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“IT WAS VERY EXCITING IN THOSE DAYS.
WE WERE EXPLORERS.”

Marie-Tharp [1920-2006], Oceanographer

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Echoes from the Deep



Marine pelagic ecosystems present fascinating opportunities for ecological investigation but pose important methodological challenges for sampling. One significant challenge for those interested in studying life in the ocean is the limited penetration of light, which makes optical tools ineffective at sampling over large volumes and great ranges.

To overcome this limitation, many animals exploit the rapid and efficient transmission of sound in water for communication and sensing. We also take advantage of these characteristics for scientific exploration of the marine habitat. Active acoustic techniques involve producing sound and receiving signals from organisms and other water column sources, offering the benefit of high spatial and temporal resolution and the ability to make measurements spanning a range

of spatial and temporal scales. Acoustic tools and new approaches to taking them to sea are opening up access to one of the least investigated ecosystems on the planet, the mesopelagic. We are now able to observe individual animals in the context of their environment at a variety of scales, revealing the critical role these animals have in feeding ocean life and regulating the earth's climate through active carbon pumping. Our timing couldn't be better – for the first time, several countries have issued fishing permits to allow access to the mesopelagic to provide fish feed and fish oil. We have an unprecedented opportunity to design sustainable fisheries to minimize the impact of human actions on the deep sea and science and technology have an important role to play.