COMUNICACIONES ACADÉMICAS

SERIE OCEANOGRAFÍA BIOLÓGICA

BIOMASA Y ESTRUCTURA DEL ZOOPLANCTON FRENTE A LA COSTA OCCIDENTAL DE BAJA CALIFORNIA (CRUCEROS IMECOCAL 0001, 0004, 0007, 0010)

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**CENTRO DE INVESTIGACIÓN CIENTÍFICA Y
DE EDUCACIÓN SUPERIOR DE ENSENADA**

Lavaniegos, Bertha E., Julio C. Hernández León, Santiago J. Mejía Acosta y Luis C. Jiménez Pérez. 2004. Biomasa y estructura del zooplancton frente a la costa occidental de Baja California (Cruceros IMECOCAL 0001, 0004, 0007, 0010). Informe Técnico. Comunicaciones Académicas, Serie Oceanografía Biológica, CICESE 61 p. (21601).

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ZOOPLANKTON BIOMASS AND STRUCTURE OFF THE WESTERN COAST OF BAJA CALIFORNIA (IMECOCAL CRUISES 0001, 0004, 0007, 0010)

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Informe Técnico
Technical Report

Octubre 2004
October 2004

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RESUMEN.- Se presentan resultados de volumen desplazado de macrozooplancton, así como de abundancia y distribución de los principales grupos taxonómicos de los cruceros IMECOCAL realizados en el año 2000 (0001, 0004, 0007 y 0010). La mediana de la biomasa aumentó de 49 a 84 ml/1000 m^3 de Enero a Julio, disminuyendo posteriormente a 68 ml/1000 m^3. Esto representó una ligera recuperación de las bajos valores de 1999. La abundancia total fue máxima en Abril (34 ind m^{-3}), mientras que en las otras temporadas se mantuvo alrededor de 23 ind m^{-3}. La estructura comunitaria promedio estuvo dominada por copépodos, los cuales disminuyeron progresivamente de 56% (Enero) a 39% (Octubre). Frente a esta disminución se observó un incremento en el número de eufáusidos, los cuales duplicaron su abundancia relativa de Enero (7%) a Abril. Los quetognatos aumentaron considerablemente en Octubre (20%) comparado con los otros cruceros (9-11%). Estos dos taxa tendieron a ser más abundantes en la región central frente a Baja California. Los principales crustáceos herbívoros presentaron una distribución de parches costeros, mientras que los herbívoros gelatinosos (doliólidos y salpas) tuvieron una tendencia oceánica. Las apendicularias fueron muy abundantes en el año 2000, en comparación con 1999.

ABSTRACT.- Results of the displacement macrozooplankton volume, as well as abundance and distribution of the main taxonomic groups from the IMECOCAL cruises, performed in the year 2000 (0001, 0004, 0007 and 0010) are presented. The median biomass increased from 49 to 84 ml/1000 m^3 from January to July, decreasing further to 68 ml/1000 m^3. This represented a light recovering from the low values of 1999. The total abundance was maximum in April (34 ind m^{-3}), while in other seasons it stayed around 23 ind m^{-3}. The community structure was dominated by copepods, their contribution decreased form 56% (January) to 39% (October). In contrast, an increase of euphausiids was observed, which doubled their relative abundance from January (7%) to April. The chaetognaths considerable increased in October (20%) compared to other cruises (9-11%). These two taxa were more abundant in the central region off Baja California. The main crustacean herbivores presented a patchy distribution near the coast, while the gelatinous herbivores (doliolids and salps) tended to be more oceanic. Appendicularians were more abundant in 2000 than in 1999.

1. INTRODUCCION

Los datos que presentamos en este informe son producto del análisis de muestras de zooplancton colectadas en cuatro cruceros del año 2000 por el programa Investigaciones Mexicanas de la Corriente de California (IMECOCAL). Las campañas oceanográficas fueron realizadas a bordo del B/O *Francisco de Ulloa*. Corresponden a la 9ª, 10ª 11ª y 12ª desde que inició dicho programa. Se concreta así, el tercer año de monitoreo oceánico trimestral en la región sur de la Corriente de California. Hemos utilizado las mismas estaciones de colecta del programa estadounidense CalCOFI (California Cooperative Oceanic Fisheries Investigations). CalCOFI inició sus actividades en 1949 con el objetivo de determinar las causas de las fluctuaciones en las pesquerías de clupeidos del Estado de California, EUA. La Corriente de California era cubierta en su totalidad por CalCOFI hasta mediados de los 1970s. Posteriormente la cobertura se redujo y el ingreso en aguas mexicanas se hizo más esporádico, hasta desaparecer definitivamente después de 1984. El objetivo de IMECOCAL, al restablecer el monitoreo en la zona, es obtener y difundir información regional del ecosistema pelágico y su variabilidad en diferentes escalas espacio-temporales, que permita un mejor aprovechamiento de los recursos pesqueros.

La contribución del presente informe es aportar datos de volumen desplazado de zooplancton para la comunidad científica, así como de abundancia de grupos funcionales durante el ciclo estacional del 2000. Los datos hidrográficos de estos cruceros están disponibles en informes técnicos (García-C *et al.*, 2000, 2001a,b,c) o han sido analizados en artículos científicos (Bograd *et al*., 2000; Durazo *et al.*, 2001). La Corriente de California experimentó en 2000 un segundo año consecutivo de temperatura fría, desde el inició de La Niña en Octubre 1998 (Durazo y Baumgartner, 2002). Estas condiciones prevalecieron hasta Abril 2000 frente a Baja California, aunque en la zona oceánica se observaron anomalías positivas de temperatura. También el verano se caracterizó por anomalías cálidas en la zona oceánica (de más de

1. INTRODUCTION

The data presented in this report are the result of the zooplankton samples analysis, collected by the program Investigaciones Mexicanas de la Corriente de California (IMECOCAL) in four cruises during 2000. These were the oceanographic surveys number 9, 10, 11, and 12 since the beginning of that program, and were done on board of the R/V *Francisco de Ulloa*. 2000 was the third year of quarterly oceanographic surveys in the southern region of the California Current. The same sampling locations were used as during the earlier CalCOFI (California Cooperative Oceanic Fisheries Investigations) program. CalCOFI started activities in 1949 with the objective to determine the causes for the variability of the clupeid fisheries in the State of California, USA. The CALCOFI program completely covered the region of the California Current until the middle of the 1970s. After that the sampling region was reduced, and sampling in Mexican waters was sporadic, completely stopped after 1984. IMECOCAL reestablished the monitoring in the Mexican region with the purpose to obtain and publish regional information of the pelagic ecosystem and its variability in different time-space scales, which will allow for a better use of the fisheries resources in the future.

The present report is making zooplankton displacement volume data available to the scientific community, as well as information about the abundance of functional groups during the seasonal cycle of 2000. Hydrographic data of these cruises are available in other technical reports (García-C. *et al*., 2000, 2001a,b,c) or have been analyzed in scientific papers (Bograd *et al*., 2000; Durazo *et al*., 2001). In 2000 the California Current showed for the second consecutive year colder than normal temperatures, a tendency that started with La Niña in October 1998. These cold conditions prevailed until April 2000 off Baja California, although in the oceanic zoned positive temperature anomalies were observe. Warm anomalies offshore (up to

3°C), pero negativas en aguas cercanas a la costa. Las anomalías negativas estuvieron más extendidas en Octubre.

Los datos de biomasa de zooplancton de los cruceros anteriores (Septiembre 1997 a Octubre 1999) también están disponibles en informes técnicos y son accesibles por internet en http://imecocal.cicese.mx/texto/prod/tecnic.htm La biomasa del zooplancton presentó los valores típicos del área durante el pico de El Niño 1997-1998, decayendo posteriormente con la transición a condiciones frías y a través de 1999 (Lavaniegos *et al*., 2002). En este reporte describiremos como evolucionó la biomasa después de estos eventos climáticos.

1.1 Objetivos

- Presentar un registro de las coordenadas geográficas y datos técnicos de los arrastres de red bongo de los cruceros IMECOCAL 0001, 0004, 0007, 0010.
- Describir la distribución de volumen desplazado de zooplancton durante dichos cruceros.
- Describir la estructura del zooplancton y la distribución de los grupos principales durante dichos cruceros.

2. MÉTODOS

2.1 Colecta y preservación de muestras

Las muestras de zooplancton fueron colectadas a bordo del B/O *Francisco de Ulloa* durante en cuatro periodos del 2000: 14 Enero-1 Febrero, 4-21 Abril, 10-30 Julio y 10-29 Octubre. Se realizaron arrastres oblicuos con red bongo de 61 cm de diámetro de boca, de acuerdo a Smith y Richardson (1977). Idealmente la profundidad de arrastre fue de 210 m, ya que se largaron 300 m de cable con una inclinación de 45°. El ángulo del cable se registró cada 10 m durante el ascenso de la red, y su promedio sirvió para determinar la profundidad real. En estaciones someras el lance se realizó a partir de 10 m arriba del fondo marino. La luz de malla de ambas redes fue de 500 µm. Se colocó un flujómetro digital General Oceanics

3°C) were also characteristic of the summer, while negatives temperature anomalies were found in nearshore waters. Negative anomalies extended more in October.

Zooplankton biomass data of the previous cruises (September 1997 to October 1999) are also available in technical reports, and can be accessed at http://imecocal.cicese.mx/texto/prod/tecnic.htm Zooplankton biomass presented the typical values of the area during the peak of 1997-1998 El Niño, decrasing further with the transition to cool conditions and through 1999 (Lavaniegos *et al*., 2002). In this report we describe how the biomass evolved after these climatic events.

1.1 Objectives

- To present a record of the geographic coordinates and technical data of the bongo net tows of the IMECOCAL cruises 0001, 0004, 0007, 0010.
- To describe the distribution of zooplankton displacement volume during those cruises.
- To describe the zooplankton structure and distribution of the main functional groups during those cruises.

2. METHODS

2.1 Samples collection and preservation

The zooplankton samples were collected on board of the R/V *Francisco de Ulloa* during four periods of 2000: 14 January-1 February, 4-21 April, 10-30 July, and 10-29 October. Oblique tows were done with a bongo net of 61 cm of diameter, following to Smith & Richardson (1977). In theory, the tow depth was 210 m, because 300 m of wire were let out, with an wire angle inclination of 45°. The wire angle was recorded each 10 m during the ascent of the net, and the average was used to determine the real depth. In shallow stations the tow was done from a depth of 10 m above the sea bottom. Both nets were of 500 µm of mesh width. A General

frente a la boca de cada red para estimar el volumen de agua filtrada. La velocidad de arrastre fue mantenida aproximadamente constante a 2 nudos. En total se colectaron 302 muestras (Fig. 1). El plancton fue preservado con formol al 4% neutralizado con borato de sodio. En la Tabla 1 se muestran los datos técnicos de los arrastres de zooplancton, así como los datos de volumen desplazado. Las coordenadas indican la posición del buque al inicio del arrastre.

2.2 Análisis de laboratorio

El análisis de las muestras consistió en la medición de la biomasa del zooplancton, así como en el conteo de los organismos a nivel de grupos taxonómicos mayores. La medición de biomasa fue realizada por el método de volumen desplazado siguiendo a Kramer *et al*. (1972). Primeramente se separaron los organismos con volumen mayor a 5 ml. El material biológico restante se vertió en una probeta graduada de 100, 250 o 500 ml de capacidad (según la cantidad de plancton en cada muestra), y se ajustó el volumen hasta la marca superior. Posteriormente, el contenido fue transferido a otra probeta de las mismas dimensiones, con un tamiz de 333 µm ajustado a un embudo en la parte superior, para drenar el plancton. Se registró el volumen cuando el escurrimiento se redujo a una gota ocasional. La diferencia de estas mediciones se reporta como biomasa chica. El volumen de los organismos de mayor tamaño que habían sido separados, más la biomasa chica, se registró como biomasa total.

La cuantificación de abundancia se hizo sobre una fracción de 1/8 o 1/16 de la muestra, obtenida con un separador Folsom. Fracciones más pequeñas (de hasta 1/256) se usaron en 14% de las muestras, debido a la gran cantidad de plancton; mientras que en muestras bajas en plancton (16%) se analizaron fracciones de 1/4, 1/2 o completa. Los organismos contenidos en la submuestra fueron identificados a grandes grupos taxonómicos y contados con un microscopio estereoscópico. En promedio se contaron 1048 especimenes por submuestra.

Oceanics flowmeter was place in front of each net to estimate volume of filtered water. The tow velocity was maintained approximately constant to 2 knots. The total collected samples were 302 (Fig. 1). The plankton was preserved with 4% formalin buffered with sodium borate. In Table 1 are shown the technical data of the zooplankton tows, as well as data of displacement volume. Coordinates indicate the ship position at the starting time of tow.

2.2 Laboratory analysis

The analysis of samples consisted in the measurement of the zooplankton biomass, and the counting of the organisms at level of major taxa. The measurement of biomass was done by the method of displacement volume following to Kramer *et al*. (1972). First, the organisms with volume higher than 5 ml were removed. The rest of biological material was poured in a graduated cylinder of 100, 250 or 500 ml (depending of the amount of plankton in each sample), and the volume was adjusted to superior tick. Further, the content was transferred to other graduated cylinder of the same dimensions, with a 333 µm draining cone in a funnel at the top to retain the plankton. The volume was recorded when the leakage was reduced to an occasional drop. The difference between these measures was reported as small biomass. The volume of the large organisms removed plus the small biomass were recorded as total biomass.

The quantification of abundance was done on a 1/8 or 1/16 fraction of the sample, obtained with a Folsom splitter. Smaller fractions (up to 1/256) were used in 14% of the samples, due to the high amount of plankton; while in samples with few plankton (16%) the analyzed fraction was 1/4, 1/2 or complete. The organisms contained in the subsample were identified to major taxa and counted with a stereoscopic microscope. The mean of specimens counted per subsample were 1048.

2.3 Tratamiento de los datos

El volumen y la abundancia de plancton fueron estandarizados por volumen de agua filtrada (1000 m^3 y m^3 respectivamente). Los mapas de distribución de los principales grupos taxonómicos se realizaron con el programa SIGMAPLOT 6.0, usando la función de distancia inversa para interpolación de los contornos. Posteriormente se retocaron, para asegurar que los valores reales cayeran en los intervalos correspondientes.

Debido a la falta de normalidad de los datos, se calcularon medianas de abundancia en los taxa dominantes de todos los cruceros IMECOCAL, con el fin de mostrar los cambios en estructura del zooplancton. Para ello se agruparon las estaciones en dos regiones: 1) Norte (líneas 100 a 110), 2) Central (líneas 113 a 130). La delimitación de estas regiones está basada en el criterio de que Punta Baja (30°N) es el límite entre dos regiones de la Corriente de California (U.S. GLOBEC, 1994). El sector Mexicano de la Corriente de California posee parte de la región del remolino que tiene su centro en la Cuenca del Sur de California (Southern California Bight). Dicha región presenta una marcada estratificación, mínimo forzamiento por viento y surgencias débiles. En la otra región mexicana (Pta. Baja - Cabo San Lucas) hay una moderada advección, actividad a mesoescala, vientos moderados pero persistentes y surgencias moderadas todo el año (U.S. GLOBEC, 1994).

Para ilustrar los cambios de largo plazo de la biomasa del zooplancton se elaboraron series de tiempo con los datos CalCOFI de volumen desplazado del periodo 1951-1984. Se seleccionaron datos de las líneas 100 a 133, de cruceros realizados en Enero (o Febrero), Abril (o Mayo), Julio (o Agosto) y Octubre (o Septiembre). Se calcularon medianas por crucero, así como la media logarítmica para estimar anomalías, después de sustraer la respectiva media estacional de largo plazo.

2.3 Data processing

Plankton volume and abundance were standardized per volume of water filtered (1000 m^3 and m^3 respectively). Charts of distribution for the main taxa were done with the software SIGMAPLOT 6.0, using the function of inverse distance for contour interpolation. Further, were retouched, to make sure that real values fell in the corresponding intervals.

Due to not normal distribution of data, medians of abundance were calculated for the main taxa in all IMECOCAL cruises, to show changes in zooplankton structure. Stations were grouped in two regions: 1) North (lines 100 to 110), 2) Central (lines 113 to 130). Delimitation of these regions was based in Punta Baja (30°N) as the limit between two regions of the California Current (U.S. GLOBEC, 1994). The Mexican sector of the California Current has part of the region where the Southern California Eddy occurs. That region presents a marked stratification, minimum wind forcing and weak upwellings. In the other Mexican region (Pta. Baja - Cabo San Lucas) there is moderate advection, mesoscale activity, moderate but persistent winds, and moderate upwellings year round (U.S. GLOBEC, 1994).

To illustrate long-term changes of zooplankton biomass, time series were done with CalCOFI data of displacement volume from the period 1951-1984. Data of lines 100 to 133 were selected, from cruises performed on January (or February), April (or May), July (or August), and October (or September). Medians per cruise were calculated, as well as the log-mean to estimate anomalies, after remove the respective long-term seasonal mean.

3. RESULTADOS

3.1 Biomasa del zooplancton

Las dos mediciones de biomasa que se reportan (Tablas 1-4) difieren en número limitado de muestras, que contenían uno o más organismos grandes (>5 ml). Considerando la medida más conservadora (biomasa chica), las medianas de los cuatro cruceros IMECOCAL fueron 49, 69, 84 y 68 ml/1000 m^3 durante Enero, Abril, Julio y Octubre del 2000.

Enero fue la temporada más pobre en biomasa, con 52% de las muestras con menos de 50 ml/1000 m^3, contra 1/3 de las muestras en Abril y solo un 1/4 de en Julio y Octubre. La distribución de biomasa más homogénea se observó en Octubre, con 71% de las estaciones dentro del intervalo 50-150 ml/1000 m^3. En primavera y verano se presentaron gradientes costa-océano, con biomasas mayores a 250 ml/1000 m^3 en varias estaciones cercanas a la costa, particularmente en Bahía Vizcaíno (Fig. 2).

3.2 Abundancia por grupos taxonómicos

La mayoría de los organismos grandes, excluidos de la biomasa chica fueron pirosomas y estadios juveniles de langostilla (*Pleuroncodes planipes*) (Tabla 5). Las primeras predominaron en Enero, mientras que las últimas, en Julio y Octubre. En Abril se encontraron organismos grandes solo en tres muestras, sobresaliendo dos grandes nectóforos del sifonóforo *Rosacea cymbiformis*.

Las medianas de la abundancia de zooplancton (todos los organismos contenidos en la biomasa chica) fueron 22, 34, 23 y 24 ind m^{-3} durante Enero, Abril, Julio y Octubre del 2000. La semejanza en las medianas de Enero y Julio contrastan con la diferencia encontrada en biomasa mediana, donde guardaron una proporción de 1:1.7. Esto sugiere la presencia de organismos más voluminosos en Julio que en Enero. Por otro lado, la diferencia en las medianas de abundancia de Abril y Octubre contrasta con la semejanza en su

3. RESULTS

3.1 Zooplankton biomass

The two measurements of biomass reported (Tables 1-4) differed in a limited number of samples, which contained one or more large organisms (>5 ml). Considering the most conservative measurement (small biomass), the medians for the four IMECOCAL cruices were 49, 69, 84 and 68 ml/1000 m^3 during January, April, July and October of 2000.

January was the season with lowest biomass, with 52% of the samples with less of 50 ml/1000 m^3, against 1/3 of the samples in April and only 1/4 in July and October. The most homogenous biomass distribution was observed in October, with 71% of the stations in the interval of 50-150 ml/1000 m^3. In spring and summer onshore-offshore gradients were present, with biomass higher than 250 ml/1000 m^3 in many stations near the coast, particularly in Vizcaino Bay (Fig. 2).

3.2 Abundance of taxonomic groups

Most of the large organisms, excluded from the small biomass, were pyrosomes and juvenile stages of red crab (*Pleuroncodes planipes*) (Table 5). The first dominated in January, while the last in the July and October. In April, only in three samples were found large organisms, remarkably two large nectophores of the siphonophore *Rosacea cymbiformis*.

The medians of zooplankton abundance (all organisms contained in the small biomass) were 22, 34, 23 and 24 ind m^{-3} during January, April, July and October of 2000. The resemblance of medians for January and July contrasts with the difference in median biomass, with a proportion of 1:1.7. This suggests the presence of more voluminous organisms in July than in January. The difference in median abundance of April and October contrast with the similarity in median biomass, suggesting also the presence of more voluminous organisms en October

biomasa mediana, sugiriendo también la presencia de organismos más voluminosos en Octubre que en Abril.

En Enero, la abundancia total de los organismos contenidos en la biomasa chica fue baja, con solo 18% de las muestras sobrepasando los 50 ind m^{-3} (Tabla 6). Los valores máximos correspondieron a las estaciones 130.30 y 133.25 (438 y 372 ind m^{-3} respectivamente). Se trata de localidades cercanas a la costa con grandes parches de copépodos. No obstante, las máximas biomasas observadas, no pertenecieron a estas sino a las ests. 120.35 y 119.33, las cuales tuvieron una alta proporción de salpas.

En Abril, 43% de las muestras contuvieron una abundancia total superior a 50 ind m^{-3}, y más de la mitad de estas sobrepasó los 100 ind m^{-3} (Tabla 7). Los máximos de abundancia (1560, 829 y 577 ind m^{-3}) se encontraron en Bahía Vizcaino (ests. 120.30, 117.30 y 120.35 respectivamente) y coinciden con los máximos de biomasa. La proporción de copépodos fue alta en las tres, especialmente en la est. 117.30 (92%), además de las salpas en la est. 120.30 y los eufáusidos en la 120.35.

La mayor abundancia total se presentó en Julio, cuando 74% de las muestras tuvieron más de 50 ind m^{-3} y un cuarto de estas sobrepasó los 250 ind m^{-3} (Tabla 8). Cinco de las estaciones costeras mostraron valores >500 ind m^{-3}, que en general coinciden con los máximos de biomasa. La st. 100.30 no registró una abundancia total particularmente alta, a pesar de reportar una biomasa de 1015 ml/1000 m^3, ya que 70% de los organismos fueron grandes eufáusidos.

Octubre a semejanza de Julio, presentó un alto porcentaje de muestras con >50 ind m^{-3}, pero apenas un 5% de estas sobrepasó los 150 ind m^{-3} (Tabla 9). Los máximos en abundancia total no fueron espectaculares (241 y 155 ind m^{-3}), a pesar de que en el primer caso (st. 113.30) coincidió con alta biomasa.

La estructura comunitaria promedio estuvo dominada por copépodos, los cuales disminuyeron progresivamente de 56% (Enero) a 39% (Octubre).

than in April.

In January, the total abundance of organisms inside the small biomass was low, with only 18% of the samples exceeding 50 ind m^{-3} (Table 6). The maximal values corresponded to the stations 130.30 and 133.25 (438 and 372 ind m^{-3} respectively). These were near the coast locations with large patches of copepods. However, the maximal observed biomass did not pertain to these but to sts. 120.35 and 119.33, which had a high proportion of salps.

In April, 43% of the samples had a total abundance >50 ind m^{-3}, and more than a half of these surpassed 100 ind m^{-3} (Table 7). The maxima abundance (1560, 829 and 577 ind m^{-3}) was found in Vizcaino Bay (sts. 120.30, 117.30 and 120.35 respectively) in coincidence with maximal biomass. The proportion of copepods was high in all, but particularly in st. 117.30 (92%), and additionally salps in st. 120.30 and euphausiids in st. 120.35.

The highest total abundance was present in July, when 74% of the samples had >50 ind m^{-3} and one quarter of these exceeded 250 ind m^{-3} (Table 8). Five of the coastal stations showed values >500 ind m^{-3}, which in general coincided with the maximal biomass. The st. 100.30 did not show a total abundance particularly high, despite of the 1015 ml/1000 m^3 in biomass, but 70% of the organisms were large euphausiids.

October as July, presented a high percentage of samples with >50 ind m^{-3}, but only a 5% of these surpassed 150 ind m^{-3} (Table 9). Maximal abundances were not spectacular (241 and 155 ind m^{-3}), despite of in the first case (st. 113.30) coincided with high biomass.

The mean community structure was dominated by copepods, progressively decreasing from 56% (January) to 39% (October). In contrast, the euphausiids increased from 7% in January to a relative abundance of 11-15% in the other cruises. The chaetognaths considerably increased in

Frente a esta disminución se observó un incremento en el número de eufáusidos, los cuales pasaron de 7% en Enero a abundancias relativas de 11-15% en los otros cruceros. Los quetognatos aumentaron considerablemente en Octubre (20%) comparado con los otros cruceros (9-11%). Estos tres taxa sumados abarcaron 3/4 del zooplancton. De los taxa restantes, los sifonóforos llegaron a ocupar hasta 7% en Julio, mientras que en Abril tuvieron un mínimo de 3%. Tres clases de tunicados (apendicularias, doliólidos y salpas) en conjunto representaron entre 5 y 9% de la comunidad. Otros crustáceos relativamente importantes fueron los ostracodos (2-5%) y anfípodos (1-4%). Los taxa restantes comprendieron <10% del zooplancton.

3.3 Patrones de distribución

Durante el año 2000 se observó un gradiente costa-océano en la distribución de biomasa zooplanctónica, particularmente fuerte en primavera y verano (Fig. 2). Bahía Vizcaino registró los volúmenes máximos, como en primaveras y veranos anteriores (Lavaniegos et al, 2002). La biomasa elevada de Bahía Vizcaino se proyectó hacia fuera abarcando varias estaciones oceánicas, y obedeció principalmente a densos agregados de copépodos (Fig. 3) y eufáusidos (Fig. 4). En Julio 2000 destaca la presencia de un parche oceánico de biomasa en la región norte, también con altos porcentajes de copépodos y eufáusidos. Una biomasa uniformemente pobre predominó en el área en el otoño.

La distribución de los diferentes taxa presentó patrones variables (Figs. 3-14). A continuación se comenta brevemente los rasgos más sobresalientes.

La distribución más densa en copépodos para la zona oceánica se observó en Abril, con gran número de estaciones superando los 15 ind m^{-3} (Fig. 3). En Enero parece haber ocurrido un patrón similar, aunque sólo se observó un filamento de altas concentraciones de copépodos en la región norte, asociado a colectas nocturnas. Evidentemente las bajas abundancias en el resto de la región obedecieron al comportamiento migratorio de los copépodos que permanecen por debajo de la

October (20%) compared to other cruises (9-11%). These three taxa combined comprised 3/4 of the zooplankton. Of the remaining taxa, the siphonophores reached up to 7% in July, while in April were at a minimum of 3%. Three classes of tunicates (appendicularias, doliolids and salps) represented between 5 and 9% of the community. Other relatively important crustaceans were ostracods (2-5%) and amphipods (1-4%). The rest of taxa comprised <10% of the zooplankton.

3.3 Distributional patterns

During the year 2000 a coast-offshore gradient was observed in the distribution of zooplankton biomass, particularly strong in spring and summer (Fig. 2). In those seasons, Vizcaino Bay recorded the highest volumes, as in previous years (Lavaniegos et al, 2002). The high biomass of Vizcaino Bay influenced the offshore stations, and obeyed to high concentrations of copepods (Fig. 3) and euphausiids (Fig. 4). In July 2000, a notable oceanic biomass patch was observed in the northern region, with high percentage of copepods and euphausiids. An evenly poor biomass dominated the area during fall.

The distribution of the different taxa presented variable patterns (Figs. 3-14). Bellow the main features are briefly commented.

The highest copepod aggregates for the oceanic zone were observed in April, with many stations surpassing 15 ind m^{-3} (Fig. 3). A similar pattern could be occurring in January, but only a filament of high concentrations of copepods was observed in the northern region, associated to nighttime samples. Evidently, the low abundance in the rest of the region obeyed to the migratory behavior of copepods, which remained below the sampling depth during light hours.

