Ecological Quality Assessment in Coastal Ecosystems

Synopsis

Marine diversity as a tool in environmental quality assessment and its value for protection of endangered ecosystems and for environmental monitoring and assessment programs in the framework of regulatory directives (EU Water Framework Directive, etc.).

Aims

•To be aware that marine diversity is a precious treasure to preserve in conservation programmes and a key variable to assess environmental quality in endangered ecosystems.

•To introduce the basic concepts used in marine ecological quality assessment.

•To provide a basic knowledge on the Water Framework Directive and other legislative references and their implications for the marine quality assessment

•To provide the methods for the integrative ecological assessment of marine quality

•To present some practical cases dealing with the integrative ecological assessment of marine quality

- To present some practical cases dealing with the human pressures an exotic species on marine environments

Objectives

At the end of the Unit, you should:

1.Recognize characteristic taxa of algae, invertebrates and fishes from coastal ecosystems.

2.Assess environmental quality, by using different diversity measures.

3.Analyse monitoring programmes for algae and animals

4.Have a good knowledge of the main legislative references in relation to the assessment of the quality of the marine environment, especially the Water Framework Directive.

5.Interpret the data from monitoring programs

6. Have a good knowledge of the effect of human pressures and exotic species on the marine environment

Key Skills Acquired

1.Generic skills: report writing, scientific writing, working in teams, library information retrieval and critical analysis of literature, presentation and manipulation of data (e.g. water quality data interpretation biological data interpretation), ability in integrative interpretation of data.

Programme

PART 1. BIODIVERSITY ASSESSMENT & MONITORING

1. Richness of diversity based on algae, invertebrates and fishes from coastal ecosystems.

2. Methods for performing studies on rocky shores (and Impact studies) ans sampling resolutionField trip: Floristic and faunistic survey

Practical: Data analysis from the intertidal data using PRIMER

PART 2. INTEGRATIVE ASSESMENT OF MARINE ENVIRONMENTAL QUALITY

1. The Marine Strategy Framework Directive: objectives, descriptors and assessment criteria. Tools for its implementation.

2. The Water Framework Directive (WFD) and its implications for the marine quality assessment in EU will be presented. Framework for Community action in the field of water policy. Concepts, objectives, requirements and implementation phases of the WFD. Other important legislative references e.g., European Marine Strategy Directive.

3. Human pressures on coastal waters and hydromorphological quality

4. Factors of global change in the marine environment: marine litter and exotic species.

5. Environmental monitoring of the Nervión estuary: the story of a rehabilitation process

Practical: Marine environmental quality indices

Learning & Teaching

•Formal & Audiovisual Lectures: 30 hr; 8 (Part 1) & 22 (Part 2)

•Computer practicals: 6 hr

•Fild trip (½ day): 4 hr

Teaching Staff: E. Quintano (Coord.), N. Muguerza, U. Goiti, I. Rojo, J. Franco (AZTI), I. Zorita (AZTI), I. Menchaca (AZTI), O. Solaun (AZTI), N. Montero (AZTI)

Semester: 2

Timetable slot: To be advised

ECTS:4

Level: Optional

Bibliography

Delivered during the course

Assessment

•Written report (40%)

•Questionnaires (60%)

• The attendance is very important

Course Evaluation

By completion of University Unit Evaluation Questionnaire by students, annual assessment by Unit Coordinator.