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Acoustical methods that provide an integrated view of the marine ecosystem

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The fish stock assessment are not anymore the sole purpose of the "fisheries acoustics" as it appears clearly that the fish belongs to a whole ecosystem, of which functioning mechanisms must be understood to better assess the fish populations' health state. The biotic factors, as prey availability, are of great importance and can be studied also by acoustic tools. The multifrequency systems (echosounders or profilers), increase the size range of the organisms that can be detected; new multibeam sonars provide a high resolution allowing studies close to boundaries. The results of the SIMFAMI European program are presented. It aimed at marine organism classification through multifrequency information, including fish/plankton separation and classification of meso/macroplankton. It provided new methods to classify and describe the various biotic components of the ecosystem from fish to plankton. A link between the use of these new methods and the former micro/mesoplankton classification tools as well as passive acoustic tools allows to reach the classification of a huge range of organisms and to study their interactions. Results of such experiences done on various upwelling ecosystems are shown. Additionally for complex fields, new multibeam sonars can advantageously help in the description of fish distributions.