The distribution of euphausiids through the year presented a coastal pattern, standing out the Vizcaino region. Moderate abundances were present in the oceanic zone of the central region in winter and

profundidad de muestreo durante la fase luminosa del día.

La distribución de los eufáusidos a través del año presentó un patrón costero, destacando la región de Bahía Vizcaino. Abundancias moderadas se presentaron en la zona oceánica de la región central en invierno y verano (Fig 4). En contraste, los ostrácodos mostraron una tendencia más oceánica (Fig. 5), que ya había sido notada en años anteriores (ver Informes Técnicos anteriores). Toda el área oceánica fue similarmente rica en verano y otoño, mientras que en invierno y primavera la incidencia de parches fue regional (central y norte sucesivamente).

Los anfípodos mostraron una tendencia estacional, con mínimas abundancias en invierno y máximas en el verano (Fig. 6). Este patrón contrasta con el observado para las salpas (Fig. 9), a las que usualmente explotan como sustrato. La distribución de anfípodos denotó un gradiente latitudinal, especialmente en la temporada alta.

Entre los grupos de tunicados, las apendicularias fueron las más abundantes (Fig. 7). La región central presentó los mayores agregados en Abril 2000. Los doliólidos fueron homogéneamente poco abundantes en toda el área, con muy pocas estaciones superando los 2.5 ind m^{-3} (Fig. 8). La distribución de salpas fue pobre, estando ausentes en muchas estaciones, particularmente en el verano. No obstante parches de alta abundancia fueron observados en Abril (Fig. 9). Tanto las salpas como los doliólidos denotaron una distribución más bien oceánica, complementaria a la de los principales crustáceos herbívoros (copépodos y eufáusidos).

Los principales grupos carnívoros fueron los quetognatos (Fig. 11), sifonóforos (Fig. 12) y medusas (Fig. 13). Todos ellos presentaron baja abundancia en la región norte durante Enero. En Abril sus distribuciones fueron hasta cierto punto complementarias, observándose en localidades distintas sus parches de mayor abundancia. El mayor traslape entre ellos se observó durante el otoño.

El ictioplancton presentó alta abundancia en

summer (Fig 4). In contrast, the ostracods showed an oceanic tendency (Fig. 5), also noted in previous years (see previous Technical Reports). All the oceanic area was similarly rich in summer-fall, while in winter-spring the patch incidence was regional (central and north successively).

Amphipods showed a seasonal trend, with minimum abundance in winter and maximum in summer (Fig. 6). This pattern is in contrast with that for salps (Fig. 9), to which usually exploit as a substrate. The distribution of amphipods had a latitudinal gradient, particularly in the high season.

The appendicularians were the most abundant of the pelagic tunicates (Fig. 7). The central region presented the highest aggregates in April 2000. Doliolids were evenly few abundant in all the area, seldom surpassing 2.5 ind m^{-3} (Fig. 8). The distribution of salps was poor, being absent in many stations, particularly in summer. However, some patches were observed in April (Fig. 9). Both salps and doliolids had an oceanic distribution, complementary to the main herbivorous crustaceans (copepods and euphausiids).

The main carnivorous groups were the chaetognaths (Fig. 11), siphonophores (Fig. 12) and medusae, (Fig. 13). All presented low abundance in the northern region during January. In April, their distribution was complementary at some point, observing distinct locations for the highest patches. They overlapped more during fall.

The ichthyoplankton recorded high abundance in April, particularly in Vizcaino and adjacent locations (Fig. 14). Moderate abundance occurred in summer in most of the area. In other periods (January and Octuber), isolated zones of high abundance occurred (Golf of Ulloa and Vizcaino Bay respectively).

The rest of taxa were few abundant and their distribution is not shown. Decapods were found in 84% of the samples, and heteropods in 83%. Other holozoplankton taxa (polychaetes, cladocerans, ctenophores and pyirosomes) were found in samples

abril, especialmente en Vizcaino y sus inmediaciones (Fig. 14). En verano presentó abundancia moderada en la mayor parte del área. En otros periodos (Enero y Octubre) se presentaron zonas aisladas de alta abundancia (Golfo de Ulloa y Bahía Vizcaino respectivamente).

Los grupos restantes fueron poco abundantes y no se presenta su distribución. Los decápodos se encontraron en 84% de las muestras, mientras que los heterópodos en 83%. El resto de los taxa del holozoplancton (poliquetos, cladóceros, ctenóforos y pirosomas) se encontraron con una frecuencia de 23 a 42% de las muestras.

Los organismos más conspicuos del meroplancton fueron las larvas de estomatópodos, observadas en 34% de las muestras de la región norte y 55% de la región central. Abundancias superiores a 1 ind m^{-3} se registraron en nueve muestras (cinco de Bahía Vizcaino en Enero).

Larvas de cefalópodos fueron encontradas en 33% de las muestras, pero sólo nueve de ellas arrojaron abundancias superiores a 100 ind/1000 m^3. Todas de la región central.

Numerosas larvas filosoma de langosta roja (*Panulirus interruptus*) fueron encontradas en las muestras del crucero de Octubre 2000 (Ortuño-Manzanares, 2003).

4. COMPARACIÓN CON OTROS DATOS

4.1 Composición del zooplancton de Septiembre 1997 a Octubre 2000 (cruceros IMECOCAL)

A través de las prospecciones del IMECOCAL se ha encontrado consistentemente una menor cantidad de organismos en la región comprendida al norte de Punta Baja (líneas 100-110), que al sur de esta prominencia. Esta última región, es aquí designada central por su ubicación respecto a la península de Baja California, y para fines comparativos se incluirán solo las líneas 113-130, ya que en los primeros cruceros no se incluían las líneas 133 y 137. En la Figura 15 se muestra la mediana de abundancia de los taxa principales por región, en forma de barras apiladas. La altura total de la barra es la suma de las medianas de estos

with a frequency of 23 to 42%.

The most conspicuous meroplankton organisms were the stomatopod larvae, observed in 34% of the north region simples and 55% of the central region. Abundance higher than 1 ind m^{-3} was recorded in nine samples (five from Vizcaino Bay in January).

Cephalopod larvae were found in 33% of the samples, but only nine of these had abundance higher than 100 ind/1000 m^3. All form the central region.

Many phyllosoma larvae of the spinous lobster (*Panulirus interruptus*) were found in samples form the October 2000 cruise (Ortuño-Manzanares, 2003).

4. COMPARISON WITH OTHER DATA

4.1 Zooplankton structure from September 1997 to October 2000 (IMECOCAL cruises)

Through the IMECOAL surveys has been consistently found a lower amount of organisms in the region placed at north of Punta Baja (lines 100-110) than southern to that prominence. The last region, is designed here central due its geographical location in the Baja California peninsula, and for comparative reasons only the lines 113-130 were included, since the lines 133 and 137 were missing in the first cruises. In the Figure 15 the median abundance of the main taxa is shown by region, in the form of stacked bars. The total bar height is the sum of the individual taxa medians and by simplicity is named total abundance. During 2000 the total abundance oscillated between 10 and 30 ind m^{-3} in the northern region, while in the central region it was 19-39 ind m^{-3}. The maximum was observed in April at both regions. The minimum corresponded to January in the north region, while in the central region January and July were similarly low.

Taking the twelve cruises, the difference between regions was in the range of 13% (October 1997) and 86%

grupos y por simplicidad la denominamos abundancia total. En la región norte durante el año 2000, la abundancia total fluctuó de 10 a 30 ind m^{-3}, mientras que en la región central lo hizo de 19 a 39 ind m^{-3}. En ambas regiones la máxima se observó en Abril. La mínima correspondió a Enero en la región norte, mientras que en la central Enero y Julio fueron igualmente bajos.

Considerando los doce cruceros, la diferencia entre regiones fluctuó de 13% (Octubre 1997) a 86% (Enero 1999). La diferencia entre zonas parece obedecer principalmente al aporte de copépodos, quetognatos y tunicados (salpas y doliólidos). Los copépodos presentaron una mayor variación estacional, con un fuerte incremento en primavera y un descenso gradual posterior. Dicha estacionalidad se vio profundamente alterada durante El Niño (Oct 1997-Ene 1998) en que los copépodos fueron muy abundantes, particularmente en la región central. Durante El Niño también se observó una explosión de quetognatos en ambas regiones, en respuesta al incremento de sus presas.

En la transición a condiciones frías (Jul-Oct 1998) se registraron importantes agregaciones de tunicados en la región central.

4.2 Biomasa de zooplancton en el contexto del periodo 1951-1984 (cruceros CalCOFI)

Las tendencias a largo plazo de la biomasa del zooplancton en el sector Baja californiano de la Corriente de California fueron discutidas por Lavaniegos *et al*. (1998). Aquí presentamos la serie CalCOFI del periodo 1951-1984, a la cual se le añadieron los datos de los doce cruceros IMECOCAL realizados en 1997-2000 (Fig. 16). Para los primeros cruceros CalCOFI (1950s, 1960s), realizados con una frecuencia mensual se tomaron preferentemente los meses de Enero, Abril, Julio y Octubre para representar las estaciones del año.

La mediana de la biomasa de los cruceros CalCOFI e IMECOCAL se mantiene por debajo de los 300 ml/1000 m^3, aunque hubo cruceros excepcionales: 5307, 5601, 5607, en la región norte; 5607 en la central. Durante 1997-2000, la mediana en la región norte tuvo su máximo valor en el (January 1999). The difference between regions mainly obeyed to the amount of copepods, chaetognaths and tunicates (salps and doliolids). The copepods presented a higher seasonal variability, with a strong increase in spring and a further gradual decrease. The seasonality was deeply altered during El Niño (Oct 1997-Jan 1998), when the copepods abounded, particularly in the central region central. An explosion of chaetognaths was also observed during El Niño at both regions, responding to their preys increase.

In the transition to cool conditions (Jul-Oct 1998) important tunicate aggregations were recorded in the central region.

4.2 Zooplankton biomass in the context of the period 1951-1985 (CalCOFI cruises)

The long-term tendencies in zooplankton biomass in the Baja californian sector of the California Current were discussed by Lavaniegos *et al*. (1998). Here we present the CalCOFI series for the period 1951-1984, with additional data from the twelve IMECOCAL cruises performed in 1997-2000 (Fig. 16). For the first CalCOFI cruises (1950s, 1960s) with a monthly frequency, January, April, July and October were selected as representative of the seasons.

The median biomass for the CalCOFI and IMECOCAL cruises maintained values lower than 300 ml/1000 m^3, though there were exceptional cruises: 5307, 5601, 5607, in the north region; 5607 in the central. During 1997-2000, the north region median was maximum in the cruise 9710 (113 ml/1000 m^3) and minimum in 9904 (35 ml/1000 m^3). In the central region, the maximum occurred in 9801 (132 ml/1000 m^3) and the minimum in 9901 (47 ml/1000 m^3). Therefore, the maxima and minima of both regions corresponded with the occurrence of El Niño and La Niña respectively. Apparently in 2000 was reestablished the typical seasonal variability.

For better evaluation of the 1997-2000

crucero 9710 (113 ml/1000 m^3) y su mínimo en el 9904 (35 ml/1000 m^3). En la región central el máximo ocurrió en 9801 (132 ml/1000 m^3) y el mínimo en 9901 (47 ml/1000 m^3). Así los máximos y mínimos de ambas regiones corresponden con la ocurrencia de El Niño y La Niña respectivamente. Aparentemente en el 2000 se reestableció la variabilidad estacional típica.

Para evaluar las biomasas de 1997-2000 en el largo plazo, se muestran también (Fig. 16) las anomalías logarítmicas removiendo las medias logarítmicas estacionales. Ligeras anomalías positivas se registraron en la región norte durante El Niño, seguidas por un período de anomalías negativas hasta principios del 2000. En la región central la única anomalía positiva importante fue en 9801.

5. AGRADECIMIENTOS

La colecta de muestras de zooplancton estuvo a cargo de Daniel Loya Salinas, Tomás Campos Alfaro, Raymundo Avendaño Ibarra, Lorena Lincre Rojas, Sarita De La Campa y Erick Bravo Jiménez. Se reconoce ampliamente el esfuerzo de la tripulación del B/O *Francisco de Ulloa*. Los datos CalCOFI de biomasa de zooplancton fueron amablemente proporcionados por Paul Smith. El apoyo financiero provino del CONACYT (Proyectos GO041-T9607 y G35326-T), del Instituto Interamericano para la Investigación del Cambio Global (Proyecto ISP 2-124) y del proyecto interno del CICESE "Respuesta del plancton al forzamiento de mesoescala en el ecosistema pelágico de la zona Sur de la Corriente de California".

biomass in the long-term, logarithmic anomalies are also shown (Fig. 16), removing seasonal log-means. Lightly positive anomalies were recorded in the north region during El Niño, followed by a period of negative anomalies up to early 2000. In the central region the only important positive anomaly was in 9801.

5. AKNOWLEDGEMENTS

The zooplankton collection was done by Daniel Loya-Salinas, Tomás Campos-Alfaro, Raymundo Avendaño-Ibarra, Lorena Lincre-Rojas, Sarita De-La-Campa and Erick Bravo-Jiménez. The effort of the R/V *Francisco de Ulloa* crew is greatly appreciated. Paul Smith kindly provided the CalCOFI data of zooplankton biomass. The financial support was from CONACYT (Grants GO041-T9607 y G35326-T), the Inter-American Institute for the Global Change Research (Grant ISP 2-124) and from the CICESE Project "Respuesta del plancton al forzamiento de mesoescala en el ecosistema pelágico de la zona Sur de la Corriente de California".

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Tabla 1. Datos de los arrastres bongo y biomasa del zooplancton del crucero IMECOCAL 0001.
Table 1. Bongo tow data and zooplankton biomass from IMECOCAL cruise 0001.

ESTACION	LATITUD	LONGITUD	FECHA (d/m/a)	HORA INICIAL	HORA FINAL	VOLUM. FILTR.	PROF. MAXIMA	BIOMASA CHICA	BIOMASA TOTAL
STATION	LATITUDE	LONGITUDE	DATE (d/m/y)	STARTING HOUR	ENDING HOUR	FILTERED VOLUME	MAXIMAL DEPTH	SMALL BIOMASS	TOTAL BIOMASS
	(N)	(W)		(h:m)	(h:m)	(m^3)	(m)	(ml/1000 m^3)	(ml/1000 m^3)
100.30	31° 40.4	116° 46.8	14/01/2000	14:00	14:17	304	215	10	10
100.35	31° 30.5	117° 07.0	14/01/2000	18:09	18:25	331	217	15	151
100.40	31° 20.8	117° 26.7	14/01/2000	22:27	22:48	410	204	122	373
100.45	31° 11.4	117° 46.5	15/01/2000	02:22	02:42	283	213	88	88
100.50	30° 59.6	118° 08.2	15/01/2000	06:29	06:44	298	201	54	87
100.55	30° 49.1	118° 25.3	15/01/2000	12:16	12:41	313	214	41	41
100.60	30° 40.0	118° 46.9	15/01/2000	16:14	16:29	324	194	62	62
103.32	31° 05.9	116° 24.4	16/01/2000	23:57	00:02	98	42	61	61
103.35	30° 56.1	116° 45.2	16/01/2000	19:45	20:02	304	217	66	66
103.40	30° 46.0	117° 04.6	16/01/2000	15:51	16:07	318	199	22	22
103.45	30° 35.8	117° 24.6	16/01/2000	11:09	11:29	361	211	64	64
103.50	30° 25.3	117° 44.6	16/01/2000	05:32	05:47	324	207	154	201
103.55	30° 16.1	118° 04.4	16/01/2000	01:53	02:13	396	213	106	156
103.60	30° 05.2	118° 24.5	15/01/2000	21:57	22:20	363	215	110	149
107.32	30° 25.1	116° 11.9	17/01/2000	05:55	06:11	284	212	42	42
107.35	30° 22.0	116° 22.5	17/01/2000	08:51	09:08	319	209	31	31
107.40	30° 10.6	116° 41.9	17/01/2000	13:47	14:04	338	215	36	36
107.45	29° 59.6	117° 02.5	17/01/2000	18:20	18:35	276	218	127	127
107.50	29° 50.5	117° 20.9	17/01/2000	23:11	23:30	307	212	33	33
107.55	29° 40.3	117° 42.1	18/01/2000	03:05		367	214	27	27
107.60	29° 30.8	118° 01.0	18/01/2000	06:53	07:09	311	208	10	10
110.35	29° 45.5	115° 59.4	19/01/2000	10:27	10:45	374	204	20	20
110.40	29° 35.9	116° 18.0	19/01/2000	05:23	05:39	289	214	35	35
110.45	29° 27.0	116° 37.3	19/01/2000	01:56	02:14	432	213	35	174
110.50	29° 15.4	116° 59.8	18/01/2000	22:09	22:27	356	210	53	53
110.55	29° 05.5	117° 19.4	18/01/2000	17:39	17:55	292	202	257	257
110.60	28° 56.2	117° 37.9	18/01/2000	13:23	13:41	452	212	44	44
113.30	29° 21.2	115° 18.2	19/01/2000	17:17	17:22	117	59	43	43
113.35	29° 10.2	115° 37.7	19/01/2000	21:27	21:46	407	212	74	74
113.40	29° 02.7	115° 57.5	20/01/2000	1:12	1:32	476	212	80	80
113.45	28° 52.3	116° 18.0	20/01/2000	5:26	5:42	335	209	57	57
113.50	28° 40.7	116° 37.1	20/01/2000	9:43	10:01	373	209	8	8
113.55	28° 30.9	116° 55.9	20/01/2000	16:04	16:20	337	212	9	9
113.60	28° 21.3	117° 15.5	20/01/2000	20:11	20:30	391	214	64	64
117.30	28° 45.8	114° 55.8	23/01/2000	4:44		182	82	50	50
117.35	28° 37.9	115° 17.3	23/01/2000	0:59	1:14	455	170	66	66
117.40	28° 27.8	115° 34.4	22/01/2000	21:51	22:09	360	208	56	56
117.45	28° 14.9	115° 56.1	22/01/2000	17:31	17:48	325	213	6	6
117.50	28° 04.6	116° 12.8	22/01/2000	11:37	11:55	340	209	9	9
117.55	27° 56.3	116° 34.5	22/01/2000	7:39	7:55	311	205	10	10
117.60	27° 47.2	116° 51.8	22/01/2000	3:22	3:38	360	213	25	25

Tabla 1. (……continuación)
Table 1. (……continuation)

117.65	27° 36.9	117° 13.5	21/01/2000	23:14	23:34	362	212	55	55
117.70	27° 27.1	117° 32.4	21/01/2000	18:00	18:16	337	201	59	297
117.75	27° 15.7	117° 50.4	21/01/2000	13:16	13:34	371	213	13	13
117.80	27° 07.3	118° 10.7	21/01/2000	8:26	8:44	343	213	15	15
119.33	28° 18.4	114° 52.5	23/01/2000	9:06	9:15	196	106	639	639
120.30	28° 12.7	114° 33.6	23/01/2000	23:27	23:34	143	79	56	56
120.35	28° 03.0	114° 54.4	24/01/2000	2:31	2:38	170	71	1029	1029
120.40	27° 56.4	115° 14.2	24/01/2000	5:09	5:11	62	44	113	113
120.45	27° 41.1	115° 32.2	24/01/2000	9:27	9:44	382	214	21	21
120.50	27° 32.1	115° 52.8	24/01/2000	12:25	12:44	520	212	29	29
120.55	27° 22.9	116° 12.0	24/01/2000	17:56	18:11	247	215	61	61
120.60	27° 12.4	116° 30.6	24/01/2000	21:45	22:05	386	212	91	91
120.65	27° 02.2	116° 51.3	25/01/2000	1:22	1:38	458	213	44	208
120.70	26° 52.4	117° 10.2	25/01/2000	4:55	5:11	273	216	44	227
120.75	26° 43.1	117° 30.8	25/01/2000	8:48	9:06	368	211	35	35
120.80	26° 34.4	117° 52.9	25/01/2000	12:21	12:38	429	212	23	23
123.50	26° 56.2	115° 31.1	26/01/2000	14:50	15:10	623	212	37	37
123.55	26° 45.3	115° 52.4	26/01/2000	8:40	8:58	417	205	60	60
123.60	26° 37.5	116° 07.4	26/01/2000	3:13	3:27	587	212	77	77
127.35	26° 54.8	114° 06.1	27/01/2000	5:44	5:50	99	77	304	456
127.40	26° 42.5	114° 28.9	27/01/2000	10:27	10:45	405	212	17	17
127.45	26° 32.4	114° 48.6	27/01/2000	16:37	16:53	338	204	38	38
127.50	26° 23.7	115° 07.9	27/01/2000	21:42	22:01	411	211	109	109
127.55	26° 13.1	115° 26.4	28/01/2000	1:31	1:49	510	212	49	49
127.60	26° 02.4	115° 46.1	28/01/2000	5:59	6:17	355	202	23	23
130.30	26° 29.0	113° 27.8	29/01/2000	15:05	15:11	165	71	303	303
130.35	26° 19.2	113° 48.5	29/01/2000	10:10	10:29	334	209	60	60
130.40	26° 09.2	114° 07.2	29/01/2000	5:06	5:22	306	208	131	212
130.45	25° 57.3	114° 25.8	29/01/2000	1:16	1:35	497	212	101	251
130.50	25° 45.8	114° 46.0	28/01/2000	21:19	21:36	333	210	42	42
130.55	25° 36.7	115° 04.0	28/01/2000	17:35	17:52	387	171	39	39
130.60	25° 26.6	115° 23.6	28/01/2000	11:39	11:58	363	211	28	28
133.25	26° 04.8	112 47.7	29/01/2000	20:52	20:59	122	69	246	246
133.30	25° 54.5	113° 07.1	30/01/2000	0:09	0:25	390	198	77	103
133.35	25° 42.1	113° 25.5	30/01/2000	4:05	4:22	307	215	88	88
133.40	25° 32.6	113° 44.0	30/01/2000	7:54	8:10	289	213	52	69
133.45	25° 22.3	114° 04.4	30/01/2000	11:26	11:43	353	212	48	48
133.50	25° 09.9	114° 22.8	30/01/2000	17:06	17:21	332	208	36	36
133.55	25° 00.4	114° 42.8	30/01/2000	21:27	21:43	354	211	42	42
133.60	24° 50.1	115° 02.0	31/01/2000	0:58	1:15	506	212	69	79
137.25	25° 29.8	112° 27.4	01/02/2000	12:44	12:51	158	64	127	127
137.30	25° 19.9	112° 45.0	01/02/2000	8:22	8:40	317	218	32	32
137.40	24° 58.9	113° 25.7	01/02/2000	0:04	0:21	530	212	94	283
137.45	24° 48.6	113° 41.0	31/01/2000	20:25	20:42	327	210	46	46
137.50	24° 38.1	113° 59.6	31/01/2000	16:32	16:49	331	188	36	36
137.55	24° 29.0	114° 16.0	31/01/2000	10:22	10:39	345	211	29	29
137.60	24° 20.6	114° 34.7	31/01/2000	6:51	7:08	330	194	30	30

Tabla 2. Datos de los arrastres bongo y biomasa del zooplancton del crucero IMECOCAL 0004.
Table 2. Bongo tow data and zooplankton biomass from IMECOCAL cruise 0004.

ESTACION	LATITUD	LONGITUD	FECHA (d/m/a)	HORA INICIAL	HORA FINAL	VOLUM. FILTR.	PROF. MAXIMA	BIOMASA CHICA	BIOMASA TOTAL
STATION	LATITUDE (N)	LONGITUDE (W)	DATE (d/m/y)	STARTING HOUR (h:m)	ENDING HOUR (h:m)	FILTERED VOLUME (m^3)	MAXIMAL DEPTH (m)	SMALL BIOMASS (ml/1000 m^3)	TOTAL BIOMASS (ml/1000 m^3)
100.30	31° 39.1	116° 44.7	4/04/2000	14:36	14:44	400	210	37	75
100.35	31° 31.0	117° 06.7	4/04/2000	20:04	20:20	366	207	82	82
100.40	31° 20.6	117° 26.7	4/04/2000	00:44	01:02	324	213	55	55
100.45	31° 11.3	117° 47.2	5/04/2000	05:43	06:03	335	216	48	48
100.50	31° 00.5	118° 06.2	5/04/2000	11:00	11:19	356	213	56	56
100.55	30° 49.4	118° 25.1	5/04/2000	16:14	16:34	334	207	60	60
100.60	30° 39.0	118° 46.6	5/04/2000	21:28	21:46	362	212	44	44
103.30	31° 06.6	116° 24.1	7/04/2000	10:03	10:07	89	41	224	224
103.35	30° 56.0	116° 42.9	7/04/2000	05:55	06:12	288	214	69	69
103.40	30° 46.1	117° 04.4	7/04/2000	00:52	01:09	345	210	93	93
103.45	30° 35.4	117° 23.6	6/04/2000	20:01	20:17	341	207	97	97
103.50	30° 26.3	117° 43.8	6/04/2000	12:42	12:58	370	213	54	54
103.55	30° 16.4	118° 03.3	6/04/2000	08:50	09:11	337	209	21	21
103.60	30° 10.0	118° 39.4	6/04/2000	04:38	04:59	326	213	31	31
107.32	30° 24.8	116° 09.5	7/04/2000	17:38	17:54	374	204	334	334
107.35	30° 20.5	116° 20.7	7/04/2000	21:10	21:27	349	204	77	106
110.35	29° 45.4	116° 59.9	11/04/2000	05:40	05:56	347	214	78	78
110.40	29° 36.1	116° 19.8	11/04/2000	09:35	09:52	322	211	25	25
110.45	29° 26.0	116° 38.1	11/04/2000	15:14	15:30	316	209	32	32
110.50	29° 16.2	116° 58.9	11/04/2000	19:41	19:57	391	212	69	69
110.55	29° 06.2	117° 18.9	11/04/2000	23:28	23:44	348	210	29	29
110.60	28° 55.5	117° 39.2	12/04/2000	04:06	04:21	325	212	31	31
113.30	29° 22.8	115° 17.8	13/04/2000	16:39	16:44	94	54	11	11
113.35	29° 12.4	115° 37.6	13/04/2000	13:10	13:26	323	202	102	102
113.40	29° 02.1	115° 58.1	13/04/2000	06:54	07:10	322	185	143	143
113.45	28° 51.8	116° 16.8	13/04/2000	02:19	02:35	286	207	279	279
113.50	28° 42.2	116° 36.6	12/04/2000			369	215	65	65
113.55	28° 32.0	116° 56.2	12/04/2000	17:49	18:05	337	210	45	148
113.60	28° 20.8	117° 16.9	12/04/2000	11:50	12:06	357	212	20	20
117.30	28° 46.9	114° 55.4	13/04/2000	21:50	21:57	181	85	829	829
117.35	28° 37.0	115° 15.1	14/04/2000	01:32	01:46	289	168	104	104
117.40	28° 26.1	115° 35.1	14/04/2000	05:37	05:53	344	216	73	73
117.45	28° 15.8	115° 55.2	14/04/2000	09:32	09:50	491	210	47	47
117.50	28° 07.6	116° 14.3	14/04/2000	15:23	15:39	290	214	69	69
117.55	27° 56.8	116° 33.7	14/04/2000	19:29	19:45	310	221	194	194
117.60	27° 45.6	116° 52.6	14/04/2000	23:54	00:10	381	216	131	131
117.65	27° 36.0	117° 12.3	15/04/2000	04:06	04:22	321	211	62	62
117.70	27° 26.8	117° 32.3	15/04/2000	08:07	08:24	414	212	48	48
117.75	27° 16.0	117° 51.7	15/04/2000	12:16	12:32	330	207	76	76
117.80	27° 06.9	118° 10.7	15/04/2000	16:50	17:06	308	216	32	32
119.33	28° 17.7	114° 52.3	17/04/2000	18:05	18:10	102	71	147	147

Tabla 2. (……continuación)
Table 2. (……continuation)

120.30	28° 13.1	114° 34.1	17/04/2000	20:27	20:34	179	85	1560	1560
120.35	28° 03.2	114° 53.6	17/04/2000	23:46	23:52	156	71	577	577
120.40	27° 53.8	115° 07.1	18/04/2000	02:23	02:26	66	25	91	91
120.45	27° 42.6	115° 32.5	17/04/2000	04:45	05:01	324	195	53	53
120.50	27° 33.7	115° 51.4	17/04/2000	00:40	00:56	291	211	96	96
120.55	27° 23.9	116° 11.0	16/04/2000	21:02	21:19	441	212	340	340
120.60	27° 13.1	116° 30.6	16/04/2000	17:25	17:41	302	220	33	33
120.65	27° 03.3	116° 50.3	16/04/2000	13:17	13:30	269	200	26	26
120.70	26° 52.7	117° 09.3	16/04/2000	07:36	07:52	280	218	25	25
120.75	26° 43.1	117° 28.4	16/04/2000	03:53	04:09	279	218	25	25
120.80	26° 33.3	117° 47.7	15/04/2000	23:36	23:52	402	213	25	25
123.42	27° 14.3	114° 59.4	18/04/2000	08:29	08:46	427	212	211	211
123.45	27° 08.9	115° 11.0	18/04/2000	13:53	14:05	214	142	328	328
127.34	26° 53.7	114° 10.0	20/04/2000	13:03	13:40	165	81	393	393
130.30	26° 29.1	113° 28.6	20/04/2000	18:33	18:40	130	87	307	307
130.35	26° 19.2	113° 48.2	20/04/2000	22:19	22:36	435	213	161	161
130.40	26° 07.9	114° 06.8	21/04/2000	02:41	02:56	325	215	215	215
130.50	25° 48.4	114° 45.9	21/04/2000	09:31	09:48	444	212	36	36
130.60	25° 27.8	115° 24.0	21/04/2000	16:25	16:41	350	205	11	11
133.60	24° 54.0	115° 02.0	21/04/2000	23:08	23:25	399	212	48	48

Tabla 3. Datos de los arrastres bongo y biomasa del zooplancton del crucero IMECOCAL 0007.
Table 3. Bongo tow data and zooplankton biomass from IMECOCAL cruise 0007.

