

SIXTH FRAMEWORK PROGRAMME
PRIORITY [#]
[PRIORITY TITLE]



Contract for:

SPECIFIC TARGETED RESEARCH OR INNOVATION PROJECT

Annex I - “Description of Work”

Project acronym: INCOFISH
Project full title: Integrating Multiple Demands on Coastal Zones with
Emphasis on Fisheries and Aquatic Ecosystems
Proposal/Contract no.: PL 003739
Related to other Contract no.: *(to be completed by Commission)*

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1. Project summary

INCOFISH will conduct specifically targeted strategic research towards reconciling multiple demands on coastal zones with special emphasis on developing countries. It will evaluate and integrate data, tools and concepts suitable to contribute to the goals set by the World Summit for Sustainable Development in Johannesburg, such as restoring healthy fish stocks and ecosystems by 2015.

INCOFISH will focus its research activities on the following Integrated Coastal Zone Management (ICZM) issues: document historical performance of ecosystems to deal with the 'shifting baselines' syndrome and provide sound reference points for resource restoration; provide electronic maps for all coastal species to establish authoritative species inventories and explore scenarios of global change and invasive species; create spatial ecosystem models for the coastal systems treated in this project as a basis for understanding the resource; provide guidelines and tools for best sizing and placement of marine protected areas; research impact of ecotourism on coastal ecosystems and provide best-practice guidelines; identify suitable simple indicators to promote and monitor sustainable fisheries; provide valuation of coastal ecosystem products and services and of different management regimes; evaluate legal instruments with regard to their usefulness for sustainable fishing in coastal zones; revisit coastal transects as a tool for structuring and understanding multiple demands on coastal zones; provide an archive and web portal for public access to all data and tools relevant for ICZM.

The tools and concepts resulting from INCOFISH research will be tested in real-world scenarios in selected coastal systems worldwide. They will together form a package with the potential to impact on solving societal problems in the coastal zone.

2. Project objectives

2.1 Background

Integrated Coastal Zone Management (ICZM) is defined as a dynamic, continuous and iterative process, by which decisions are made for sustainable use, development and conservation of the coast and its resources. The extent of the coastal zone is defined by the area in which terrestrial and marine processes (economic, ecological, and socio-cultural) depend on and influence each other. A variety of demands for utilisation and protection collide in this area making it a zone of problems and potentials.

On the side of the sea, the shelves and coastal zones are the source of an estimated 95% of marine fish, invertebrate and algal production; they attract millions of tourists for activities such as swimming, diving, and boating; they also are used for maritime transport and as sources of offshore petroleum, gas and wind energy, and sewage disposal. On the side of the land, coastal zones are home to almost two-thirds of the human population and associated socio-economic and recreational activities.

Coastal zones are important reservoirs of biodiversity and recent decisions at the Johannesburg World Summit on Sustainable Development demand the establishment of protected areas to restore degraded aquatic ecosystems and fish stocks to healthy levels by 2015. In a subsequent meeting of European environmental ministers in Bremen, Germany, it was agreed that Europe's seas will contain a network of protected areas by 2010.

The concept of ICZM has been developed in the 1980s and has since been widely accepted, elaborated, and tested in numerous projects. However, widely accepted tools and related data to provide transparency to the decision making process have yet to emerge. Such transparency is a precondition to the success of ICZM. Research to improve the understanding of coastal zones requires a shared interdisciplinary framework, to help reconcile the multiple demands on limited resources, mitigate degradation, and find equitable, innovative solutions appropriate to the social, economic, institutional and environmental contexts of developed and developing countries.

The development of knowledge products and their dissemination useful for the understanding of coastal systems and supporting policy formulation on priorities set by bi-regional dialogue between Europe, Africa, Caribbean and the Pacific, Asia and Latin America and by the World Summit on Sustainable Development could be considered as stepping stones to reach such a goal. As an example, accepted tools for suitable siting, sizing and monitoring of coastal protected areas and for evaluating their ability for reconciling ecological and socio-economic demands are still missing. Such tools will be crucial if progress is to be made on the pathway towards restoration of coastal/aquatic ecosystems and towards regular income and dignified livelihoods for communities relying on aquatic resources.

Resilience is the ability of a system to cope with disturbances without shifting into a qualitatively different state. At the species level, resilience indicates the ability to cope with occasional unfavourable climatic conditions, with human exploitation pressure, with changes in prey or predator relationships, or with pollution. At the ecosystem level it is the capacity to cope with massive exploitation, invasive species, climate change, or pollution. In social systems resilience is the ability to withstand and recover from, e.g., environmental change, or social, economic or political upheaval. INCOFISH will provide measures of resilience at the species, ecosystem, and social level.

Indicators for sustainably-produced fisheries products entering international trade will help in policy analysis and support the enabling environment required to operationalize (implement) the World Summit on Sustainable Development decision on aquatic ecosystem restoration.

Valuation of coastal ecosystem products and services and equitability of resource allocation is another important tool for mitigation of degradation in the wider coastal zone including those from urbanisation. Consideration of the human dimension and social impact assessments will be necessary. The legal framework for establishing, designing and implementing resource protection law must be taken into consideration, both at the international and regional/national level.

INCOFISH proposes specifically targeted, strategic research towards the development, application, and integration of a series of databases, tools and concepts suitable to contribute to the goals set by the World Summit on Sustainable Development for a sustainable reconciliation of multiple demands on coastal zones.

We believe that two decades after the invention of ICZM it is time to attempt a global synthesis and lay the foundation for turning scientific insight into public action. Such vision can be taken on only by a large number of partners and specialists from all around the world contributing to a common goal in a harmonized fashion. INCOFISH therefore integrates what would otherwise have been several independent INCO projects.

2.2. Objectives

The scientific and technological objectives of INCOFISH can be summarized as follows:

Overcome the 'Shifting Baseline' Syndrome

This problem has emerged as each generation of fisheries and environmental scientists has accepted existing stock size and species composition as the baseline against which temporal changes are measured. However, if stocks are progressively depleted, a shift in the baseline occurs over time. This results in an accommodation of the creeping disappearance of resource species, and the application of inappropriate reference points for the evaluation of economic losses and for the identification of targets for rehabilitation policies. To resolve this problem, historical data on catch and effort, biomasses, length-frequencies, maximum sizes, size and age at maturity, growth rates, natural mortality, etc. will be assessed, collated and analysed to establish baselines against which the current status and restoration goals of key aquatic resources can be assessed. Likewise, historical data on catch and effort, production, biomasses, predator-prey interactions, flows, and habitat change will be assessed, collated and analysed to establish baselines against which the current status and restoration goals of selected marine ecosystems can be assessed. Detailed objectives, deliverables, and milestones are given in the description of the “Shifting Baselines” work package.

Provide Authoritative Species Inventories

Coastal zones are important reservoirs of biodiversity and the source of an estimated 95% of marine fish, invertebrate and algae production. Understanding the occurrence of species in space and time is a precondition to applied marine coastal zone conservation efforts. INCOFISH will use biogeographic niche modelling to define the preferred environmental conditions for key marine coastal zone species. This specific niche information will then be used to create standardized electronic maps of predicted distributions for all coastal zone species. In addition, the niche circumscription of species of interest will be connected with physical and bio-geochemical models thus producing dynamic distribution maps driven by models of forcing functions. This will allow exploring changes in distribution of species resulting from natural and anthropogenic environmental changes. The maps and related tools will be made freely available on the Internet with an easy-to-use interface. This will provide crucial support for efforts to promote, protect, and preserve the coastal zone environment. In addition, tools will be provided to produce counts and species lists – with indication of likelihood of occurrence – for any given area by “drilling through the pile” of standardized occurrence maps. Seasonal maps will help in understanding the dynamics of species diversity and species migrations in a given area. This will provide crucial information needed for, e.g. proper placement of Marine Protected Areas (MPAs) or zones with restricted access. Detailed objectives, deliverables, and milestones are given in the description of the “Biodiversity Mapping” work package.

Provide Ecosystem Models

There is wide agreement that coastal resource management has to move from single-species to ecosystem management. The precondition for such move is the existence of accepted, standardized models for the respective ecosystems. INCOFISH will provide such models as well as the underlying data for more than 10 strategically selected large marine ecosystems with a focus on Asia, Africa and South-America. These models will draw on INCOFISH data such as species inventories and biomasses; in return they will provide crucial inputs for e.g. sizing and siting of protected areas. Detailed objectives, deliverables, and milestones are given in the description of the “Ecosystem Modelling” work package.

Assist in Sizing and Siting of Marine Protected Areas

Benefits of marine protected Areas (MPAs) to fisheries, biodiversity conservation and precautionary management are widely recognized and the World Summit on Sustainable

Development resolved to create networks of MPAs before 2012. However, there is little consensus on what ‘networks of MPAs’ should look like and the situations where MPAs will or will not work. INCOFISH will provide best-practice concepts as well as tools for improved planning of MPAs, with a view of reconciling conflicting demands. Detailed objectives, deliverables, and milestones are given in the description of the “Marine Protected Areas” work package.

Provide Framework and Tools for Analysis of Interactions and Flows in the Coastal Zone

Based on the concept of ‘coastal transects’ and acknowledging the importance of interactions between sectors in coastal areas, we will develop a framework for compilation and analysis of data relevant to the understanding of interactions, impacts and flows in the coastal zone from mountains to the continental shelf. The ultimate goal is to provide coastal managers with a decision-making framework and communication tool for integrated coastal management. In this context we will investigate the use of the fuzzy logic approach and expert systems. Detailed objectives, deliverables, and milestones are given in the description of the “Coastal Transects” work package.

Provide Simple Indicators for Sustainable Resource Use

Excessive fishing is often the most important factor impacting marine ecosystems and the communities depending on the resource. Established fisheries management and its institutions have usually been unable to prevent or reverse overfishing. There is a need for specific targeted research to identify and operationalize methodologies which rely on low cost observations reflecting resource system features which can be recognised and accepted by all stakeholders. INCOFISH will provide indicators such as degree of resilience to exploitation or natural disturbances. We will focus on simple indicators that allow participation of the public in resource management and that have the potential to end overfishing. Detailed objectives, deliverables, and milestones are given in the description of the “Sustainability Indicators” work package.

Valuation of Coastal Ecosystem Services

Major sources of pressure on marine and coastal resources include unsustainable practices such as overfishing, coral mining, clear-cutting of mangrove forests, as well as those resulting from inappropriate management regimes at national and international levels. The latter include subsidisation of fishing capacity and fish consumption and of coastal development, insufficient management institutions, and ineffective policies for international trade and globalisation. In addition to degrading marine and coastal ecosystems, such pressures directly affect the social and economic conditions of fishing and coastal communities, resulting in widespread poverty in developing countries and high levels of debt of commercial fishing companies. INCOFISH will use state of the art methodologies to assign values to products and services of coastal ecosystems. This will then allow valuation of sustainable versus unsustainable management regimes and thus provide the public and politicians with the information needed to combat unsustainable management. Detailed objectives, deliverables, and milestones are given in the description of the “Valuation of Coastal Ecosystem Products and Services” work package.

Evaluate Pros and Cons of Ecotourism

There is growing evidence that well-managed marine protected areas (MPAs) not only cover their costs, but can generate substantial income for the benefit of local people and national economies. MPAs are especially attractive for ecotourists. However, usually visitors are not equally distributed but tend to concentrate around specific sites within the MPA due to key features and attractions or logistical constraints. The risks and environmental impacts

associated with such activities are little understood. INCOFISH will analyse benefits and problems associated with ecotourism in selected MPAs and will produce best-practice guidelines for what may be termed 'sustainable ecotourism.' Detailed objectives, deliverables, and milestones are given in the description of the “Impact of Ecotourism” work package.

