1
Flying insects	-	-
C. Arachnida		
Pink mites	-	-
Brown mites	7	7
Spiders	-	-
P. Mollusca		
C. Gastropoda		
Velutina velutina	-	-
Odostomia sp.	-	-
Natica clausa	-	-
Oenopota spp.	-	-
Margarites pupillus	-	-
Margarites sp.	-	-
Alvania spp.	-	-
Littorina sitkana	-	-
Fusitriton sp.	-	-
Cryptobranchia concentrica	-	-
unid. coiled Gastropods	4	5

RT005 SP1 2/80 10 wks	RT005 SP2 2/80 10 wks	RT005 VVG1 2/80 155 m	RT005 VVG2 2/80 155 m	RT010 NS1 8/80 23 wks	RT010 NS2 8/80 23 wks	RT014 NS1 12/80 17 wks	RT014 NS2 12/80 17 wks
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
2	-	-	-	2	-	-	-
-	-	-	-	1	-	-	-
-	2	-	-	2	-	-	-
-	-	-	-	1	2	-	1
4	6	-	-	-	-	-	-
-	-	-	-	1	-	-	-
-	-	-	-	-	1	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	3	-	-	31	24	11	18

Table 1. (continued)

Cruise number:	RT014	RT014	RT017
Replicate:	NS3	NS4	NS1
Collection date:	12/80	12/80	4/81
Colonization period or grab depth:	51 wks	51 wks	18 wks
Taxon:			
F. Paguridae			
unid. Pagurids	-	-	-
F. Cancridae			
Cancer magister	-	-	-
unid. juvenile Cancrids	-	-	-
C. Insecta			
Chironomid larvae	-	2	-
Beetles	-	-	-
Flying insects	-	-	-
C. Arachnida			
Pink mites	-	1	1
Brown mites	-	1	-
Spiders	-	-	-
P. Mollusca			
C. Gastropoda			
Velutina velutina	-	-	-
Odostomia sp.	1	-	-
Natica clausa	-	-	-
Oenopota spp.	1	-	-
Margarites pupillus	-	-	-
Margarites sp.	-	-	2
Alvania spp.	12	-	-
Littorina sitkana	-	-	-
Fusitriton sp.	-	-	-
Cryptobranchia concentrica	-	-	-
unid. coiled Gastropods	31	4	1

RT017 NS2 4/81 18 wks	RT019 NS3 6/81 10 wks	RT019 NS4 6/81 10 wks	RT019 SP1 6/81 10 wks	RT019 SP2 6/81 10 wks	RT019 NS11 6/81 28 wks	RT019 NS12 6/81 28 wks
-	-	-	-	-	1	1
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	1	1	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	1	-	1	-	3	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	2	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	3	3
-	63	21	11	20	33	72

Table 1. (continued)

Cruise number: Replicate: Collection date: Colonization period or grab depth:	RT019 NS8 6/81 78 wks	RT019 NS10 6/81 78 wks
Taxon:		
F. Paguridae		
unid. Pagurids	1	-
F. Cancridae		
Cancer magister	-	-
unid. juvenile Cancrids	-	-
C. Insecta		
Chironomid larvae	1	-
Beetles	7	2
Flying insects	1	-
C. Arachnida		
Pink mites	3	-
Brown mites	-	1
Spiders	-	-
P. Mollusca		
C. Gastropoda		
Velutina velutina	-	-
Odostomia sp.	13	5
Natica clausa	-	1
Oenopota spp.	-	2
Margarites pupillus	-	-
Margarites sp.	1	-
Alvania spp.	2	-
Littorina sitkana	-	-
Fusitriton sp.	1	-
Cryptobranchia concentrica	2	1
unid. coiled Gastropods	62	159

RT021 NS12 8/81 7 wks	RT021 NS14 8/81 7 wks	RT021 SP6 8/81 7 wks	RT021 SP7 8/81 7 wks	RT029 VVG1 8/82 15 m	RT029 VVG2 8/82 15 m
-	-	-	-	-	-
-	-	-	-	-	-
-	-	1	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	1	-	-	1	-
-	-	-	-	2	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	1	-	-	-
-	-	-	-	1	-
-	-	2	-	-	-
-	-	-	-	-	-
-	-	6	-	-	-
-	-	1	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
74	6	-	6	4	3

Table 1. (continued)

