**Table S1. Primers with Illumina adaptors.** Sequence of each primer used, including Illumina adaptors (highlighted in grey).

|  |  |
| --- | --- |
| **Primer** | **Sequence (5' - 3')** |
| mlCOIintF | CTTTCCCTACACGACGCTCTTCCGATCTGGWACWGGWTGAACWGTWTAYCCYCC |
| jgHCO2198 | GGAGTTCAGACGTGTGCTCTTCCGATCTTAIACYTCIGGRTGICCRAARAAYCA |
| SSU\_F04 | CTTTCCCTACACGACGCTCTTCCGATCTGCTTGTCTCAAAGATTAAGCC |
| SSU\_R22mod | GGAGTTCAGACGTGTGCTCTTCCGATCTCCTGCTGCCTTCCTTRGA |

**Table S2. Life cycle habitat by family.** List of identified families by phylum indicating whether the family is known to spend partial time in pelagic habitat (meroplankton or ichthyoplankton) or the full life cycle (holoplankton). Information verified in the databases DORIS (*Données d'Observations pour la Reconnaissance et l'Identification de la faune et la flore Subaquatiques*; https://doris.ffessm.fr/) and WoRMS (World Register of Marine Species; http://www.marinespecies.org/). 1Subclass.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Phylum** | **Class** | **Order** | **Family** | **Pelagic strategy** |
| Porifera | Demospongiae | Polymastiida | Polymastiidae | Meroplankton |
| Cnidaria | Anthozoa | Spirularia | Cerianthidae | Meroplankton |
| Cnidaria | Hydrozoa | Leptothecata | Aequoreidae | Holoplankton |
| Cnidaria | Hydrozoa | Leptothecata | Aglaopheniidae | Meroplankton |
| Cnidaria | Hydrozoa | Leptothecata | Eirenidae | Holoplankton |
| Cnidaria | Hydrozoa | Leptothecata | Campanulariidae | Holoplankton |
| Ctenophora | Tentaculata | Beroida | Beroidae | Holoplankton |
| Ctenophora | Tentaculata | Cydippida | Pleurobrachiidae | Holoplankton |
| Platyhelminthes | Rhabditophora | Polycladida | Euryleptidae | Meroplankton |
| Nemertea | Palaeonemertea | Archinemertea | Cephalotrichidae | Meroplankton |
| Annelida | Polychaeta | Phyllodocida | Nephtyidae | Meroplankton |
| Annelida | Polychaeta | Phyllodocida | Phyllodocidae | Meroplankton |
| Annelida | Polychaeta | Phyllodocida | Tomopteridae | Holoplankton |
| Annelida | Polychaeta | Polychaeta incertae sedis1 | Oweniidae | Meroplankton |
| Annelida | Polychaeta | Polychaeta incertae sedis1 | Polygordiidae | Meroplankton |
| Annelida | Polychaeta | Sedentaria1 | Chaetopteridae | Meroplankton |
| Annelida | Polychaeta | Sedentaria1 | Sabellariidae | Meroplankton |
| Annelida | Polychaeta | Spionida | Poecilochaetidae | Meroplankton |
| Annelida | Polychaeta | Spionida | Spionidae | Meroplankton |
| Annelida | Polychaeta | Terebellida | Pectinariidae | Meroplankton |
| Bryozoa | Gymnolaemata | Cheilostomatida | Electridae | Meroplankton |
| Bryozoa | Gymnolaemata | Cheilostomatida | Membraniporidae | Meroplankton |
| Phoronida |  |  | Phoronidae | Meroplankton |
| Mollusca | Bivalvia | Adapedonta | Hiatellidae | Meroplankton |
| Mollusca | Bivalvia | Adapedonta | Pharidae | Meroplankton |
| Mollusca | Bivalvia | Cardiida | Donacidae | Meroplankton |
| Mollusca | Bivalvia | Cardiida | Psammobiidae | Meroplankton |
| Mollusca | Bivalvia | Cardiida | Semelidae | Meroplankton |
| Mollusca | Bivalvia | Cardiida | Tellinidae | Meroplankton |
| Mollusca | Bivalvia | Galeommatida | Lasaeidae | Meroplankton |
| Mollusca | Bivalvia | Mytilida | Mytilidae | Meroplankton |
| Mollusca | Bivalvia | Ostreida | Ostreidae | Meroplankton |
| Mollusca | Bivalvia | Pectinida | Pectinidae | Meroplankton |
| Mollusca | Bivalvia | Venerida | Mactridae | Meroplankton |
| Mollusca | Bivalvia | Venerida | Mesodesmatidae | Meroplankton |
| Mollusca | Bivalvia | Venerida | Veneridae | Meroplankton |
| Mollusca | Gastropoda | Aplysiida | Aplysiidae | Meroplankton |
| Mollusca | Gastropoda | Caenogastropoda | Aporrhaidae | Meroplankton |
| Mollusca | Gastropoda | Caenogastropoda | Turritellidae | Meroplankton |
| Mollusca | Gastropoda | Cephalaspidea | Cylichnidae | Meroplankton |
| Mollusca | Gastropoda | Cephalaspidea | Philinidae | Meroplankton |
| Mollusca | Gastropoda | Cephalaspidea | Retusidae | Meroplankton |
| Mollusca | Gastropoda | Littorinimorpha | Naticidae | Meroplankton |