Review Legal Instruments Relevant for Sustainable Coastal Resource Use

International, regional, and national laws apply to most aspects of coastal resource use, such as fishing or establishment of marine protected areas. Most managers and stakeholders are aware of only a small subset of relevant legal instruments. INCOFISH will analyse and evaluate the legal framework relevant for sustainable resource use, taking account of legal structures that may increase pressure on resources, relate to the management of the resource, or provide for sharing of benefits from the resource. Detailed objectives, deliverables, and milestones are given in the description of the “Legal Aspects of ICZM” work package.

Provide Access to Relevant Data, Tools, and Concepts

Data, tools, and concepts created by INCOFISH or otherwise relevant to integrated coastal zone management will be made accessible through a user-friendly web portal. This will include raw data, interactive maps, step-by-step tools for complicated analyses, text documents, discussion forum, data archive, and links to other relevant web sites. Detailed objectives, deliverables, and milestones are given in the description of the “Data, Tools and Outreach” work package. Traditional means of knowledge dissemination such as scientific publications or presentation, newsletter articles and press releases will be employed directly by the respective workpackage leaders and project partners.

Bringing it All Together

A combination of accommodating coordination with strong leadership will ensure that the components of INCOFISH described above will come together and form a comprehensive package with the potential to improve integrated coastal zone management. Detailed objectives, deliverables, and milestones are given in the description of the “Management” work package.

More and detailed information on objectives, deliverables, milestones and respective indicators of success are given in the workplan below.

3. List of Participants

List of Participants

Partic. Role*	Partic . no.	Participant name	Participant short name	Country	Month enter project	Month exit project
CO	1	Leibniz Institut für Meereswissenschaften	IFM-GEOMAR	Germany	1	36
CR	2	Ações Para Preservação dos Recursos Naturais e Desenvolvimento Economico Racional	APRENDER	Brazil	3	34
CR	3	Instituto de Pesca (APTA/SAA/SP)	IP	Brazil	3	34

Partic. Role*	Partic . no.	Participant name	Participant short name	Country	Month enter project	Month exit project
CR	4	Empresa de Consultoría e Inversiones, CABAL S.A.	CABAL S.A.	Nicaragua	3	34
CR	5	Coastal Development Centre	CDC	Thailand	3	34
CR	6	Charles Darwin Foundation for the Galapagos Islands	CDF	Ecuador	3	33
CR	7	The Centre for Environment, Fisheries and Aquaculture Science	CEFAS	United Kingdom	3	34
CR	8	Centro Interdisciplinario de Ciencias Marinas del IPN	CICIMAR	Mexico	3	34
CR	10	Syddansk Universitet	SDU	Denmark	3	34
CR	11	Centro de Referencia em Informação Ambiental	CRIA	Brazil	3	36
CR	12	Centre de Recherches Oceanographiques de Dakar Thiaroye	CRODT	Senegal	3	34
CR	13	Dirección Nacional de Recursos Acuáticos	DINARA	Uruguay	3	34
CR	15	East China Normal University	ECNU	China	3	34
CR	16	Universität Bremen	UNI BREMEN	Germany	3	34
CR	17	FishBase Information and Research Group, Inc.	FIN	Philippines	3	36
CR	19	Instituto del Mar del Peru	IMARPE	Peru	3	34
CR	21	International Governance Solutions Ltd.	IGS	United Kingdom	3	34
CR	22	Università degli Studi di Padova	UNIPAD	Italy	3	34
CR	23	Marine and Coastal Management Branch of Environmental Affairs and Tourism	MCM DEAT	South Africa	3	34
CR	24	Estonian Marine Institute	MEI	Estonia	3	34
CR	25	University of Hull	UHULL	United Kingdom	3	34
CR	26	Nanjing Institute of Environmental Sciences	NIES	China	3	34
CR	27	Naturhistoriska Riksmuseet	NRM	Sweden	3	34
CR	30	PRIMEX Foundation for the Alternative Management of the Environment	PRIMEX-FAME	Philippines	3	34
CR	31	Prince of Songkla University	PSU	Thailand	3	34
CR	32	Fundación Malpelo y Otros Ecosistemas Marinos	Fundación Malpelo	Colombia	3	34
CR	33	Universidad Nacional de Colombia	UNAL	Colombia	3	34
CR	34	University of Namibia, Faculty of Agriculture and Natural Resources	UNAM	Namibia	3	34
CR	35	Universidad de Concepción	Uni Concepción	Chile	3	34
CR	36	The University of Newcastle upon Tyne	UNEW	United Kingdom	3	34
CR	37	Universitetet i Tromsø	UiT	Norway	3	34

Partic. Role*	Partic . no.	Participant name	Participant short name	Country	Month enter project	Month exit project
CR	38	University of Western Cape, Programme for Land and Agrarian studies	UWC	South Africa	3	34
CR	39	The University Court of the University of Aberdeen	UNIABDN	United Kingdom	3	34
CR	41	Corporacion de Promocion Universitaria / Universidad San Francisco de Quito / ECOLAP	USFQ	Ecuador	3	34
CR	43	Kenya Sea Turtle Conservation Committee	KESCOM	Kenya	3	34

CO = Coordinating Institution; since 1st January 2004 the former “Institut für Meereskunde (IfM)” has merged with GEOMAR into “Leibniz Institut für Meereswissenschaften (IfM-GEOMAR)”.

CR = Contractor

Note: total number of participants is 35. Gaps in sequential numbering were caused by changes among participants after submission of proposal. 12 participants come from 7 European countries and 23 participants come from 15 developing countries.

4. Relevance to the objectives of the INCO specific measures

Below we describe the relevance of INCOFISH to the objectives of the INCO specific measures as they apply to this project.

General Objectives: Specific Activities Covering a Wider Field of Research

INCOFISH is a specific targeted research project that covers the research areas of fisheries science, taxonomy, bio-geography, ecology and ecosystem modeling, conservation, economics and social sciences, resource management, and legal aspects.

General Objectives: Strengthening the Foundations of European Research

INCOFISH strengthens the foundations of European research in two ways: firstly it brings together researchers of from 12 institutions in 7 European countries, thus fostering pan-European interdisciplinary research. Secondly it exposes European researchers to international research in partnership with colleagues from 24 institutions in 15 developing countries in Africa, Asia and Latin America.

Cross Cutting Issues: Small and Medium-sized Enterprises

Among the INCOFISH members are 3 small and medium-sized enterprises.

Cross Cutting Issues: Associated States and Associated Candidate Countries

Among the INCOFISH members is one associate state (Norway).

Cross Cutting Issues: International Co-operation

INCOFISH involves 36 senior researchers, 12 from seven European countries and 24 from 15 developing countries in Africa, Asia and Latin America. In addition, about an equal number of young scientists will be involved.

Cross Cutting Issues: Support International Mobility of Researchers

INCOFISH will organize 24 international workshops taking place in Europe, Africa, Asia, and Latin America. In addition it provides means for individual working visits of researchers.

Cross Cutting Issues: Place and Role of Women in Science and Research

INCOFISH has 12 women (33%) among its 36 senior scientists; three women (27%) are workpackage leaders.

Cross Cutting Issues: Socio-economic Research

INCOFISH includes one socio-economic and one legal workpackage.

Cross Cutting Issues: Address 'Citizens and Governance in a Knowledge-based Society'

All data, tools and concepts created by INCOFISH or otherwise relevant to ICZM will be made publicly available through a user-friendly web portal. The portal will also include options for citizens to upload, e.g., observations of species and to participate in forum discussions with experts. More specifically, two workpackages aim to develop simple indicators that will enable the public to participate in coastal resource management.

INCO Objectives: Provide Access to Knowledge and Expertise Elsewhere in the World

INCOFISH integrates data relevant to ICZM from all over the world and will make it easily available through the Internet, thus serving European researchers as well as researchers from partner countries.

INCO Objectives: Participation in Research Initiatives Conducted at International Levels

Integrated coastal zone management has been a primary field of international research over the past two decades. Especially the components of ecosystem modelling, sustainability indicators, and sizing and siting of marine protected areas are international high priority research items. INCOFISH participants are members of international mega-science activities such as GBIF and scientific programs such as OBIS and Species 2000.

INCO Objectives: Support EC Development Aid Policy; Strengthen DC Research Systems

INCOFISH develops state-of-the-art tools and concepts for ICZM for application in Europe as well as in developing countries. Five of ten scientific workpackages are led by colleagues from developing countries. Most testing of INCOFISH tools and concepts will be done in real-world scenarios in developing countries. About 50% of INCOFISH funds go to partners in developing countries.

INCO Objectives: Contribute to the Solution of Specific Problems Faced by Third Countries

More than 40% of the world's population lives in coastal areas, most of them in developing countries. Reconciling conflicting demands in coastal zones is one of the most pressing problems facing developing countries. INCOFISH will contribute to the solution of this problem in equitable partnership with colleagues in third countries.

Call Objectives: Improve Understanding of Coastal Zone

INCOFISH integrates 10 scientific workpackages covering all major aspects of coastal zone management. One workpackage specifically deals with visualization of flows and interactions in the coastal zone. Another package is dedicated to make the accumulated knowledge readily available through a user friendly web portal. Special step-by-step tools will facilitate difficult analyses, and discussion forums will enable and encourage dialogue between interested citizens and experts.

Call Objectives: Reconcile Multiple Demands on Coastal Zones

Five INCOFISH workpackages deal explicitly with the issue of reconciling multiple and potentially conflicting demands on coastal zones: “Ecosystem Modelling” allows to play with different scenarios of resource exploitation; “Coastal Transects” visualizes and quantifies flows and interactions in the coastal zone; “Valuation of Ecosystem Services” allows to compare different management scenarios in terms of cost/benefit analyses; “Impact of Ecotourism” explores the pros and cons of ecotourism in marine protected areas; and “Legal Instruments” reviews the legal instruments and their potential to either increase pressure on the resource or enable sharing of benefits.

Call Objectives: Restoration of Aquatic Ecosystems, Particularly through Protected Areas

Five INCOFISH workpackages deal explicitly with restoration and protected areas: “Shifting Baselines” explores historical data sets to establish the reference points against which the resources have to be evaluated and where restoration may aim for; “Mapping” provides authoritative inventories of species in the coastal zone and explores potential changes under different scenarios; “Marine Protected Areas” develops guidelines for best sizing and siting of protected areas; “Sustainability Indicators” will allow the public to participate in the restoration of important species; “Valuation of Ecosystem Services” will demonstrate the substantial value that can be derived from well-managed ecosystems.

Call Objectives: Data-rich Approaches Using Existing Data are Favoured

The INCOFISH workpackage “Data, Tools & Outreach” specializes in real-time integration of large databases that may reside anywhere in the world. For example, all specimens that have been collected in a certain coastal zone can be retrieved from multiple museum collection and research survey databases and be displayed jointly in one map. A click on a point will open a pop-up window that shows the respective source. This approach will be applied to all data relevant to ICZM.

Call Objectives: Creation of a conceptual framework for ICZM

One INCOFISH workpackage deals explicitly with the creation of a conceptual framework for the integrated interpretation of information on coastal zone structure and dynamics: “Coastal Transects” reviews existing frameworks and tools and creates a web-based version that visualises flows and interactions in the coastal zone.

Call Objectives: Policy Analysis and Development to Create an Enabling Environment for ICZM

Laws and regulations are the legal instruments by which policy is implemented. Workpackage “Legal Instruments” reviews international, regional and national laws relevant for coastal zone management and especially for sustainable resource use. In addition, “Valuation of Ecosystem Services” will deliver strong arguments and potentially political pressure in favour of sustainable use of resources.

Call Objectives: Indicators for Sustainably Produced Fisheries Products

Workpackage “Sustainability Indicators” deals explicitly with this topic.

Call Objective: Valuation of Coastal Ecosystem Products

Workpackage “Evaluation of Ecosystem Services” deals explicitly with this topic.

Call Objectives: Expected Results are Knowledge Products and their Dissemination

One INCOFISH workpackage is dedicated to make “Data, Tools, and Concepts” created by INCOFISH or otherwise relevant to ICZM widely available through a user-friendly web portal. This includes an archive for data that might otherwise be lost, direct access to huge

environmental and biological databases, maps and tools to visualize data, step-by-step tools to make complicated analyses available to a wider audience, an interface where users can contribute data such as observations of species, and a discussion forum where users can ask experts.