ESTACION	LATITUD	LONGITUD	FECHA (d/m/a)	HORA INICIAL	HORA FINAL	VOLUM. FILTR.	PROF. MAXIMA	BIOMASA CHICA	BIOMASA TOTAL
STATION	LATITUDE	LONGITUDE	DATE (d/m/y)	STARTING HOUR	ENDING HOUR	FILTERED VOLUME	MAXIMAL DEPTH	SMALL BIOMASS	TOTAL BIOMASS
	(N)	(W)		(h:m)	(h:m)	(m^3)	(m)	(ml/1000 m^3)	(ml/1000 m^3)
100.30	31° 41.2	116° 46.6	10/07/2000	19:58	20:17	369	192	1015	1015
100.35	31° 31.2	117° 06.9	11/07/2000	01:23	01:42	344	220	58	58
100.40	31° 21.2	117° 27.1	11/07/2000	05:35	05:56	255	204	59	59
100.45	31° 11.2	117° 47.2	11/07/2000	11:47	12:08	284	229	70	70
100.50	31° 01.2	118° 07.3	11/07/2000	16:22	16:39	164	232	275	275
100.55	30° 51.2	118° 27.4	11/07/2000	20:38	20:55	160	222	313	563
100.60	30° 41.2	118° 47.5	12/07/2000	01:44	02:01	361	224	83	221
103.30	31° 06.9	116° 24.5	13/07/2000	16:12	16:18	98	194	558	558
103.35	30° 56.9	116° 44.6	13/07/2000	12:04	12:22	459	193	131	131
103.40	30° 46.9	117° 04.7	13/07/2000	07:42	08:00	495	172	81	81
103.45	30° 37.0	117° 24.7	13/07/2000	01:40	01:58	464	204	76	76
103.50	30° 26.9	117° 44.7	12/07/2000	20:15	20:34	302	204	165	165
103.55	30° 16.9	118° 04.7	12/07/2000	15:57	16:14	380	224	197	197
103.60	30° 06.9	118° 24.7	12/07/2000	08:55	09:12	309	41	162	162
107.32	30° 27.5	116° 09.8	13/07/2000	22:32	22:45	450	116	216	216
107.35	30° 21.5	116° 21.8	14/07/2000	01:59	02:17	403	222	236	236
107.40	30° 11.5	116° 41.8	14/07/2000	06:33	06:53	440	229	41	41
107.45	30° 01.5	117° 01.7	14/07/2000	12:36	12:53	351	221	100	100
107.50	29° 51.5	117° 21.6	14/07/2000	18:00	18:17	347	229	101	101
107.55	29° 41.5	117° 41.4	14/07/2000	22:16	22:34	276	198	109	109
107.60	29° 31.5	118° 01.3	15/07/2000	03:46	04:04	524	213	76	76
110.35	29° 47.2	115° 59.8	16/07/2000	15:25	15:42	511	216	29	29
110.40	29° 37.2	116° 19.7	16/07/2000	10:10	10:27	385	151	18	18
110.45	29° 27.2	116° 39.5	16/07/2000	05:51	06:07	465	222	108	108
110.50	29° 17.2	116° 59.2	16/07/2000	01:05	01:24	498	231	80	80
110.55	29° 07.2	117° 19.0	15/07/2000	20:06	20:25	538	174	65	65
110.60	28° 57.2	117° 38.7	15/07/2000	15:29	15:47	435	222	30	30
113.30	29° 22.9	115° 18.2	17/07/2000	10:35	10:39	89	55	2251	2251
113.35	29° 12.9	115° 37.9	17/07/2000	15:04	15:21	596	219	84	84
117.30	28° 47.6	114° 55.8	19/07/2000	13:17	13:24	182	82	138	138
117.35	28° 37.6	115° 15.5	19/07/2000	17:21	17:36	376	178	98	98
117.40	28° 27.6	115° 35.1	19/07/2000	21:24	21:40	354	215	141	141
117.45	28° 17.6	115° 54.2	20/07/2000	02:29	02:46	411	225	260	260
117.50	28° 07.6	116° 14.2	20/07/2000	07:04	07:29	456	226	29	29
117.55	27° 57.6	116° 33.7	20/07/2000	13:12	13:27	509	216	10	10
117.60	27° 47.6	116° 53.2	20/07/2000	17:25	17:44	477	222	21	42
117.65	27° 37.6	117° 12.7	20/07/2000	21:10	21:27	369	219	35	35
117.70	27° 27.6	117° 32.1	21/07/2000	01:05	01:22	511	219	39	39
117.75	27° 17.6	117° 51.5	21/07/2000	05:13	05:32	487	229	41	41
117.80	27° 07.6	118° 10.9	21/07/2000	08:28	08:46	458	182	50	50
119.33	28° 17.7	114° 52.5	23/07/2000	22:43	22:57	178	83	506	506

Tabla 3. (……continuación)
Table 3. (……continuation)

120.30	28° 13.3	114° 34.3	23/07/2000	19:19	19:26	161	89	280	280
120.35	28° 03.3	114° 53.8	23/07/2000	15:47	15:52	177	72	79	79
120.40	27° 56.3	115° 07.4	23/07/2000	12:05	12:08	63	47	315	315
120.45	27° 43.3	115° 32.8	23/07/2000	05:58	06:16	479	208	84	84
120.50	27° 33.3	115° 52.2	23/07/2000	01:20	01:37	558	210	179	179
120.55	27° 23.3	116° 11.6	22/07/2000	20:36	20:52	392	199	102	102
120.60	27° 13.3	116° 31.0	22/07/2000	11:37	11:54	450	186	36	36
120.65	27° 03.3	116° 50.4	22/07/2000	07:00	07:18	473	218	74	74
120.70	26° 53.3	117° 09.7	22/07/2000	02:36	02:54	548	219	137	137
120.75	26° 43.3	117° 29.0	21/07/2000	22:24	22:41	315	220	95	95
120.80	26° 33.3	117° 48.3	21/07/2000	18:23	18:40	472	196	42	42
123.42	27° 15.0	114° 59.4	24/07/2000	20:36	20:52	369	224	406	406
123.45	27° 09.0	115° 11.0	24/07/2000	00:44	01:01	544	220	118	118
123.50	26° 59.0	115° 30.3	25/07/2000	05:15	05:34	535	207	93	93
123.55	26° 49.0	115° 49.6	25/07/2000	09:06	09:22	338	231	119	119
123.60	26° 39.0	116° 08.9	25/07/2000	16:10	16:30	378	214	106	106
127.34	26° 53.7	114° 10.1	26/07/2000	20:58	21:05	165	198	1519	1519
127.40	26° 43.7	114° 29.4	26/07/2000	17:49	18:08	535	213	234	234
127.45	26° 33.7	114° 48.6	26/07/2000	13:53	14:09	582	220	29	29
127.50	26° 23.7	115° 07.9	26/07/2000	07:40	08:00	497	213	30	30
127.55	26° 13.7	115° 27.1	26/07/2000	03:27	03:44	574	214	44	44
127.60	26° 03.7	115° 46.3	25/07/2000	23:04	23:21	332	86	45	45
130.30	26° 29.4	113° 29.4	27/07/2000	03:20	03:27	208	70	1802	2163
130.35	26° 19.4	113° 48.7	27/07/2000	06:43	07:02	573	211	56	108
130.40	26° 09.4	114° 07.9	27/07/2000	11:28	11:45	345	210	72	72
130.45	25° 57.3	114° 25.8	27/07/2000	18:05	18:23	483	218	52	52
130.50	25° 49.4	114° 46.2	27/07/2000	20:00	20:18	445	192	45	45
130.55	25° 36.7	115° 04.6	27/07/2000	23:41	23:58	338	230	41	41
130.60	25° 29.4	115° 24.4	28/07/2000	04:12	04:32	545	215	31	31
133.25	25° 05.1	112° 49.1	29/07/2000	14:34	14:40	181	213	149	188
133.30	25° 55.1	113° 08.2	29/07/2000	09:46	10:02	435	214	53	53
133.35	25° 45.1	113° 27.4	29/07/2000	06:37	06:56	493	211	71	71
133.40	25° 35.1	113° 46.5	29/07/2000	02:37	02:53	573	210	306	306
133.45	25° 22.3	114° 04.4	28/07/2000	22:30	22:45	372	220	175	194
133.50	25° 15.1	114° 24.6	28/07/2000	19:01	19:18	487	146	4	312
133.60	25° 55.1	115° 02.7	28/07/2000	12:45	13:02	597	71	20	20
137.25	25° 29.8	112° 27.4	29/07/2000	20:56	21:03	153	97	392	522
137.30	25° 19.8	112° 46.5	30/07/2000	00:29	00:45	537	210	93	93
137.35	25° 09.8	113° 05.5	30/07/2000	04:35	04:54	524	214	67	162
137.40	24° 59.8	113° 24.5	30/07/2000	08:22	08:38	372	197	81	349

Tabla 4. Datos de los arrastres bongo y biomasa del zooplancton del crucero IMECOCAL 0010.
Table 4. Bongo tow data and zooplankton biomass from IMECOCAL cruise 0010.

ESTACION	LATITUD	LONGITUD	FECHA (d/m/a)	HORA INICIAL	HORA FINAL	VOLUM. FILTR.	PROF. MAXIMA	BIOMASA CHICA	BIOMASA TOTAL
STATION	LATITUDE	LONGITUDE	DATE (d/m/y)	STARTING HOUR	ENDING HOUR	FILTERED VOLUME	MAXIMAL DEPTH	SMALL BIOMASS	TOTAL BIOMASS
	(N)	(W)		(h:m)	(h:m)	(m^3)	(m)	(ml/1000 m^3)	(ml/1000 m^3)
100.30	31° 40.8	116° 45.8	10/10/2000	12:56	13:11	584	213	29	29
100.35	31° 30.6	117° 06.8	10/10/2000	20:55	21:12	468	219	588	588
100.40	31° 20.5	117° 26.8	11/10/2000	02:21	02:39	487	215	72	72
100.45	31° 10.2	117° 46.5	11/10/2000	06:55	07:12	432	213	81	81
100.50	30° 60.0	118° 05.4	11/10/2000	12:49	13:05	356	218	56	56
100.55	30° 50.3	118° 26.5	11/10/2000	18:23	18:41	475	213	21	21
100.60	30° 40.6	118° 47.1	11/10/2000	23:35	23:50	452	212	55	55
103.30	31° 06.9	116° 24.5	13/10/2000	14:38	14:42	97	33	52	52
103.35	30° 56.7	116° 44.3	13/10/2000	10:21	10:37	405	212	82	82
103.40	30° 45.9	117° 04.1	13/10/2000	05:43	06:01	520	212	67	67
103.45	30° 35.9	117° 23.8	13/10/2000	00:46	01:02	508	210	49	49
103.50	30° 25.6	117° 44.1	12/10/2000	20:18	20:34	503	208	40	40
103.55	30° 13.7	118° 04.6	12/10/2000	15:02	15:18	450	204	22	22
103.60	30° 05.5	118° 24.2	12/10/2000	07:00	07:17	478	212	17	17
107.32	30° 27.7	116° 09.8	14/10/2000	08:40	08:56	357	197	84	84
107.35	30° 20.7	116° 20.9	14/10/2000	12:45	13:02	406	222	148	148
107.40	30° 10.4	116° 40.8	14/10/2000	17:41	18:06	517	213	52	52
107.45	30° 01.0	117° 01.4	14/10/2000	22:22	22:38	449	211	111	123
107.50	29° 51.2	117° 22.0	15/10/2000	02:52	03:09	507	210	89	89
107.55	29° 41.2	117° 41.6	15/10/2000	07:10	07:27	449	213	33	33
107.60	29° 29.3	118° 00.1	15/10/2000	12:48	13:05	441	210	68	68
110.35	29° 46.3	115° 59.4	16/10/2000	19:57	20:14	400	199	100	100
110.40	29° 34.4	116° 19.0	16/10/2000	14:57	15:15	530	213	28	28
110.45	29° 26.8	116° 39.8	16/10/2000	09:19	09:34	435	211	92	92
110.50	29° 16.9	116° 59.3	16/10/2000	04:48	05:04	387	213	116	116
110.55	29° 07.0	117° 18.6	16/10/2000	00:13	00:30	429	210	117	117
110.60	28° 55.4	117° 37.5	15/10/2000	19:36	19:56	468	213	68	68
113.30	29° 22.7	115° 18.2	17/10/2000	21:03	21:07	122	57	1067	1067
113.35	29° 11.9	115° 37.1	18/10/2000	01:31	01:47	459	215	87	87
113.40	29° 02.0	115° 56.7	18/10/2000	06:06	06:24	468	213	64	64
113.45	28° 52.8	116° 16.0	18/10/2000	12:26	12:42	443	208	68	68
113.50	28° 42.5	116° 36.8	18/10/2000	16:51	17:08	497	213	60	60
113.55	28° 32.2	116° 56.2	18/10/2000	20:59	21:16	488	213	82	82
113.60	28° 22.7	117° 16.0	19/10/2000	01:12	01:28	391	214	102	102
117.60	27° 46.9	116° 53.3	20/10/2000	09:21	09:36	464	205	80	80
117.65	27° 37.1	117° 12.6	20/10/2000	05:08	05:24	430	213	74	74
117.70	27° 26.6	117° 31.9	20/10/2000	01:02	01:17	439	209	68	68
117.75	27° 16.5	117° 51.4	19/10/2000	20:36	20:52	426	207	59	59
117.80	27° 03.8	118° 10.3	19/10/2000	15:56	16:11	540	211	33	33
120.30	28° 09.1	114° 31.2	22/10/2000	15:12	15:19	176	82	45	45
120.35	28° 03.4	114° 53.8	22/10/2000	18:47	18:53	157	71	109	109

Tabla 4. (……continuación)
Table 4. (……continuation)

120.40	27° 56.1	115° 7.4	22/10/2000	21:23	21:25	77	34	91	91
120.45	27° 43.8	115° 31.6	23/10/2000	02:36	02:51	412	212	170	170
120.50	27° 32.8	115° 51.1	23/10/2000	07:33	07:51	510	210	88	88
120.55	27° 21.8	116° 09.5	23/10/2000	13:40	13:57	469	205	43	43
120.60	27° 13.2	116° 30.8	23/10/2000	17:54	18:13	473	212	36	36
120.65	27° 03.6	116° 50.2	23/10/2000	21:55	22:11	407	210	66	66
120.70	26° 53.6	117° 09.5	24/10/2000	02:06	02:22	369	209	103	184
120.75	26° 43.3	117° 29.1	24/10/2000	06:27	06:44	410	211	49	49
120.80	26° 32.7	117° 48.9	24/10/2000	10:30	10:45	324	199	124	124
123.42	27° 14.9	114° 59.4	25/10/2000	18:30	18:45	473	212	78	78
123.45	27° 07.7	115° 10.0	25/10/2000	15:16	15:31	411	201	68	68
123.50	26° 58.0	115° 30.1	25/10/2000	09:27	09:43	427	206	56	56
123.55	26° 49.0	115° 49.7	25/10/2000	05:06	05:23	428	211	58	58
123.60	26° 37.6	116° 08.2	25/10/2000	00:56	01:12	396	205	63	63
127.34	26° 53.3	114° 10.0	26/10/2000	01:37	00:44	181	82	110	110
127.40	26° 43.7	114° 29.5	26/10/2000	05:36	05:54	442	212	90	90
127.45	26° 32.1	114° 48.1	26/10/2000	10:08	10:23	449	215	89	89
127.50	26° 21.8	115° 07.1	26/10/2000	16:08	16:26	466	213	34	34
127.55	26° 13.6	115° 27.9	26/10/2000	20:34	20:49	435	215	92	92
127.60	26° 02.8	115° 46.1	27/10/2000	01:12	01:29	429	210	58	58
130.30	26° 29.4	113° 29.3	28/10/2000	08:38	08:44	172	65	46	46
130.35	26° 19.4	113° 48.8	28/10/2000	05:04	05:21	391	213	64	320
130.40	26° 09.2	114° 06.9	28/10/2000	01:12	01:28	362	211	97	97
130.50	25° 49.3	114° 46.3	27/10/2000	17:38	17:55	490	212	47	47
130.60	25° 29.3	115° 24.5	27/10/2000	08:10		421	212	48	59
133.25	26° 05.1	112° 48.9	28/10/2000	15:29	15:36	156	81	96	96
133.30	25° 55.1	113° 08.2	28/10/2000	19:04	19:17	312	164	128	157
133.35	25° 44.3	113° 26.7	28/10/2000	23:17	23:34	408	216	86	94
133.40	25° 34.6	113° 46.0	29/10/2000	03:40	03:56	392	200	82	82
133.50	25° 13.0	114° 23.9	29/10/2000	13:23	13:40	458	201	33	33
133.60	24° 54.1	115° 02.4	29/10/2000	21:09	21:25	451	199	78	78

Tabla 5. Organismos grandes excluidos de la medición de biomasa chica.
Table 5. Large organisms excluded in the measurement of small biomass.

CRUCERO CRUISE	ESTACION STATION	ORGANISMOS ORGANISMS	ABUNDANCIA ABUNDANCE (ind/1000 m^3)
0001	100.35	1 Pyrosomida	3
	100.40	3 Pyrosomida	7
	100.50	1 Pyrosomida	3
	103.50	3 Pyrosomida	9
	103.55	1 Salpida	3
	103.60	2 Pyrosomida	6
	110.45	1 Ctenophora	2
	117.70	1 Salpida	3
	120.65	2 Pyrosomida	4
	120.70	1 Salpida	4
	127.35	Medusae	
	130.40	1 Medusae	3
	130.45	1 Pyrosomida	2
	133.30	1 Medusae	3
	133.40	1 Ctenophora	3
	133.60	1 *Pleuroncodes planipes*	2
	137.40	6 Salpida	11
0004	100.30	1 Salpida	3
	107.35	1 Cephalopoda larva	3
	113.55	1 Siphonophora	6
0007	100.55	10 Pyrosomida	63
	100.60	7 Pyrosomida	19
	117.60	1 Pyrosomida	2
	130.30	24 *Pleuroncodes planipes*	115
	130.35	11 *Pleuroncodes planipes*	19
	133.25	2 *Pleuroncodes planipes*	11
	133.45	1 *Pleuroncodes planipes*	3
	133.50	52 *Pleuroncodes planipes*	107
	137.25	5 *Pleuroncodes planipes*	33
	137.35	11 *Pleuroncodes planipes*	21
	137.40	1 Pyrosomida	3
0010	107.45	1 Medusae	2
	120.70	1 Heteropoda	3
	130.35	30 *Pleuroncodes planipes*	77
	130.60	1 *Pleuroncodes planipes*	2
	133.30	3 *Pleuroncodes planipes*	10
	133.35	1 *Pleuroncodes planipes*	2

Tabla 6. Abundancia (ind/m^3) de grupos de zooplancton en las estaciones del crucero IMECOCAL 0001.
Table 6. Abundance (ind/m^3) of zooplankton groups in stations of the IMECOCAL cruise 0001.

Taxa	100.30	100.35	100.40	100.45	100.50	100.55	100.60	103.30	103.35	103.40	103.45	103.50	103.55	103.60	107.32	107.35	107.40	107.45
Medusae	0.036	0.088	0.215	0.113	0.725	0.767	0.019	0.286	0.079	0.019	0.310	0.691	0.970	1.344	0.986	1.216	0.426	0.145
Siphonophora	0.016	0.063	0.156	0.254	0.322	0.511	0.074	0.122	0.092	0.135	0.432	0.173	0.242	0.176	0.225	0.790	0.888	0.957
Ctenophora	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.005	0.000	0.000	0.025	0.012	0.000
Pteropoda	0.013	0.057	0.020	0.057	0.081	0.026	0.019	0.020	0.039	0.013	0.055	0.741	0.101	0.441	0.225	0.176	0.000	0.058
Heteropoda	0.003	0.018	0.039	0.000	0.107	0.128	0.022	0.041	0.013	0.000	0.028	0.000	0.121	0.110	0.028	0.038	0.000	0.029
Polychaeta	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cladocera	0.000	0.003	0.000	0.000	0.054	0.000	0.000	0.000	0.000	0.000	0.022	0.000	0.000	0.022	0.000	0.013	0.024	0.000
Ostracoda	0.046	0.269	0.741	0.594	0.403	0.179	0.086	0.020	0.461	0.101	0.172	0.741	0.566	1.587	1.746	0.439	0.438	0.464
Copepoda	1.026	1.568	22.302	21.625	6.362	3.195	0.904	11.673	9.000	0.827	2.609	25.704	25.515	19.945	10.113	2.357	6.178	25.159
Amphipoda	0.016	0.082	0.195	0.141	0.349	0.741	0.105	0.000	0.184	0.088	0.100	0.296	0.808	0.926	0.592	0.451	0.260	0.319
Euphausiacea	0.007	0.568	1.054	0.876	1.074	0.665	0.247	3.327	0.355	0.097	0.249	4.889	2.040	2.711	2.873	0.702	0.308	1.188
Decapoda	0.007	0.006	0.000	0.000	0.000	0.077	0.000	0.041	0.000	0.006	0.000	0.025	0.061	0.132	0.056	0.013	0.024	0.000
Chaetognatha	0.658	0.184	0.390	0.283	0.859	1.891	0.130	0.061	0.197	0.248	0.521	0.395	1.596	1.543	3.944	1.680	1.503	1.101
Appendicularia	0.000	0.000	0.000	0.000	0.054	0.000	0.006	0.163	0.026	0.000	0.022	0.074	0.343	0.198	0.113	0.050	0.012	0.000
Doliolida	0.000	0.000	0.000	0.000	0.054	4.115	0.025	0.000	0.013	0.016	0.072	2.025	0.646	7.449	0.423	0.389	0.036	0.000
Salpida	0.000	0.000	0.254	0.057	2.819	0.000	0.000	0.000	0.039	0.000	0.017	0.049	0.384	0.000	0.000	0.000	0.000	0.290
Pyrosomida	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Briozoaria larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cephalopoda larvae	0.000	0.000	0.000	0.000	0.027	0.000	0.000	0.000	0.000	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.058
other Mollusca larvae	0.007	0.003	0.000	0.000	0.027	0.077	0.003	0.000	0.000	0.006	0.055	0.123	0.020	0.176	0.085	0.025	0.036	0.000
Polychaeta larvae	0.000	0.027	0.020	0.113	0.242	0.000	0.022	0.000	0.053	0.013	0.028	0.049	0.101	0.066	0.254	0.075	0.095	0.000
Cirripedia larvae	0.000	0.000	0.000	0.028	0.000	0.000	0.003	0.020	0.000	0.000	0.000	0.049	0.000	0.022	0.000	0.013	0.012	0.000
Stomatopoda larvae	0.000	0.006	0.020	0.000	0.000	0.051	0.000	0.061	0.000	0.003	0.006	0.025	0.000	0.000	0.000	0.013	0.000	0.029
Echinodermata larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
other Invertebrate larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pisces larvae	0.026	0.030	0.039	0.000	0.134	0.051	0.015	0.061	0.026	0.028	0.022	0.198	0.162	0.110	0.085	0.075	0.071	0.116
Pisces eggs	0.000	0.018	0.137	0.057	0.859	0.332	0.062	0.061	0.000	0.009	0.100	0.074	0.061	0.198	0.000	0.213	0.095	0.029
Total	1.862	2.991	25.580	24.198	14.550	12.805	1.747	15.959	10.579	1.613	4.834	36.321	33.742	37.157	21.746	8.752	10.414	29.942

Tabla 6. ……IMECOCAL 0001 (continuación)
Table 6. ……IMECOCAL 0001 (continuation)

