LANEnC6

Survey seabed habitat by remote sensing

Overview

This standard is about the knowledge, understanding and skills required to survey the subtidal marine seabed physical habitat as a part of coastal zone management activities. The standard addresses the skills needed to appreciate, measure, interpret and communicate seabed habitat data to achieve marine conservation objectives and for wider audiences. The skills addressed here assume competence in the fields of Geographical Positioning Systems (GPS) and Geographical Information Systems (GIS).

The survey methods addressed in this standard use the remote sensing principles of interpreting reflected energy (light or sound) from the seabed to enable determination of the basic characteristics of the seabed habitat. These remote methods complement methods that rely on being on the seabed (e.g. diving) or sampling a small area of the seabed and bringing it to a survey vessel for inspection (e.g. grabbing).

You will require a sound knowledge and understanding of marine seabed habitats and the methods by which they may be remotely sensed. You will also need an understanding of how this information is commonly used in marine environmental management processes, notably through the application of the biotope principle, where habitat, flora and fauna are interrelated, and where national classification systems exist.

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Performance criteria

You must be able to:

P1 plan surveys of a range of marine habitats at different scales using remote sensing methods

P2 follow published (national) guidance, policy and procedure documents in line with statutory requirements, good practice and legislation

P3 assess the risks associated with the site and the proposed works

P4 prepare and deploy equipment for surveys appropriate to the mapping of specific marine habitats at appropriate scales

P5 undertake field checks to ensure optimum data quality under varying water column conditions

P6 maintain environmental, health and safety legislation and codes of practice

P7 apply quality assurance and control procedures to data collection and storage

P8 apply spatial data processing methods to reveal habitats

P9 link data to a) ground-truth information and b) recognised biotope substrate descriptors

P10 identify marine habitats and explain their geospatial context

P11 communicate the data to clients and wider audiences

P12 contribute to discussions on data interpretation limitations and significance

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Knowledge and understanding

You need to know and understand:

K1 classification of marine habitats

K2 typical statutory and organisational requirements

K3 the value of risk assessments

K4 deployment, data logging procedures and good practice for commonly used remote mapping systems

K5 factors that can affect field data quality

K6 data safety, quality control procedures for acoustic and optical data sets, data back-up and archiving

K7 processing spatial data using GIS or CAD-based technology

K8 seabed sample description systems

K9 marine seabed classification principles and systems

K10 methods of graphic and written communication for geospatial data

K11 limitations and advantages of specific remote mapping methodologie

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Glossary

Marine: the area from the inter-tidal zone (highest water mark) out to the limit of the territorial waters (12 nautical miles)

Marine seabed habitats: depth, energy levels, rock and hard ground, sediments, macroflora, biogenic morphology.

- the key elements that can be mapped are depth, rock outcrop, sediment deposits, macro algal beds and (more rarely) faunally generated features

Scales: micro, local, broad (landscape)

Equipment: echo sounding, multibeam, side-scan sonar, AGDS, sub-bottom profiling, LIDAR, satellite imagery, aerial photographs, towed camera and video

Water column conditions affecting data quality: equipment mounting/deployment attitude, vessel speed, density stratification, strong currents, waves, obstructions

Data processing methods: smooth/simplify/mosaic/enhance/contour data, GIS and CAD systems, proprietary software

Communication of results: images, xyz data, layering, written descriptors

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