5. Potential Impact

5.1 Contributions to standards

Impact on Solving Societal Problems

Several INCOFISH workpackages aim to provide objective and transparent indicators for visualizations of the status and development of the resource. Such objectivity and transparency are preconditions for general acceptance of indicators, itself a precondition for a meaningful public and political discussion about future use of the resource. For example, if percentage of mature specimens in the catch was accepted as simple but powerful and transparent indicator of the status of the resource, then normal political processes could be used to address and eventually solve the societal problem of chronic overfishing. The same applies if valuation of ecosystem services is accepted and different management regimes can be compared at a cost/benefit level.

Innovation Related Activities

Several products created by INCOFISH will be completely new or improved versions of existing tools. For example, the step-by-step approach to perform complicated analyses such as determining the value of a given indicator for a given resource is conceptually not new. It somehow resembles a cook-book recipe guiding the inexperienced cook through the many steps needed to create a magnificent meal. However, the implementation of this approach on the web, drawing on huge knowledge databases to download relevant information at every step, combining and processing it real-time and in response to user inputs, providing extensive background information through intelligent links, and applying this to themes relevant to ICZM, all this combines to a new quality and innovative tool. Similarly, Coastal Transects will be a new tool combining ideas from several existing tools and making it all available on the Web.

Dissemination Plans to Ensure Use of the Results

The Internet has been identified as the medium of choice for disseminating information on ICZM. Experiences from other web portals show that usage of the Internet by developing countries is already substantial and is growing much faster than overall Internet usage. All data, tools and concepts created by INCOFISH or otherwise relevant to ICZM will be made immediately available through a user-friendly web portal. Existing, successful web portals will be used as role models. Usage will be monitored on a monthly basis and statistics on 'who is using what how often' will be compiled and analysed.

Added value by Carrying out the Work at the European Level

The comparative approach is well suited for studying systems that are not well defined, such as flows and interactions in the coastal zone or trophic relationships in aquatic ecosystem. Studying these problems at a European level brings added value as it evokes synergies resulting from combination of different experiences and environments. This is amplified even further as experiences with tropical ecosystems and coastal zones of developing countries are taken into account.

Account Taken of Other National or International Research Activities

Especially in the field of marine protected areas European researchers can learn a lot from their colleagues in the tropics, where most studies have been conducted so far. Also, results of protected areas establish themselves much faster in the tropics because of higher metabolism and shorter generation times of most organisms in warm waters.

All INCOFISH workpackages contain a review component that explicitly takes account of relevant past and current national and international research activities.

Impact on Solving Problems at Third Country Level

As stated in the introduction, a wide variety of demands for utilisation and protection collide in the coastal area making it a zone of problems and potentials. This is especially true for developing countries where population densities grow fastest in the coastal zone. The problems of resource conflicts are well known; however, the potentials of the coastal zone have yet to be discovered in many places. Here we refer to potential for national and international ecotourism, but also to the considerable revenue that can be derived from well managed living resources. Several INCOFISH workpackages deal explicitly with problem solving and restoration of resources and ecosystems, with a focus on developing countries.

5.2 Contribution to EU Development Cooperation and External Relations

All research conducted in INCOFISH builds on close partnerships between European and Third Country researchers. Five of ten scientific workpackages are lead by DC institutions and ca. 50% of the INCOFISH budget goes to developing countries. This scientific recognition and financial contributions strengthen developing country research institutions and are thus in the spirit of EU development cooperation and external relations.

5.3 Risk assessment and related communication strategy

The products of INCOFISH are data, tools, and concepts. No risks for society / citizens are foreseen. Disclaimers and warnings against misinterpretation of results will be shown as appropriate.

6. Project management and exploitation/dissemination plans

6.1 Project management

The project will be led by the Project Co-ordinator with the help of the Project Support Team and a Steering Committee. The Project Co-ordinator will be responsible for overall project management, and for chairing the Steering Committee. The Steering Group will be composed of the Workpackage Leaders and will advise the Project Co-ordinator on management matters. Workshops at the project and workpackage level will serve as milestones and 'control points' to review progress and adjust course where needed.

Each workpackage will be led by the identified Workpackage Leader, a senior representative of the Contractor for that workpackage. All workpackages will hold workshop meetings led by the Workpackage Leader, and at which workpackage members will be expected to attend.

The organization of work between project participants is described in detail in the INCOFISH Consortium Agreement. Below is an overview of responsibilities, decision making structures, communication flow, and assessment of progress and results.

Responsibilities of the Project Co-ordinator

The Project Co-ordinator has responsibility for the co-ordination of the project and maintaining contact with the Commission. Particular responsibilities include:

- scientific co-ordination of the entire project
- chairing the Steering Group
- maintaining contact with the Commission
- supervision of the Workpackage Leaders’ activities within the project, including trouble-shooting should any difficulties arise either with the project plan, with financial allocations or in time-keeping.
- two-way communication with the Workpackage Leaders
- distribution of funds to partner organisations.
- maintenance of a project timetable and register of project events, including meetings, milestones and deliverables.
- maintenance of consolidated time, expenditure and financial records
- final preparation and submission of reports and other deliverables to the Commission.

The Project Co-ordinator will be supported by the Project Support Team, and will himself be allocated to this project for a minimum of 2 days per week for the 3 year duration, as in-kind contribution by IfM-GEOMAR. The Project Support Team will consist of a Project Manager, a Project Assistant, and a half-time webmaster.

Responsibilities of the Workpackage Leaders

Each Workpackage Leader has responsibility for completing the workpackage. This includes:

- scientific and technical management of the workpackage
- two-way communication with the project co-ordinator
- supervision of the activities of the workpackage members within the workpackage
- adherence to the agreed time-lines for milestones and deliverables
- adherence to the budget plan
- two-way communication with the members of the workpackage
- preparation of the milestones, deliverables and financial reports for delivery to the project co-ordinator.

Each Workpackage Leader should put an effort into basing his/her decisions on a broad consensus among workpackage members.

Responsibilities of Workpackage Members

A Workpackage Member has the responsibility to execute a specific task (including reporting) in the workpackage within a specified time span for which he/she will get funding. A Workpackage Member will also participate in workpackage meetings chaired by the Workpackage Leader and actively contribute to the decisions of the workpackage consortium.

Financial management and administration

Internal accounting will be established by the project co-ordination, based on the accounting and control practices used by the Finance Department of IfM-GEOMAR which will assist where questions of correct practice are concerned.

Decision Making Structures

INCOFISH aims to reach decisions by consensus at all levels. Formally the Project Co-ordinator will have overall responsibility for decision-making. Any difficulties with the project plan, financial allocation or time-keeping are to be resolved by the Co-ordinator in cooperation with the Steering Committee members.

The Workpackage Leader has responsibility for decision-making within each workpackage, taking into account communications with the Project Co-ordinator, and with members of the workpackage.

Communication Flow

Responsibility for flow of communications lies with the Project Co-ordinator (to and from the Commission, and to/from the Workpackage Leaders), and with the Workpackage Leaders (to/from the relevant members of the workpackage). This flow will be re-enforced by the sequence of meetings, by electronic fora established for the project, and by 'private' web-pages used both for a project-wide repository of documents (including agendas, minutes and technical documents) and for a repository and commentary on the timetable of meetings, milestones and deliverables.

Assessment of progress and results

The following mechanisms will be used for assessment of progress and results:

- Annual progress reports by workpackages and by entire project.
- Semi-annual formal follow-up with WP leaders to warrant cross-fertilization and success of parallel approach for complementing tasks.

Auditing

For every contractor there will be two financial audits, one at mid-term and one at the end of the project. Details are specified in the Consortium Agreement.

6.2 Plan for using and disseminating knowledge

Management of Knowledge and Tools

All data, tools and concepts developed by INCOFISH will be considered public goods and will be made available through the INCOFISH web portal. Members of INCOFISH have volunteered to archive data and continue to make tools available beyond the duration of this project. Consortium partners accept and authorise that the Commission disseminates relevant project information, including summaries and public project results, names and contact details of consortium partners through visual, oral and electronic media.

6.3 Raising public participation and awareness

Public participation is envisaged mainly through the INCOFISH web portal where lay persons can upload data such as observations of species or pollution events, attach their own web sites if relevant to INCOFISH, or discuss issues with experts in the relevant forum. Public awareness will also be raised through traditional means such as regular press releases demonstrating success stories and guiding lay persons to the INCOFISH web portal. Involvement of stakeholders or the public in general are essential parts of work packages 3, 5, 6, 7, 8 and 9.

7. Workplan

7.1 Introduction - general description and milestones

INCOFISH represents 36 senior researchers from 36 institutions in 22 countries in Africa, Asia, Europe and Latin America who will provide scientific guidance and supervise—as ‘in-kind’ contribution of their respective institutions—the more than 36 young scientists who will be hired and who will do much of the work required by the respective INCOFISH work packages. The project covers major aspects of integrated coastal zone management. Work is broken down into ten scientific and one project management workpackage. The scientific workpackages are relatively large and some of them could have become stand-alone INCO projects. This integration of major ICZM aspects into one project has the advantage of synergy resulting from close coordination between partners from a wide range of disciplines. One aspect of such synergy is that workpackages do not have to maintain their own data management and programming and web services; this is handled as a service to all other workpackages by the “Data, Tools & Outreach” workpackage, which has a proven track record of reliable and timely delivery of such services.

Other interdependencies in INCOFISH are limited in the sense that if for unforeseen reasons one of the workpackages would fail to provide its deliverables, most other workpackages would still be able to achieve their respective goals. Most crucial interdependencies are between deliverables within workpackages. This was a deliberate decision to limit complexity and risks. Several members take part in more than one workpackage and altogether about 24 workshops with cross-participation ensure that fruitful exchanges happen and result in the synergy alluded to above.

Outside contacts will include regular interactions with parallel and related projects such as ECOST and CENSOR (both 6th framework projects) and the ‘Sea Around Us’ project run out of Vancouver, Canada.

All workpackages are conducted by multi-national groups of scientists from different institutions, thus providing a buffer against unforeseen events preventing participants from providing their deliverables. If such a case arises then the Project-Coordinator together with the respective Workpackage Leader and Members will decide how to redistribute work so that the objectives of the workpackage can be met.

Sources of information for INCOFISH will be the relevant literature as well as publicly available databases such as GBIF, OBIS, FishBase and those provided by FAO and projects such as ‘Sea Around Us’ in Canada. In addition, INCOFISH will create and promote its own data repositories including those drawing on inputs from anglers, divers, fishers, fish traders and consumers and laypersons in general. The risk that existing data sources such as described above become inaccessible is seen as small. The risk that volunteered contributions to INCOFISH databases will be less than expected is seen as medium, as it is unclear whether the success that birdwatchers had with this approach can be repeated with other animal groups and topics. However, none of the workpackages depends completely on such contributions.

7.2 Workplanning and timetable

Time Table

In Table 7.2.1 (see file of Tables attached to Annex 1) we show the time allocations for the deliverables in the different workpackages. As explained in the introduction, interdependencies between workpackages are limited and thus no workpackage needs to wait for a deliverable of

another workpackage before it can start. As a result, all workpackages start in month 3 and end in month 34, with the exception of “Data, Tools and Outreach which starts in month 3 and ends in month 36, and Project Management which starts in month 1 and ends in month 36.

7.3 Graphical presentation of work packages

As explained in the introduction to chapter 7, all work packages deliver data, tools and concepts through workpackage 1. There are no sequential or otherwise crucial interdependencies between workpackages. Thus, we do not show a graph here.

