



Sonar Data and Fisheries Management

Preserving data for fisheries management and beyond

What are water-column sonar data?

Water-column sonar data contain acoustic scattering information from near the surface of the ocean to the seafloor. This relatively new type of sonar data is opening new fields of study including 3-D mapping of fish schools and other marine organisms, large-scale mapping of methane seeps, and remote monitoring of undersea oil spills.

Sonar data and fisheries management

The National Marine Fisheries Service (NMFS) is dedicated to sustaining our nation's living marine resources. Sonar technologies are the primary means to noninvasively monitor fish and their environment. NMFS uses cutting-edge sonar systems that greatly improve the quality and quantity of the information gathered. This information in turn improves NMFS's ability to understand and manage fisheries.

Why are these data important?

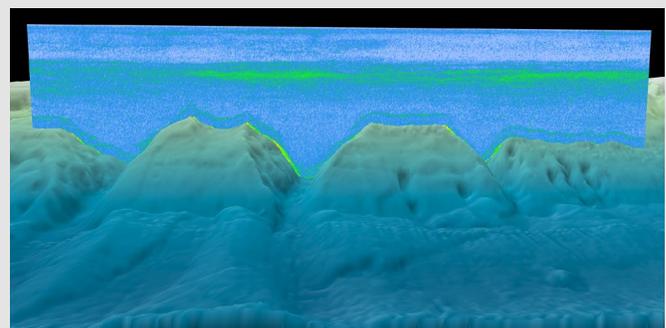
Water-column sonar data aid fisheries management, help to sustain living marine resources, and can be used to characterize the seafloor and methane seeps. Ensuring these valuable data are available to the broadest community enables better science and supports the broadest application.

What is the benefit to the public?

Clearly defining the condition of commercially and recreationally important species will protect our nation's fisheries and help improve fisheries regulations. Careful management and preservation of water-column sonar data guarantees these data are available for public use for decades to come.



Yellowtail snapper, a commercially important species in the Gulf of Mexico and southeastern U.S. Atlantic Ocean. Credit NOAA.



Water-column sonar data collected on the NOAA Research Vessel *Okeanos Explorer* in July 2013. The sonar data are overlaid onto NCEI coastal relief model bathymetry.

Our goal is to create an accessible archive available to the world

The National Centers for Environmental Information (NCEI), in partnership with the National Marine Fisheries Service (NMFS), has created a national archive for the stewardship and distribution of water-column sonar data collected by numerous sources including NOAA and academic fleets.

Driving factors for water-column sonar data stewardship

- There is an ever-increasing volume of sonar data generated from NOAA research and survey activities that is not being stored in a sustainable manner
- NCEI's ability to store large amounts of data ensures the archive is well supported and well integrated for NOAA and the public
- Numerous NOAA and national requirements for data management and access need to be met
- Collaboration fosters modern and standardized ocean data management across the federal government

Future direction

- Many of the data management, discovery, and delivery tools developed to support the water-column sonar data archive have a broader application across the Federal government and academic institutions, aiding not only fisheries management but also those interested in investigating essential fish habitats and even methane seeps
- Development of derived-data products helps turn the large volume of raw water-column sonar data into a more comprehensive, accessible result that anyone can incorporate into their research and management decisions
- Integrate other oceanographic data to assist users in understanding the entire ecosystem where water-column sonar data were collected



NOAA Fishery Survey Vessels *Pisces* and *Bell M. Shimada* at sea

Challenges

- Raw data formats are complex
- Immense size of water-column sonar data collected (10+ terabytes for just one research cruise)
- Efficient transfer of large volumes of data from a research lab to NCEI

Opportunities

- New technology with great potential for future advances
- Expanding number of potential users and applications
- Use of data beyond original collection purpose
- Facilitate innovative marine ecosystem acoustic research