Taxa	107.50	107.55	107.60	110.35	110.40	110.45	110.50	110.55	110.60	113.30	113.35	113.40	113.45	113.50	113.55	113.60	117.30	117.35
Medusae	0.143	0.044	0.003	0.179	0.111	0.074	0.124	0.082	0.053	0.137	0.138	0.000	0.096	0.027	0.047	0.082	0.220	0.018
Siphonophora	0.326	0.251	0.588	0.053	0.249	1.463	1.056	0.199	1.717	18.803	0.393	0.151	0.872	0.284	0.555	0.225	0.593	0.141
Ctenophora	0.000	0.000	0.000	0.016	0.000	0.000	0.059	0.000	0.000	0.009	0.012	0.004	0.000	0.000	0.000	0.061	0.000	0.002
Pteropoda	0.208	0.065	1.785	0.021	0.249	0.167	0.236	0.075	0.022	0.205	0.020	0.000	0.107	0.102	0.039	0.041	0.022	0.018
Heteropoda	0.000	0.000	0.013	0.005	0.249	0.426	0.258	0.233	0.049	0.274	0.000	0.000	0.406	0.080	0.039	0.000	0.154	0.018
Polychaeta	0.000	0.011	0.010	0.003	0.000	0.000	0.022	0.000	0.066	0.000	0.000	0.000	0.012	0.005	0.000	0.000	0.000	0.000
Cladocera	0.000	0.000	0.000	0.000	0.000	0.000	0.045	0.027	0.049	0.000	0.020	0.000	0.012	0.011	0.047	0.000	0.000	0.000
Ostracoda	0.704	0.490	0.186	0.000	0.720	0.778	0.775	0.158	0.243	0.000	0.314	0.235	0.633	0.193	0.282	0.225	0.000	0.053
Copepoda	24.730	7.869	0.749	0.313	21.176	25.315	8.438	3.664	2.257	27.419	42.339	42.975	4.872	0.201	2.404	15.448	12.154	44.536
Amphipoda	0.117	0.087	0.215	0.019	0.249	0.444	0.101	0.308	0.164	0.137	0.236	0.034	0.251	0.051	0.098	0.102	0.022	0.018
Euphausiacea	0.469	0.676	0.260	0.337	0.554	0.852	0.427	0.630	0.230	0.342	0.491	0.874	1.254	0.059	0.463	0.634	0.747	1.635
Decapoda	0.003	0.011	0.003	0.021	0.000	0.076	0.079	0.000	0.009	0.615	0.943	0.000	0.012	0.000	0.000	0.000	4.571	0.018
Chaetognatha	0.391	0.926	0.254	0.265	0.609	0.815	0.899	0.048	1.133	2.393	0.256	0.084	0.036	0.086	0.840	0.143	0.110	0.967
Appendicularia	0.039	0.153	0.010	0.005	0.221	0.556	1.270	0.027	0.088	0.752	0.000	0.000	0.048	0.142	0.148	0.000	0.044	0.035
Doliolida	0.039	0.000	0.019	0.040	0.138	0.204	0.067	0.021	0.279	0.000	0.059	0.050	0.012	0.048	0.243	0.061	0.022	0.000
Salpida	0.013	0.000	0.006	0.000	0.000	0.000	0.056	0.644	0.619	0.000	0.000	0.000	0.024	0.196	0.092	0.041	0.769	0.000
Pyrosomida	0.000	0.000	0.000	0.000	0.000	0.002	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.166	0.012	0.000	0.022	0.000
Briozoaria larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cephalopoda larvae	0.000	0.000	0.003	0.011	0.000	0.000	0.000	0.007	0.000	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.018
other Mollusca larvae	0.287	0.381	0.026	0.000	0.000	0.093	0.000	0.000	0.031	0.068	0.000	0.000	0.048	0.011	0.003	0.000	0.066	0.000
Polychaeta larvae	0.065	0.022	0.032	0.008	0.028	0.037	0.079	0.007	0.146	0.000	0.020	0.000	0.060	0.005	0.024	0.041	0.000	0.000
Cirripedia larvae	0.000	0.000	0.000	0.000	0.000	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Stomatopoda larvae	0.000	0.000	0.010	0.040	0.000	0.000	0.000	0.000	0.022	0.821	0.098	0.017	0.000	0.000	0.006	0.000	1.495	0.018
Echinodermata larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
other Invertebrate larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pisces larvae	0.052	0.022	0.010	0.011	0.028	0.130	0.056	0.055	0.093	0.000	0.000	0.000	0.036	0.019	0.071	0.041	0.022	0.000
Pisces eggs	0.026	0.022	0.003	0.003	0.028	0.000	0.022	0.007	0.013	0.000	0.020	0.050	0.000	0.003	0.009	0.000	0.000	0.000
Total	27.612	11.030	4.186	1.350	24.609	31.449	14.093	6.192	7.283	51.974	45.359	44.492	8.788	1.689	5.421	17.146	21.033	47.492

Tabla 6. ……IMECOCAL 0001 (continuación)
Table 6. ……IMECOCAL 0001 (continuation)

Taxa	117.40	117.45	117.50	117.55	117.60	117.65	117.70	117.75	117.80	119.33	120.30	120.35	120.40	120.45	120.50	120.55	120.60	120.65
Medusae	0.111	0.031	0.041	0.016	0.100	0.166	0.415	0.108	0.047	0.163	0.280	0.000	1.677	0.063	0.246	5.279	3.565	0.437
Siphonophora	0.067	0.105	0.288	0.296	0.311	0.221	1.543	1.941	1.609	5.714	15.161	6.965	6.323	0.293	0.354	3.692	4.850	0.699
Ctenophora	0.089	0.000	0.000	0.000	0.001	0.004	0.071	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.040	0.021	0.002
Pteropoda	0.000	0.160	0.024	0.080	0.078	0.000	0.059	0.065	0.163	0.653	0.224	3.953	3.742	0.230	0.231	0.486	0.207	0.559
Heteropoda	0.089	0.191	0.003	0.122	0.100	0.066	0.036	0.086	0.093	0.000	0.783	0.000	1.032	0.042	0.031	0.065	0.166	0.070
Polychaeta	0.000	0.012	0.000	0.003	0.000	0.000	0.000	0.022	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.041	0.000
Cladocera	0.000	0.000	0.038	0.074	0.000	0.000	0.036	0.151	0.023	0.000	0.000	0.000	0.000	0.021	0.000	0.162	0.000	0.000
Ostracoda	0.467	0.505	0.118	0.193	0.133	0.166	0.071	1.057	0.840	0.000	0.000	0.565	0.645	0.188	0.108	0.810	0.456	0.262
Copepoda	17.756	1.858	0.535	1.376	9.022	6.309	2.671	5.973	6.694	8.653	17.902	2.259	114.581	2.366	7.000	15.709	29.098	38.830
Amphipoda	0.111	0.123	0.047	0.068	0.067	0.099	0.142	0.129	0.187	0.000	0.056	0.000	0.129	0.063	0.231	0.097	0.124	0.856
Euphausiacea	0.911	0.905	0.126	0.193	0.611	0.796	1.947	0.690	0.443	4.245	1.958	5.082	16.645	2.073	0.892	1.360	4.850	1.013
Decapoda	0.022	0.009	0.003	0.003	0.000	0.000	0.027	0.043	0.093	12.082	8.503	0.565	2.323	0.021	0.023	0.130	0.000	0.000
Chaetognatha	0.000	0.400	0.291	0.614	0.100	0.122	0.677	2.523	3.055	0.653	3.077	0.000	5.419	7.079	7.738	3.206	4.352	0.419
Appendicularia	0.000	0.012	0.297	0.405	0.000	0.000	0.000	2.199	1.866	0.163	0.224	0.000	0.903	1.236	0.200	0.356	0.332	0.000
Doliolida	0.000	0.031	0.100	0.029	0.000	0.000	0.012	0.798	0.746	0.000	0.000	2.635	0.903	0.000	0.000	0.097	0.041	0.000
Salpida	0.022	0.062	0.044	0.016	0.333	0.044	0.036	0.086	0.163	94.367	2.070	98.824	18.323	0.063	0.062	0.032	0.580	0.052
Pyrosomida	0.022	0.012	0.029	0.042	0.033	0.122	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Briozoaria larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cephalopoda larvae	0.044	0.000	0.000	0.000	0.000	0.000	0.000	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.083	0.000
other Mollusca larvae	0.000	0.025	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.056	0.753	0.129	0.000	0.000	0.000	0.083	0.000
Polychaeta larvae	0.022	0.117	0.006	0.006	0.000	0.033	0.000	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.000	0.083	0.000
Cirripedia larvae	0.000	0.000	0.000	0.000	0.011	0.022	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Stomatopoda larvae	0.000	0.000	0.000	0.000	0.011	0.044	0.119	0.000	0.000	1.796	1.846	2.447	2.065	0.168	0.015	0.356	0.166	0.175
Echinodermata larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.387	0.042	0.000	0.162	0.497	0.035
other Invertebrate larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.129	0.000	0.015	0.097	0.041	0.017
Pisces larvae	0.000	0.049	0.012	0.013	0.011	0.033	0.036	0.259	0.140	0.000	0.000	0.000	0.000	0.000	0.046	0.065	0.041	0.035
Pisces eggs	0.022	0.018	0.003	0.026	0.000	0.000	0.012	0.108	0.560	0.163	0.000	0.376	0.000	0.000	0.000	0.000	0.000	0.017
Total	19.756	4.625	2.006	3.576	10.935	8.247	7.920	16.280	16.816	128.653	52.140	124.424	175.355	13.953	17.208	32.202	49.679	43.478

Tabla 6. ……IMECOCAL 0001 (continuación)
Table 6. ……IMECOCAL 0001 (continuation)

Taxa	120.70	120.75	120.80	123.50	123.55	123.60	127.35	127.40	127.45	127.50	127.55	127.60	130.30	130.35	130.40	130.45	130.50	130.55
Medusae	2.286	2.087	0.047	0.051	0.115	0.545	1.051	0.316	0.024	0.156	0.125	0.000	0.582	0.359	0.261	0.451	0.192	0.021
Siphonophora	0.938	0.500	1.837	0.488	1.113	1.526	1.131	0.672	0.615	0.818	0.973	0.811	1.164	0.862	0.889	0.515	1.225	0.599
Ctenophora	0.018	0.003	0.000	0.000	0.000	0.000	0.040	0.069	0.003	0.044	0.000	0.000	0.000	0.039	0.072	0.000	0.003	0.000
Pteropoda	0.176	0.043	0.047	0.128	0.480	1.526	0.646	0.316	0.237	0.156	0.157	0.135	1.164	0.168	0.366	1.095	0.769	0.599
Heteropoda	0.059	0.000	0.028	0.026	0.211	0.218	0.081	0.237	0.000	0.039	0.063	0.000	0.194	0.048	0.052	0.129	0.048	0.021
Polychaeta	0.000	0.000	0.056	0.026	0.058	0.000	0.242	0.079	0.000	0.078	0.016	0.000	0.194	0.024	0.105	0.129	0.048	0.021
Cladocera	0.059	0.000	0.121	0.000	0.019	0.000	0.000	0.040	0.071	0.000	0.047	0.034	0.000	0.096	0.105	0.129	0.024	0.248
Ostracoda	0.322	0.043	0.681	0.437	0.019	0.491	0.162	0.237	0.331	0.195	0.549	0.237	2.327	0.024	0.993	2.447	1.417	0.972
Copepoda	16.205	23.609	7.133	13.637	12.144	40.450	77.333	19.121	7.740	35.036	14.714	3.741	401.261	8.862	25.725	74.173	15.063	13.147
Amphipoda	0.352	0.261	0.177	0.514	0.134	0.273	2.667	0.119	1.018	0.273	0.251	0.011	0.388	0.144	0.471	0.386	0.793	0.393
Euphausiacea	1.143	1.217	0.802	2.286	1.458	2.181	13.818	2.449	0.805	2.258	1.522	0.473	10.279	0.503	2.248	7.018	2.090	3.349
Decapoda	0.007	0.022	0.000	0.040	0.007	0.101	5.455	0.600	0.095	0.056	0.018	0.000	4.073	0.240	0.013	0.209	0.147	0.049
Chaetognatha	2.081	3.478	1.902	4.982	4.393	8.504	13.091	6.281	4.568	3.387	2.118	1.589	4.073	3.186	9.830	12.105	4.420	4.651
Appendicularia	0.117	0.043	1.166	0.180	0.096	0.382	0.242	0.079	0.000	0.662	0.282	1.025	1.358	0.743	0.366	0.773	0.601	0.289
Doliolida	0.059	0.000	0.280	0.000	0.019	0.000	0.242	0.000	0.024	0.117	0.110	0.406	0.776	0.000	0.000	0.000	0.360	0.062
Salpida	0.000	0.087	0.131	0.051	0.000	0.109	1.535	1.304	0.000	0.078	0.188	0.383	1.164	0.048	0.000	0.644	0.024	0.021
Pyrosomida	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Briozoaria larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cephalopoda larvae	0.000	0.000	0.000	0.000	0.000	0.109	0.000	0.000	0.000	0.000	0.016	0.000	0.000	0.048	0.000	0.000	0.000	0.000
other Mollusca larvae	0.000	0.022	0.000	0.000	0.038	0.000	0.162	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Polychaeta larvae	0.000	0.000	0.000	0.000	0.000	0.109	0.000	0.040	0.000	0.000	0.000	0.000	0.776	0.024	0.052	0.000	0.000	0.000
Cirripedia larvae	0.000	0.000	0.000	0.000	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Stomatopoda larvae	0.176	0.261	0.019	0.205	0.019	0.055	0.404	0.672	0.024	0.195	0.047	0.000	2.327	0.072	0.000	0.579	0.120	0.021
Echinodermata larvae	0.322	0.152	0.000	0.000	0.000	0.000	1.051	0.356	0.000	0.078	0.031	0.045	0.582	1.389	0.000	0.129	0.000	0.000
other Invertebrate larvae	0.029	0.000	0.084	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.072	0.000	0.000	0.000	0.000
Pisces larvae	0.059	0.065	0.084	0.000	0.000	0.600	2.263	0.198	0.024	0.039	0.000	0.068	4.461	0.144	0.261	1.288	0.480	0.310
Pisces eggs	0.000	0.043	0.047	0.026	0.019	0.000	0.000	0.356	0.024	0.039	0.016	0.045	0.582	0.144	0.105	0.064	0.000	0.041
Total	24.407	31.938	14.639	23.077	20.362	57.177	121.616	33.538	15.601	43.701	21.241	9.003	437.721	17.237	41.915	102.262	27.826	24.814

Tabla 6. ……IMECOCAL 0001 (continuación)
Table 6. ……IMECOCAL 0001 (continuation)

Taxa	130.60	133.25	133.30	133.35	133.40	133.45	133.50	133.55	133.60	137.25	137.30	137.40	137.45	137.50	137.55	137.60
Medusae	0.066	6.557	0.369	0.104	0.388	0.136	0.193	0.316	0.095	0.051	0.227	0.000	0.343	0.169	0.139	0.073
Siphonophora	1.124	9.967	1.559	0.313	1.273	0.952	1.976	2.215	1.992	1.924	0.278	2.113	0.979	0.894	1.925	0.970
Ctenophora	0.000	0.033	0.005	0.000	0.003	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.012	0.000	0.003	0.000
Pteropoda	0.331	75.541	5.703	2.919	4.761	0.227	1.807	1.446	1.834	12.506	1.741	0.845	1.982	0.314	0.696	0.873
Heteropoda	0.022	3.410	1.682	0.208	0.775	0.045	0.193	0.090	0.095	0.658	0.202	0.060	0.147	0.097	0.000	0.048
Polychaeta	0.066	0.262	0.164	0.026	0.000	0.136	0.000	0.090	0.032	0.000	0.101	0.000	0.147	0.048	0.000	0.024
Cladocera	0.000	0.262	0.492	0.026	1.439	0.635	0.024	0.226	0.000	0.000	0.000	0.000	0.024	0.000	0.046	0.000
Ostracoda	0.970	6.557	1.108	0.182	1.772	1.088	1.783	1.220	1.960	0.253	1.918	1.389	2.055	0.894	1.345	1.939
Copepoda	10.424	119.607	30.441	11.726	35.433	34.629	15.855	11.345	27.858	55.544	23.697	36.891	9.346	9.402	9.391	9.430
Amphipoda	0.242	9.180	0.287	0.052	0.498	0.363	0.289	0.678	0.443	0.557	0.101	0.906	0.587	0.411	0.186	0.267
Euphausiacea	0.926	47.213	6.195	2.137	2.713	1.904	3.928	4.610	2.340	5.367	2.322	2.958	2.544	0.773	2.296	1.261
Decapoda	0.008	8.131	8.451	0.365	0.388	0.054	0.319	0.008	0.245	2.329	0.808	0.196	0.297	0.242	0.093	0.267
Chaetognatha	1.851	23.869	8.246	5.160	14.616	7.252	6.265	5.559	7.494	8.759	2.549	6.943	5.040	4.665	4.035	2.958
Appendicularia	2.887	38.033	6.400	1.068	2.934	2.856	0.675	3.616	1.549	4.304	22.637	0.483	0.881	0.508	0.904	0.339
Doliolida	0.220	6.820	0.000	0.078	0.055	0.363	0.096	0.181	0.126	0.759	0.126	0.604	0.489	0.314	0.325	0.267
Salpida	0.000	8.918	0.903	0.000	0.332	0.045	0.048	0.045	0.285	0.051	0.151	0.604	0.269	0.097	0.093	0.024
Pyrosomida	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Briozoaria larvae	0.000	0.000	0.000	0.000	0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cephalopoda larvae	0.000	0.000	0.082	0.000	0.000	0.000	0.000	0.181	0.032	0.000	0.050	0.000	0.024	0.000	0.000	0.048
other Mollusca larvae	0.000	0.000	0.082	0.000	0.000	0.000	0.000	0.000	0.032	0.051	0.000	0.000	0.024	0.000	0.000	0.000
Polychaeta larvae	0.000	0.525	0.041	0.000	0.111	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.049	0.000	0.000	0.024
Cirripedia larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Stomatopoda larvae	0.022	0.525	0.123	0.208	0.166	0.091	0.145	0.045	0.063	0.000	0.177	0.181	0.122	0.048	0.046	0.000
Echinodermata larvae	0.044	0.000	0.000	0.000	0.000	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000
other Invertebrate larvae	0.110	0.000	0.000	0.000	0.000	0.000	0.120	0.000	0.063	0.152	0.000	0.000	0.171	0.048	0.070	0.000
Pisces larvae	0.154	5.246	2.092	0.547	0.166	0.408	0.506	0.407	0.538	0.557	0.656	0.543	0.783	0.290	0.232	0.145
Pisces eggs	0.066	1.311	0.000	1.329	0.111	0.181	0.048	0.000	0.032	0.152	0.076	0.242	0.024	0.024	0.023	0.000
Total	19.534	371.967	74.426	26.450	68.042	51.453	34.295	32.297	47.107	93.975	57.817	54.958	26.339	19.239	21.893	18.958

Tabla 7. Abundancia (ind/m^3) de grupos de zooplancton en las estaciones del crucero IMECOCAL 0004.
Table 7. Abundance (ind/m^3) of zooplankton groups in stations of the IMECOCAL cruise 0004.

Taxa	100.30	100.35	100.40	100.45	100.50	100.55	100.60	103.30	103.35	103.40	103.45	103.50	103.55	103.60	107.32	107.35	110.35	110.40
Medusae	0.260	0.262	0.346	0.096	0.000	1.150	0.221	0.719	0.167	0.974	1.783	0.259	0.047	0.245	1.027	2.017	1.429	0.547
Siphonophora	0.360	0.219	0.198	0.645	0.225	0.096	0.619	0.629	0.222	0.325	0.094	0.173	1.923	2.896	1.882	0.092	0.507	0.348
Ctenophora	0.000	0.000	0.000	0.000	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pteropoda	0.620	0.568	0.247	0.191	0.270	0.240	0.155	0.000	0.111	0.000	0.094	0.173	1.187	2.503	0.171	0.229	0.184	0.248
Heteropoda	0.000	0.131	0.000	0.000	0.090	0.144	0.133	0.000	0.000	0.000	0.094	0.043	0.047	0.123	0.000	0.046	0.000	0.050
Polychaeta	0.000	0.393	0.049	0.024	0.000	0.048	0.066	0.000	0.000	0.093	0.094	0.043	0.142	0.172	0.000	0.046	0.000	0.000
Cladocera	0.000	0.000	0.000	0.000	0.180	0.000	0.022	0.000	0.000	0.000	0.094		0.047	0.000	0.000	0.046	0.000	0.075
Ostracoda	0.040	1.399	2.420	1.457	1.213	1.485	1.680	0.000	0.583	1.113	2.252	0.692	0.950	1.620	0.000	0.550	1.245	0.820
Copepoda	13.740	23.257	21.975	9.457	18.382	41.533	21.304	69.753	10.639	33.345	39.789	18.162	4.273	12.859	100.791	40.802	18.674	15.627
Amphipoda	0.120	0.612	0.741	0.716	0.494	0.479	0.442	0.000	0.194	0.510	0.845	0.432	0.475	0.417	0.000	0.183	0.138	0.224
Euphausiacea	0.200	6.426	2.074	4.848	18.472	13.701	2.343	24.360	2.000	3.154	22.804	5.405	4.985	8.515	13.690	0.688	1.199	0.745
Decapoda	0.040	0.219	0.000	0.051	0.135	0.099	0.000	2.697	0.000	0.046	0.191	0.389	0.050	0.077	1.369	0.229	0.138	0.050
Chaetognatha	0.980	5.902	2.864	2.316	2.742	5.461	2.431	11.685	6.139	2.319	1.971	4.281	2.516	3.288	13.690	1.926	3.274	2.534
Appendicularia	0.020	1.749	0.000	0.000	1.303	3.737	0.199	0.809	0.083	1.113	1.032	0.216	6.172	1.178	0.000	0.550	0.968	0.373
Doliolida	0.000	0.175	0.642	0.143	0.090	0.335	0.309	0.000	0.000	0.371	0.798	0.346	0.237	0.221	0.000	2.888	0.461	0.298
Salpida	0.000	0.000	0.049	0.669	0.000	0.048	0.110	0.000	0.000	0.046	1.126	0.130	0.285	0.368	0.000	0.000	0.000	0.298
Pyrosomida	0.000	0.000	0.000	0.024	0.000	0.096	0.133	0.000	0.000	0.046	0.000	0.562	0.000	0.123	0.000	0.138	0.000	0.050
Cephalopoda larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046	0.092	0.050
other Mollusca larvae	0.120	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Polychaeta larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.044	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cirripedia larvae	0.000	0.000	0.198	0.000	0.000	0.000	0.022	0.000	0.000	0.093	0.188	0.130	0.047	0.000	0.000	0.000	0.138	0.000
Stomatopoda larvae	0.000	0.044	0.049	0.119	0.539	0.719	0.265	0.000	0.000	0.139	0.000	0.000	0.000	0.000	0.000	0.092	0.000	0.000
Echinodermata larvae	0.020	0.000	0.000	0.000	0.135	6.323	0.066	0.090	0.000	0.046	0.000	0.303	0.047	0.123	0.000	0.000	0.277	0.025
other Invertebrate larvae	0.000	0.131	0.000	0.000	0.045	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pisces larvae	0.080	0.874	0.049	0.239	0.989	0.671	0.088	0.000	0.000	0.557	0.938	0.303	0.190	0.294	0.342	0.138	0.599	0.124
Pisces eggs	0.040	0.612	0.049	0.119	0.045	0.000	0.133	0.000	0.028	2.319	0.282	0.086	0.119	0.491	0.000	0.688	0.184	0.124
Total	16.640	42.973	31.951	21.113	45.393	76.410	30.785	110.742	20.167	46.701	74.466	32.130	23.742	35.512	132.963	51.393	29.510	22.609

Tabla 7. ……IMECOCAL 0004 (continuación)
Table 7. ……IMECOCAL 0004 (continuation)

Taxa	110.45	110.50	110.55	110.60	113.30	113.35	113.40	113.45	113.50	113.55	113.60	117.30	117.35	117.40	117.45	117.50	117.55	117.60
Medusae	0.354	0.491	0.276	0.197	0.202	1.337	1.888	2.462	0.434	0.451	0.140	4.243	1.107	1.163	1.010	0.772	1.032	0.588
Siphonophora	0.684	0.532	0.575	1.403	0.383	0.446	1.789	0.000	0.217	1.163	1.109	0.707	0.111	0.186	0.293	0.552	2.839	1.470
Ctenophora	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.028	0.000	0.009	0.000	0.000	0.035	0.093	0.008	0.003	0.045	0.047
Pteropoda	0.025	0.123	0.161	2.018	0.043	0.050	0.000	0.671	0.130	0.593	0.050	0.000	0.055	0.093	0.033	0.083	0.826	0.588
Heteropoda	0.025	0.000	0.046	0.000	0.011	0.000	0.099	0.000	0.087	0.190	0.101	0.354	0.277	0.140	0.293	0.083	0.103	0.924
Polychaeta	0.000	0.041	0.092	0.000	0.000	0.050	0.000	0.000	0.043	0.000	0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.042
Cladocera	0.000	0.123	0.023	0.049	0.064	0.000	0.099	0.000	0.000	0.095	0.011	0.354	0.000	0.000	0.293	0.028	0.000	0.084
Ostracoda	0.430	1.801	1.770	1.231	0.149	2.031	0.298	1.343	1.084	0.641	0.863	0.000	0.554	0.651	0.293	0.193	1.600	1.176
Copepoda	6.582	21.974	22.115	15.188	7.138	37.152	90.435	38.825	23.978	10.682	6.599	483.359	48.720	38.837	34.020	18.731	28.852	76.934
Amphipoda	0.785	1.187	0.253	0.172	0.000	0.149	0.099	0.895	0.347	0.451	0.303	0.000	0.388	0.326	0.130	0.166	0.310	0.294
Euphausiacea	0.380	5.361	1.563	3.471	0.734	7.034	13.814	41.287	12.054	1.139	0.241	17.680	8.471	24.465	3.682	8.966	5.213	3.990
Decapoda	0.139	0.003	0.000	0.249	0.457	0.000	0.000	0.224	0.087	0.098	0.246	1.768	1.439	1.163	0.815	0.469	0.310	0.129
Chaetognatha	1.152	2.087	0.460	0.714	0.521	4.409	4.870	3.916	2.298	2.825	0.913	13.436	0.554	2.326	1.303	1.379	1.290	0.420
Appendicularia	0.051	0.082	0.046	1.329	1.394	12.632	6.658	5.035	3.079	0.356	0.022	1.414	0.554	1.721	3.193	0.497	0.052	0.000
Doliolida	0.127	0.164	0.115	0.468	0.085	0.050	0.099	0.895	0.390	0.332	0.398	0.000	0.388	0.419	0.130	0.276	0.826	0.126
Salpida	0.203	0.368	0.207	1.083	0.000	0.050	0.000	0.000	0.390	2.801	0.241	0.000	0.443	0.930	0.358	3.007	17.342	10.331
Pyrosomida	0.025	0.205	0.115	0.000	0.000	0.050	0.099	0.000	0.087	0.000	0.190	0.000	0.111	0.047	0.033	0.028	0.361	0.084
Cephalopoda larvae	0.000	0.041	0.000	0.000	0.021	0.050	0.000	0.000	0.000	0.024	0.028	0.359	0.000	0.047	0.065	0.055	0.052	0.000
other Mollusca larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.052	0.000
Polychaeta larvae	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.024	0.039	0.000	0.000	0.047	0.000	0.000	0.000	0.042
Cirripedia larvae	0.051	0.041	0.000	0.098	0.000	0.000	0.000	0.000	0.087	0.166	0.078	0.000	0.000	0.047	0.163	0.110	0.000	0.000
Stomatopoda larvae	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.224	0.000	0.000	0.000	0.707	0.000	0.093	0.000	0.000	0.000	0.000
Echinodermata larvae	0.025	0.164	0.023	0.074	0.351	0.495	2.882	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
other Invertebrate larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pisces larvae	0.101	0.246	0.115	0.369	0.064	0.198	0.199	0.448	0.087	0.119	0.235	0.000	0.055	0.279	0.033	0.083	0.258	0.126
Pisces eggs	0.051	0.000	0.000	0.025	0.021	0.248	0.099	37.930	2.688	0.237	0.022	0.354	0.277	0.372	0.098	0.055	0.000	0.042
Total	11.215	35.031	28.046	28.138	11.638	66.427	123.429	134.182	47.566	22.398	11.899	524.735	63.536	73.442	46.248	35.534	61.361	97.436

Tabla 7. ……IMECOCAL 0004 (continuación)
Table 7. ……IMECOCAL 0004 (continuation)

