

Executive Summary

Based on recommendations of PICES Working Group on *Effective Sampling of Micronekton* (WG 14), an Advisory Panel on *Micronekton Sampling Gear Intercalibration Experiment* (MIE-AP) was established in 2002 under the direction of the PICES Biological Oceanography Committee (BIO). The role of the Advisory Panel (renamed as *Micronekton Sampling Inter-calibration Experiment* in 2004) was to oversee the planning and implementation of a field program to evaluate the efficacy of sampling gears and procedures employed by different agencies to sample micronekton in the North Pacific, and to disseminate the results to the scientific community. Between 2004 and 2007, three micronekton sampling gear experiments were completed and seven gears were inter-compared:

- MIE-1: October 6–13, 2004, off Oahu Island, Hawaii, U.S.A.; acoustics and three gears [Cobb trawl, Isaacs-Kidd Midwater Trawl (IKMT), and Hokkaido University Frame Trawl (HUFT)] were compared;
- MIE-2: September 25–October 3, 2005, southeast of Hokkaido Island, Japan; acoustics and five gears [Midwater otter trawl (OT), Multiple Opening/Closing Net and Environmental Sensing System (MOCNESS-10, MOCNESS-1), FMT (also referred to as HUFT), and Matsuda-Oozeki-Hu Trawl (MOHT)] were compared;
- MIE-3: September 22–23, 2007, eastern Bering Sea; acoustics and two gears (IKMT and MOHT) were compared.

Results of the three experiments point out that the Matsuda-Oozeki-Hu Trawl (MOHT) gear was among the most reliable and cost-effective micronekton gears examined. It provided high quality and quantity micronekton sampling. The MOHT is now available commercially and development of a closing/opening mechanism for this net is underway. Equipping the MOHT with an opening/closing mechanism on the cod-end could put this gear in the position to become a standard micronekton gear worldwide, and in the North Pacific, in particular. As a consequence, the Advisory Panel strongly supports further work in this direction.

Models were developed to predict backscattering volume to allow for comparisons between acoustic and net data. However, preliminary results indicated that the compatibility was low, which points to problems associated with both sampling techniques that have been discussed in the literature. The closest results were obtained between the MOHT and acoustics. The Advisory Panel suggests that research in improving acoustics estimates should be continued. In addition, acoustic data collected during all experiments still require some degree of editing and analysis.

A new system, J-QUEST (Sugisaki and Sawada, 2007), was shown to quantify the epipelagic micronekton and nekton but appeared to be inefficient in detecting the mesopelagic fishes, and myctophids in particular. There is a good potential for adopting this system for mesopelagic sampling but more work is required to determine which light spectrum myctophids are less sensitive to.