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**Marine ecosystem acoustics: contributions of sonar technology**

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Sonar is considered in the widest sense as an acoustic system consisting of a transmitter and receiver of underwater sound. It may be monostatic, bistatic, or multi-static; narrowband or broadband; with one or more fixed, rotating, or electronically formed beams. Transducers may be mounted on hulls of vessels and autonomous underwater vehicles, fixed structures, or seafloor; towed; or suspended. Spatial scales may be sampled from millimeters to thousands of kilometers; corresponding temporal scales vary from a fraction of a second, as in target-tracking, to seasons, as in observing animal migration. Several sonar types are described. Contributions of sonar technology to ecosystem studies, both actual and potential, are noted. These include, for example, fine-scale surveying of pelagic and semi-demersal fish by scientific echo sounder; mapping of the three-dimensional structure of fish aggregations and bathymetry by multibeam sonar; quantification of benthic egg beds of the squid *Loligo opalescens* by sidescan sonar; and large-scale surveying of swimbladdered fish by parametric sonar. Each of these sonar systems has potential for detection, quantification, and classification of marine organisms, as well as for characterization of the habitat, hence yielding the kind of information that is required for ecosystem assessment and management.