Taxa	117.65	117.70	117.75	117.80	119.33	120.30	120.35	120.40	120.45	120.50	120.55	120.60	120.65	120.70	120.75	120.80	123.42	123.45
Medusae	0.112	0.000	0.048	0.234	1.490	0.715	4.718	1.455	0.198	0.275	0.145	0.013	0.059	0.000	0.201	0.080	0.300	0.000
Siphonophora	0.449	1.159	0.194	2.052	0.706	0.000	0.000	4.242	1.778	3.739	3.773	0.252	0.714	1.914	2.323	2.826	4.496	14.654
Ctenophora	0.000	0.000	0.000	0.010	0.010	0.089	0.051	0.000	0.019	0.000	0.152	0.013	0.000	0.000	0.000	0.000	0.000	0.000
Pteropoda	0.065	0.213	0.582	0.130	0.078	0.000	0.205	0.364	0.099	0.220	0.726	0.053	0.119	0.057	0.143	0.000	0.300	0.000
Heteropoda	0.349	1.546	76.606	1.740	0.392	0.000	1.436	0.242	8.395	3.684	0.000	0.053	0.059	2.686	2.724	0.199	0.000	0.000
Polychaeta	0.150	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.049	0.165	0.000	0.079	0.000	0.000	0.000	0.040	0.000	0.000
Cladocera	0.000	0.850	0.048	0.104	0.157	0.000	0.205	0.000	0.198	0.055	0.290	0.026	0.595	0.200	0.115	0.080	0.150	0.000
Ostracoda	0.910	0.560	0.970	1.065	0.314	0.715	0.205	0.000	0.296	1.595	0.580	0.225	0.684	0.371	0.860	0.239	0.450	0.598
Copepoda	9.981	4.483	6.158	12.909	70.667	698.637	308.923	64.485	16.296	20.838	23.946	4.132	7.970	6.686	13.419	11.025	74.941	221.907
Amphipoda	0.336	0.077	0.097	0.078	0.157	1.430	0.615	0.000	0.296	0.000	0.000	0.146	0.297	0.057	0.000	0.080	0.000	0.000
Euphausiacea	1.620	3.188	8.339	14.597	39.216	42.905	112.410	14.061	2.420	13.416	11.175	0.781	2.409	5.657	4.645	1.990	11.391	2.991
Decapoda	0.078	0.027	0.000	0.571	1.176	0.000	8.000	1.333	0.000	0.230	1.161	0.040	0.004	0.061	0.201	0.321	0.302	0.598
Chaetognatha	0.984	3.208	5.964	4.026	2.275	1.430	6.769	0.727	2.914	13.086	1.306	1.113	4.818	3.657	6.509	6.726	1.499	0.299
Appendicularia	0.087	2.184	3.539	4.753	1.647	0.715	6.769	9.939	0.395	13.746	0.580	0.252	4.372	5.086	3.240	1.313	2.848	3.589
Doliolida	0.087	0.251	0.194	0.156	0.000	0.000	1.026	0.485	0.049	0.715	1.161	0.053	0.208	0.429	0.832	0.876	0.000	0.000
Salpida	0.087	0.193	0.097	0.182	0.000	317.497	3.487	1.212	1.037	1.814	52.535	0.464	0.030	0.200	0.029	0.199	4.796	0.897
Pyrosomida	0.087	0.077	0.097	0.010	0.078	0.000	0.000	0.000	0.052	0.000	0.583	0.013	0.000	0.000	0.000	0.000	0.000	0.000
Cephalopoda larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.205	0.000	0.000	0.000	0.000	0.013	0.000	0.000	0.029	0.000	0.002	0.299
other Mollusca larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Polychaeta larvae	0.050	0.039	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.145	0.026	0.000	0.000	0.000	0.000	0.300	0.000
Cirripedia larvae	0.100	0.019	0.000	0.000	0.000	0.000	0.615	0.000	0.000	0.000	0.145	0.013	0.030	0.029	0.029	0.000	0.000	0.000
Stomatopoda larvae	0.000	0.019	0.000	0.000	0.392	5.006	1.641	0.364	0.049	0.000	0.145	0.000	0.000	0.000	0.000	0.002	0.150	0.000
Echinodermata larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
other Invertebrate larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pisces larvae	0.075	0.058	0.145	0.234	0.000	0.000	0.000	0.242	0.099	0.715	0.726	0.053	0.119	0.343	0.516	0.756	0.300	0.299
Pisces eggs	0.324	1.391	0.873	0.390	0.471	2.145	0.615	1.333	0.049	0.165	0.145	0.066	0.535	0.314	0.201	0.080	1.948	2.393
Total	15.931	19.563	103.952	43.240	119.225	1071.28	457.897	100.485	34.688	74.457	99.420	7.881	23.022	27.746	36.014	26.831	104.173	248.523

Tabla 7. ……IMECOCAL 0004 (continuación)
Table 7. ……IMECOCAL 0004 (continuation)

Taxa	130.30	130.35	130.40	130.50	130.60	133.60
Medusae	1.231	0.294	0.788	0.126	0.034	0.040
Siphonophora	22.154	4.929	2.954	1.982	0.594	0.561
Ctenophora	0.131	0.184	0.197	0.000	0.000	0.020
Pteropoda	0.246	0.294	0.295	0.108	0.069	0.481
Heteropoda	0.000	0.000	0.000	0.180	0.800	0.644
Polychaeta	0.000	0.074	0.000	0.018	0.000	0.000
Cladocera	0.000	2.280	3.348	0.090	0.000	0.000
Ostracoda	0.000	0.883	0.985	0.559	0.229	0.361
Copepoda	165.169	42.887	50.708	7.045	2.446	8.742
Amphipoda	0.246	0.441	0.591	0.180	0.091	0.321
Euphausiacea	5.908	10.520	31.902	0.991	0.754	5.855
Decapoda	0.246	0.956	2.363	0.345	0.080	0.241
Chaetognatha	3.938	1.913	2.560	4.234	1.006	2.246
Appendicularia	3.692	3.752	3.840	1.495	0.080	0.080
Doliolida	0.492	0.589	0.689	0.793	0.114	0.080
Salpida	7.631	0.000	21.957	0.649	0.000	3.930
Pyrosomida	0.000	0.152	0.098	0.000	0.000	0.003
Cephalopoda larvae	0.000	0.002	0.000	0.000	0.000	0.000
other Mollusca larvae	0.000	0.000	0.000	0.000	0.000	0.000
Polychaeta larvae	0.000	0.221	0.000	0.000	0.000	0.000
Cirripedia larvae	0.000	0.000	0.000	0.000	0.000	0.000
Stomatopoda larvae	0.000	0.074	0.000	0.000	0.006	0.040
Echinodermata larvae	0.000	0.000	0.000	0.000	0.000	0.000
other Invertebrate larvae	0.000	0.000	0.000	0.000	0.000	0.000
Pisces larvae	0.000	0.147	0.492	0.811	0.183	0.561
Pisces eggs	0.246	0.147	0.591	0.036	2.800	0.000
Total	211.331	70.738	124.357	19.642	9.286	24.206

Tabla 8. Abundancia (ind/m^3) de grupos de zooplancton en las estaciones del crucero IMECOCAL 0007.
Table 8. Abundance (ind/m^3) of zooplankton groups in stations of the IMECOCAL cruise 0007.

Taxa	100.30	100.35	100.40	100.45	100.50	100.55	100.60	103.30	103.35	103.40	103.45	103.50	103.55	103.60	107.32	107.35	107.40	107.45
Medusae	0.173	0.349	0.439	0.732	0.146	2.000	0.886	0.000	0.157	0.663	0.207	0.848	0.042	0.388	0.427	1.191	0.182	0.003
Siphonophora	0.000	1.233	1.427	1.014	0.537	0.600	0.931	19.592	0.105	0.453	0.397	0.689	0.253	0.544	0.000	0.556	0.327	0.251
Ctenophora	0.000	0.000	0.000	0.000	0.006	0.013	0.006	0.041	0.011	0.000	0.002	0.007	0.000	0.029	0.000	0.002	0.005	0.003
Pteropoda	0.347	0.605	0.345	0.732	2.146	0.706	0.399	0.000	0.471	0.065	0.500	0.424	0.379	0.599	0.073	1.112	0.036	0.479
Heteropoda	0.173	0.349	0.314	0.254	0.341	0.800	0.222	0.000	0.540	0.263	1.328	0.212	0.168	0.155	0.000	0.476	0.145	0.114
Polychaeta	0.000	0.140	0.267	0.169	0.049	0.500	0.177	0.000	0.000	0.000	0.017	0.053	0.042	0.026	0.000	0.079	0.073	0.000
Cladocera	0.000	0.000	0.000	0.000	1.317	0.700	0.000	0.000	0.000	0.000	0.086	0.000	0.084	0.078	0.000	0.000	0.000	0.000
Ostracoda	0.000	3.884	2.416	4.056	0.878	1.600	1.640	0.000	0.261	0.048	0.810	0.477	0.716	0.647	0.071	1.588	0.327	0.570
Copepoda	8.672	7.884	4.251	7.437	34.976	76.100	10.593	344.163	5.124	2.683	15.069	30.517	11.368	9.631	51.342	69.161	15.164	6.724
Amphipoda	0.347	1.884	1.082	2.169	1.805	2.300	0.975	0.000	0.680	0.339	1.000	2.013	2.147	2.356	0.640	3.017	0.473	1.231
Euphausiacea	70.244	1.907	1.631	0.958	13.707	7.800	1.507	94.041	1.551	2.408	0.724	5.086	0.800	0.673	6.827	8.655	0.945	0.957
Decapoda	0.000	0.116	0.267	0.197	0.098	0.700	0.266	29.714	0.122	0.000	0.155	0.106	0.042	0.078	1.067	0.159	0.109	0.023
Chaetognatha	7.978	0.837	1.678	5.127	2.585	4.600	2.792	29.714	0.401	0.178	2.034	0.795	2.063	2.097	7.111	1.112	2.182	1.983
Appendicularia	0.347	0.326	1.098	2.451	4.634	3.400	1.950	12.082	2.092	0.679	0.190	1.430	13.684	5.023	0.640	1.588	0.436	5.789
Doliolida	0.000	0.070	0.298	0.254	1.805	0.200	5.008	0.000	0.087	0.048	0.138	0.159	1.011	0.492	0.000	7.226	0.145	0.137
Salpida	0.000	0.023	0.125	0.028	0.976	0.500	0.044	0.000	2.004	0.566	0.000	0.000	0.000	0.000	0.996	0.159	1.382	0.068
Pyrosomida	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.034	0.000	0.000	0.003	0.000	0.000	0.000	0.000
Brachiopoda larvae	0.000	0.000	0.016	0.000	0.000	0.000	0.044	0.000	0.000	0.000	0.034	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cephalopoda larvae	0.000	0.023	0.016	0.000	0.000	0.100	0.044	0.000	0.000	0.016	0.000	0.000	0.003	0.026	0.000	0.002	0.000	0.023
other Mollusca larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.052	0.000	0.000	0.000	0.000	0.000	0.073	0.000
Polychaeta larvae	0.000	0.047	0.220	0.085	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.053	0.000	0.000	0.000	0.079	0.073	0.000
Cirripedia larvae	0.000	0.977	0.424	0.310	0.000	0.000	0.089	0.000	0.000	0.000	0.000	0.053	0.042	0.000	0.000	0.079	0.000	0.182
Stomatopoda larvae	0.173	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.016	0.000	0.053	0.000	0.000	0.000	0.000	0.000	0.000
Pisces larvae	0.000	0.488	0.549	0.394	0.195	0.100	0.044	0.000	0.105	0.016	0.017	0.000	0.042	0.104	0.000	0.174	0.000	0.068
Pisces eggs	0.000	0.000	0.094	0.141	3.805	0.200	0.089	0.000	0.017	0.016	0.276	0.371	0.211	0.129	0.000	0.000	0.255	0.046
Total	88.455	21.140	16.957	26.507	70.006	102.919	27.706	529.347	13.745	8.457	23.071	43.344	33.097	23.078	69.193	96.417	22.332	18.650

Tabla 8. ……IMECOCAL 0007 (continuación)
Table 8. ……IMECOCAL 0007 (continuation)

Taxa	107.50	107.55	107.60	110.35	110.40	110.45	110.50	110.55	110.60	113.30	113.35	117.30	117.35	117.40	117.45	117.50	117.55	117.60
Medusae	0.058	0.087	0.183	0.094	0.026	0.120	0.080	0.104	0.110	0.000	0.107	0.000	1.489	1.266	0.000	0.053	0.047	0.067
Siphonophora	0.749	0.957	1.618	2.035	0.519	10.908	3.309	3.242	0.717	20.135	1.128	0.440	7.915	2.531	0.934	1.070	1.045	0.990
Ctenophora	0.026	0.058	0.000	0.000	0.000	0.000	0.002	0.002	0.001	0.000	0.000	0.000	0.005	0.006	0.000	0.000	0.000	0.000
Pteropoda	0.141	0.203	0.366	0.783	0.213	1.138	0.436	0.015	0.230	0.000	0.111	0.000	0.213	0.000	0.000	0.175	0.063	0.050
Heteropoda	0.081	0.261	0.305	0.110	0.229	0.809	0.436	0.119	0.147	0.000	0.000	0.000	0.128	0.271	0.078	0.123	0.071	0.184
Polychaeta	0.012	0.000	0.031	0.047	0.016	0.017	0.000	0.030	0.028	0.000	0.000	0.000	0.000	0.090	0.000	0.018	0.031	0.101
Cladocera	0.081	0.000	0.000	0.031	0.010	0.000	0.000	0.000	0.018	0.000	0.000	0.000	0.000	0.045	0.000	0.000	0.000	0.000
Ostracoda	1.614	2.754	3.664	0.438	0.561	0.499	0.755	0.401	0.883	2.876	0.000	0.000	0.170	1.085	1.090	0.807	0.338	0.553
Copepoda	2.651	8.203	7.664	1.941	1.657	2.563	5.671	3.375	1.775	1556.135	41.020	36.220	13.191	31.051	54.190	3.228	2.892	5.099
Amphipoda	0.369	2.957	0.824	0.767	0.722	0.877	0.771	1.383	1.113	0.000	0.805	0.176	1.149	1.266	0.856	0.825	0.990	0.637
Euphausiacea	0.392	2.928	3.939	1.472	0.379	1.617	2.699	0.862	0.432	35.955	1.718	5.407	4.681	8.181	22.034	1.263	0.039	0.335
Decapoda	0.069	0.033	0.155	0.282	0.109	0.123	0.257	0.032	0.469	1.438	0.430	0.264	0.298	0.090	0.467	0.105	0.236	0.036
Chaetognatha	0.888	0.783	1.435	0.736	0.722	0.671	0.450	0.193	0.405	11.506	0.644	0.440	0.340	1.446	0.779	4.386	1.972	3.103
Appendicularia	2.086	0.899	0.336	1.691	0.135	0.465	0.161	0.074	0.377	0.000	2.685	4.044	0.638	0.814	1.791	0.281	0.000	0.151
Doliolida	0.046	0.870	0.305	0.110	0.047	0.069	0.032	0.015	0.736	0.000	0.000	0.044	1.234	0.000	0.000	0.018	0.079	0.084
Salpida	0.000	0.000	0.000	0.063	0.000	0.120	0.064	0.000	0.000	0.000	0.054	0.000	0.085	0.000	0.000	0.000	0.000	0.034
Pyrosomida	0.035	0.029	0.000	0.016	0.000	0.000	0.002	0.000	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Brachiopoda larvae	0.000	0.000	0.000	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017
Cephalopoda larvae	0.000	0.000	0.000	0.000	0.005	0.052	0.016	0.015	0.009	0.000	0.000	0.000	0.000	0.090	0.080	0.018	0.008	0.000
other Mollusca larvae	0.000	0.000	0.000	0.000	0.005	0.034	0.000	0.015	0.000	0.000	0.000	0.000	0.000	0.045	0.000	0.000	0.000	0.000
Polychaeta larvae	0.046	0.000	0.000	0.000	0.005	0.017	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.024	0.000
Cirripedia larvae	0.104	0.000	0.275	0.016	0.608	0.310	0.257	0.119	0.193	0.000	0.000	0.000	0.000	0.000	0.000	0.281	0.361	0.168
Stomatopoda larvae	0.000	0.000	0.000	0.016	0.016	0.017	0.000	0.015	0.000	0.000	0.054	0.176	0.085	0.045	0.078	0.000	0.000	0.000
Pisces larvae	0.058	0.174	0.305	0.141	0.068	0.465	0.145	0.312	0.092	0.000	0.055	0.000	0.085	0.090	0.078	0.211	0.212	0.369
Pisces eggs	0.046	0.145	0.153	0.110	0.026	0.000	0.016	0.000	0.028	0.000	0.161	0.440	0.255	0.136	0.234	0.053	0.102	0.168
Total	9.550	21.337	21.559	10.912	6.078	20.890	15.574	10.323	7.771	1628.045	48.971	47.648	31.963	48.548	82.689	12.930	8.511	12.145

Tabla 8. ……IMECOCAL 0007 (continuación)
Table 8. ……IMECOCAL 0007 (continuation)

Taxa	117.65	117.70	117.75	117.80	119.33	120.30	120.35	120.40	120.45	120.50	120.55	120.60	120.65	120.70	120.75	120.80	123.42	123.45
Medusae	0.043	0.000	0.246	0.332	2.876	6.559	0.271	0.508	0.000	0.115	9.592	0.196	0.304	0.029	0.686	0.525	0.000	0.235
Siphonophora	0.737	1.393	0.690	1.118	0.360	2.385	0.271	5.587	0.902	0.344	0.857	0.889	3.924	7.971	8.178	1.966	0.000	0.706
Ctenophora	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.005	0.001	0.004	0.000	0.000	0.002	0.000	0.004
Pteropoda	0.043	0.078	0.115	0.140	2.876	0.000	1.175	0.000	0.200	0.000	0.209	0.240	0.169	0.586	0.229	0.271	0.003	0.147
Heteropoda	0.065	0.344	0.296	0.349	1.438	0.000	2.441	0.000	0.367	0.918	0.286	0.364	0.677	0.964	0.178	0.237	0.000	0.294
Polychaeta	0.022	0.047	0.016	0.052	0.000	0.000	0.000	0.000	0.134	0.000	0.000	0.027	0.000	0.000	0.051	0.068	0.000	0.000
Cladocera	0.108	0.031	0.016	0.000	0.000	0.000	0.000	0.508	0.401	0.344	0.000	0.000	0.000	0.029	0.025	0.034	0.000	0.147
Ostracoda	1.106	1.613	1.035	0.629	0.000	0.000	0.000	0.000	0.401	0.344	2.000	1.360	0.507	1.577	1.016	1.220	0.694	1.676
Copepoda	8.867	7.327	4.304	5.642	412.045	118.261	112.452	373.333	24.317	75.355	20.000	0.862	5.108	9.839	4.851	6.000	372.900	8.559
Amphipoda	1.149	0.830	0.805	0.838	0.360	0.000	0.000	0.000	0.134	1.032	2.776	0.729	1.218	1.693	0.584	0.542	0.000	1.588
Euphausiacea	1.518	1.346	1.232	1.572	117.213	44.522	24.497	8.127	5.545	16.172	3.673	0.169	1.049	2.745	0.914	0.729	9.366	4.029
Decapoda	0.087	0.141	0.033	0.332	1.079	0.994	1.266	3.048	0.167	0.803	0.247	0.089	0.203	0.321	0.083	0.237	0.347	0.176
Chaetognatha	2.255	2.380	1.856	3.983	4.674	6.559	2.531	4.571	1.670	2.753	1.592	1.333	4.330	2.861	2.895	5.288	0.000	1.382
Appendicularia	0.260	0.078	0.263	0.087	1.438	9.739	0.542	6.603	3.307	0.688	0.531	0.000	0.406	0.000	0.762	1.898	2.428	0.088
Doliolida	0.087	0.078	0.066	0.157	0.000	0.398	0.000	0.000	0.000	0.000	0.898	0.036	0.338	0.117	0.483	0.441	0.347	0.059
Salpida	0.130	0.047	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.041	0.000	0.000	0.029	0.000	0.136	0.000	0.000
Pyrosomida	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.000	0.000	0.000	0.000	0.000	0.029
Brachiopoda larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cephalopoda larvae	0.022	0.000	0.000	0.052	0.000	0.000	0.000	0.000	0.000	0.116	0.000	0.000	0.000	0.058	0.000	0.000	0.000	0.029
other Mollusca larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.025	0.000	0.000	0.000
Polychaeta larvae	0.000	0.031	0.016	0.017	0.000	0.000	0.000	0.000	0.067	0.000	0.000	0.080	0.203	0.117	0.051	0.102	0.000	0.059
Cirripedia larvae	0.195	0.266	0.148	0.227	0.000	0.000	0.000	0.508	0.000	0.115	0.082	0.942	0.101	0.175	0.203	0.136	0.000	0.353
Stomatopoda larvae	0.000	0.000	0.000	0.000	0.360	0.000	0.000	0.000	0.000	0.229	0.000	0.018	0.034	0.088	0.003	0.000	0.014	0.000
Pisces larvae	0.672	1.080	0.493	0.245	0.000	0.000	0.362	0.508	0.334	0.688	0.408	0.142	0.034	0.204	0.305	0.220	0.000	0.176
Pisces eggs	0.022	0.047	0.049	0.052	1.079	0.994	3.345	0.000	0.067	0.000	0.000	0.089	0.000	0.000	0.000	0.000	0.000	0.000
Total	17.393	17.159	11.680	15.843	545.798	190.410	149.153	403.302	38.017	100.016	43.196	7.574	18.609	29.403	21.521	20.053	386.098	19.739

Tabla 8. ……IMECOCAL 0007 (continuación)
Table 8. ……IMECOCAL 0007 (continuation)

Taxa	123.50	123.55	123.60	127.35	127.40	127.45	127.50	127.55	127.60	130.30	130.35	130.40	130.45	130.50	130.55	130.60	133.25	133.30
Medusae	1.256	0.118	0.402	0.000	0.000	0.014	0.080	0.000	0.036	0.000	0.223	0.325	1.193	0.234	0.154	0.257	0.000	0.000
Siphonophora	7.596	5.751	3.746	0.000	0.957	0.605	2.575	1.617	0.325	0.000	0.894	1.020	1.789	2.301	0.769	0.455	0.000	0.092
Ctenophora	0.000	0.003	0.003	0.000	0.000	0.002	0.000	0.003	0.002	0.000	0.000	0.006	0.004	0.002	0.013	0.012	0.000	0.000
Pteropoda	0.179	0.071	0.169	0.000	0.718	0.220	0.338	0.307	0.084	0.000	0.056	0.278	0.099	0.252	0.095	0.044	0.000	0.000
Heteropoda	0.419	0.355	0.169	1.552	0.000	0.179	0.451	3.568	0.289	0.000	0.223	0.186	0.199	0.629	0.284	0.139	0.354	0.037
Polychaeta	0.060	0.000	0.000	0.000	0.000	0.014	0.032	0.028	0.000	0.000	0.000	0.000	0.099	0.036	0.059	0.037	0.000	0.000
Cladocera	0.000	0.000	0.000	0.000	0.239	0.192	0.000	0.000	0.000	0.000	0.000	0.464	0.133	0.036	0.000	0.000	0.000	0.000
Ostracoda	1.675	0.852	2.074	0.000	0.239	0.481	0.869	1.700	1.422	0.000	0.391	0.742	0.298	1.276	1.361	0.859	0.000	0.018
Copepoda	11.185	5.231	5.206	1860.267	113.406	2.227	5.489	6.857	4.578	779.077	24.572	32.464	21.896	3.074	3.574	1.894	115.359	3.108
Amphipoda	2.632	1.231	0.423	0.000	0.000	0.687	0.225	0.195	0.048	0.000	0.782	0.278	0.464	0.360	0.036	0.037	0.000	0.202
Euphausiacea	3.708	0.805	1.270	26.376	5.742	0.811	0.306	1.672	1.614	205.538	8.712	5.936	1.789	2.607	0.462	0.602	0.000	0.846
Decapoda	0.419	0.213	0.132	0.000	0.004	0.261	0.161	0.362	0.160	1.231	0.168	0.093	0.166	0.090	0.047	0.059	0.177	0.055
Chaetognatha	5.921	0.947	2.307	1.552	4.785	2.680	1.513	3.568	0.410	3.692	6.031	3.014	3.776	0.989	1.763	1.028	0.265	6.345
Appendicularia	1.136	0.686	4.635	0.000	2.393	1.416	0.837	0.139	0.072	0.000	0.614	1.577	0.232	0.216	0.000	0.000	0.000	0.000
Doliolida	0.299	0.308	0.106	0.000	0.000	0.096	0.306	0.474	0.120	0.000	0.056	1.020	0.331	0.180	0.710	0.132	0.000	0.000
Salpida	0.120	0.095	0.466	0.000	0.000	0.000	0.499	0.000	0.000	0.000	0.000	0.046	0.000	0.054	0.036	0.037	0.000	0.000
Pyrosomida	0.060	0.000	0.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.007	0.000	0.000
Brachiopoda larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.000	0.000
Cephalopoda larvae	0.120	0.000	0.000	0.000	0.000	0.014	0.016	0.084	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.000	0.000
other Mollusca larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Polychaeta larvae	0.060	0.000	0.000	0.000	0.000	0.027	0.016	0.000	0.000	0.000	0.223	0.000	0.066	0.000	0.012	0.022	0.000	0.018
Cirripedia larvae	0.299	0.000	0.106	0.000	0.000	0.014	0.032	0.056	0.012	0.000	0.000	0.000	0.000	0.036	0.000	0.000	0.000	0.000
Stomatopoda larvae	0.000	0.000	0.042	0.000	0.000	0.000	0.000	0.139	0.000	0.000	0.000	0.000	0.033	0.000	0.012	0.015	0.000	0.018
Pisces larvae	0.479	0.118	0.042	0.000	0.718	0.069	0.209	1.979	0.253	0.000	0.112	0.000	0.166	0.647	0.840	0.389	0.088	0.018
Pisces eggs	0.000	0.000	0.000	0.000	0.000	0.041	0.032	0.000	0.193	0.000	0.000	0.000	0.000	0.018	0.260	0.132	0.088	0.000
Total	37.622	16.784	21.341	1889.745	129.200	10.050	13.988	22.749	9.631	989.538	43.058	47.449	32.733	13.036	10.499	6.170	116.331	10.759

Tabla 8. ……IMECOCAL 0007 (continuación)
Table 8. ……IMECOCAL 0007 (continuation)

Taxa	133.35	133.40	133.45	133.50	133.60	137.25	137.30	137.35	137.40
Medusae	1.623	0.112	1.204	0.018	0.027	0.000	0.074	2.382	0.710
Siphonophora	4.673	1.229	2.753	0.470	1.581	0.105	0.015	0.702	0.645
Ctenophora	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pteropoda	0.260	0.335	0.000	0.023	0.027	0.000	0.000	0.031	0.086
Heteropoda	0.000	0.558	0.172	0.097	0.027	0.000	0.164	0.214	0.065
Polychaeta	0.065	0.000	0.000	0.035	0.000	0.000	0.015	0.031	0.086
Cladocera	0.130	0.000	0.000	0.062	0.054	0.000	0.000	0.000	0.022
Ostracoda	2.142	1.340	1.720	0.129	0.590	0.000	0.238	0.641	0.860
Copepoda	67.700	50.820	103.054	0.795	8.978	47.059	7.568	18.809	13.484
Amphipoda	0.584	0.000	0.172	0.117	1.072	0.000	0.045	0.397	0.280
Euphausiacea	9.996	12.621	24.774	0.021	0.616	20.706	3.903	6.626	2.086
Decapoda	0.260	0.342	0.688	0.064	0.509	0.105	0.121	0.156	0.495
Chaetognatha	7.010	4.691	7.914	0.542	6.673	1.673	1.743	3.084	3.161
Appendicularia	0.909	1.452	1.892	0.049	1.581	0.000	0.000	0.092	0.108
Doliolida	0.519	0.112	0.860	0.072	0.348	0.000	0.000	0.153	0.086
Salpida	0.065	0.000	0.172	0.006	0.080	0.000	0.000	0.061	0.022
Pyrosomida	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Brachiopoda larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cephalopoda larvae	0.000	0.000	0.000	0.012	0.000	0.000	0.002	0.002	0.000
other Mollusca larvae	0.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Polychaeta larvae	0.000	0.000	0.172	0.131	0.000	0.000	0.030	0.061	0.043
Cirripedia larvae	0.065	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.022
Stomatopoda larvae	0.065	0.112	0.172	0.000	0.000	0.000	0.030	0.034	0.022
Pisces larvae	0.909	0.335	1.548	0.062	0.161	0.000	0.104	0.336	0.108
Pisces eggs	0.260	0.112	0.000	0.039	0.134	0.000	0.015	0.031	0.043
Total	97.298	74.171	147.269	2.745	22.459	69.647	14.067	33.842	22.430

Tabla 9. Abundancia (ind/m^3) de grupos de zooplancton en las estaciones del crucero IMECOCAL 0010.
Table 9. Abundance (ind/m^3) of zooplankton groups in stations of the IMECOCAL cruise 0010.

