Tools for Underwater Noise Monitoring, Marine Mammals' Surveys, and Implementation of Acoustic Risk Mitigation Policies

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Abstract

The concern that man-made acoustic signals can affect marine mammals has increased over the past few years, mainly within the context of low-frequency active sonars and seismic surveys. Whether it is in support of acoustic risk mitigation measures, or in the larger context of environmental monitoring, recent years have seen an increasing use of underwater passive acoustics.

Passive acoustics is a powerful tool to be used for (a) expanding knowledge about marine mammals' behaviour, ecology and distribution; (b) monitoring underwater noise; (d) monitoring critical habitats; (e) evaluating the effects of sound exposure on animals' behaviour; (f) implementing mitigation policies by detecting animals within or approaching a possibly dangerous sound exposure area.

To support the Acoustic Risk Mitigation Policies being developed by many national and international civil and military organizations a PC based Sound Analysis Workstation was designed and extensively tested to provide an affordable and flexible tool for wide band acoustic detection and monitoring. It provides detection, processing, storage and plotting capabilities and can be used for both wide area surveys and local monitoring needs.
In many years of extensive use it has been demonstrated the importance of broadband detection, continuous 24/24h monitoring and integration of visual cues to maximize detection capabilities.

The package includes software for 1) recording and analyzing sounds received by up to 8 wide band sensors, 2) manage a sonobuoys' radio receiver, 3) recording and distributing NMEA navigation data, 4) logging and classification of acoustic contacts, 5) logging visual contacts, 6) sharing data among a network of PCs, 7) plot georeferenced data on a GIS.

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