| Mollusca | Gastropoda | Littorinimorpha | Eulimidae | Meroplankton |
| Mollusca | Gastropoda | Neogastropoda | Raphitomidae | Meroplankton |
| Mollusca | Gastropoda | Nudibranchia | Cuthonellidae | Meroplankton |
| Mollusca | Gastropoda | Nudibranchia | Cuthonidae | Meroplankton |
| Mollusca | Gastropoda | Nudibranchia | Dotidae | Meroplankton |
| Arthropoda | Branchiopoda | Diplostraca | Sididae | Holoplankton |
| Arthropoda | Branchiopoda | Diplostraca | Podonidae | Holoplankton |
| Arthropoda | Malacostraca | Decapoda | Galatheidae | Meroplankton |
| Arthropoda | Malacostraca | Decapoda | Munidopsidae | Meroplankton |
| Arthropoda | Malacostraca | Decapoda | Paguridae | Meroplankton |
| Arthropoda | Malacostraca | Decapoda | Porcellanidae | Meroplankton |
| Arthropoda | Malacostraca | Decapoda | Carcinidae | Meroplankton |
| Arthropoda | Malacostraca | Decapoda | Corystidae | Meroplankton |
| Arthropoda | Malacostraca | Decapoda | Leucosiidae | Meroplankton |
| Arthropoda | Malacostraca | Decapoda | Ovalipidae | Meroplankton |
| Arthropoda | Malacostraca | Decapoda | Pilumnidae | Meroplankton |
| Arthropoda | Malacostraca | Decapoda | Polybiidae | Meroplankton |
| Arthropoda | Malacostraca | Decapoda | Varunidae | Meroplankton |
| Arthropoda | Malacostraca | Decapoda | Xanthidae | Meroplankton |
| Arthropoda | Malacostraca | Decapoda | Crangonidae | Meroplankton |
| Arthropoda | Malacostraca | Decapoda | Hippolytidae | Meroplankton |
| Arthropoda | Malacostraca | Decapoda | Pandalidae | Meroplankton |
| Arthropoda | Malacostraca | Decapoda | Processidae | Meroplankton |
| Arthropoda | Malacostraca | Decapoda | Thoridae | Meroplankton |
| Arthropoda | Malacostraca | Decapoda | Upogebiidae | Meroplankton |
| Arthropoda | Hexanauplia | Sessilia | Verrucidae | Meroplankton |
| Arthropoda | Hexanauplia | Calanoida | Acartiidae | Holoplankton |
| Arthropoda | Hexanauplia | Calanoida | Calanidae | Holoplankton |
| Arthropoda | Hexanauplia | Calanoida | Candaciidae | Holoplankton |
| Arthropoda | Hexanauplia | Calanoida | Centropagidae | Holoplankton |
| Arthropoda | Hexanauplia | Calanoida | Euchaetidae | Holoplankton |
| Arthropoda | Hexanauplia | Calanoida | Metridinidae | Holoplankton |
| Arthropoda | Hexanauplia | Calanoida | Paracalanidae | Holoplankton |
| Arthropoda | Hexanauplia | Calanoida | Pontellidae | Holoplankton |
| Arthropoda | Hexanauplia | Calanoida | Temoridae | Holoplankton |
| Arthropoda | Hexanauplia | Cyclopoida | Corycaeidae | Holoplankton |
| Arthropoda | Hexanauplia | Cyclopoida | Oithonidae | Holoplankton |
| Arthropoda | Hexanauplia | Cyclopoida | Oncaeidae | Holoplankton |
| Arthropoda | Hexanauplia | Cyclopoida | Sapphirinidae | Holoplankton |
| Arthropoda | Hexanauplia | Harpacticoida | Argestidae | Meroplankton |
| Arthropoda | Hexanauplia | Monstrilloida | Monstrillidae | Holoplankton |
| Arthropoda | Hexanauplia | Siphonostomatoida | Asterocheridae | Holoplankton |
| Arthropoda | Ostracoda | Podocopida | Loxoconchidae | Meroplankton |
| Echinodermata | Echinoidea | Camarodonta | Parechinidae | Meroplankton |
| Echinodermata | Echinoidea | Clypeasteroida | Fibulariidae | Meroplankton |
| Echinodermata | Echinoidea | Spatangoida | Spatangidae | Meroplankton |
| Echinodermata | Holothuroidea | Apodida | Synaptidae | Meroplankton |
| Echinodermata | Ophiuroidea | Amphilepidida | Amphiuridae | Meroplankton |
| Echinodermata | Ophiuroidea | Amphilepidida | Ophiotrichidae | Meroplankton |
| Echinodermata | Ophiuroidea | Ophiacanthida | Ophiodermatidae | Meroplankton |
| Echinodermata | Ophiuroidea | Ophiacanthida | Ophiotomidae | Meroplankton |
| Chaetognatha | Sagittoidea | Aphragmophora | Sagittidae | Holoplankton |
| Chordata | Actinopterygii | Perciformes | Gobiidae | Ichthyoplankton |
| Chordata | Actinopterygii | Perciformes | Labridae | Ichthyoplankton |
| Chordata | Actinopterygii | Perciformes | Tripterygiidae | Ichthyoplankton |
| Chordata | Appendicularia | Copelata | Oikopleuridae | Holoplankton |
| Chordata | Thaliacea | Salpida | Salpidae | Holoplankton |