Taxa	100.30	100.35	100.40	100.45	100.50	100.55	100.60	103.30	103.35	103.40	103.45	103.50	103.55	103.60	107.32	107.35	107.40	107.45
Medusae	0.000	0.000	0.296	0.444	0.899	0.017	0.071	0.000	0.040	0.277	0.472	0.032	0.018	0.075	0.067	0.374	0.186	0.356
Siphonophora	0.055	0.103	0.296	0.185	4.697	1.381	5.770	0.103	5.946	0.154	0.724	2.227	1.680	0.870	0.381	0.650	1.424	1.639
Ctenophora	0.000	0.000	0.000	0.005	0.003	0.000	0.000	0.000	0.000	0.004	0.004	0.000	0.000	0.000	0.003	0.002	0.000	0.004
Pteropoda	0.000	0.000	0.230	0.037	0.517	0.236	0.319	0.052	0.148	0.708	0.882	0.095	0.187	0.259	0.090	0.138	0.402	0.535
Heteropoda	0.000	0.171	0.197	0.519	0.449	0.185	0.602	0.062	0.178	0.154	0.252	0.111	0.116	0.109	0.000	0.000	0.170	1.782
Polychaeta	0.000	0.000	0.000	0.000	0.000	0.118	0.000	0.000	0.040	0.031	0.063	0.032	0.044	0.050	0.000	0.020	0.015	0.036
Cladocera	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.000	0.036
Ostracoda	0.000	0.444	1.971	0.630	0.180	2.880	2.655	0.052	0.316	1.138	2.520	1.113	0.764	1.322	0.224	0.099	2.043	1.604
Copepoda	2.192	10.154	24.509	15.630	4.584	7.293	8.283	5.711	2.390	17.385	18.457	5.948	4.213	3.397	13.894	12.749	3.683	19.136
Amphipoda	0.041	1.812	1.018	0.148	0.517	0.606	1.133	0.052	0.217	1.077	1.291	0.954	0.453	0.569	0.403	0.355	0.603	2.209
Euphausiacea	2.370	11.726	4.764	13.704	1.843	2.476	3.965	0.680	0.790	17.785	2.835	1.018	0.302	0.552	9.479	6.424	1.130	5.523
Decapoda	0.014	0.000	0.168	0.148	0.070	0.219	0.460	1.155	0.198	0.371	0.067	0.211	0.364	0.310	0.739	0.591	0.193	0.535
Chaetognatha	4.932	0.068	2.760	4.111	0.899	3.503	3.221	2.041	0.711	3.385	1.323	1.352	1.564	1.782	2.218	1.123	1.687	6.699
Appendicularia	0.000	0.000	3.121	1.185	0.674	1.432	1.097	0.062	0.000	0.031	0.283	0.493	0.480	0.736	4.101	2.207	0.248	1.212
Doliolida	0.000	0.000	0.000	0.037	0.022	0.152	0.389	0.021	0.059	0.154	0.031	0.095	0.124	0.109	0.000	0.000	0.015	0.143
Salpida	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.010	0.099	0.000	0.000	0.000	0.000	0.126	0.006	0.000	0.000	0.036
Pyrosomida	0.000	0.000	0.000	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Brachiopoda larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.000
Cephalopoda larvae	0.000	0.000	0.000	0.000	0.022	0.000	0.035	0.000	0.000	0.000	0.000	0.032	0.071	0.008	0.000	0.000	0.000	0.038
other Mollusca larvae	0.014	0.034	0.000	0.037	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.090	0.059	0.000	0.036
Polychaeta larvae	0.000	0.000	0.033	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.000	0.000	0.000	0.000	0.107
Cirripedia larvae	0.000	0.000	0.066	0.815	0.270	0.067	0.106	0.010	0.079	0.154	0.189	0.048	0.018	0.033	0.000	0.000	0.108	0.321
Stomatopoda larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.022	0.000	0.000	0.000
Echinodermata larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Other invertebrate larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pisces larvae	0.027	0.068	0.133	0.076	0.022	0.168	0.035	0.062	0.000	0.154	0.128	0.064	0.142	0.268	0.000	0.079	0.124	0.356
Pisces eggs	0.014	0.000	0.066	0.000	0.045	0.168	0.177	0.072	0.000	0.062	0.283	0.191	0.116	0.117	0.717	0.020	0.000	0.036
Total	9.658	24.581	39.628	37.748	15.758	20.918	28.334	10.165	11.210	43.021	29.805	14.016	10.667	10.695	32.434	24.909	12.046	42.376

Tabla 9. ……IMECOCAL 0010 (continuación)
Table 9. ……IMECOCAL 0010 (continuation)

Taxa	107.50	107.55	107.60	110.35	110.40	110.45	110.50	110.55	110.60	113.30	113.35	113.40	113.45	113.50	113.55	113.60	117.60	117.65
Medusae	0.158	0.125	1.741	0.440	0.174	0.110	0.207	0.186	0.274	0.787	0.488	0.291	0.090	0.483	0.066	0.123	0.759	0.521
Siphonophora	1.704	0.570	1.415	0.640	0.158	0.607	1.902	4.103	1.436	2.623	0.906	0.530	1.120	2.479	2.557	4.460	1.034	2.084
Ctenophora	0.004	0.002	0.000	0.005	0.003	0.000	0.005	0.042	0.004	0.000	0.004	0.000	0.000	0.004	0.004	0.000	0.000	0.000
Pteropoda	0.032	0.365	0.005	0.440	0.068	0.241	0.372	0.671	0.308	2.361	0.458	0.222	0.149	0.032	0.525	0.041	0.244	0.744
Heteropoda	0.410	0.445	0.544	0.200	0.204	0.644	0.537	0.410	0.034	1.574	0.383	0.872	0.451	0.708	0.525	0.000	0.276	1.712
Polychaeta	0.063	0.018	0.073	0.160	0.015	0.018	0.041	0.000	0.103	0.000	0.070	0.051	0.018	0.000	0.066	0.082	0.034	0.149
Cladocera	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.032	0.098	0.041	0.000	0.074
Ostracoda	1.673	0.232	0.218	1.280	0.279	0.497	0.703	2.275	2.017	0.787	2.475	0.342	0.199	0.290	2.131	2.455	1.586	2.158
Copepoda	22.848	6.539	12.880	13.280	2.543	6.731	25.178	25.324	19.350	104.918	18.161	1.863	2.167	6.503	14.131	21.197	12.862	28.577
Amphipoda	1.767	1.176	0.000	2.840	0.543	0.497	2.191	2.573	1.128	0.000	0.802	0.752	0.524	0.901	0.852	1.105	0.172	0.521
Euphausiacea	5.081	1.728	7.873	2.520	1.608	1.048	6.491	7.571	3.009	106.230	5.682	2.462	0.524	1.191	2.033	5.974	2.448	6.326
Decapoda	0.316	0.125	0.181	0.040	0.038	0.239	0.271	0.191	0.105	2.361	0.070	0.143	0.081	0.334	0.270	0.130	0.052	0.363
Chaetognatha	2.304	1.514	0.798	1.080	0.755	2.336	3.514	2.238	2.256	7.344	3.939	1.641	3.702	8.885	4.656	4.092	12.034	21.433
Appendicularia	0.221	0.018	0.943	1.120	0.347	0.313	0.703	1.119	1.709	0.262	0.662	0.120	0.271	0.354	0.590	1.678	1.276	1.563
Doliolida	0.379	0.018	0.036	0.000	0.015	0.055	0.124	0.075	0.103	0.000	0.070	0.017	0.054	0.032	0.623	0.164	0.034	0.149
Salpida	0.022	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.035	0.017	0.018	0.028	0.066	0.005	0.032	0.000
Pyrosomida	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000
Brachiopoda larvae	0.000	0.000	0.000	0.040	0.008	0.000	0.041	0.000	0.000	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.000
Cephalopoda larvae	0.002	0.000	0.002	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.032	0.000	0.000	0.000	0.223
other Mollusca larvae	0.000	0.018	0.073	0.000	0.000	0.018	0.083	0.000	0.034	0.000	0.000	0.000	0.018	0.032	0.000	0.000	0.207	0.074
Polychaeta larvae	0.063	0.000	0.036	0.000	0.023	0.000	0.124	0.000	0.000	0.000	0.035	0.171	0.072	0.129	0.098	0.000	0.000	0.074
Cirripedia larvae	0.095	0.053	0.073	0.040	0.000	0.018	0.165	0.149	0.103	0.000	0.070	0.017	0.054	0.097	0.033	0.041	0.069	0.000
Stomatopoda larvae	0.002	0.018	0.000	0.000	0.008	0.000	0.000	0.037	0.000	3.672	0.070	0.017	0.000	0.064	0.000	0.000	0.000	0.074
Echinodermata larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Other invertebrate larvae	0.000	0.018	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.450	0.000	0.000
Pisces larvae	0.442	0.143	0.039	0.040	0.015	0.074	0.041	0.336	0.105	0.525	0.035	0.017	0.018	0.193	0.230	0.041	0.069	0.595
Pisces eggs	0.000	0.018	0.000	0.080	0.000	0.018	0.000	0.075	0.000	7.082	0.000	0.034	0.090	0.000	0.098	0.082	0.069	0.074
Total	37.584	13.143	26.930	24.245	6.810	13.464	42.700	47.378	32.077	240.525	34.414	9.596	9.639	22.807	29.652	42.161	33.259	67.488

Tabla 9. ……IMECOCAL 0010 (continuación)
Table 9. ……IMECOCAL 0010 (continuation)

Taxa	117.70	117.75	117.80	120.30	120.35	120.40	120.45	120.50	120.55	120.60	120.65	120.70	120.75	120.80	123.42	123.45	123.50	123.55
Medusae	0.036	0.376	0.030	0.136	1.732	0.416	0.583	1.945	0.546	0.575	0.314	0.954	0.624	2.321	0.220	0.000	0.600	0.748
Siphonophora	2.843	1.202	0.889	1.682	2.140	0.831	1.126	3.357	0.938	0.643	1.101	1.474	1.405	1.630	0.626	0.545	0.899	1.159
Ctenophora	0.005	0.000	0.000	0.006	0.000	0.000	0.005	0.004	0.017	0.000	0.000	0.005	0.000	0.000	0.006	0.002	0.000	0.005
Pteropoda	0.692	1.202	0.474	0.500	0.611	0.208	0.311	0.163	0.171	0.643	0.629	0.130	0.624	1.040	0.271	0.163	0.375	0.449
Heteropoda	0.146	0.263	0.178	0.545	0.408	0.416	0.816	0.251	0.324	0.406	0.039	0.694	0.702	0.741	0.609	0.234	0.150	0.299
Polychaeta	0.000	0.038	0.030	0.000	0.000	0.000	0.000	0.094	0.017	0.000	0.000	0.043	0.078	0.000	0.017	0.058	0.000	0.000
Cladocera	0.000	0.000	0.059	0.000	0.000	0.000	0.000	0.000	0.000	0.101	0.197	0.260	0.000	0.049	0.000	0.039	0.075	0.000
Ostracoda	2.989	2.178	1.304	0.000	0.102	0.000	1.825	0.345	0.648	3.552	2.084	2.298	0.468	1.086	0.778	1.460	1.574	0.897
Copepoda	14.542	15.061	10.904	24.864	21.096	40.519	11.767	9.725	3.019	5.108	11.243	11.751	11.395	17.185	5.108	2.219	5.808	8.860
Amphipoda	0.620	0.563	0.859	0.182	0.102	0.623	0.194	0.690	0.426	1.015	0.747	0.780	1.756	3.160	0.355	0.350	0.674	0.374
Euphausiacea	2.041	2.967	0.622	17.182	56.459	87.688	7.767	3.451	1.535	2.097	2.713	2.688	1.912	5.383	2.402	1.090	1.274	3.664
Decapoda	0.294	0.190	0.237	1.136	0.713	1.883	0.578	0.327	0.107	0.243	0.197	0.241	0.171	0.133	0.326	0.173	0.251	0.196
Chaetognatha	4.702	7.775	7.319	3.773	7.134	7.481	7.573	3.545	3.753	5.345	7.902	7.371	4.995	5.778	7.763	6.482	7.569	4.935
Appendicularia	1.421	0.789	0.474	0.364	2.548	3.948	0.311	0.125	0.921	2.875	1.887	4.033	3.278	10.173	0.152	0.292	1.536	1.757
Doliolida	0.401	0.338	0.919	0.182	0.000	0.208	0.117	0.000	0.102	0.338	0.511	0.520	0.195	1.037	0.017	0.058	0.262	0.374
Salpida	0.027	0.188	0.644	0.006	0.000	0.000	0.039	0.006	0.154	0.444	0.511	0.022	0.039	0.494	0.173	0.136	0.262	0.561
Pyrosomida	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Brachiopoda larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cephalopoda larvae	0.036	0.075	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.117	0.000	0.000	0.019	0.000	0.000
other Mollusca larvae	0.000	0.000	0.000	0.045	0.000	0.623	0.000	0.251	0.000	0.034	0.000	0.043	0.078	0.099	0.034	0.000	0.000	0.000
Polychaeta larvae	0.073	0.038	0.000	0.000	0.000	0.000	0.000	0.157	0.017	0.000	0.118	0.000	0.039	0.296	0.000	0.058	0.037	0.000
Cirripedia larvae	0.219	0.075	0.000	0.091	0.102	0.000	0.039	0.000	0.017	0.034	0.000	0.043	0.195	0.593	0.000	0.000	0.000	0.000
Stomatopoda larvae	0.000	0.000	0.000	0.545	0.102	4.364	0.388	0.251	0.034	0.000	0.000	0.000	0.000	0.000	0.321	0.039	0.000	0.000
Echinodermata larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.049	0.000	0.000	0.000	0.000
Other invertebrate larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pisces larvae	0.364	0.413	0.178	0.227	0.414	0.208	0.041	0.000	0.068	0.034	0.236	0.087	0.039	0.049	0.000	0.000	0.075	0.112
Pisces eggs	0.364	0.000	0.119	2.727	1.427	5.818	0.117	0.000	0.000	0.068	0.000	0.260	0.000	0.099	0.000	0.039	0.037	0.075
Total	31.815	33.730	25.237	54.193	95.089	155.234	33.595	24.725	12.817	23.554	30.428	33.699	28.112	51.395	19.178	13.457	21.459	24.463

Tabla 9. ……IMECOCAL 0010 (continuación)
Table 9. ……IMECOCAL 0010 (continuation)

Taxa	123.60	127.35	127.40	127.45	127.50	127.55	127.60	130.30	130.35	130.40	130.50	130.60	133.25	133.30	133.35	133.40	133.50	133.60
Medusae	0.646	0.088	0.217	0.998	0.309	1.103	0.448	0.000	0.041	1.017	0.718	0.418	0.154	0.000	0.078	0.286	0.157	0.000
Siphonophora	1.051	0.575	0.652	0.641	0.652	0.589	1.343	0.186	0.286	2.564	3.461	0.741	0.308	0.462	1.118	1.714	0.664	0.798
Ctenophora	0.000	0.000	0.000	0.009	0.006	0.000	0.005	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000
Pteropoda	0.646	0.177	0.434	0.285	0.105	0.483	0.671	0.000	0.368	0.796	0.457	0.095	0.410	1.487	0.078	0.449	0.297	0.213
Heteropoda	0.162	0.486	0.000	0.784	0.137	0.846	1.193	0.512	0.205	0.884	0.424	0.266	0.615	0.667	0.196	0.245	0.402	0.268
Polychaeta	0.000	0.044	0.000	0.000	0.000	0.074	0.000	0.000	0.020	0.088	0.033	0.057	0.000	0.000	0.020	0.041	0.017	0.106
Cladocera	0.000	0.000	0.000	0.143	0.172	0.037	0.149	0.000	0.000	0.177	0.033	0.000	0.000	0.000	0.000	0.367	0.052	0.018
Ostracoda	2.101	0.000	2.425	2.851	0.755	1.582	2.499	0.093	0.593	2.564	0.327	0.513	0.256	0.769	0.314	2.694	1.694	1.667
Copepoda	12.364	6.320	14.588	14.539	2.129	9.563	13.277	30.698	11.192	11.624	5.682	4.732	23.846	6.821	8.765	16.000	5.485	9.206
Amphipoda	0.364	0.486	0.362	0.570	0.206	0.589	0.671	0.884	0.041	0.177	0.131	0.285	1.744	0.000	0.000	0.367	0.279	0.550
Euphausiacea	3.394	2.077	6.407	3.350	0.652	3.457	3.207	1.674	2.578	3.050	1.665	0.665	3.333	15.641	2.647	4.327	0.454	2.182
Decapoda	0.247	0.210	0.093	0.082	0.142	0.228	0.261	2.233	0.110	0.157	0.298	0.259	3.333	0.580	0.100	0.130	0.312	0.678
Chaetognatha	5.333	28.155	15.385	20.882	12.292	8.276	6.564	4.000	2.230	7.602	11.624	9.406	17.538	6.308	3.588	13.469	5.939	4.683
Appendicularia	1.697	0.265	0.869	2.494	1.099	1.434	1.268	0.279	0.348	0.796	1.208	1.197	1.897	0.103	0.941	1.143	0.507	1.082
Doliolida	0.848	0.000	0.072	0.143	0.137	0.736	0.895	0.093	0.082	0.133	0.065	0.304	0.205	0.000	0.059	0.939	0.681	0.284
Salpida	0.306	0.144	0.072	0.290	0.652	0.434	0.559	0.041	0.000	0.055	0.188	0.316	0.872	0.010	0.118	0.128	0.568	0.499
Pyrosomida	0.000	0.000	0.000	0.000	0.000	0.000	0.112	0.000	0.000	0.044	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Brachiopoda larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cephalopoda larvae	0.045	0.000	0.000	0.071	0.002	0.037	0.037	0.000	0.000	0.000	0.033	0.000	0.000	0.000	0.000	0.043	0.017	0.071
other Mollusca larvae	0.000	0.000	0.000	0.071	0.000	0.000	0.000	0.000	0.000	0.000	0.033	0.000	0.051	0.000	0.000	0.000	0.017	0.000
Polychaeta larvae	0.000	0.000	0.000	0.071	0.137	0.074	0.000	0.000	0.000	0.000	0.000	0.019	0.000	0.000	0.000	0.000	0.000	0.000
Cirripedia larvae	0.000	0.044	0.000	0.071	0.000	0.000	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Stomatopoda larvae	0.000	0.177	0.072	0.000	0.034	0.000	0.000	0.186	0.000	0.044	0.065	0.000	0.103	0.154	0.039	0.000	0.000	0.000
Echinodermata larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Other invertebrate larvae	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pisces larvae	0.364	0.133	0.072	0.214	0.034	0.257	0.373	0.512	0.082	0.000	0.163	0.038	0.256	0.051	0.020	0.776	0.157	0.213
Pisces eggs	0.000	0.000	0.000	0.000	0.034	0.037	0.000	0.512	0.000	0.133	0.392	0.057	0.000	0.000	0.000	0.122	0.245	0.000
Total	29.568	39.381	41.722	48.559	19.689	29.834	33.571	41.901	18.176	31.909	27.000	19.368	54.923	33.051	18.081	43.245	17.945	22.519

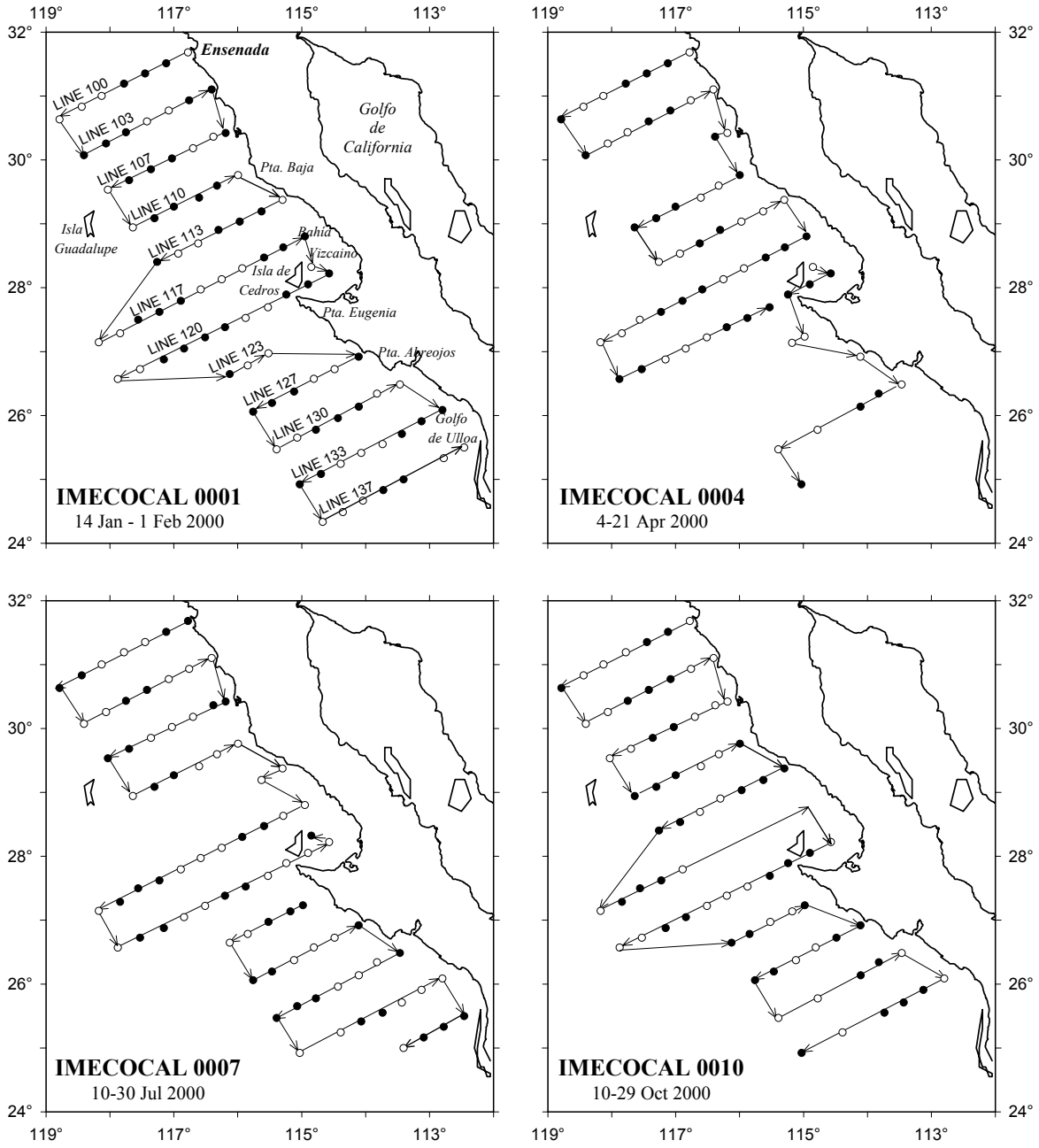

Figura 1. Estaciones de colecta durante los cruceros IMECOCAL 0001, 0004, 0007 y 0010. Los círculos sombreados (claros) representan estaciones nocturnas (diurnas)

Figure 1. Sampling stations during the IMECOCAL cruises 0001, 0004, 0007 y 0010. Shaded (open) circles are stations occupied at night (day)

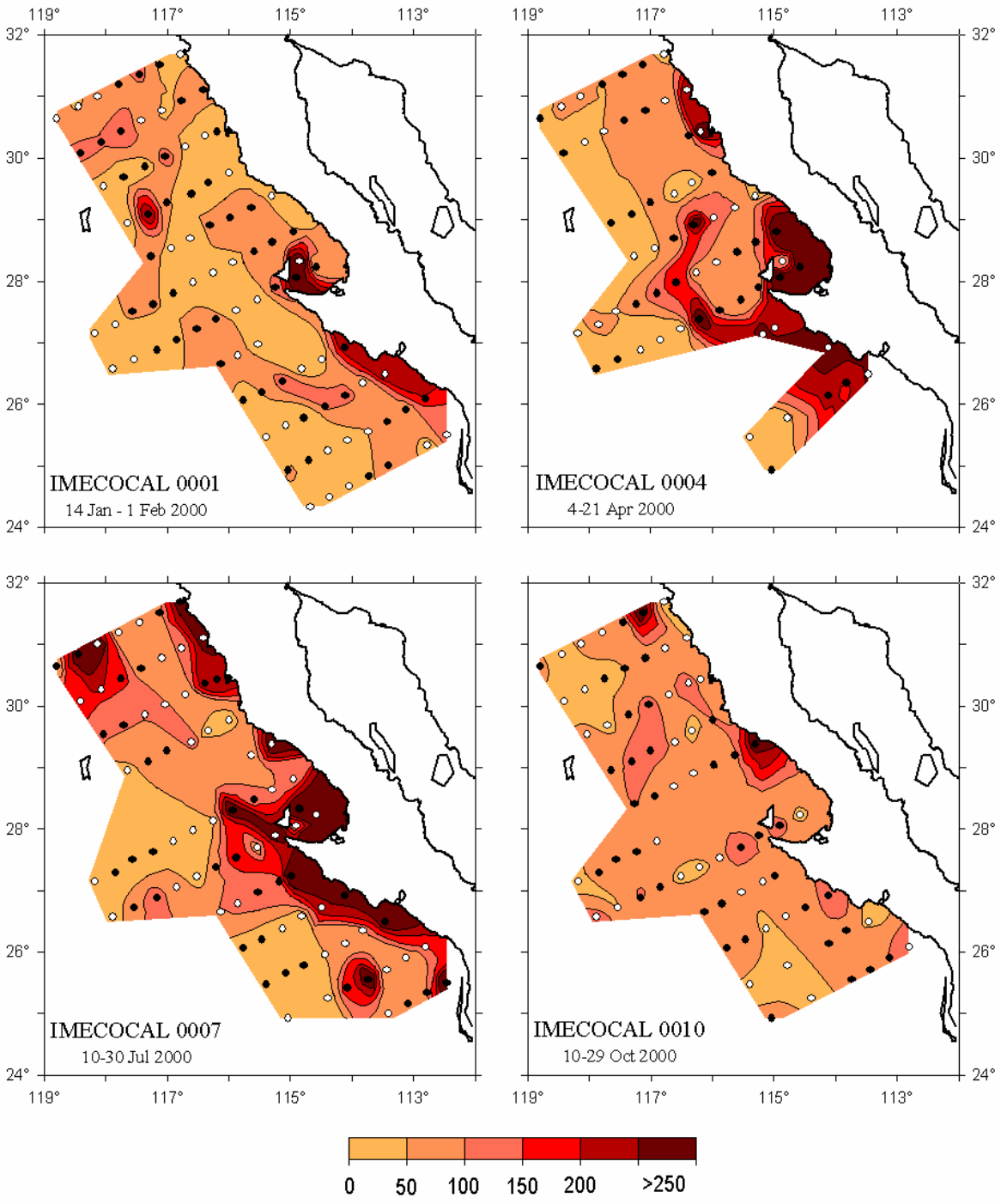

Figura 2. Volumen desplazado de zooplancton (ml/1000 m^3) durante el 2000.

