Quantifying a midwater zooplankton community using the ZooScan system.

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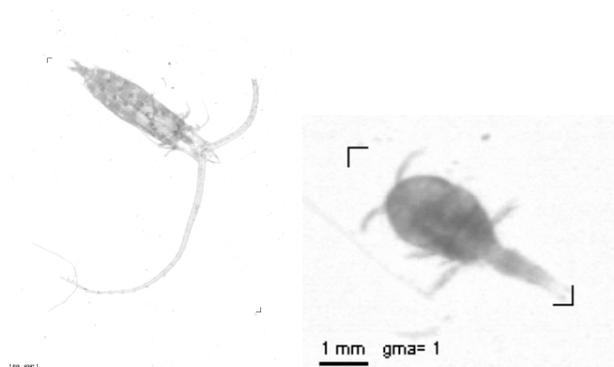
Gelatinous predators are an ever-present, but often overlooked part of marine ecosystems. Indeed, their fragile, gelatinous nature, means they are difficult to sample intact, and so their numbers and biomass are often underestimated. However, possibly due to their resilience to changing habitats, the 'gelatinous food web' is becoming more important in the light of increased climatic and anthropogenic stress exerted on marine environments. Few studies deal with the predation pressure this gelatinous food web may represent (Mackie, Pugh, Purcell, 1987). Indeed, because these animals are so fragile, there is little if no information on their prey, as the stomachs are either lost during sampling (Siphonophora) or destroyed (ctenophores and other Cnidaria).

Stratified net samples (50- to 100m depth intervals) were collected in spring 2006 in Sagami Bay and surrounding areas, and allowed a relatively complete identification of the gelatinous plankton present. In order to study the potential prey field of these gelatinous predators present at the time of sampling, the 50 to 5000μm fraction of the net samples was analyzed with the ZooScan and the ZooProcess automatic recognition software.

These methods are applied for the first time to the study of samples from Japanese waters. Due to the important biodiversity of these waters, especially in complex oceanographic zones like the south-eastern coast of Japan, and to the lack of taxonomic expertise in many of the groups considered, prey groups were usually established only to order level, except for the dominant copepod *Calanus sinicus*. Numbers and size spectra of the particles in each group were established over the water column, as well as an estimate of biomass for the dominant copepod groups, and compared to the vertical distributions of gelatinous predators.

Examples of scanned prey items.