7.4 Work package list /overview

Work-package No ¹	Workpackage title	Lead contractor No ²	Person-months ³	Start month ⁴	End month ⁵	Deliverable No ⁶
1	Data, Tools & Outreach	30	68	3	36	1.1-1.6
2	Shifting Baselines	25	130	3	34	2.1-2.3
3	Biodiversity Mapping	27	92	3	34	3.1-3.5
4	Ecosystems Modelling	8	209	3	34	4.1-4.4
5	Marine Protected Areas	36	102	3	34	5.1-5.4
6	Coastal Transects	5	85	3	34	6.1-6.4
7	Sustainability Indicators	1	133	3	34	7.1-7.4
8	Valuation of Ecosystem Services	34	94	3	34	8.1-8.5
9	Impact of Ecotourism	6	128	3	33	9.1-9.3
10	Legal Instruments	16	78	3	34	10.1-10.5
11	Project Management	1	51	1	36	11.1-11.3
	TOTAL		1170*			

* person months financed by subcontracts are not included in this figure.

7.5 Deliverables list

INCOFISH has altogether 46 deliverables with many interactions and dependencies. Table 7.5.1 in the attached file of Tables lists all deliverables, with work package, lead participant, nature, dissemination level, delivery date, and indicator of success.

As explained in the Introduction, all workpackages depend on workpackage 1 for data management, web programming, and serving of data, tools and concepts through the INCOFISH portal. Other interdependencies are mainly within workpackages. Because of the high number of interdependencies we decided to present them in a table format rather than in a graph.

Table 7.5.2: Deliverables list and interdependencies

Deliverable	Start Month	End Month	Depending on	Delivering to
D1.1	3	19	D2.1, D3.1, D3.2, D4.1, D5.1, D5.2, D6.1, D7.1, D7.2, D7.2, D8.1, D8.2, D9.1, D10.1, D11.1	D1.2, D1.3, D1.5
D1.2	7	19	D1.1	-
D1.3	13	25	D1.1	-
D1.4	13	25	D2.1	-
D1.5	7	13	D1.1	-
D1.6	13	36	D2.2, D2.3, D3.3, D3.4, D3.5, D4.4, D5.3, D5.4, D6.3, D6.4, D7.3, D8.3, D8.4, D8.5, D9.2, D9.3, D10.2, D10.3, D10.4, D10.5, D11.2, D11.3	-
D1.7	3	36	-	-
D2.1	3	19	-	D1.1, D2.2
D2.2	19	25	D2.1	D1.6, D2.3
D2.3	19	34	D2.2	D1.6, D2.3
D2.4	3	34	-	-
D3.1	3	13	-	D1.1, D3.2, D3.3, D3.4
D3.2	13	19	D3.1	D1.1
D3.3	13	25	D3.1	D1.6
D3.4	19	31	D3.1	D1.6, D3.5
D3.5	25	34	D3.4	D1.6
D3.6	3	34	-	-
D4.1	3	13	-	D1.1, D4.2
D4.2	7	19	D4.1	D4.3
D4.3	13	25	D4.2	D4.4, D5.2
D4.4	19	34	D4.3	D1.6
D4.5	3	34	-	-
D5.1	3	16	-	D1.1
D5.2	16	28	D4.3	D1.1, D5.3
D5.3	25	31	D5.2	D1.6, D5.4
D5.4	32	34	D5.3	D1.6
D5.5	3	34	-	-
D6.1	3	13	-	D1.1, D6.2
D6.2	11	17	D6.1	D6.3
D6.3	13	25	D6.2	D1.6, D6.4
D6.4	19	34	D6.3	D1.6
D6.5	3	34	-	-
D7.1	3	7	-	D1.1, D7.2
D7.2	5	13	D7.1	D1.1, D7.3
D7.3	13	19	D7.2	D1.6, D7.4
D7.4	19	34	D7.3	-
D7.5	3	34	-	-
D8.1	3	13	-	D1.1, D8.2
D8.2	11	19	D8.1	D1.1, D8.3
D8.3	13	25	D7.1, D8.2	D1.6, D8.4
D8.4	25	31	D8.3	D1.6
D8.5	31	34	-	D1.6
D8.6	3	34	-	-
D9.1	3	12	-	D1.1, D9.2
D9.2	11	21	D9.1	D1.6, D9.3
D9.3	25	33	D9.2	D1.6
D9.4	3	33	-	-
D10.1	3	10	-	D1.1, D10.7
D10.2	7	13	-	D1.6, D10.7
D10.3	7	13	-	D1.6, D10.7
D10.4	7	13	-	D1.6, D10.7
D10.5	13	19	D10.2- D10.4	D1.6, D10.7
D10.6	20	31	D10.5	D1.6, D10.7
D10.7	31	34	D10.1-D10.6	D1.6
D10.8	3	34	-	-
D11.1	1	13	-	D1.1
D11.2	13	25	-	D1.6
D11.3	25	36	D1.6, D2.3, D3.5, D4.4, D5.4, D6.4, D7.4, D8.5, D9.3, D10.5	D1.6

7.6 Work package descriptions

Work package number	1	Start date (month)					3
Activity Type	RTD / Innovation Activities						
Participant Id:	CRIA	FIN					
Person-months per participant:	34	34					

Objectives:
 The “Data, Tools, and Outreach” workpackage provides data, tools, and Internet outreach services to the other INCOFISH workpackages, with the following objectives:
 (1) Make relevant data for ICZM available from all possible sources using modern Internet technologies.
 (2) Provide an archive function for ICZM data that might otherwise be lost.
 (3) Provide tools for analysis and visualization of data, including a 'Step-by-Step' approach to complicated interactive analyses. (4) Provide mapping tools for WP 3. (5) Provide a user-friendly one-stop Internet portal to all data, tools, models, documents and partners in the context of this project. (6) Provide an Internet discussion forum for ICZM issues open to project partners and the public, as well as links to the many existing news and discussion forums around ICZM. (7) Provide interfaces where the interested public (e.g. fishers, divers or anglers) can upload data such as observed occurrences of species in space and time. (8) Assist project partners in building their own web presence. (9) Work in integrated fashion with workpackages 2-10.

Description of work:
 An existing experienced team of programmers and data encoders—supplemented with additional staff—will be in charge of design, programming, and encoding needs. Specific tasks will be identified, agreed, executed and evaluated in close cooperation with the respective WP leaders. The information system to be used already contains appropriate structures and large data sets for many of the data needed in INCOFISH, including demographic, environmental, and species data. Tools exist and will be improved that serve data in a format suitable for ecosystem modelling. Prototypes of tools for parameterization of sustainability indicators and for analysis of historical data exist and will be improved. In summary, WP1 will provide a solid data base and archive, powerful tools, and user friendly access on the Internet to data, tools and news around ICZM. Databases will also be available on CD-ROM.

1. Deliverables:
 CRIA and FIN will both contribute to all deliverables.
 D1.1 Free online access to all data relevant to this project (web portal, month 19);
 D1.2 Data Archive for all relevant data of D1.1 not archived elsewhere (database, month 19);
 D1.3 Online ICZM tools including coastal transects, and special step-by-step tools for common ICZM tasks (web software, month 25).
 D1.4 Electronic maps for all relevant marine organisms (web-based maps, month 25);
 D1.5 Internet Portal including Forum, Data Upload, and Links (web portal, month 13)
 D1.6 Maintenance of portal, uploading of WP data & tools, report on achievements (report, month 36)
 D1.7 At least five scientific publications related to this WP to be published or submitted by WP members before the end of the project (month 36)

Milestones¹ and expected result:
 - First workshop to agree on relevant data, tools, and outreach strategy (WP members, all WP leaders; month 6)
 - Second workshop to review data, tools, portal, outreach (WP members, all WP leaders, month 26)

Work package number	2	Start date (month)					3		
Activity Type	RTD / Innovation Activities								
Participant Id:	CDF	CEFAS	SDU	IMARPE	MEI	UHULL	UNAL	UNIABDN	
Person-months per participant:	18	8	12	12	20	16	36	8	

Objectives:

Examine the patterns of long term change in selected coastal ecosystems and thereby establish targets for the restoration and sustainable use of living marine resources.

1. Identification, validation and assembly of historical data (e.g. biomass, mean size, maturity, fecundity) relating to key aquatic resources in selected large marine ecosystems (LMEs);
2. Collation, analysis and dissemination of the historical data collected and processed in (1);
3. Establish baselines against which the current status of aquatic resources and LMEs can be evaluated and restoration goals can be set.

Description of work:

The “Shifting Baselines” workpackage addresses the 'shifting baseline syndrome'. In essence, this problem has emerged as each generation of fisheries and environmental scientists has accepted existing stock size and species composition as the baseline against which temporal changes are measured. However, if stocks are progressively depleted, a shift in the baseline occurs over time. This results in an accommodation of the creeping disappearance of resource species, and the application of inappropriate reference points for the evaluation of economic losses due to overfishing, and the identification of targets for rehabilitation policies. To resolve this problem, criteria for selecting key aquatic resources (stocks) within particular large marine ecosystems will be developed. Historical data on catch and effort, biomasses, length-frequencies, maximum sizes, size and age at maturity, growth rates, natural mortality, etc. will be assessed, collated and analysed to establish baselines against which the current status and restoration goals of key aquatic resources can be assessed. Likewise, historical data on catch and effort, production, biomasses, predator-prey interactions, flows, and habitat change will be mined, assessed, collated and analysed to establish baselines against which the current status and restoration goals of selected marine ecosystems can be assessed. These data will be disseminated in conjunction with WP 1 and will inform the work of colleagues engaged in WP 3-6.

Deliverables:

All WP participants will contribute to all deliverables.

- D2.1 Historical data relating to selected key aquatic resources (stocks) in particular large marine ecosystems (database available through WP 1, month 19)
- D2.2 Derived from D2.1, baseline data for the respective stocks and LMEs, for utilisation in WP 4, 5, 7 and dissemination through WP 1 (database, month 25)
- D2.3 Population of databases, interactions with WPs 1, 3, 4, 7, report on baseline data and analysis (report, month 34)
- D2.4 At least five scientific publications related to this WP to be published or submitted by WP members before the end of the project (month 34)

Milestones¹ and expected result

- First workshop: Select key aquatic resources, identify potential data sources, distribute tasks to establish historical database (WP members; representative of WP 1; month 4);
- Second workshop: Informed by data analysis, establish baselines, prepare baseline database (WP members, representative of WP 1; month 27)

Work package number	3	Start date (month)			3
Activity Type	RTD / Innovation Activities				
Participant Id	CDF	CEFAS	DINARA	NRM	KESCOM
Person-months per participant:	18	10	16	32	16

Objectives:

The “Biomap” workpackage will provide authoritative knowledge about the occurrence of marine species in space and time and in response to climate change, with the following objectives:

1. Provide access to point data from all available sources (collections, surveys, observations) and from historical times to present for all organisms occurring in areas covered by this project;
2. Combine data from 1) with relevant environmental parameters to define the preferred niche and to create standardized electronic maps for all species;
3. Establish a system where maps can be verified by experts;
4. Based on (2) and (3), provide authoritative species inventories;
5. Using current climate change scenarios and knowledge about resilience of species and ecosystems, predict potential changes in species composition or abundance, with special attention to harmful algal blooms, invasive species, and predator-prey overlap.

Description of work:

Biogeographic niche modelling will be used to define the preferred environmental conditions for key marine coastal zone species. This specific niche information will then be used to create standardized electronic maps of predicted distributions for all coastal zone species. In addition, the niche circumscription of species of interest will be connected with physical and bio-geochemical models thus producing dynamic distribution maps driven by models of forcing functions. This will allow exploring changes in distribution of species resulting from natural and anthropogenic environmental changes. The maps and related tools will be made freely available on the Internet with an easy-to-use interface. This will provide crucial support for efforts to promote, protect, and preserve the coastal zone environment. Throughout the process there will be close interaction with WP 1, 2, 4, 5, 6.

Deliverables:

All WP participants will contribute to all deliverables.