Figure 2. Displacement volume of zooplankton (ml/1000 m^3) during 2000.

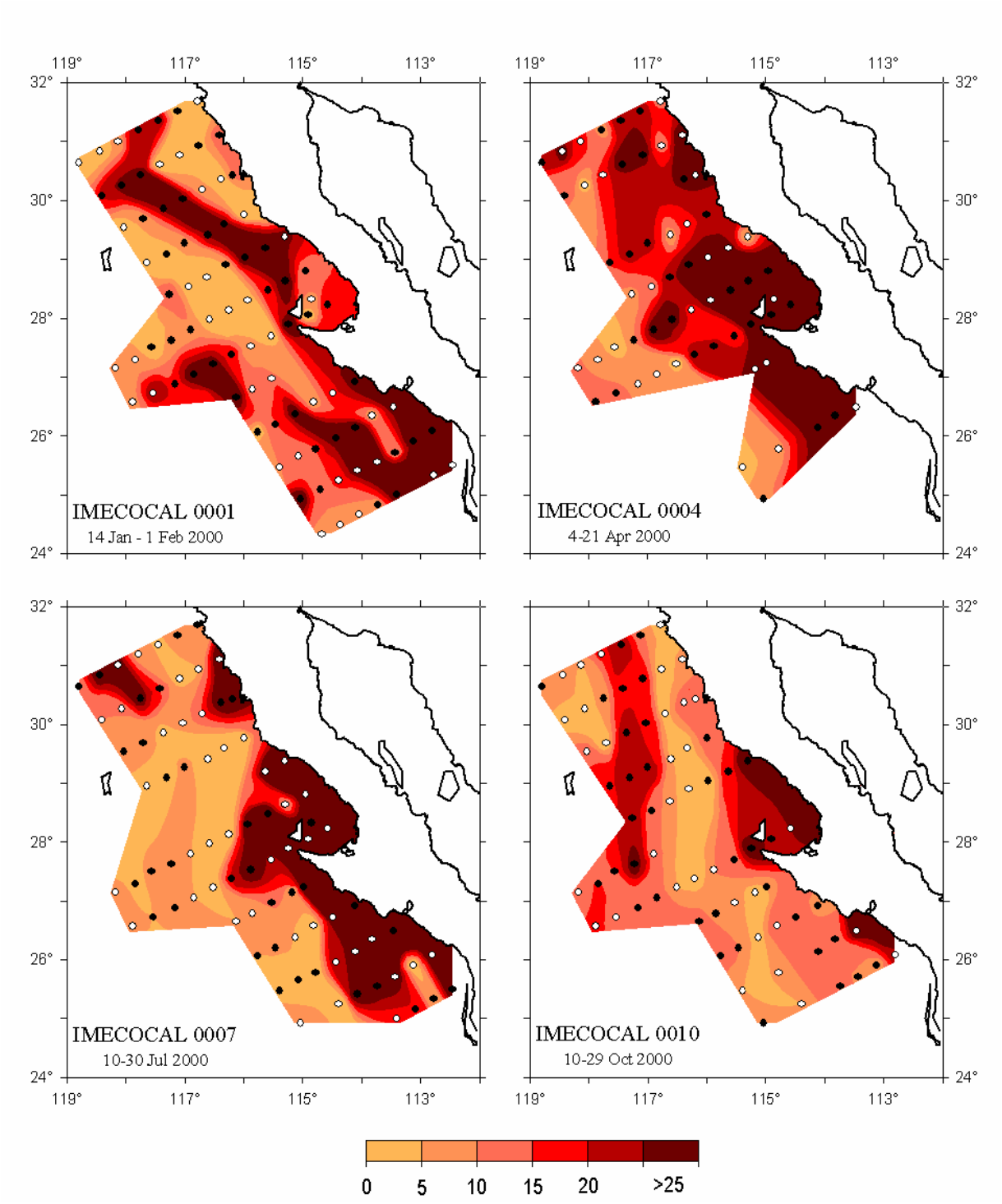

Figura 3. Distribución de copépodos (ind/m^3) durante el 2000.

Figure 3. Distribution of copepods (ind/m^3) during 2000.

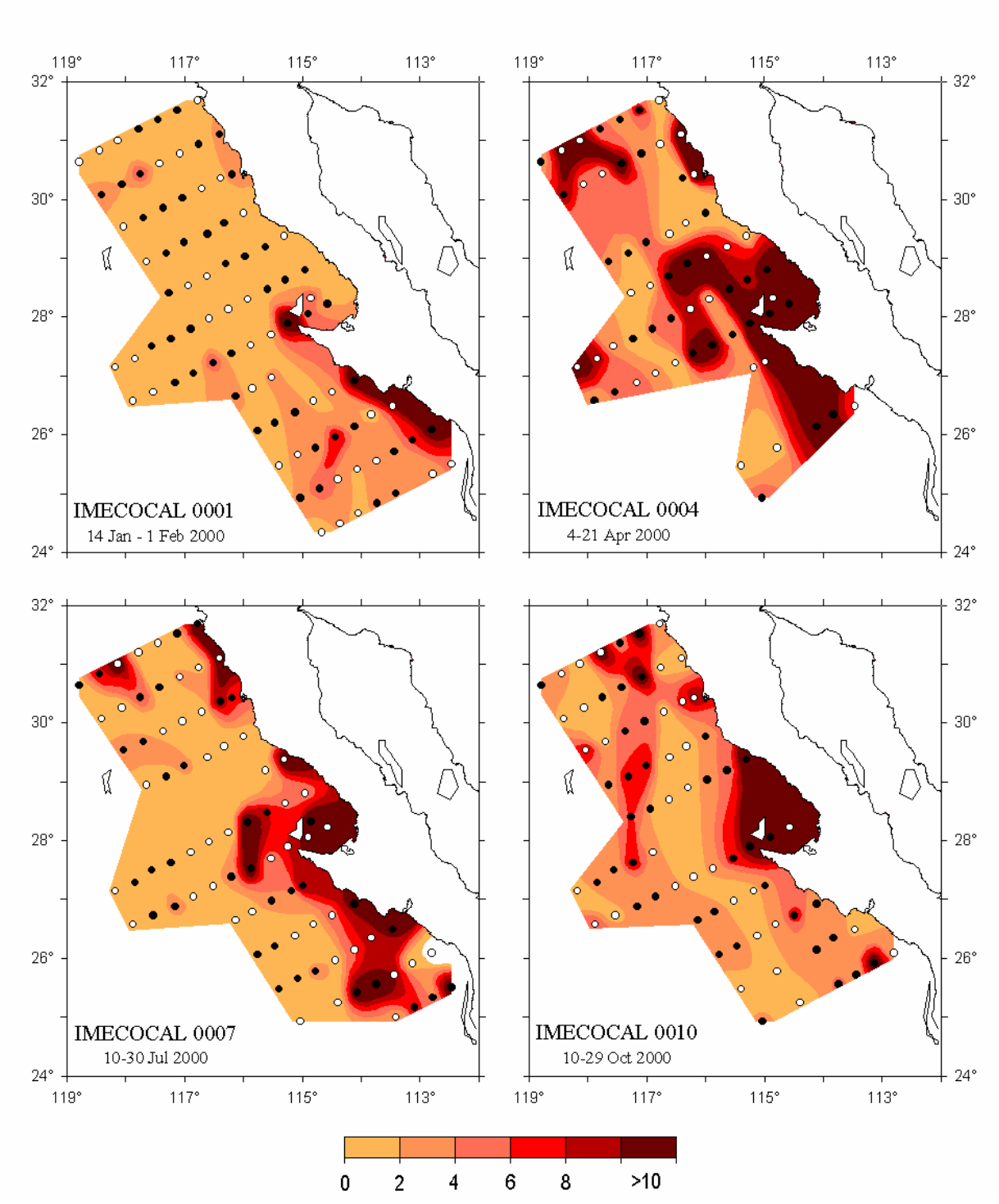

Figura 4. Distribución de eufáusidos (ind/m^3) durante el 2000.

Figure 4. Distribution of euphausiids (ind/m^3) during 2000.

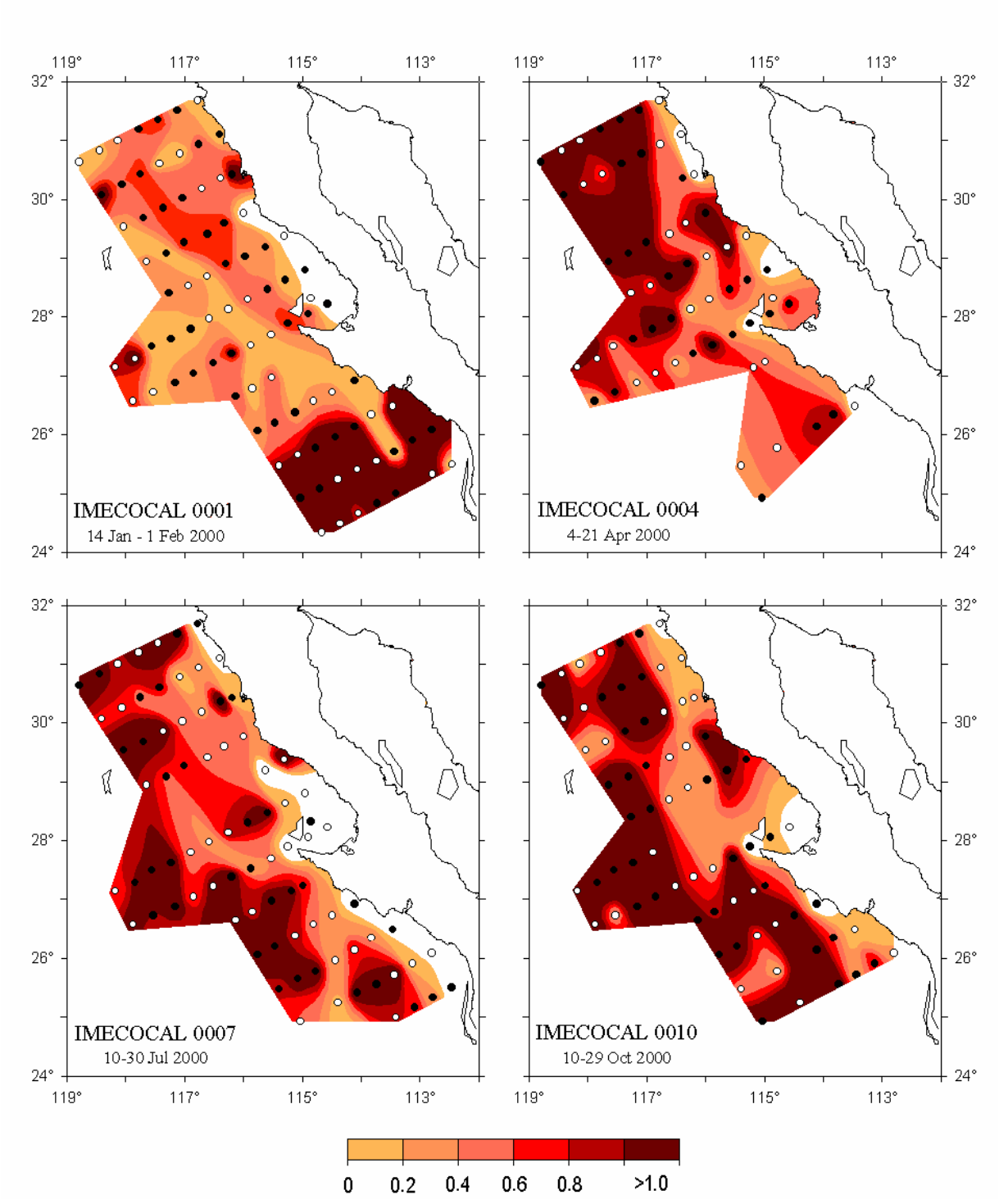

Figura 5. Distribución de ostrácodos (ind/m^3) durante el 2000.

Figure 5. Distribution of ostracods (ind/m^3) during 2000.

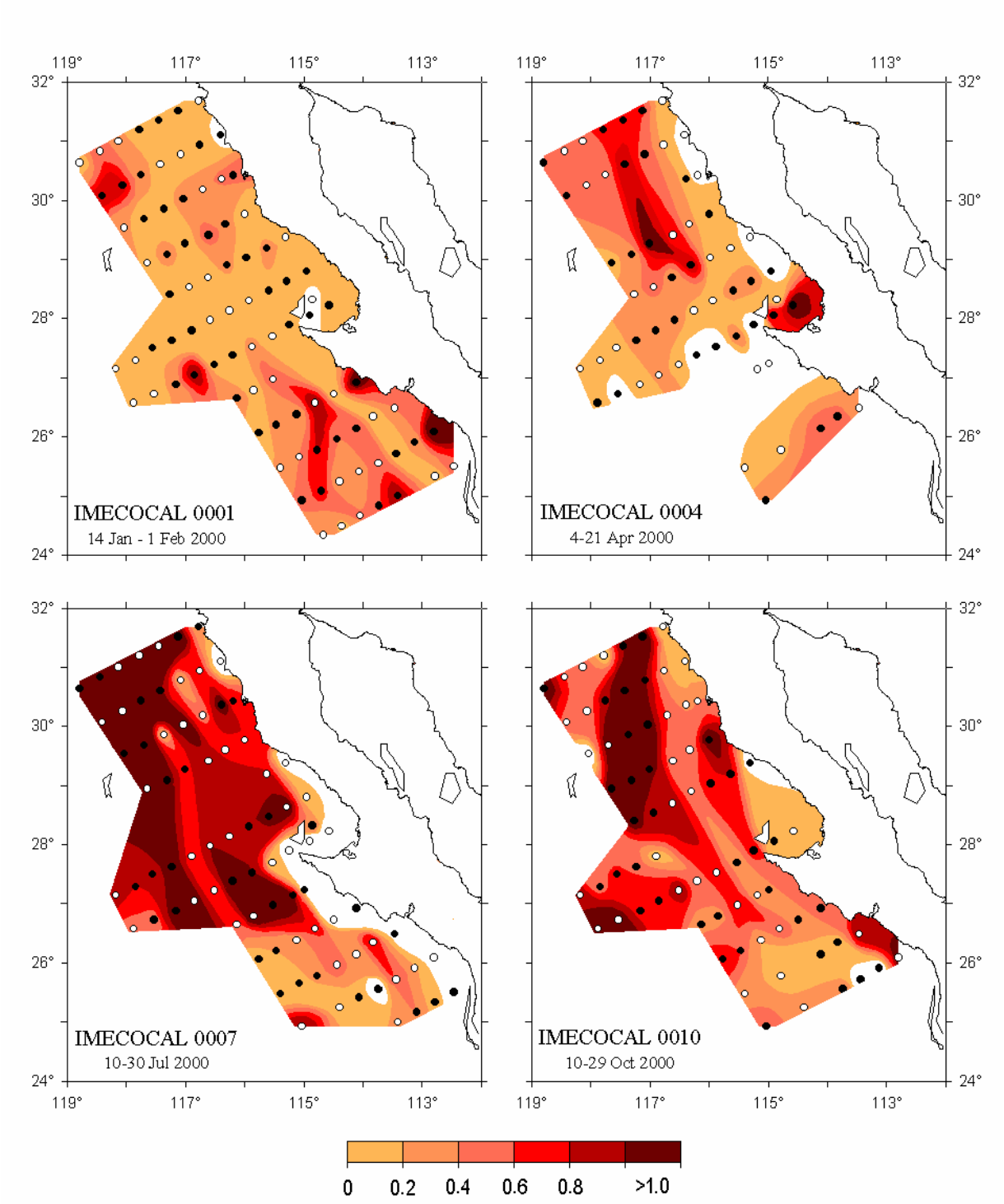

Figura 6. Distribución de anfípodos (ind/m^3) durante el 2000.

Figure 6. Distribution of amphipods (ind/m^3) during 2000.

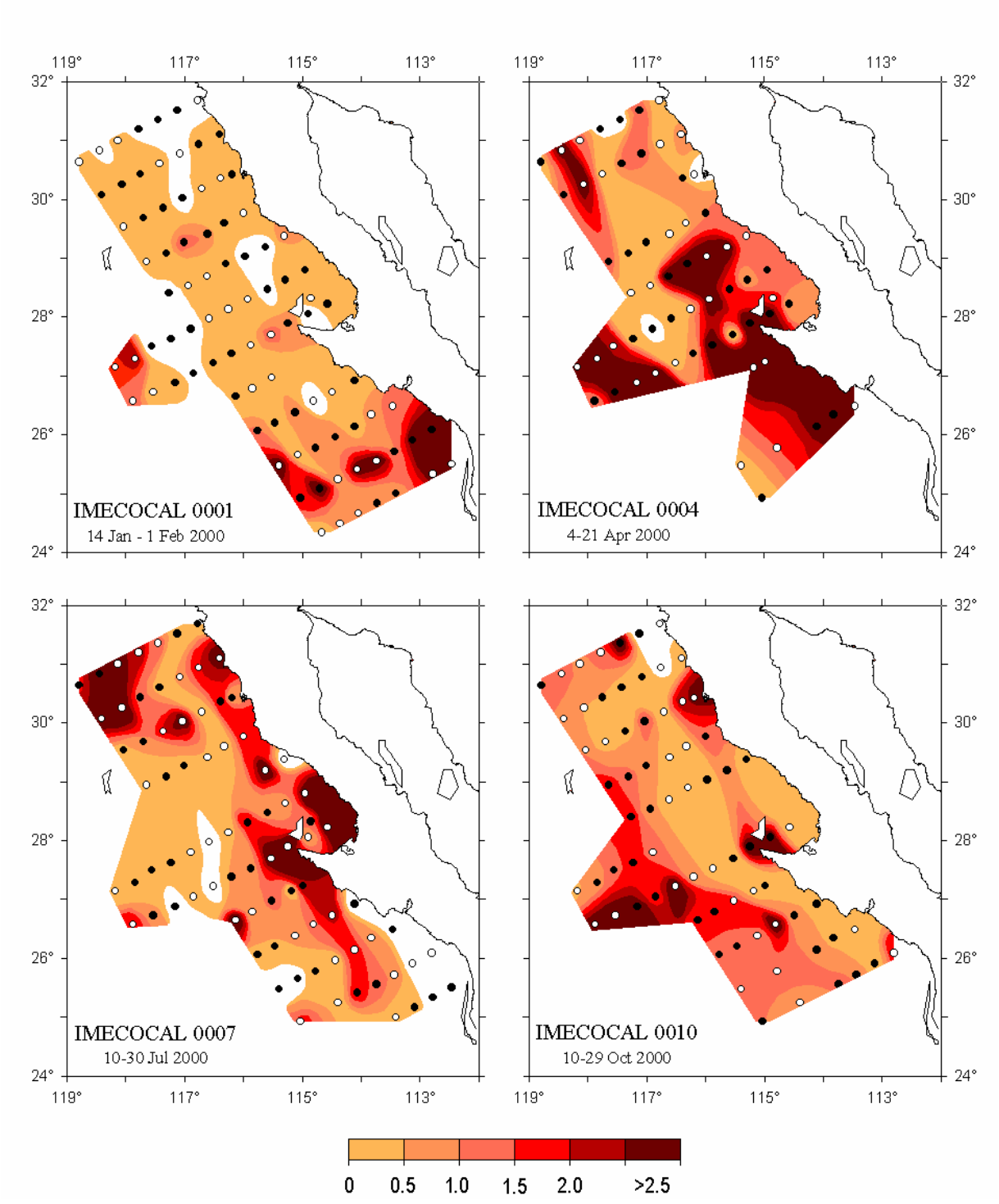

Figura 7. Distribución de apendicularias (ind/m^3) durante el 2000.

Figure 7. Distribution of appendicularians (ind/m^3) during 2000.

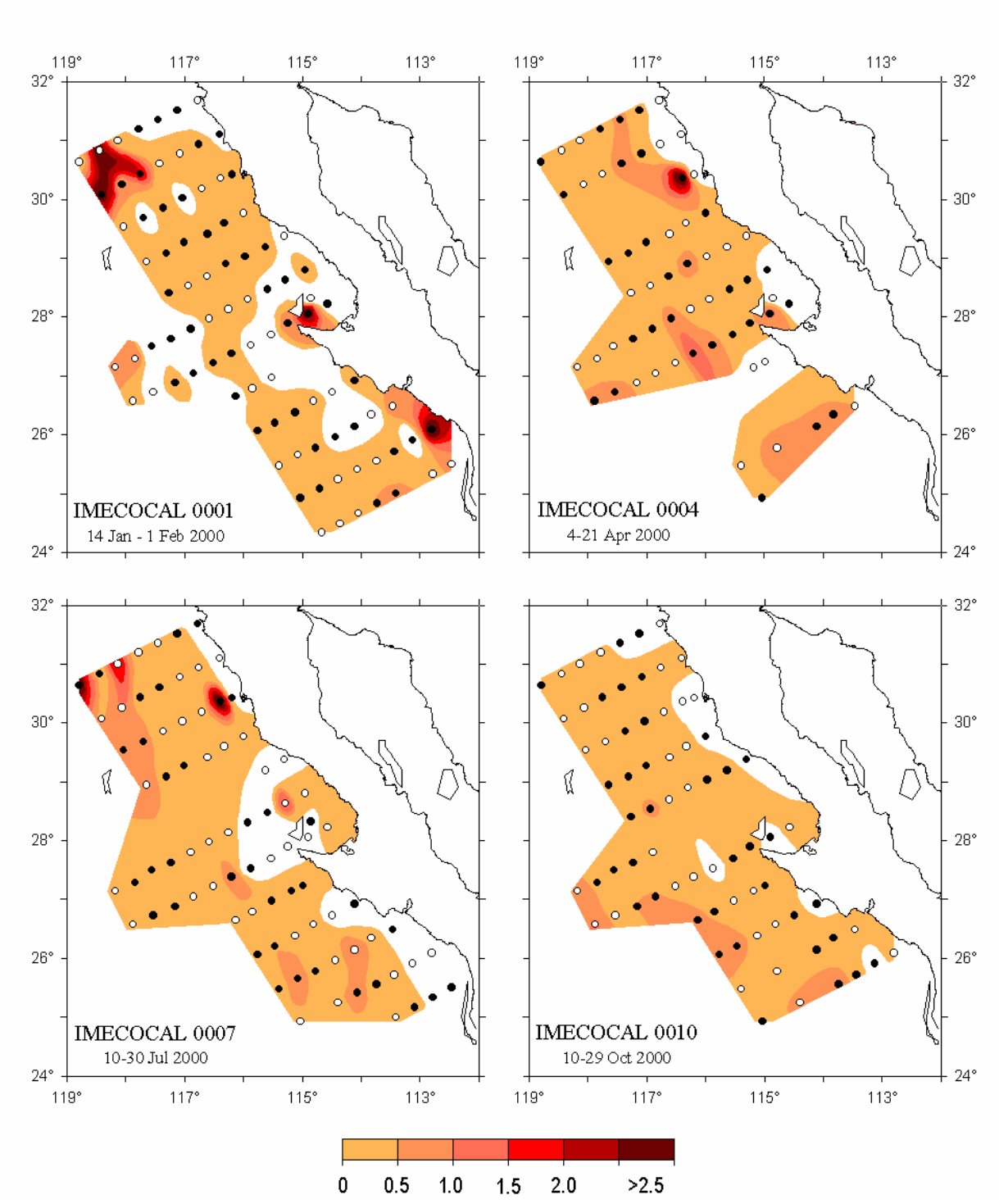

Figura 8. Distribución de doliólidos (ind/m^3) durante el 2000.

Figure 8. Distribution of doliolids (ind/m^3) during 2000.

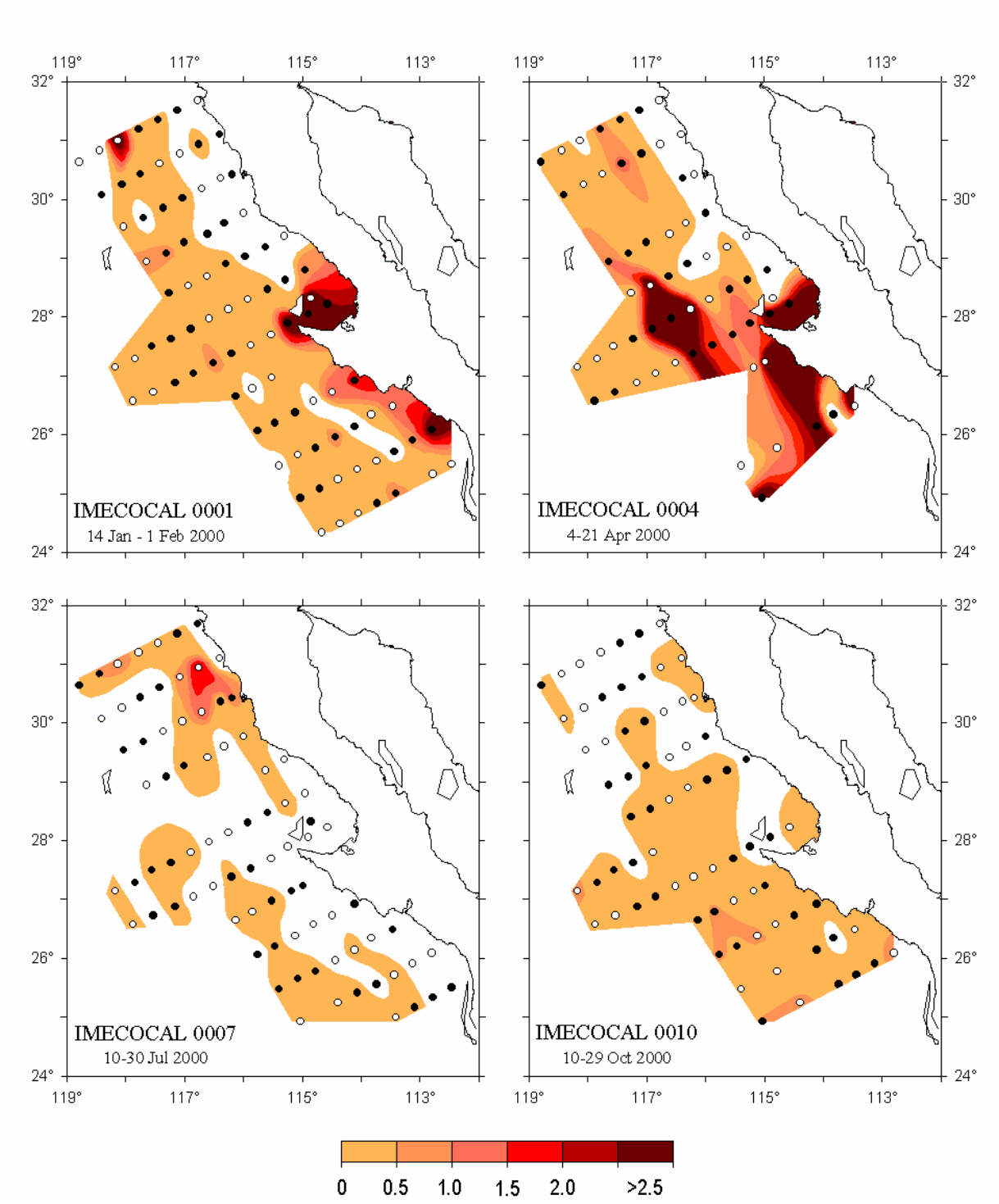

Figura 9. Distribución de salpas (ind/m^3) durante el 2000.

Figure 9. Distribution of salps (ind/m^3) during 2000.