**Table S3. Number of reads and OTUs for metazoans per marker.** Summary of the number of reads and OTUs for metazoans with the COI and 18S markers before and after processing (chimera removal and singleton).

|  |  |  |
| --- | --- | --- |
|  | **COI** | **18S rRNA** |
| Samples | 18 | 18 |
| Reads before processing | 2,367,381 | 2,256,633 |
| Reads after processing | 1,143,663 | 1,039,947 |
| Reads/sample (mean ± sd) | 63,537 ± 4,305 | 57,775 ± 3,773 |
| OTUs | 380 | 296 |

**Table S4. Results of the Redundancy Analysis (RDA).** Total (model) and residual variance and variance of each predictor tested in the RDA (Distance + Temperature + Salinity + Fluorescence + ΔT), for meroplankton, holoplankton and copepods feeding traits.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **df** | **Variance** | **F** | ***p*** |
| **Meroplankton** |  |  |  |  |
| Model | 5 | 0.03766 | 3.76 | 0.001 \*\*\* |
| RDA1 | 1 | 0.02638 | 13.20 | 0.003 \*\* |
| RDA2 | 1 | 0.00935 | 4.67 | 0.158 |
| RDA3 | 1 | 0.00179 | 0.90 | 0.918 |
| RDA4 | 1 | 0.00011 | 0.05 | 1.000 |
| RDA5 | 1 | 0.00001 | 0.01 | 1.000 |
| Residual | 12 | 0.02398 |  |  |
|  |  |  |  |  |
| **Holoplankton** |  |  |  |  |
| Model | 5 | 0.03430 | 5.35 | 0.001 \*\*\* |
| RDA1 | 1 | 0.02804 | 18.77 | 0.001 \*\*\* |
| RDA2 | 1 | 0.00928 | 5.24 | 0.050 \* |
| RDA3 | 1 | 0.00192 | 2.42 | 0.311 |
| RDA4 | 1 | 0.00161 | 0.30 | 0.991 |
| RDA5 | 1 | 0.00027 | 0.01 | 1.000 |
| Residual | 12 | 0.02417 |  |  |
|  |  |  |  |  |
| **Copepods feeding traits** |  |  |  |  |
| Model | 5 | 0.02683 | 3.43 | 0.003 \*\* |
| RDA1 | 1 | 0.01992 | 12.72 | 0.010 \*\* |
| RDA2 | 1 | 0.00452 | 2.89 | 0.440 |
| RDA3 | 1 | 0.00160 | 1.02 | 0.842 |
| RDA4 | 1 | 0.00075 | 0.48 | 0.900 |
| RDA5 | 1 | 0.00001 | 0.01 | 1.000 |
| Residual | 12 | 0.01879 |  |  |

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**Figure S1.** **Sea Surface Temperature (SST) maps.** Weekly average satellite images of sea surface temperatures (SST) for the sampling periods in (a) spring, (b) summer, and (c) fall 2019, obtained from NASA MODIS Aqua, showing the location of the sampling stations (white dots) in the two transects in front of the bays of Brest (northern transect) and Douarnenez (southern transect).



**Figure S2.** **Vertical profiles of fluorescence.** Vertical profiles of fluorescence along the two transects, in front of the bays of Brest and Douarnenez during sampling in (a) spring, (b) summer, and (c) fall 2019. Triangles represent the starting depth of plankton tows.



**Figure S3.** **Vertical profiles of salinity.** Vertical profiles of salinity along the two transects, in front of the bays of Brest and Douarnenez during sampling in (a) spring, (b) summer, and (c) fall 2019. Triangles represent the starting depth of plankton tows.



**Figure S4.** **NMDS and clustering of the samples for mero- and holoplankton taxa.** Nonmetric multidimensional scaling (nMDS) ordination and clustering of samples collected in the Iroise Sea based on the rarefied abundance (number of reads) of OTUs assigned to mero- (a,b) and holoplankton (c,d) taxa with the 18S rRNA gene. Samples are classified according to shelf position and season of sampling.