Cruise number:	RT005	RT005
Replicate:	NS1	NS2
Collection date:	2/80	2/80
Colonization period or grab depth:	10 wks	10 wks
Taxon:		
C. Gastropoda (continued)		
unid. patellate Gastropods	-	1
Gastropteron pacificum	-	-
unid. Opisthobranchs	-	-
C. Aplacophora		
Chaetoderma robusta	-	-
C. Bivalvia		
Delectopecten sp.	-	-
Thyasira flexuosa	1	13
Nuculana sp.	1	8
Saxidomus gigantea	-	-
Mytilus edulis	-	4
Clinocardium sp.	-	-
Axinopsida viridis	-	-
Macoma balthica	-	-
Macoma elimata	-	-
Macoma sp.	-	-
Mya arenaria	-	-
unid. round Bivalves	-	-
unid. oval Bivalves	-	-
unid. rectangular Bivalves	-	-
other unid. Bivalves	-	1
P. Sarcodina		
O. Foraminifera		
unid. Foraminiferans	-	3
P. Porifera		
unid. Sponges	-	-

RT005 SP1 2/80 10 wks	RT005 SP2 2/80 10 wks	RT005 VVG1 2/80 155 m	RT005 VVG2 2/80 155 m	RT010 NS1 8/80 23 wks	RT010 NS2 8/80 23 wks	RT014 NS1 12/80 17 wks	RT014 NS2 12/80 17 wks
-	8	-	-	1	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	2	-	-	-	-
-	-	-	-	-	-	-	-
2	-	9	11	-	-	-	-
-	5	-	-	-	-	-	-
-	-	-	-	-	-	-	-
1	13	1	-	1	1	-	-
-	-	-	-	-	1	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	1	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	23	65	-	-
-	-	-	-	32	4	-	-
-	-	-	-	6	13	-	-
-	-	-	-	-	-	-	-
-	12	22	-	2	22	1	-
-	-	-	-	-	-	-	-

Table 1. (continued)

Cruise number: Replicate: Collection date: Colonization period or grab depth:	RT014 NS3 12/80 51 wks	RT014 NS4 12/80 51 wks
Taxon:		
C. Gastropoda (continued)		
unid. patellate Gastropods	1	2
Gastropteron pacificum	-	-
unid. Opisthobranchs	-	-
C. Aplacophora		
Chaetoderma robusta	-	-
C. Bivalvia		
Delectopecten sp.	-	-
Thyasira flexuosa	-	-
Nuculana sp.	-	-
Saxidomus gigantea	-	-
Mytilus edulis	-	-
Clinocardium sp.	-	-
Axinopsida viridis	91	-
Macoma balthica	-	-
Macoma elimata	-	-
Macoma sp.	10	-
Mya arenaria	5	2
unid. round Bivalves	-	60
unid. oval Bivalves	-	12
unid. rectangular Bivalves	-	6
other unid. Bivalves	-	19
P. Sarcodina		
O. Foraminifera		
unid. Foraminiferans	9	7
P. Porifera		
unid. Sponges	-	-

RT017 NS1 4/81 18 wks	RT017 NS2 4/81 18 wks	RT019 NS3 6/81 10 wks	RT019 NS4 6/81 10 wks	RT019 SP1 6/81 10 wks	RT019 SP2 6/81 10 wks	RT019 NS11 6/81 28 wks	RT019 NS12 6/81 28 wks
–	–	–	–	–	–	–	4
–	–	–	–	–	–	2	–
–	–	–	–	–	–	6	9
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
–	–	–	–	–	–	8	–
–	–	–	–	–	–	1	–
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
3	–	–	–	–	–	2	–
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
270	217	6	7	–	–	69	90
–	–	–	–	–	–	–	–

Table 1. (continued)

Cruise number:	RT019
Replicate:	NS8
Collection date:	6/81
Colonization period or grab depth:	78 wks
Taxon:	
C. Gastropoda (continued)	
unid. patellate Gastropods	8
Gastropteron pacificum	-
unid. Opisthobranchs	-
C. Aplacophora	
Chaetoderma robusta	1
C. Bivalvia	
Delectopecten sp.	-
Thyasira flexuosa	-
Nuculana sp.	-
Saxidomus gigantea	-
Mytilus edulis	3
Clinocardium sp.	-
Axinopsida viridis	130
Macoma balthica	7
Macoma elimata	-
Macoma sp.	-
Mya arenaria	3
unid, round Bivalves	-
unid. oval Bivalves	-
unid. rectangular Bivalves	-
other unid. Bivalves	272
P. Sarcodina	
O. Foraminifera	
unid. Foraminiferans	51
P. Porifera	
unid. Sponges	-