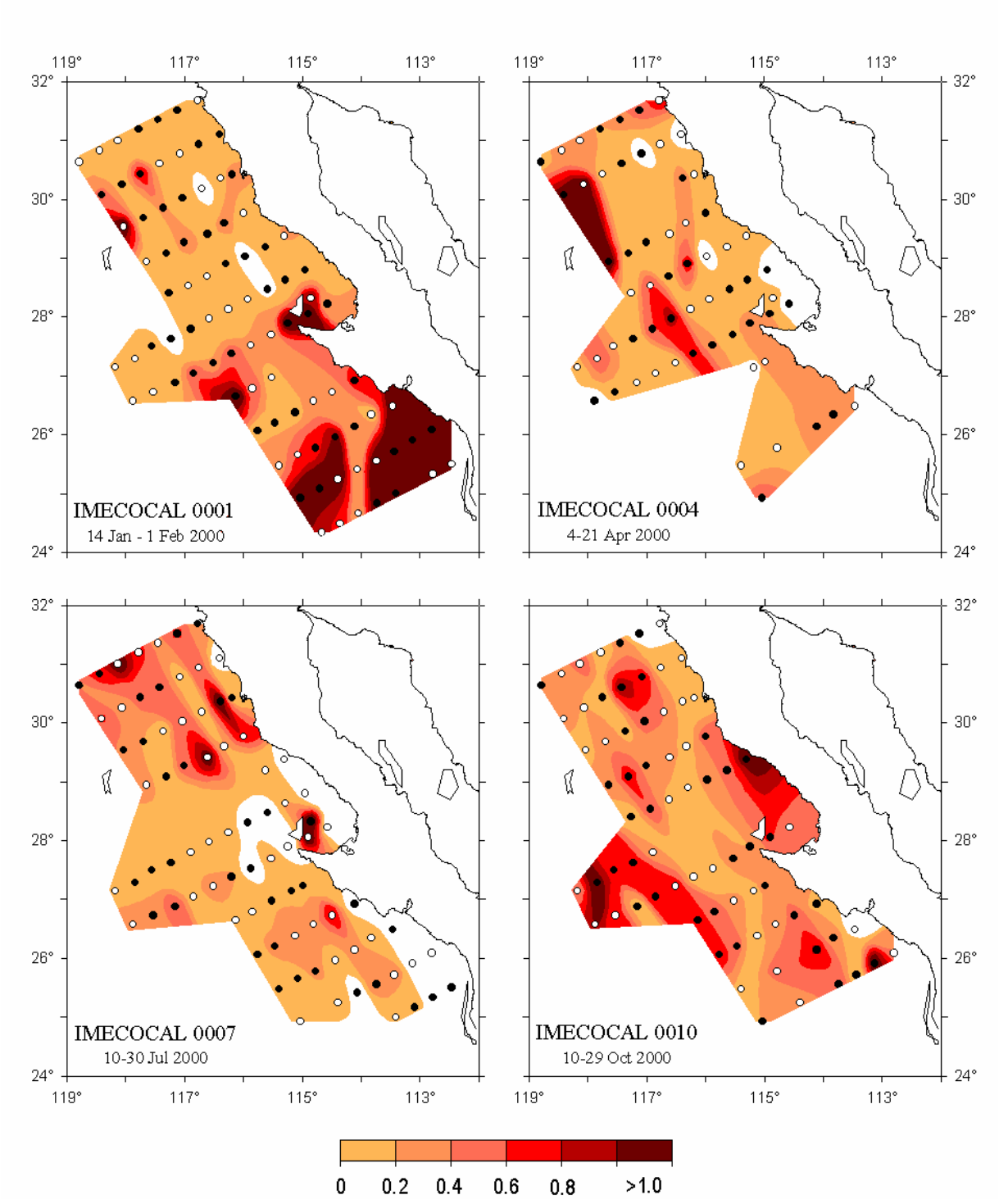

Figura 10. Distribución de pterópodos (ind/m^3) durante el 2000.

Figure 10. Distribution of pteropods (ind/m^3) during 2000.

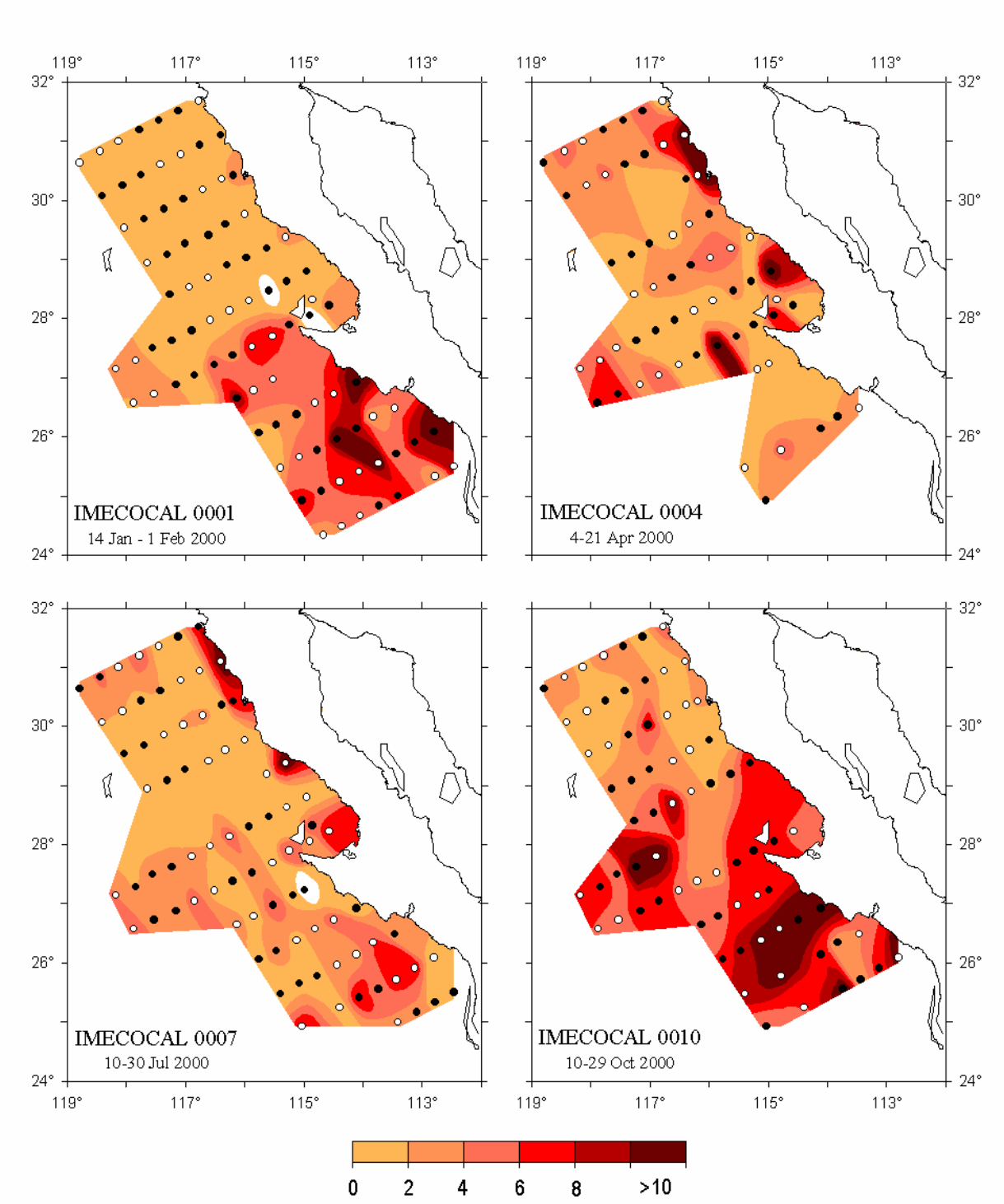

Figura 11. Distribución de quetognatos (ind/m^3) durante el 2000.

Figure 11. Distribution of chaetognaths (ind/m^3) during 2000.

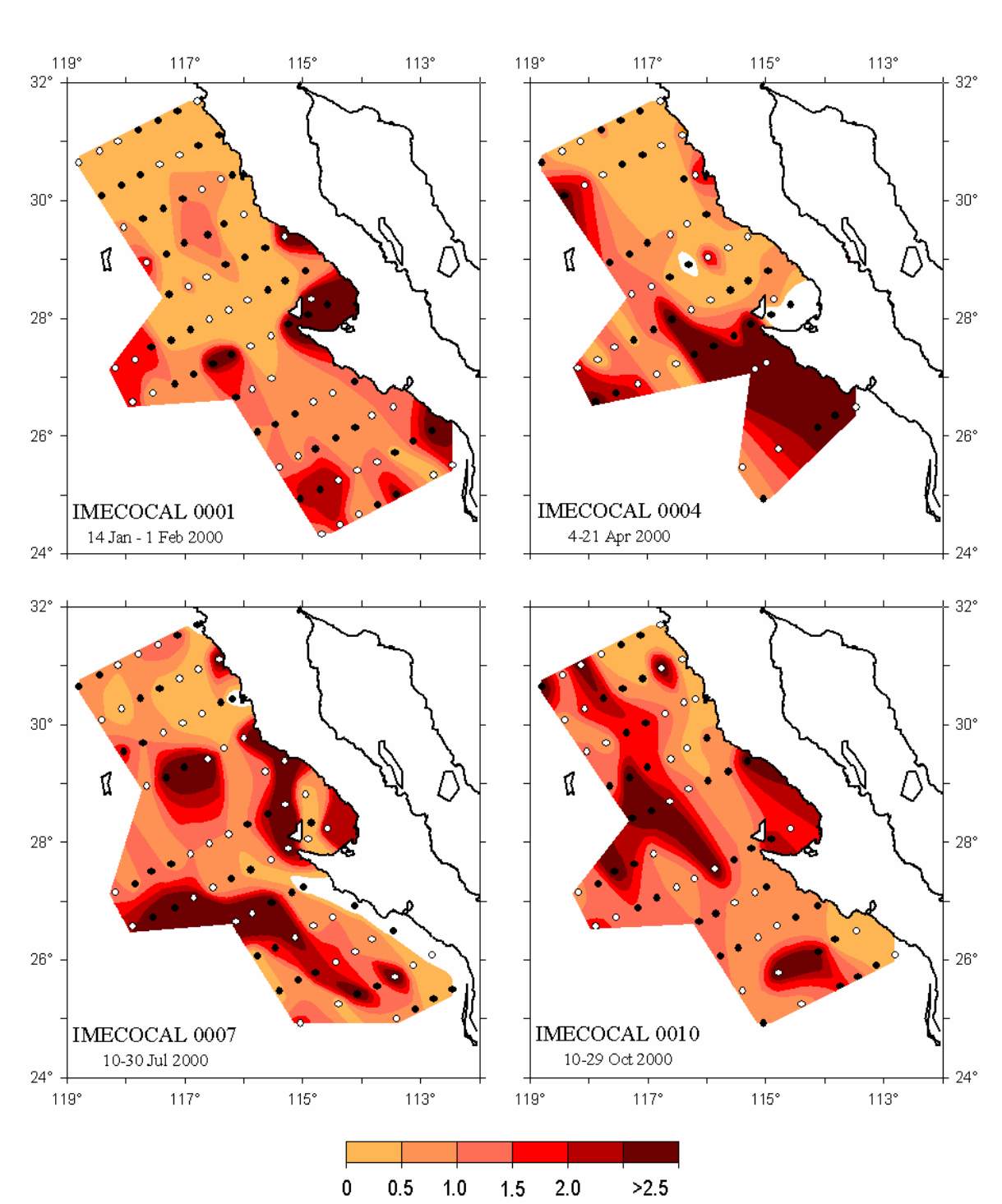

Figura 12. Distribución de sifonóforos (ind/m^3) durante el 2000.

Figure 12. Distribution of siphonophores (ind/m^3) during 2000.

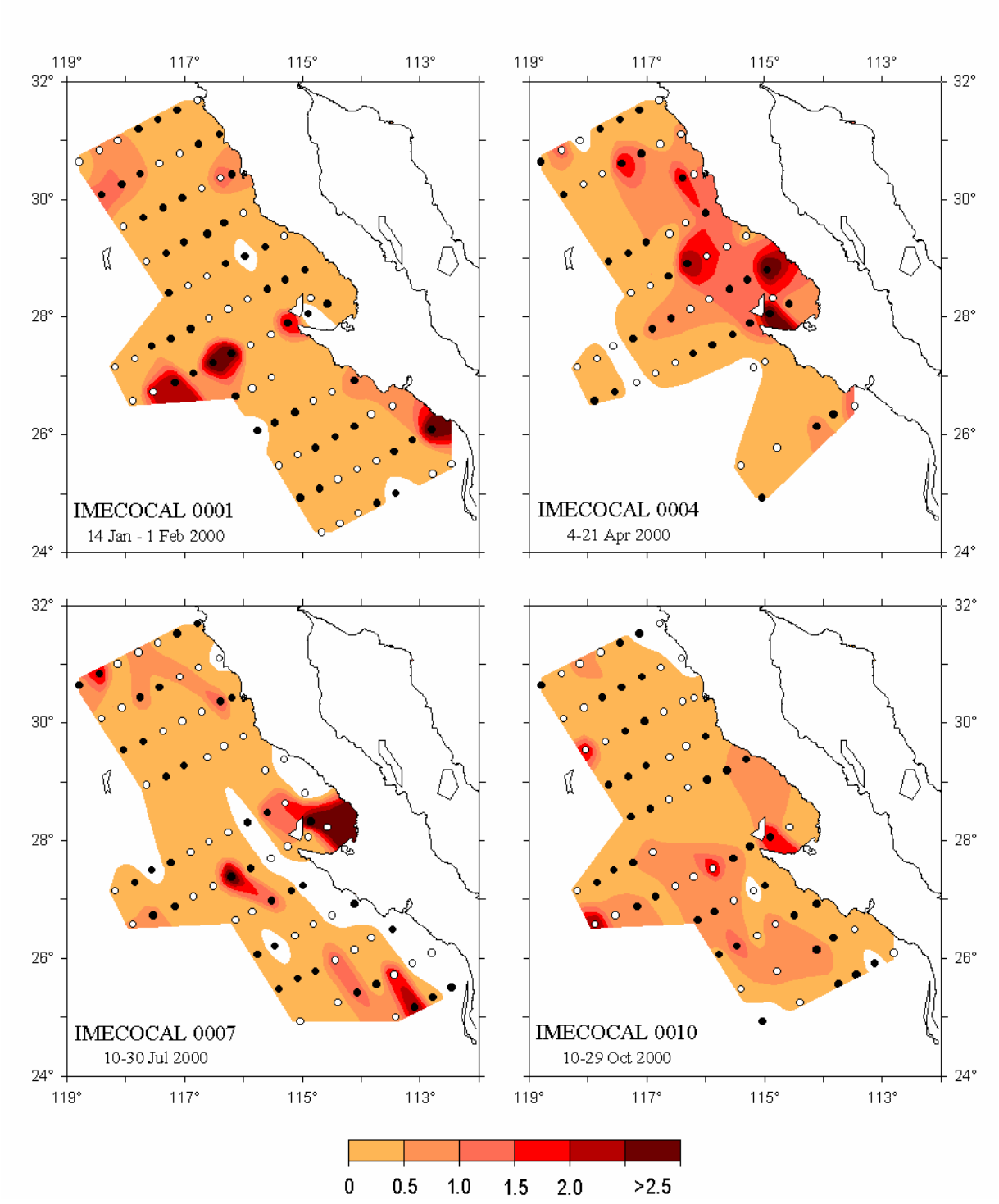

Figura 13. Distribución de medusas (ind/m^3) durante el 2000.

Figure 13. Distribution of medusae (ind/m^3) during 2000.

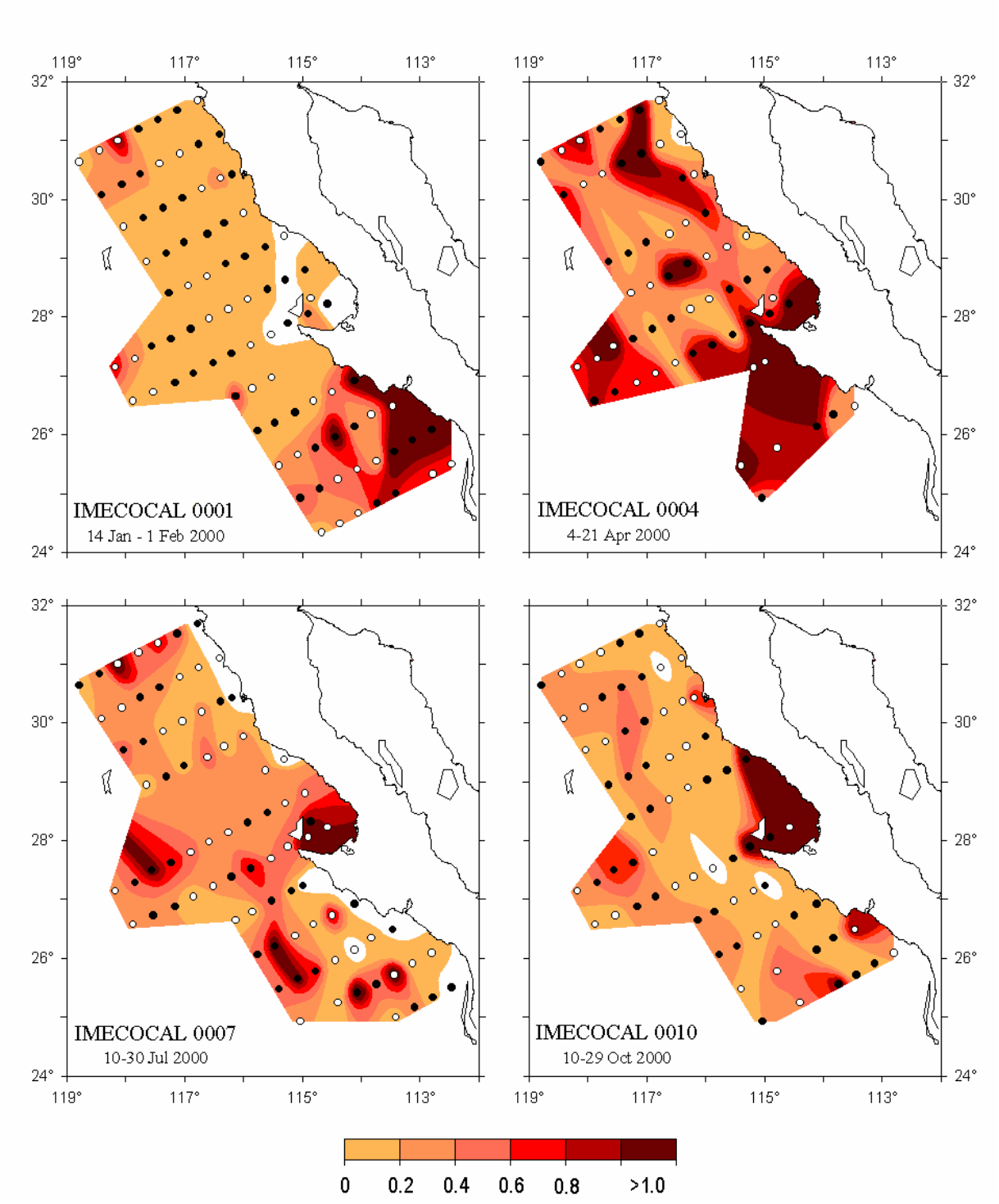

Figura 14. Distribución de huevos y larvas de peces (ind/m^3) durante el 2000.

Figure 14. Distribution of fish eggs and larvae (ind/m^3) during 2000.

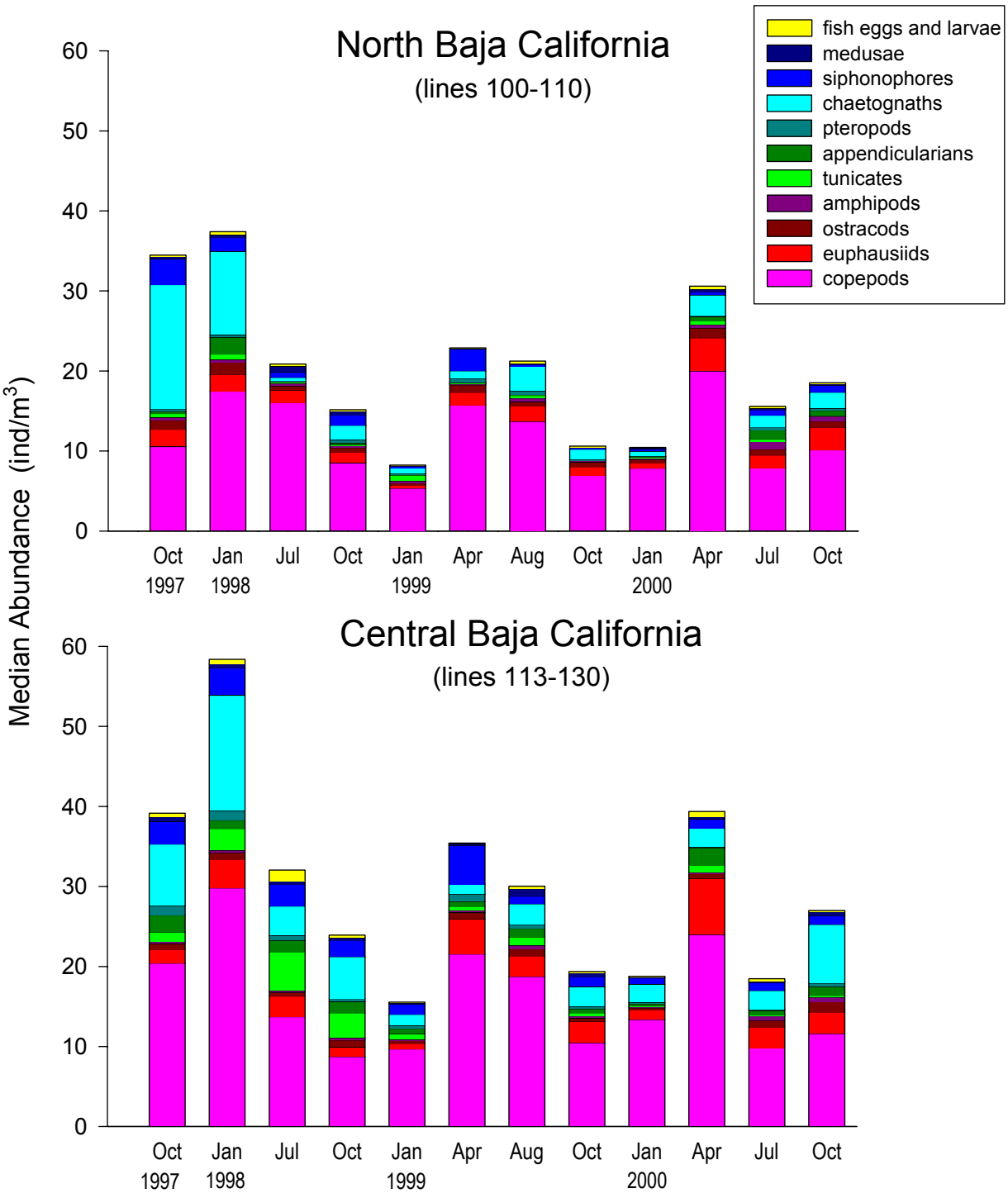

Figura 15. Aportación de los principales taxa por región en los cruceros IMECOCAL (En Oct. 1997 no hay datos de las líneas 100-107).

Figure 15. Proportion of the main taxa by region in the IMECOCAL cruises (No data on lines 100-107 in Oct. 1997).

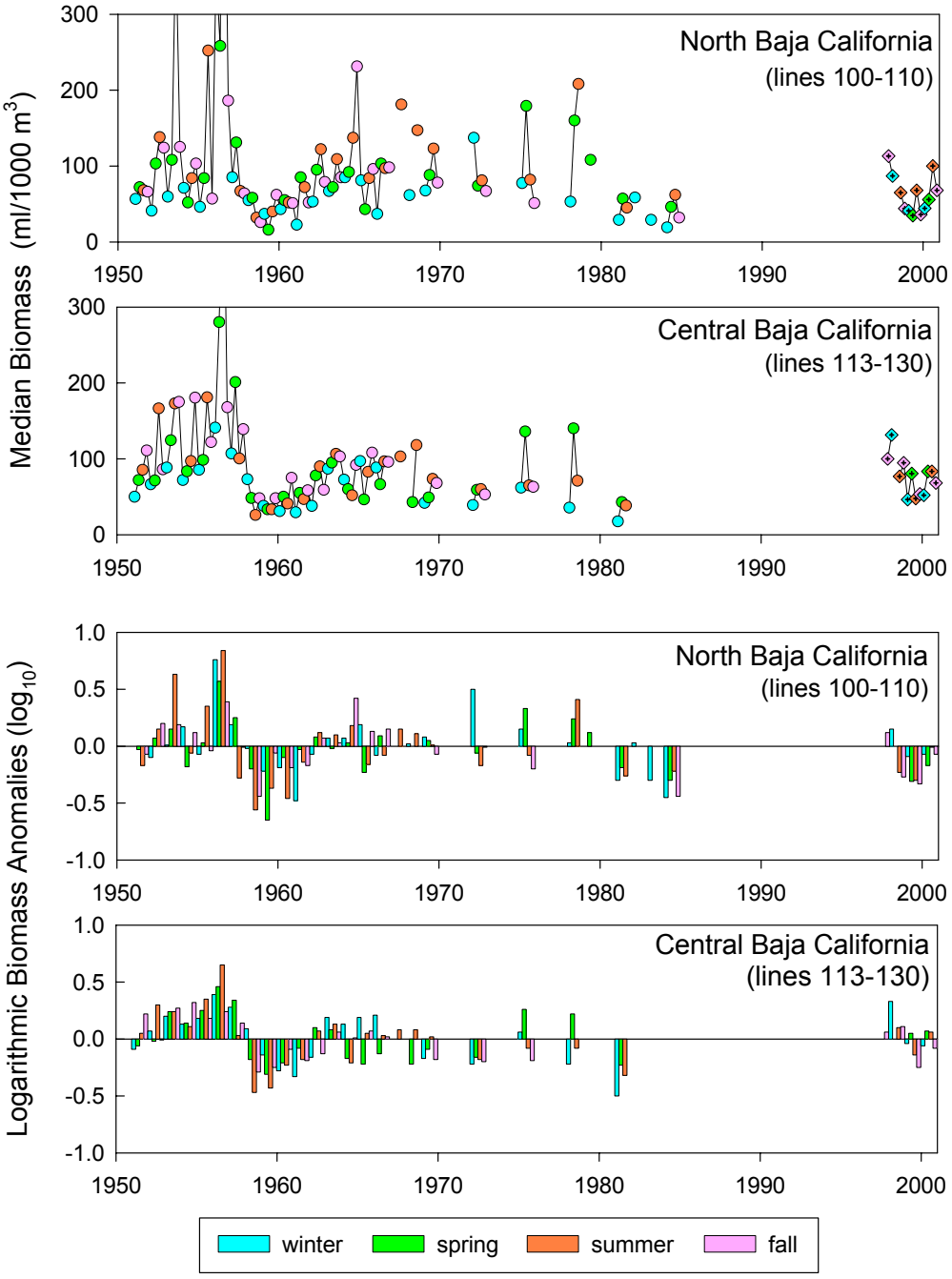

Figura 16. Variación de la biomasa zooplanctónica en el contexto histórico (incorporación de datos de los cruceros CalCOFI). Las anomalías se calcularon restando la media logarítmica estacional del periodo 1951-1984.

Figure 16. Zooplankton biomass variability in the historic context (data of the CalCOFI cruises incorporated). Anomalies were calculated removing the logarithmic seasonal mean for the period 1951-1984.

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PREVIOUS TECHNICAL REPORT ON ZOOPLANKTON (In Spanish)

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