- D3.1 Standardized electronic maps with predicted distribution (likelihood of occurrence) for all coastal zone species relevant to this project (web-based maps, month 13);
- D3.2 Before – After maps with predicted distribution before and after a certain point in time (web-based maps, month 19).
- D3.3 Maps with predicted seasonal distribution (web-based maps, month 25);
- D3.4 Dynamic maps where species distribution is predicted from the occurrence of the respective niche in space and time as predicted by physical models of the oceans (web-based maps, month 31).
- D3.5 Further population of maps, interactions with WPs, final report (report, month 34)
- D3.6 At least five scientific publications related to this WP to be published or submitted by WP members before the end of the project (month 34)

Milestones¹ and expected result

- First workshop to review data body, perform gap analysis, and assign tasks (WP members, representative of WPs 1, 2, 5, 6; month 5);
- Second workshop to review maps, tools, and outcome of analyses; decisions on dissemination and interfaces (WP members, representatives of WPs 1, 2, 5, 6, month 27);

¹ Milestones are control points at which decisions are needed; for example concerning which of several technologies will be adopted as the basis for the next phase of the project.

Work package number	4		Start date (month)					3			
Activity Type	RTD /Innovation Activities										
Participant Id	IP	CEFAS	CICIMAR	CRODT	ECNU	UNIPAD	MCM DEAT	Uni Concepcion	UNEW	UNIABDN	
Person-months per participant	10	10	54	22	64	12	11	16	6	4	

Objectives:

The overall goal of the “Ecosystem Modelling” workpackage is to provide standardized ecosystem models for all selected ecosystems.

1. Compile and make available all data relevant for the construction of models for the selected LMEs;
2. Construct standardized ecosystem models;
3. Work closely with WP 5 on the size and placement of protected areas; explore patterns of response of impacted ecosystems, testing hypothesis on resilience and impact of fisheries on ecosystems.
4. Contribute to the exploration of ecosystem attributes in a two levels strategy, one within each model exploring impact of fishing, compatibility of conservation and exploitation under sustainable use of the ecosystems, resilience, among others. The second level will be a meta-analysis, searching patterns of response of aquatic ecosystems (to human activities, ecosystem attributes, structural and functional behaviour, etc...).

Description of work:

Standardized ecosystem models for all selected ecosystems will be provided with the objective to compile and make available (through WP 1) all data relevant for model construction. Work closely with WP 5 on the size and placement of protected areas. Some simulation scenarios and hypotheses will be tested through the models involving aspects such as biodiversity conservation and fisheries conflicts, impact of fisheries on the ecosystems, resilience, fisheries management, meta-analysis and search for patterns of ecosystem response.

Deliverables

All WP participants will contribute to all deliverables.

- D4.1 Data relevant for ecosystem modelling disseminated through WP 1 (database, month 13);
- D4.2 Ecosystem models available for all INCOFISH ecosystems (models, month 19);
- D4.3 Spatial ecosystem models available for all selected LME's (models, month 25);
- D4.4 Further development of models, interactions with WPs, final report (report, month 34).
- D4.5 At least five scientific publications related to this WP to be published or submitted by WP members before the end of the project (month 34)

Milestones and expected results

- First workshop to define and distribute tasks such as selection and assignment of ecosystems to be modelled (WP members, representatives of WP1 and 5; month 5);
- Second workshop to start service function for other WPs, construct ecosystem models (WP members; representatives of other WPs, month 13);
- Third workshop to construct ecosystem models (WP members; representatives of other WPs, month 19);
- Forth workshop to present ecosystem models, prepare meta-analysis (WP members, representatives of WPs 1,3,5,8,9; month 30).

Work package number	5	Start date (month)				3
Activity Type	RTD / Innovation Activities					
Participant Id	CEFAS	CICIMAR	NIES	UNEW		
Person-months per participant:	6	16	50	30		

Objectives

The “MPA” workpackage will improve the basis for planning of MPAs with a view to reconciling demands especially of fisheries, biodiversity conservation and industrial uses including coastal aquaculture:

1. Compile data from three selected case studies of MPAs, compare and contrast the stated objectives, operation, and known effectiveness of the MPAs with respect to location, resource and other factors;
2. Conduct simulations of existing MPAs where feasible with respect to stock benefits/costs, and derive objective criteria for the placement of MPAs in all three case studies;
3. Consider possible alternatives for design of MPA networks in the shelf systems, develop conceptual models for the planning of MPAs on continental shelves, and apply these to the selected case studies.

Description of work

The successful design and implementation of MPAs relies on setting clearly defined objectives and encouraging stakeholder participation in the planning, design and implementation process. The big gaps for both developed and less-developed regions are in understanding the potential benefits, designs and outcomes of MPAs in continental-shelf waters. Beyond single-stock assessments, there is a growing need to consider the future basis for ecosystem-oriented management, and conceptual models are needed that can help decision makers develop coherent and integrated MPA networks. This WP will provide the basis for a productive interchange of data, concepts and operational assessments of existing MPA networks towards the achievement of goals such as restoring fish stocks and healthy ecosystems by 2015.

Deliverables

All WP participants will contribute to all deliverables.

- D5.1 Review of similarities and differences of planning, operation, stakeholder involvement and effectiveness of selected MPAs (report, month 16);
- D5.2 Analysis of size and placement of selected MPAs using spatial ecosystem models provided by WP 4 (report, month 28);
- D5.3 Conceptual model for MPA planning in offshore continental shelf waters (report and step-by-step tool, month 31);
- D5.4 Report on outcomes of WP 5 (report, month 34);
- D5.5 At least five scientific publications related to this WP to be published or submitted by WP members before the end of the project (month 34).

Milestones¹ and expected result

- First workshop to select MPAs and distribute tasks (WP members, representatives of WPs 4, 9; month 5);
- Second workshop to analyse selected case studies (WP members, representatives of WPs 4, 9; month 19)
- Third workshop to review analysis and develop framework (WP members, WP 4; month 25).

¹ Milestones are control points at which decisions are needed; for example concerning which of several technologies will be adopted as the basis for the next phase of the project.

Work package number	6	Start date (month)	3			
Activity Type	RTD / Innovation Activities					
Participant Id	CDC	IGS	UNIABDN			
Person-months per participant:	70	10	5			

Objectives:

Acknowledging the importance of interactions between sectors in coastal areas, the “Coastal Transects” workpackage will provide a framework for compilation and analysis of data relevant to the understanding of interactions, impacts and flows in the coastal zone from mountains to the continental shelf. The ultimate goal is to provide coastal managers with a decision-making framework and communication tool for integrated management plans:

1. To review available concepts and tools relevant to the visualization, analysis, and communication of interactions and flows in the coastal zone;
2. To examine existing 'coastal transects' software and develop communication tools that assist in categorizing and assessing of interactions and flows in the coastal zone; and
3. To develop and test a decision-making framework for integrated coastal management using selected cases around the world.

Description of work:

This workpackage will provide a framework for compilation and analysis of data relevant to the understanding of interactions, impacts and flows in the coastal zone. Each coastal area will be categorized in terms of: (1) main resource uses/activities, (2) main environment issues and impacts on coastal zone, (3) main users/stakeholder groups, and (4) main policy/regulations, for each section of the coast, from upland area to deep sea. Additionally, we will review other frameworks and tools relevant to the visualization, analysis, and communication of interactions and flows in the coastal zone. The framework will be tested on selected representative coastal ecosystems from around the world, through workshops with coastal practitioners and stakeholders. The final stage of the work will be the modification of the decision-making framework based on the test results and the development of communication tools for ICZM.

Deliverables:

All WP participants will contribute to all deliverables.

- D6.1 Review of concepts and tools for ICZM, with a special focus on stakeholder involvement (report, month 13);
- D6.2 Categorization of coastal areas using coastal transects and related software (software, month 17);
- D6.3 Decision-making framework based on coastal transect and related software (framework, step-by-step tools, month 25);
- D6.4 Testing of Framework, interactions with WPs, final report (report, month 34).
- D6.5 At least five scientific publications related to this WP to be published or submitted by WP members before the end of the project (month 34)

Milestones¹ and expected result:

- First workshop to review ICZM concepts and tools and assign tasks (WP members, month 5);
- Second workshop to review ICZM framework and tools and assign testing (WP members, month 25).

¹ Milestones are control points at which decisions are needed; for example concerning which of several technologies will be adopted as the basis for the next phase of the project.

Work package number	7	Start date (month)						3
Activity Type	RTD / Innovation Activities							
Participant Id	IIM-GEOMAR	CABAL S.A.	CDF	CRODT	IMARPE	MCM DEAT	PSU	UNIABDN
Person-months per participant:	32	16	18	18	16	12	16	5

Objectives:

The “Sustainability Indicators” workpackage will overcome overfishing by identifying, testing and implementing simple indicators for sustainable fisheries management for direct use by fishers, fish traders, consumers, managers, and media.

1. Identify suitable indicators
2. Establish biological parameters needed for indicators for all relevant species
3. With stakeholders and public, test management by indicators
4. Analyze progress and problems

Description of work:

There is a need for specific targeted research to identify and operationalize methodologies which rely on low cost observations reflecting resource system features which can be recognised and accepted by all stakeholders. Here we focus on indicators at the species level, such as resilience to exploitation or natural disturbances. We are especially interested in simple indicators that allow participation of all stakeholders including the public in management of stocks. For example, one can imagine a publicly enforced management regime that discourages the capture of juvenile, undersized fish (common cause of recruitment and growth overfishing). Posters showing commercial species at their size of first maturity will enable citizens to make informed decision when buying unprocessed fish. The task of this workpackage thus is to identify, apply, and evaluate the use of indicators that have the potential to end overfishing.

Deliverables:

All WP participants will contribute to all deliverables.

- D7.1 Review of existing indicators and selection of suitable, simple indicators (report, month 7);
- D7.2 Availability of biological parameters needed for application of indicators (database, month 13);
- D7.3 Internet-based software (Wizard) assisting in the application of indicators (step-by-step web tool, month 19);
- D7.4 Testing of indicators with real-world fisheries and stakeholders, interactions with WPs, final report (report, month 34).
- D7.5 At least five scientific publications related to this WP to be published or submitted by WP members before the end of the project (month 34)

Milestones¹ and expected result:

- First workshop to select indicators and distribute tasks such as compilation of required data and development of suitable tools (first phase); (WP members plus representatives of WP 4, 8, 9; month 5);
- Second workshop to review progress, make necessary adjustments, and coordinate testing of indicators during second phase (WP members; month 20).

¹ Milestones are control points at which decisions are needed; for example concerning which of several technologies will be adopted as the basis for the next phase of the project.

Work package number	8	Start date (month)				3	
Activity Type	RTD / Innovation Activities						
Participant Id	CDC	PRIMEX-FAME	UNAM	UiT	UWC		
Person-months per participant:	12	7	60	10	5		

Objectives:

The “Valuation” workpackage will provide valuation of coastal ecosystem products and services and thus of the benefits of sustainable management.

1. Compile or interlink (in collaboration with WP 1) economic and social databases relevant to fisheries and coastal resource management;
2. Undertake a comprehensive valuation of sustainable use of coastal resources by incorporating both market and non-market values;
3. Analyse ineffective management of coastal resources - incentive effects with economic and biological consequences (including non intended perverse effects of incentives);
4. Study the human dimensions of coastal resource use, and carry out social impact assessment for selected coastal zones;
5. Suggest policy options for sustainable fisheries and coastal management.

Description of work:

We will compile and interlink market, non-market, social, and institutional data. We will use this database and state-of-the-art techniques to assign values to products and services of coastal ecosystems. This will allow valuation of sustainable versus non-sustainable management practices.

The results of the analysis in (1) to (4) above will be used to develop innovative recommendations for management of coastal resources that take into account the various ecological, economic and social tradeoffs that need to be in place to ensure that multiple demands on coastal resource are reconciled. The work will be couched on case studies in Africa and Asia, allowing us to explore and compare several distinct economic, political and geographical settings.

Deliverables:

All WP participants will contribute to all deliverables.