RT019 NS10 6/81 78 wks	RT021 NS12 8/81 7 wks	RT021 NS14 8/81 7 wks	RT021 SP6 8/81 7 wks	RT021 SP7 8/81 7 wks	RT029 VVG1 8/82 15 m	RT029 VVG2 8/82 15 m
4	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
1	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	2	-	-	-
-	23	-	-	1	-	1
-	-	-	-	-	-	-
-	37	2	1	-	24	-
1	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
5	-	-	-	-	-	-
50	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
165	-	-	-	-	-	-
10	2	6	-	-	-	24
-	-	-	-	-	-	-

Table 1. (continued)

Cruise number:	RT005	RT005	RT005	RT005	RT005	RT005	RT010	RT010	RT014	RT014
Replicate:	NS1	NS2	SP1	SP2	VVC1	VVC2	NS1	NS2	NS1	NS2
Collection date:	2/80	2/80	2/80	2/80	2/80	2/80	8/80	8/80	12/80	12/80
Colonization period or grab depth:	10 wks	10 wks	10 wks	10 wks	155 m	155 m	23 wks	23 wks	17 wks	17 wks
Taxon:										
P. Platyhelminthes										
unid. Flatworms	-	-	-	-	-	-	1	4	1	-
P. Nemertinea (Rhynchocoela)										
unid. Nemerteans	1	-	-	-	-	2	-	-	-	2
P. Nematoda										
unid. Nematodes	-	-	-	-	-	-	-	14	-	1
P. Echinodermata										
Pycnopodia helianthoides	-	-	-	-	-	-	-	-	-	-
unid. Asteroids	-	-	-	-	-	-	-	-	-	-
Ophiura lutkeni	-	-	-	-	-	-	-	-	-	-
unid. Ophiuroids	-	2	2	-	-	-	-	1	-	-
unid. Echinoids	-	-	-	3	-	-	-	-	-	-
P. Bryozoa										
unid. colonial Bryozoans	-	-	-	-	-	-	-	-	-	-
P. Chordata										
C. Ascidiacea										
unid. Ascidians	-	-	-	-	-	-	-	-	-	-
S.C. Osteichthyes										
F. Cottidae	-	-	-	-	-	-	-	-	-	-
Asemichthys taylori	-	-	-	-	-	-	-	-	-	-
unid. Cottidae (Sculpins)	-	-	-	-	-	-	-	-	-	-
F. Pholidae										
Pholis laeta	-	-	-	1	-	-	-	-	-	-

Table 1. (continued)

Cruise number: Replicate: Collection date: Colonization period or grab depth:	RT014 NS3 12/80 51 wks	RT014 NS4 12/80 51 wks	RT017 NS1 4/81 18 wks	RT017 NS2 4/81 18 wks	RT019 NS3 6/81 10 wks	RT019 NS4 6/81 10 wks	RT019 SP1 6/81 10 wks	RT019 SP2 6/81 10 wks	RT019 NS11 6/81 28 wks	RT019 NS12 6/81 28 wks
Taxon:										
P. Platyhelminthes										
unid. Flatworms	2	7	-	-	12	5	1	2	27	12
P. Nemertinea (Rhynchocoela)										
unid. Nemerteans	13	9	-	1	2	-	-	-	12	8
P. Nematoda										
unid. Nematodes	24	29	-	1	5	1	38	77	56	19
P. Echinodermata										
Pycnopodia helianthoides	-	-	-	-	-	-	-	-	-	-
unid. Asteroids	-	-	-	-	-	-	-	-	-	-
Ophiura lutkeni	-	-	-	-	-	-	-	-	5	5
unid. Ophiuroids	-	-	-	-	-	-	-	-	-	-
unid. Echinoids	-	-	-	-	-	-	-	-	-	-
P. Bryozoa										
unid. colonial Bryozoans	-	-	-	-	-	-	-	-	-	-
P. Chordata										
C. Ascidiacea										
unid. Ascidians	-	1	-	-	-	-	-	-	2	-
C. Osteichthyes										
F. Cottidae										
Asemichthys taylori	-	-	-	-	-	-	-	1	-	-
unid. Cottidae (Sculpins)	-	-	-	-	-	-	-	-	-	1
F. Pholidae										
Pholis laeta	-	-	-	-	-	-	-	-	-	-

Table 1. (continued)

