



A very pleasant and successful Theme 3 Workshop on Non-Monetary Value was held in the Azores on 2-3 August, including an inter-island boat excursion from Terceira (workshop venue) to Sao Jorge. More formal discussions were followed, in normal tradition, with a meeting around a lunch-table.

## Theme 3: the socio-economic importance of marine biodiversity

THE AIM OF THEME 3 IS TO INTEGRATE research and data from the network members to understand the economic, social and cultural value of marine biodiversity. This will be used to help develop the research base required to support the sustainable management of marine biodiversity and ecosystem functioning.

Many of the research outputs of natural scientists are not utilised by managers of the marine environment as they are often not readily accessible in a practical form. In theme 3, the integrated research activities will develop tools to make research outputs concerning marine biodiversity and its relationship with ecosystem functioning available for operational use by managers of the marine environment.

MARBEF aims to promote increased and improved dialogue between natural and social scientists and marine ecosystem managers, fisheries managers and policy-makers. This process can be facilitated and mediated by environmental socio-economists. Within theme 3, MARBEF is exploring mechanisms to achieve this and to ensure that the results of such dialogue are fed back into the development of research within MARBEF to maintain its relevance to the formulation of European policy and the development of marine ecosystem management.

Socio-economic research in the field of marine biodiversity is currently of a very fragmented nature, but it is developing rapidly. Through MARBEF, we plan to ensure that future research into the socio-economic importance of marine biodiversity is undertaken in a cohesive manner and will put Europe at the forefront of this discipline. The theoretical base of socio-economic research in Europe is very strong and by linking research activity and developing a strong marine focus, Europe will become a world leader in this emerging field.

We aim to bridge the existing gap between natural and social science. Few natural marine scientists have collaborations with socio-economists, so few natural scientists are fully aware of the potential benefits of cross-disciplinary research. In many cases, they simply do not know where to find socio-economists with whom to collaborate. A critical role of MARBEF's theme 3 will be to enable and facilitate two-way communication between these groups. Theme 3 will promote consideration of management and societal needs as a guide to the direction of all marine biodiversity research by increasing understanding and awareness of the socio-economic importance of marine biodiversity. MARBEF aims to bring about a fundamental shift in the overall mentality of social and natural scientists by improving mutual understanding and by becoming more inclusive. One target is to develop enduring collaborations and submit collaborative

proposals for joint research between natural and socio-economic scientists. To achieve these aims, MARBEF theme 3 has two broad research objectives:-

- 1) To improve our understanding of valuation systems for marine biodiversity;
- 2) To develop marine ecosystem management strategies which can be successfully implemented to protect marine biodiversity and at the same time provide maximum and perceivable benefit to human society.

### Understanding systems of biodiversity valuation

In order to manage marine ecosystems for conservation of biodiversity and sustainability of ecosystem functioning, we need to understand the economic, social and cultural value of biodiversity across Europe and hence provide a framework and context to integrate natural science with the needs of society and development of management policies. Joint research between natural scientists, economists, sociologists and socio-anthropologists within theme 3 aims to investigate the total economic and social value of European marine biodiversity. Understanding the value of all the various components of marine biodiversity is essential if we are to minimise the negative impacts of human activities. A monetary valuation system exists for direct products of marine ecosystems (fish, molluscs, crustaceans) but the wider role

of marine ecosystems in the provision of services, such as carbon sequestration, pollution control and stabilisation of sediments to reduce coastline erosion, is poorly understood and is based on non-monetary valuation within a socio-economic approach. Theme 3 will stimulate public debate on alternative and more comprehensive valuation systems incorporating social, cultural and economic aspects of the goods and services provided by marine biodiversity.

Numerous valuation studies have been performed on coral reefs and mangroves, but other examples are rare, especially based in Europe, making this research both critically important and unique. Valuation can play a critical role in the management of the environment. Determining estimates of value for environmental resources translates natural science into an accessible format, and enables decision-makers to make educated and balanced management plans which maximise benefit to all affected parties.

## Developing marine ecosystem management tools

MARBEF aims to provide information and input to the development of the EU Marine Strategy to promote the sustainable use of the sea and the conservation of marine ecosystems. This requires integration of management with an understanding of marine biodiversity and its relationship with ecosystem functioning. The key to the sustainable utilisation of marine biodiversity is not to limit all utilisation (i.e. being completely precautionary) but to ensure that economic development can occur without exceeding the resource thresholds. In order to do this, it is essential that socio-economists and environmental managers have a good idea of how marine biodiversity will react to different pressures at different times, and the risks and confidence limits associated with these estimates. Such knowledge will be essential to develop management strategies for the sustainable use of marine ecosystems and to mitigate environmental degradation. Theme 3 participants will review the nature of data available for environmental managers and where it is found, and compare this with the type of data required and how this information is sought. Such information will feed into the development of research and dissemination within all themes of MARBEF.

Theme 3 aims to integrate natural science research outputs from themes 1 and 2 with the socio-economic valuation of marine biodiversity to develop models such as decision support systems and scenario analysis for use as management tools.

The integrated science within theme 3 will be initially progressed through a series of six

integrating workshops to implement networks between the relevant parties across the biological, social, socio-anthropological and economic disciplines as well as between marine ecosystem managers, fisheries managers and policy-makers. These workshops initially aim to review state of the art in valuation of marine biodiversity and review management tools and systems currently in place, and hence to develop research programmes to develop these areas further within the longer term of MARBEF.

## Start-up workshop and goods & services workshop

The first theme 3 workshops took place in Plymouth from 17-19 June. A one-day start-up workshop was followed by a one-day workshop on the goods and services provided by marine biodiversity. Both workshops were attended by 22 people.

There was a very broad range of disciplines, and although natural scientists (marine ecologists) dominated, there were also environmental economists, maritime historians, fisheries historians and social anthropologists as well as others who appeared to be polymaths who defied classification! This

mix made for some interesting and lively discussions, particularly concerning terminology and concepts.

The start-up workshop included introductions of the participants and their research interests, discussion of the nature and research of theme 3, as well as development of a framework for a response-mode project proposal.

The goods and services workshop reviewed the current definitions of goods and services provided by living marine organisms and mediated by marine biodiversity. This workshop provided an introduction for some natural scientists to the socio-economists' requirement to classify the biodiversity resources and ecosystem functioning of marine ecosystems into goods and services. Some of the discussion focused on considerations of the spatio-temporal scales and ecosystem functions that need to be understood and integrated to provide the data to quantify goods and services. Such data is required if economists, sociologists and socio-anthropologists are to undertake economic, social and cultural valuations of biodiversity across Europe which can be used to provide a framework and context to integrate natural science with the needs of society and development of management policies. ●

### Collecting shellfish in the Algarve, Portugal.

