

## Acoustic characterization of biological backscatterings in the Kuroshio-Oyashio inter-frontal zone and subarctic waters of the western North Pacific in spring

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as follows: copepods 13.7–17.3 dB, krill 11.6–15.3 dB, Japanese anchovy –1.6 to 1.1 dB, a myctophid, *Diaphus theta* –0.8 dB, sand lance 6.1 dB and larvae and juveniles of pelagic and mesopelagic fish –9.6 to –4.0 dB. The results suggest that biological backscatterings in the Kuroshio-Oyashio inter-frontal zone and subarctic waters of the western North Pacific in spring can be characterized by using  $\Delta$ MVBS.

**Key words:** acoustic species discrimination, *Ammodytes personatus*, *Engraulis japonicus*, *Eucalanus bungii*, *Euphausia pacifica*, *Neocalanus* spp.

### ABSTRACT

The acoustic characteristics of biological backscattering in the western North Pacific were studied to verify expert knowledge on species composition in the echosigns. The survey was conducted in the Kuroshio-Oyashio inter-frontal zone and the subarctic waters in April 2003. The species composition of backscatterings was identified by using midwater trawl, Isaacs-Kidd midwater trawl and Bongo net. The differences of mean volume backscattering strengths between 120 and 38 kHz ( $\Delta$ MVBS<sub>120–38</sub>) were calculated for the backscatterings. Six types of backscatterings were classified based on the results of net samples and the  $\Delta$ MVBS<sub>120–38</sub>. The  $\Delta$ MVBS<sub>120–38</sub> of each group was

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