Cruise number:	RT019	RT019	RT021	RT021	RT021	RT021	RT029	RT029
Replicate:	NS8	NS10	NS12	NS14	SP6	SP7	VVG1	VVG2
Collection date:	6/81	6/81	8/81	8/81	8/81	8/81	8/82	8/82
Colonization period or grab depth:	78 wks	78 wks	7 wks	7 wks	7 wks	7 wks	15 m	15 m
Taxon:								
P. Platyhelminthes								
unid. Flatworms	8	7	2	-	-	-	2	7
P. Nemertinea (Rhynchocoela)								
unid. Nemerteans	12	21	-	-	-	-	11	33
P. Nematoda								
unid. Nematodes	128	91	-	-	-	-	1636	30573
P. Echinodermata								
Pycnopodia helianthoides	-	-	-	-	-	-	-	-
unid. Asteroids	-	-	-	-	-	-	-	-
Ophiura lutkeni	-	-	-	-	-	-	-	-
unid. Ophiuroids	1	-	-	-	-	-	-	1
unid. Echinoids	-	-	-	-	-	-	-	-
P. Bryozoa								
unid. colonial Bryozoans	1	3	-	-	-	-	-	-
P. Chordata								
C. Ascidiacea								
unid. Ascidians	10	3	-	-	-	-	-	-
C. Osteichthyes								
F. Cottidae								
Asemichthys taylori	-	-	-	-	-	-	-	-
unid. Cottidae (Sculpins)	2	-	-	-	-	-	-	-
F. Pholidae								
Pholis laeta	-	-	-	-	-	-	-	-

Note: NS = natural sediment
SP = sediment-catch pan
VVG = van Veen grab

Table 2. Wet and dry weights (mg per container).

Collection date: (mo./year)		2/80	2/80	8/80	8/80	12/80	12/80	12/80	12/80
Colonization period or grab depth:		10 wks	10 wks	23 wks	23 wks	17 wks	17 wks	51 wks	51 wks
Replicate:		1	2	1	2	1	2	1	2
Phylum:									
Polychaeta	wet	185.45	134.92	953.81	433.69	798.87	877.00	2742.96	1593.03
	dry	26.51	28.75	67.00	53.16	61.05	59.90	272.21	161.31
Mollusca	wet	-	16.91	110.98	407.26	3.49	10.30	652.17	356.01
	dry	1.62	16.59	7.81	121.84	1.27	1.53	223.57	11.71
Crustacea	wet	134.93	30.31	39.01	57.27	2.25	13.06	70.72	44.78
	dry	2.11	1.06	3.47	2.65	2.11	1.18	3.25	2.12
Other	wet	-	-	-	59.75	-	0.25	2.81	-
	dry	-	1.65	-	1.50	-	0.24	0.45	0.73
Total	wet	320.38	182.14	1103.80	957.97	804.61	900.61	3468.66	1993.82
	dry	30.24	48.05	78.28	179.15	64.43	62.85	499.48	175.87

Table 2. (continued)

Collection date: (mo./year)		4/81	4/81	6/81	6/81	6/81	6/81
Colonization period or grab depth:		18 wks	18 wks	10 wks	10 wks	28 wks	28 wks
Replicate:		1	2	1	2	1	2
<u>Phylum</u>:							
Polychaeta	wet	81.43	257.30	168.15	208.10	1588.16	902.70
	dry	8.73	17.78	28.35	26.01	136.49	79.44
Mollusca	wet	25.64	7.75	60.52	113.52	194.07	111.39
	dry	6.31	0.27	2.57	8.75	39.94	37.77
Crustacea	wet	44.66	7.12	326.68	413.08	6804.09	3668.64
	dry	24.22	2.83	28.63	31.25	3345.67	617.28
Other	wet	-	-	11.53	-	242.75	151.68
	dry	-	-	0.29	-	92.92	52.42
Total	wet	151.73	272.17	566.88	734.70	8829.07	4834.41
	dry	39.26	20.88	59.84	66.01	3615.02	786.91
Totals without adult barnacles	wet					2401.90	
	dry					312.40	
Totals without adult Pandalidae	wet						1582.41
	dry						204.06

Table 2. (continued)

Collection date: (mo./year)		6/81	6/81	8/81	8/81	8/82	8/82
Colonization period or grab depth:		78 wks	78 wks	7 wks	7 wks	15 m	15 m
Replicate:		1	2	1	2	1	2
<u>Phylum</u>:							
Polychaeta	wet	6836.79	4262.79	166.71	98.02	1824.31*	1728.77*
	dry	590.12	446.79	20.90	4.86	204.67*	155.29*
Mollusca	wet	999.96	895.54	581.88	55.01	396.29	99.44
	dry	53.07	324.39	185.69	14.64	103.94	18.79
Crustacea	wet	285.12	829.56	15.88	6.01	1.87	371.05
	dry	22.12	27.40	15.18	5.44	1.55	69.48
Other	wet	28.91	86.49	-	-	3.30	254.24
	dry	2.28	7.68	-	-	2.87	18.33
Total	wet	8150.78	6074.38	764.47	159.04	2224.69	2751.26
	dry	667.59	806.26	221.77	24.94	312.66	261.89

*Largest worms missing because they were saved for reference collection and not weighed.