- D8.1 Database of social and economic information on coastal stakeholders (database, month 13);
- D8.2 Potential values that can be derived from selected marine ecosystems with and without sustainable management (report, month 19);
- D8.3 Economic indicators to be linked to the work of WP 7; (report, step-by-step tools, month 25);
- D8.4 Policy options for sustainable fisheries and coastal management, with a special focus on stakeholder involvement (report, month 31);
- D8.5 Report of on outcomes of this workpackage (report, month 34)
- D8.6 At least five scientific publications related to this WP to be published or submitted by WP members before the end of the project (month 34)

Milestones¹ and expected result

- First workshop to review valuation options, decide on a suitable approach, and assign tasks (WP members, representatives of WP 1,7, 9; month 5),
- Second workshop to assess findings and adjust actions (WP members, month 25)

¹ Milestones are control points at which decisions are needed; for example concerning which of several technologies will be adopted as the basis for the next phase of the project.

Work package number	9	Start date (month)	3				
Activity Type	RTD / Innovation Activities						
Participant Id	CDF	Fundacion Malpelo	USFQ				
Person-months per participant:	50	46	32				

Objectives:

The “Ecotourism” workpackage will provide scientific guidelines for management of marine areas with substantial ecotourism activities in close cooperation with WPs 5, 7 and 8.

1. Development and testing of criteria for determining carrying capacity and/or limits of acceptable change (LACs) for marine tourism sites;
2. Design and definition of indicators;
3. Identification and implementation of efficient, cost-effective monitoring protocols;
4. Assessment of human impacts on biological communities at specific sites;
5. Elaboration/Improvement of conservation and management strategies.

Description of work:

This WP focuses on selected National Parks / MPAs located in the Eastern Tropical Pacific: an oceanic archipelago, an oceanic island, an island in close proximity to the continent and a coastal National Park. The protected areas differ greatly in size, accessibility, level of studies, tourism infrastructure, number of annual visitors, management etc. In all cases, efforts are currently being made to regulate marine ecotourism activities especially those related to SCUBA diving and there is great concern about illegal fisheries, e.g. on sharks. If applicable, special attention will be given to the involvement and benefit of fishers in Ecotourism activities.

A comparison of these MPAs will be used to identify and evaluate approaches to sustainable use of MPAs by tourists.

Deliverables:

All WP participants will contribute to all deliverables.

- D9.1 Criteria to determine carrying capacity and LACs for ecotourism in the four MPAs under study, including a revision of experiences with ecotourism outside the Eastern Tropical Pacific (report; month 12);
- D9.2 Indicators to monitor impact of ecotourism on MPAs (report, step-by-step tools, month 21);
- D9.3 Testing of concepts and indicators with special focus on stakeholder involvement, interactions with WPs, final report (report, month 33);
- D9.4 At least five scientific publications related to this WP to be published or submitted by WP members before the end of the project (month 33).

Milestones¹ and expected result:

- First workshop to discuss strategy, define criteria and develop monitoring protocols (WP members, representatives of WPs 5, 7, 8; month 5);
- Second workshop to compare and discuss results, adapt monitoring protocols and define, if necessary, changes of strategy (WP members; month 19);
- Third workshop to discuss results and prepare final report (WP members, month 31).

¹ Milestones are control points at which decisions are needed; for example concerning which of several technologies will be adopted as the basis for the next phase of the project.

Work package number	10	Start date (month)			3		
Activity Type	RTD / Innovation						
Participant No.	APRENDER	Uni Bremen	UNAM				
Person-months per participant:	16	32	30				

Objectives:

The “Legal aspects of ICZM” workpackage will analyse relevant national legislation with a focus on sustainable use of natural resources both in overfished and surplus regions in selected developing countries and Europe. It will explore to what extent international agreements (incl. WSSD implementation plan) are translated into national law; whether there are implementation regulations and whether these are applied. WP10 will interact with related projects such as ECOST and ‘Sea Around Us.’

Description of work:

With the growing scarcity of fish resources legal instruments of fisheries management become crucial. They will however only be possible if both instruments of fisheries management (e.g. marine protected zones, fishing practises and total allowable catch - TAC) and instruments providing incentives for expanding fishing (e.g. subsidies increasing fishing capacity, price and sales guarantees) are considered. Case studies on 4 developing countries (2 South American, 1 African and 1 East Asian) and the EU shall be made on legislation and sublegal law promoting and regulating fisheries with a view on effective implementation of pertinent international agreements. The studies shall be analysed as to advantages and drawbacks of solutions found. Considerations of equitable distribution of benefits suggest to also include a study on the law providing for the sharing of benefits from fishing between the „North“ and the „South“.

WP 10 will incorporate knowledge provided by other WPs on the state of resource exploitation (WP 2, 3), the economic loss arising to coastal and other communities from overfishing (WP 8), and ecological and efficiency criteria for various protective instruments (WP 5 and 8).

Deliverables:

All WP participants will contribute to all deliverables, Uni Bremen in particular to D10.1, D10.5, D10.6, APRENDER in particular to D10.2, UNAM to D10.3.

- D 10.1 Report on regional and international law related to sustainable marine fisheries management, including a compilation of empirical information on implementation and compliance (report, month 10);
- D10.2 Report on the promotion and management of marine fisheries in Brasil and one other South American state (report, month 13);
- D10.3 Report on the promotion and management of fisheries in Namibia (report, month 13);
- D10.4 Report on the promotion and management of fisheries in Indonesia (report, month 13);
- D10.5 Report on the promotion and management of fisheries in the EU in comparison to the other selected countries (report, month 19);
- D10.6 Report on international agreements and private law contracts providing for access to resources and benefit sharing between the EU and the countries researched under D 10.2, 10.3, and 10.4 (report, month 31);
- D10.7 Report on outcomes of WP 10 (report, month 34).
- D10.8 At least five scientific publications related to this WP to be published or submitted by WP members before the end of the project (month 34).

Milestones¹ and expected result

- First workshop to agree on scope and authorships for D10.1 – D10.4 (WP10 members and representatives of WPs 2, 3, 5, 8; month 5);
- Second workshop to review and finalize reports (WP10 members and representatives of WPs 2, 3, 5, 8; month 29).

¹ Milestones are control points at which decisions are needed; for example concerning which of several technologies will be adopted as the basis for the next phase of the project.

Work package number	11	Start date (month)	1
Activity Type	Management		
Participant Id	IfM-GEOMAR		
Person-months per participant:	51		

Objectives:

The “Management” workpackage will provide review, assessment and management for the INCOFISH project. It will also maintain close contact with the Commission, through regular informal reports and visits as needed or opportunities arise.

1. Review and assess INCOFISH results and progress;
2. Supervise activities to achieve objectives and provide deliverables in good quality and on time;
3. Disperse, use, and account for resources as contracted;
4. Coordinate activities so that objectives of workpackages come together to reach the overall goal of INCOFISH, i.e., sustainable use of coastal zones.

Description of work:

INCOFISH will be lead by the Project Co-ordinator supported by the Project Support Team, (consisting of a Project Manager, a Project Assistant, and a Project webmaster) and the Steering Committee that will be composed of the Workpackage Leaders (see Consortium Agreement for details). Each workpackage will be led by the identified Workpackage Leader, a senior representative of the Contractor for that workpackage. All workpackages will hold meetings led by the Workpackage leader, and at which workpackage members will be expected to attend. Workshops at the project and workpackage level will serve as milestones and 'control points' to review progress and adjust course where needed. A detailed description of project management is given in section B.2.2.

Deliverables

- D11.1 First annual progress report (month 13)
- D11.2 Second annual progress report (month 25)
- D11.3 Final report (month 36)

Milestones¹ and expected result

Start-up workshop for all INCOFISH members; WPs are encouraged to hold their respective first workshops in association with this event. This workshop is meant to present and discuss the goals of INCOFISH and to foster team spirit (all INCOFISH members; month 5);

First Steering Committee meeting in conjunction with Start-up-workshop, to discuss and clarify management procedures (all WP leaders, month 5);

Second Steering Committee meeting to review progress, address problems and produce the first annual report (all WP leaders, month12);

Third Steering Committee meeting to review progress, address problems and prepare the second Annual Report (all WP leaders, month 24);

Final Steering Committee meeting to discuss and bring together achievements of the project and prepare the Final Report (all WP leaders, month 34).

¹ Milestones are control points at which decisions are needed; for example concerning which of several technologies will be adopted as the basis for the next phase of the project.

8. Project resources and budget overview

8.1 Efforts for the project

Table 8.1.1 in the attached file of Tables shows the number of person-months for activities in which INCOFISH partners are involved for the full duration of the project.

8.2 Overall budget for the project

The Table below shows the distribution of funds between participating institutions. A more detailed breakdown of funds may be found in the Table “INCOFISH extended budget”. A breakdown of travel and subsistence costs may be found in the Table “INCOFISH travels”.

Table 8.2.1: Distribution of funds between participating institutions (in kEuro)

Partic. Role*	Parti c. no.	Participant short name	Country	Work Package	Person Months	Cost Model	Direct Costs (kEuro)	Indirect costs (kEuro)	Total eligible costs (kEuro)	EC grant (kEuro)
CO	1	IFM-GEOMAR**	Germany	7,11	83	AC	999,0	128,8	1127,8	1127,8
CR	2	APRENDER	Brazil	10	16	AC	33,5	6,7	40,2	40,2
CR	3	IP	Brazil	4	10	AC	18,5	3,7	22,2	22,2
CR	4	CABAL S.A.	Nicaragua	7	16	FC	34,5	34,5	69,0	34,5
CR	5	CDC	Thailand	6,8	82	AC	290,0	58,0	348,0	348,0
CR	6	CDF	Ecuador	2,3,7,9	104	AC	212,0	42,4	254,4	254,4
CR	7	CEFAS	United Kingdom	2,3,4,5	34	FC	179,9	1149,3	329,2	164,6
CR	8	CICIMAR	Mexico	4,5	70	AC	283,5	56,7	340,2	340,2
CR	10	SDU	Denmark	2	12	AC	37,5	7,5	45,0	45,0
CR	11	CRIA	Brazil	1	34	AC	60,0	12,0	72,0	72,0
CR	12	CRODT	Senegal	4,7	40	AC	52,0	10,4	62,4	62,4
CR	13	DINARA	Uruguay	3	16	AC	40,0	8,0	48,0	48,0
CR	15	ECNU	China	4	64	AC	49,5	9,9	59,4	59,4
CR	16	UNI BREMEN	Germany	10	32	AC	145,1	28,0	173,1	173,1
CR	17	FIN	Philippines	1	34	AC	402,4	44,0	446,4	446,4
CR	19	IMARPE	Peru	2,7	28	AC	28,3	5,7	34,0	34,0
CR	21	IGS	United Kingdom	6	10	SFC	50,0	10,0	60,0	30,0
CR	22	UNIPAD	Italy	4	12	AC	24,0	4,8	28,8	28,8
CR	23	MCM DEAT	South Africa	4,7	23	AC	42,0	8,4	50,4	50,4
CR	24	MEI	Estonia	2	20	AC	36,0	7,2	43,2	43,2
CR	25	UHULL	United Kingdom	2	16	AC	115,5	23,1	138,6	138,6
CR	26	NIES	China	5	50	AC	43,5	8,7	52,2	52,2
CR	27	NRM	Sweden	3	32	AC	193,5	38,7	232,2	232,3
CR	30	PRIMEX-FAME	Philippines	8	7	AC	15,0	3,0	18,0	18,0
CR	31	PSU	Thailand	7	16	AC	29,0	5,8	34,8	34,8
CR	32	Fundacion Malpelo	Colombia	9	46	AC	80,0	16,0	96,0	96,0
CR	33	UNAL	Colombia	2	36	AC	36,0	7,2	43,2	43,2
CR	34	UNAM	Namibia	8	90	FCF	427,0	85,4	512,4	256,2
CR	35	Uni Concepcion	Chile	4	16	FC	23,7	23,7	47,4	23,7
CR	36	UNEW	United Kingdom	4,5	36	AC	213,0	42,6	255,6	255,6
CR	37	UiT	Norway	8	10	AC	64,0	12,8	76,8	76,8
CR	38	UWC	South Africa	8	5	AC	12,0	2,4	14,4	14,4
CR	39	UNIABDN	United Kingdom	2,4,6,7	22	AC	114,0	22,8	136,8	136,8
CR	41	USFQ	Ecuador	9	32	AC	54,0	10,0	64,0	64,0
CR	43	KESCOM	Kenya	3	16	AC	27,0	5,4	32,4	32,4
Total					1170					4899,5

* Coordinating Institution

Please note that the amounts in bold refer to WP leaders and include funds for workshops, meetings, travel of WP members, etc.

8.3 Management level description of resources and budget.

The following resources are needed to carry out INCOFISH:

- At the INCOFISH project management level part time of a senior scientist as over-all Coordinator (Rainer Froese), supported by the Project Support Team consisting of a full-time project manager (Silvia Opitz), a part-time project assistant (to be hired), and a part-time web master (to be hired).
- At the level of workpackages there is need for part time of a senior scientist as work package leader, supported by a full-time workpackage coordinating researcher and.
- At the participant level there is need for part-time of a research scientist with expertise in the task at hand, supported by research assistants or PhD students.
- Travel and subsistence cost for about 25 workshops (at least two workshops per workpackage, one start-up workshop) and 4 steering-committee meetings, are charged to INCOFISH.

Contributions of senior scientists and research scientists are charged to INCOFISH only in exceptional cases; for the majority of contractors they are part of their own resources contributed by the participating organisations and institutions. The supporting staff which enables the participation of senior and research scientists is charged to INCOFISH. Scientific infrastructures such as office rooms, computers and web servers, communications etc. are provided from own resources. Organization of most workshops is also supported with own resources (instead of out-sourcing to commercial meeting organizers).

Overall the contributions from own resources are estimated to amount to about 100% of the INCOFISH funds.

9. Ethical issues

There are no ethical issues to be considered in INCOFISH

10. Other issues (optional)

There are no “other issues” to be considered in INCOFISH

Appendix A - Consortium description

A.1 Participants and consortium

The INCOFISH Consortium consists of 37 participants from Institutions in Africa (6), Asia (6), Europe (12), and Latin America (12). Eleven participants have been chosen as Workpackage Leaders both for their proven leadership in previous EC or other projects and for their expertise related to Integrated Coastal Zone Management in general and to the theme of their respective workpackage in particular. Below we list senior scientists and other researchers participating in INCOFISH together with a short CV and a short description of their respective institutions. The first six monthly report from partners will explicitly mention all staff involved in INCOFISH activities including Ph.D. students and other young scientists still to be identified.

No.	Associated scientist	Acronym	Partner Institution
1	R. Froese , Silvia Opitz	IfM-GEOMAR	Leibniz Institut für Meereswissenschaften, Kiel, Germany
<p>Rainer Froese, Ph.D. in Fishery Biology and senior scientist at IfM-GEOMAR, is the INCOFISH Project Co-ordinator. He has a proven track record of successfully leading large international groups (such as the FishBase team and Consortium) and delivering products such as web portals (www.fishbase.org), CD-ROMs (e.g. Catalogue of Life), and multi-authored books (e.g. FishBase 2000) on time. He specializes in fisheries and aquatic biodiversity issues and has authored or co-authored over 100 scientific publications; he is one of few Europeans who received the prestigious Pew Fellowship Award in Marine Conservation. Rainer Froese knows personally all of the workpackage leaders and many of the participants. Rainer Froese will also lead workpackage 7.</p> <p>Silvia Opitz has a Ph.D. in Fishery Ecology and has coordinated several international projects in the past. Most recently she was the ECOFISH coordinator and she has together with Rainer Froese coordinated the proposal leading to this project. Silvia Opitz will lead the INCOFISH project support team.</p> <p>Leibniz Institut für Meereswissenschaften (IfM-GEOMAR) is a new institution resulting from a January 2004 merger of the former Institut für Meereskunde (IfM) and the former Institut für Marine Geowissenschaften (GEOMAR), both in Kiel, Germany. IfM-GEOMAR is a member of the German ‘Blaue Liste’ institutes that are recognized for excellence in science and receive privileged federal funding. Both institutes have proven track records of participating in and also coordinating large international projects, such as GLOBEC and CLIVAR, respectively.</p>			
2	Mauro Figueiredo	APRENDER	Acoes Para Preservacao dos Recursos Naturais e Desenvolvimento Economico Racional (APRENDER Entidade Ecologica), Santa Catarine, Brazil
<p>Mauro Figueiredo is a public interest lawyer, specialist in environmental legislation, professor of environmental law at University of South Santa Catarina - UNISUL and at the Center of High Studies of Santa Catarina – CESUSC, where he teaches about protected areas in an environmental law post graduation course. Mauro is a member of the National Council of the Environment - CONAMA and a member of Environmental Law Alliance World Wide – ELAW. He is the Executive Director of APRENDER Ecological Entity and takes part in the planning team for the management plan of the Arvoredo Biological Marine Reserve located at the south coast of Brazil. He participates in WP 10.</p> <p>APRENDER Entidade Ecológica – Florianópolis – Brazil was established in April 22nd of 2000; it is located on Santa Catarina Island. APRENDER means "to learn" in Portuguese. It also stands for Actions for the Preservation of Natural Resources and Reasonable Economic Development. APRENDER Ecological Entity is a non profit organization of environmentalist, scientific, sportive, cultural and educational character</p>			

that works in marine and coastal ecosystems and in the region of the Atlantic Rain Forest. It has as objective, the defense of the environment and the diffuse and collective rights, the preservation of the natural resources and the reasonable economic development. In December of 2003 APRENDER qualified as Civil Society Organization of Public Interest - OSCIP, assigned for the Ministry of Justice. It is member of the Atlantic Rain Forest NGOs Network and registered in the National List of the Environmental Entities at the National Council of the Environment - CNEA/CONAMA. Since September 2001, APRENDER is collaborating in the management of Arvoredo Biological Marine Reserve, located in the coast of Santa Catarina, dedicating efforts for its effective implementation and in the construction of a harmonious relationship of this important marine protected area with the communities of its supporting zone. Integration, partnership, cooperation, ethics, common-sense and legal basement are lines of direction that guide the work.

3	Maria Gasalla	IP	Instituto de Pesca, APTA, Secretaria da Agricultura e Abastecimento do Estado de Sao Paulo, Brazil
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Maria de los Angeles GASALLA is a Research Scientist of the Instituto de Pesca since 1994. She is a biologist and oceanographer, with both M.Sc. and Ph.D. from the Oceanographic Institute of the University of São Paulo, and previous experience in biological oceanography and fisheries science, since 1986. She has been working with ecosystem modelling of several areas in the South Brazil Shelf and with fisheries assessments. She was a visiting scientist in the University of British Columbia Fisheries Centre, Canada, in 1997, 2000 and 2003 and in the CICIMAR-IPN in La Paz, Mexico, in 2003, working respectively with Dr. Daniel Pauly and Francisco Arreguin-Sanchez. She participated in an INCO Concerted Action entitled “*Placing Fisheries in their Ecosystem Context*” and has published more than 20 peer-reviewed articles. She was awarded a research grant of the International Foundation for Science (IFS), Stockholm, and by the World Wildlife Fund for conducting research on the effect of fisheries in their ecosystem, and by the 4th World Fisheries Congress to participate in the AFS-UNESCO-GEF global network on fisheries ecosystems. She participates in WP 4.

The **Instituto de Pesca** is a scientific fisheries research institution of the São Paulo State government, in Southern Brazil, since 1969. It has a wide physical structure over several research units within the State of São Paulo, and aims to develop particularly inland and marine fisheries and aquaculture research and counselling. The Instituto de Pesca is recognized in Brazil as a long-standing respected fisheries science institution, specially for the active technical participation in the Brazilian decision making process concerning fisheries and aquaculture issues, and for the historical data collection and archiving. Presently, research conducted in the IP focus on fisheries statistics, biology, technology, stock assessment, fisheries economy and ecosystem modeling and on aquaculture issues as well, in 8 coastal and inland localities, trying to reconcile the extraction of sustainable economic and social benefits from human fisheries with the maintenance of biodiversity and integrity of ecological services, but keep working in close relationship with the fishing industry and productive sector.

4	Joe Ryan	CABAL, S.A.	CABAL- Center for Integrated Environmental Management Department of Tropical Coastal Management, Nicaragua
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Joe Ryan has over 20 years experience, mostly international, within a wide range of disciplines related to integrated coastal zone management. This includes assessments of coastal fisheries, wetlands, coral reefs, environmental monitoring systems, as well as developing co-management models of coastal ecosystems and their resources. His work is built on a solid scientific foundation, academic research and practical hands-on experience in Latin America, Asia and Africa. This technical background is integrated into a focus that also includes tools for addressing the more complex institutional (including Marine Protected Areas), social (co-management) and economic (financing mechanisms) dimensions of sustainable development. He is currently based in Nicaragua where he heads the Sustainable Coastal Management Center for CABAL, S.A. Joe Ryan participates in WP 7.

CABAL S.A. is a newly established Nicaraguan consulting and research organization created by several Nicaraguans who have worked in academia, as well as the public and private sectors, including different types of consultancies, both in Nicaragua and in the Central American Region. After working as freelance consultants and researchers they recognized the importance of joining forces to create a firm that is built on a high level of professionalism and transparency, and one that is engaged in providing integrated solutions to the region’s diverse problems. Areas of specialty include Integrated Waters Resource Management and Integrated Coastal Zone Management. The primary objective of CABAL S.A. is to provide consulting services that benefit human development in an equitable manner. CABAL S.A. is dedicated to providing the necessary experience, knowledge and leadership for meeting the challenge of developing institutional capacity in ways that can promote the sustainable and equitable development of the Central American Region.

5	Ratana Chuenpagdee , Kungwan Juntarashote	CDC	Coastal Development Centre (CDC), Bangkok, Thailand
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Ratana Chuenpagdee, Ph.D., is the co-director of Coastal Development Centre (CDC), Thailand. She specializes in interdisciplinary approaches to fisheries and coastal management, coastal valuation and community participation in resource management. The ‘damage schedule’ approach that she developed to integrate scientific knowledge and public judgment in assessing environmental impacts and formulating resource use policies, has been successfully applied in various settings like Thailand, Mexico and USA. Ratana will lead WP 6 and participate in WP 8. **Dr. Kungwan Juntarashote** is the director of CDC and associate professor at the Faculty of Fisheries, Kasetsart University, Bangkok. He has extensive experiences in socio-economic analysis and policy assessment in fisheries and coastal management. Kungwan will participate in WP 6.

The **Coastal Development Centre (CDC)**; <http://cdc.fish.ku.ac.th/>) was established in 1998 as a response to a rapid, but uncoordinated development of the coastal areas in Thailand and many countries in Asia-Pacific region. CDC’s mandates include integration of knowledge in sustainable practices of coastal development, collaboration and partnership building between national and regional institutes and organization in integrated coastal management (ICM), developing training and capacity for implementation of ICM programs, and facilitate information sharing and resource exchanges. Members of CDC are natural and social scientists from a range of disciplines and institutions, with a group of international experts serving on the advisory board. In 2002, CDC hosted the first Coastal Zone Asia-Pacific (CZAP) Conference in Bangkok, which was attended by about 250 participants from 30 countries. CDC plays a critical role in the formulation of marine policy, resource conservation issues, and coastal inventory in Thailand. It also provides training to government officials, researchers and students from Thailand and abroad.