APPENDIX C: GEOMETRIC CLASSES V AND VI

	10 wks, Feb.	17 wks, Dec.	51 wks, Dec.
Class V 16-31 ind./m^2	Monoculodes zernovi Aetideopsis rostrata Orchomene minuta Mytilus edulis Pectinaria granulata Prionospio spp.	Tharyx sp. Armandia brevis Glycinde picta Porcellidium sp. Pectinaria granulata Metopella sp. Scalibregma inflatum Harpacticus uniremis	Mya arenaria Myriochele oculata Sphaerodoropsis sphaerulifera Pleusymtes uncigera Acrenhydrosoma karlingi Scalibregma inflatum Eteone longa
Class VI 32-63 ind./m^2	Nuculana sp. Synchelidium shoemakeri Armandia brevis Thyasira flexuosa	Guernea nordenskioldi Parapleustes sp. Pseudomolgus sp. Pista brevibranchiata	Macoma sp. Pseudochitinopoma occidentalis Alvania spp. Synchelidium sp. Harpacticus uniremis Glycera capitata Chone sp. Danielssenia sp. Euryte longicauda Pontocypris sp. Helectinosoma finmarchium Glycinde armigera Metopella sp. Porcellidium sp. Ophelina acuminata Pista brevibranchiata

	10 wks, Jun.	28 wks, Jun.	78 wks, Jun.
Geometric Class V 16-31 ind./m^2	Aricidea sp. Melinna cristata Tauberia gracilis Nephtys punctata Stephos scotti Pseudocalanus sp. Capitella capitata Cythere sp.	Micropodarke dubia Cryptobranchia concentrica Leucon nasica Asabellides sp. Orchomene sp. Cumella sp. Synchelidium shoemakeri Synchelidium rectipalmum Axiothella rubrocincta Ophelina acuminata Lanassa venusta venusta Spio filicornis Pontocypris sp.	Dactylopodia sp. Heterolaophonte discophora Pontogeneia sp. Pontogeneia ivanovi Myriochele oculata Acartia clausi Tortanus discaudatus Eudorellopsis biplicata Leitoscoloplos pugettensis Chone sp. Guernea nordenskioldi Acrenhydrosoma karlingi Scalibregma inflatum Eteone longa Glycinde picta Armandia brevis
Class VI 32-63 ind./m^2	Acartia clausi Acartia longiremis Tortanus discaudatus Cumella sp. Lumbrineris luti Leitoscoloplos pugettansis Amphiascopsis cinctus Guernea nordenskioldi Paralteutha simile	Harpacticus sp. Paraphoxus similus Platyneris bicanaliculata Axinopsida viridus Pista brevibranchiata Ophiura lutkeni Paralteutha simile	Mya arenaria Macoma balthica Diarthrodes sp. Cossura sp. Acartia longiremis Centropages abdominalis Phyllodoce sp.

	7 wks, Aug.	18 wks, Apr.
Class V 16-31 ind./m^2	Aetideopsis rostrata Orchomene sp. Cumella sp. Prionospio steenstrupi Leitoscoloplos pugettensis Paralteutha simile Sphaerodoropsis minuta Parapleustes sp. Ophelina acuminata	Pholoe minuta Sphaerodoropsis minuta Monoculodes sp.
Class VI 32-63 ind./m^2	Pholoe minuta Lumbrineris luti Synchelidium shoemakeri Amphiascopsis cinctus	Cylindroleberis mariae Lumbrineris luti

	23 wks, Aug.	Ambient, Aug. 1982
Class V 16-31 ind./m^2	Cumella sp. Cumella vulgaris Euryte longicauda Guernea nordenskioldi Acrenhydrosoma karlingi Bathymedon sp.	Glycinde picta Protodorvillea gracilis Leitoscoloplos pugettensis Spiophanes berkeleyorum Metridia sp. Calanus sp. Guernea nordenakioldi
Class VI 32-63 ind./m^2	Pleusymtes sp. Asabellides sp. Capitella capitata Spiophanes berkeleyorum	Eunoe senta Eteone longa Platynereis bicanaliculata Aricidea lopezi Tauberia gracilis Magelona longicornis Ophelia limacina Notomastus lineatus Myriochele oculata Pista cristata Polycirrus sp. Evadne sp. Cylindroleberis marise Orchomene minuta