6	Eva Danulat	CDF	Charles Darwin Foundation, Puerto Ayora, Santa Cruz Island, Galapagos, Ecuador
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Eva Danulat received her Ph.D. in Hydrobiology & Fisheries from University of Hamburg, Germany (1986), specialization: Marine Biology. Her principal research experience is in Fish Biology, Natural History of Fishes and Coastal Marine Assessment/Contamination. She is an active research diver. As the Head of Marine Research & Conservation at CDF, Santa Cruz, Galapagos, she oversees the ongoing research and monitoring programs of CDF on (i) extractive resources, (ii) non-extractive resources, (iii) coastal zoning, and (iv) support to the Participatory Management of the Galapagos Marine Reserve (GMR), which was created in 1998. She edited the ‘Baseline of Biodiversity in the Galapagos Marine Reserve’ (2002, 484 pp., in Spanish), and authored the first overview on tourism activities and impact in the GMR (2003, 140 pp, in Spanish). She has experience in marine conservation and management of marine protected areas. She leads WP 10 and participates in WP 2, 3, and 7.

Charles Darwin Foundation (CDF) is an international non-profit organization and the official advisor to the Government of Ecuador on conservation science in Galapagos with nearly 45 years experience in

conservation research in the islands. CDF carries out research for Galapagos biodiversity conservation and uses the results to inform the management decisions of government authorities, including the Galapagos National Park Service (GNPS), the Participatory Management Board (PMB) and the Inter-institutional Management Authority (AIM) for the Galapagos Marine Reserve (GMR), created in 1998. The CDF has a long history of successful collaboration with national and international leading scientists, experts in other fields and research institutions.

7	John K. Pinnegar, Steve Mackinson, Paul Eastwood	CEFAS	The Centre for Environment, Fisheries & Aquaculture Science (CEFAS), Lowestoft Laboratory, Lowestoft, Suffolk, United Kingdom
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John Pinnegar, Ph.D., joined CEFAS in 2000, and is now Topic Area Leader for Fisheries Modelling. He has ten years experience working in marine and freshwater ecosystems around the world. In-depth knowledge and practical experience in the assessment and modelling of fisheries, ecosystems and food-webs. Publications have focussed on marine protected areas, the indirect impacts of intensive fishing, marine mammals and the use of various multispecies modelling approaches e.g. Ecopath, MSVPA and Bormicon/Gadget to evaluate fishery management options. John will act as CEFAS team leader, and he will participate in workpackages 2, 4 and 5.

Paul Eastwood, Ph.D., joined CEFAS in January 2003 with interests in the application of Geographical Information Systems (GIS) to fisheries research and marine resources management. Paul has a broad background in the marine sciences and during the last 10 years has been involved in a number of projects in the UK and overseas. Recently, Paul's research activities have centred on mapping marine habitats and the distribution of commercially-important marine fish. Paul will primarily participate in workpackage 3.

Steve Mackinson, Ph.D., joined the CEFAS Fish Behaviour team in 1999 after completing his PhD at the Fisheries Centre, UBC, Canada. Present work involves scientific investigations on trophic modelling of ecosystems; the behavioural dynamics of predator-prey interactions; on the application of acoustic methods to behavioural ecology and fish distribution and abundance surveys. Steve has broad experience in the use and construction of Ecopath with Ecosim models, also in assembling historic time-series and ecosystem models. Steve will participate in workpackages 2, 4 and 5.

CEFAS is an Executive Agency of the UK Department for Environment, Food and Rural Affairs (Defra). The organisation employs over 550 staff at three specialist laboratories and it is an internationally renowned scientific research and advisory centre working in fisheries management, marine environmental protection and aquaculture. CEFAS enjoys an outstanding reputation around the world, and it plays a leading role within the International Council for the Exploration of the Seas (ICES) as well as other international organisations e.g. EIFAC, NASCO, NAFO, ICCAT, IWC. CEFAS scientists undertake a wide range of research, advisory, consultancy, monitoring and training activities. The customer base includes Government departments (UK and foreign, central and local), international agencies, commercial companies and aid organisations. Much of the work carried out by the organisation is conducted on behalf of the UK Government and the European Union, where research and advice is utilised directly by policy makers.

8	Francisco Arreguin-Sanchez	CICIMAR	Centro Interdisciplinario de Ciencias Marinas del IPN (CICIMAR), La Paz, Baja, California Sur, México
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Francisco Arreguín-Sánchez obtained his PhD in 1992, and is currently Professor at the Interdisciplinary Center of Marine Science of the National Polytechnic Institute. His main scientific work has been directed to fisheries and dynamics of exploited population and ecosystems, with a strong emphasis on methods and management. During the last decade he published about 90 scientific contributions on fisheries, half of them based on ecosystem approach applied to real problems in Mexico. He has been principal adviser of 19 postgraduate students; at the present a group of 9 PhD students are working on ecosystem modelling under his supervision. He teaches at Master and PhD level in his institute. His scientific work on ecosystem based

fisheries management is well recognized. Has broad experience in stock assessment and ecosystem modelling. He is one of the first to have successfully applied ecosystem management. He leads WP4 and participates in WP 5.

The **Interdisciplinary Center of Marine Science of the National Polytechnic Institute, CICIMAR-IPN**, is a research center whose aim is to develop scientific research in Marine Science and formation of postgraduate human resources. There are Masters and Doctor of Science Programs. Organization and scientific research of CICIMAR is based on four departments: Oceanology; Development of Biotechnologies; Plankton and Marine Ecology; and Fisheries and Marine Biology. The size of the Center is almost 200 persons, most of them involved in research activities and currently almost 170 students. Among the most relevant research activities are those focused in integrated studies on marine ecosystems which are facilitated by the interdisciplinarity of the center, but particularly those aimed to applied sciences supporting and advising management, investments, environmental impact, among others.

10	Poul Holm	SDU	SDU, Esbjerg, Denmark
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Poul Holm, Ph.D., since 2000 Professor of History, University of Southern Denmark, and Director, Center for Maritime and Regional Studies. Major current academic posts: Co-Editor, *International Journal of Maritime History*, Member, Census of Marine Life, Scientific Steering Committee, Vice-President, European Society for Environmental History; Chairman, Danish Research Council for the Humanities, Chairman, European Network of Research Councils for the Humanities. Director of the Danish postgraduate school MARINERS – Maritime History and Marine Environmental Research School. Main research fields: Maritime social and economic history. Marine environmental history. Biology and history. Publications: Five authored books, 18 edited books, and 75 papers. Bibliography: <http://www.cmrs.dk/default.asp?id=195>. Poul participates in WP 2.

The **Centre for Maritime and Regional Studies (CMRS)** at the University of Southern Denmark is committed to fostering academic excellence in maritime, regional and marine environmental history and to making significant contributions to the knowledge and understanding in the relevant fields of history. Its research effort focuses on long-term programmes of national and global importance, undertaken in collaboration with complementary institutions to achieve optimum research performance and impact on the knowledge base. In accomplishing this mission, the CMRS is playing a leading role in developing and coordinating the History of Marine Animal Populations (HMAP) project. This programme, which commenced in January 2000, constitutes the historical component of the Census of Marine Life (CoML) initiative and is designed to utilize historical evidence and an understanding of the past to broaden and deepen our knowledge of the contemporary condition of the marine environment. Drawing upon its expertise in marine environmental history, and its experience of participating in major interdisciplinary, international projects, the CMRS proposes to contribute to INCOFISH’s Joint Programme of Activities in conjunction with the Maritime Historical Studies Centre (MHSC), University of Hull (Director: Dr David J Starkey. As well as its central role in the HMAP programme, the CMRS has strong inter-departmental, interdisciplinary links with colleagues and research units in other parts of Southern Denmark University, notably in the Department of History and Civilization (Prof Nye [American environmental history] and Assoc Prof Tønnes Bekker-Nielsen [Ancient Mediterranean fisheries]), and the Department of Environmental Economics (Prof Vestergaard [fisheries economics and modeling]). The CMRS also has strong interdisciplinary connections with other institutions, notably of the Danish Institute of Fisheries Research (Brian MacKenzie [Baltic cod]), the National Environmental Research Institute, Department of Marine Ecology and Microbiology (Daniel Conley [paleoecology]), and the National Environmental Research Institute, Department of Coastal Zone Ecology (Jesper Madsen).

11	Dora Ann Lange Canhos	CRIA	Centro de Referencia em Informacao Ambiental-CRIA, Campinas (Sao Paulo State), Brazil
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Dora Ann Lange Canhos is the Project Director of the Centro de Referência em Informação Ambiental (Reference Center on Environmental Information - www.cria.org.br). She has been working with databases

and online information systems since 1985. She has been involved with biodiversity information networks since 1992, as a member of BIN21 (Biodiversity Information Network - Agenda 21) and responsible for its web site, and as technical coordinator of the project BINbr (Biodiversity Information Network - Brazil) for the Ministry of the Environment from May, 1997 to April 2001. She is also member of the *Clearing-House Mechanism Informal Advisory Committee* (<http://www.biodiv.org/>) and of the *Liaison Working Group* of the *Biosafety Clearing-House* (<http://bch.biodiv.org/>) both of the Convention on Biological Diversity. Currently at CRIA she is a member of the developing team of the speciesLink network (<http://splink.cria.org.br/>). She participates in WP 1.

Centro de Referência em Informação Ambiental (CRIA) is a non-profit, private organization. Its aim is to help organize and disseminate scientific information as a tool for the organization of the scientific and technological community of Brazil. It disseminates biological information of environmental and industrial interest and through this, hopes to contribute directly to the conservation and sustainable use of Brazil's biological resources.

12	Birane Samb	CRODT	Le Centre de Recherches Océanographiques de Dakar- Thiaroye (CRODT) de l'Institut Sénégalais de Recherches Agricoles (ISRA), Dakar, Sénégal
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Birane Samb, Ph.D., with main interest in research on coastal pelagic species, including traditional stock assessment as well as state-of-the-art ecosystem modelling and research into impact of climate change. This research feeds directly into fisheries regulations in Sénégal. Birane Samb participates in WPs 4 and 7.

Centre de Recherches Océanographiques de Dakar Thiaroye (CRODT) is a member of the agricultural research institutions of Sénégal (ISRA). The Centre aims for sustainable use of coastal resources in Sénégal. It is tasked to provide the scientific basis for national fisheries management. CRODT has a proven track record of successful participation in international projects.

13	Hebert Constante Nion Girado	DINARA	Dirección Nacional de Recursos Acuáticos (DINARA), Montevideo, Uruguay
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Hebert Nion, Ph.D., Director of Fishery Biology Division National Fishery Institute (INAPE) Uruguay 1975-1990 and 1994-1996. Director Fishery Research Project, INAPE–UNDP 1995-1996. INAPE Project Co-ordinator CARP-INIDEP-INAPE Project on Stock Assessment of Upper La Plata River Resources 1987-89. Director Group Member CTMFM Argentina –Uruguay (1984-1994). INAPE Co-ordinator ECOPLATA II Project (IDRC) 1994-1997. Member of the Council of ECOPLATA III Project (IDRC) 1997-2000. Actual Position: DINARA (National Aquatic Resources Direction) Technical Director. Member of CCAMLR Scientific Committee. Principal activities: Fish stock assessment, Fishery management, Fish ecology. Participates in WP 3.

Dirección Nacional de Recursos Acuáticos (DINARA) is based in Montevideo, Uruguay. DINARA is the national institute tasked with the sustainable use of aquatic resources and providing the scientific basis for national fisheries management. DINARA has in the past successfully participated in numerous international projects.

15	Cheng Heqin	ECNU	State Key Laboratory of Estuarine and Coastal Research, East China Normal University, Shanghai 200062, China
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Heqin Cheng, Ph.D., has been in charge of the Shanghai beach assessment project in 1997 and was involved in the consultation about water resource sustainability for the local government of Shanghai in 2002. She has been in charge of projects about the sustainability of estuarine salt marsh ecosystem and nautical channels in the Yangtze Estuary and Qiongzhou Strait (South China Sea). These projects have been

supported by National Natural Science Foundation of China; Science and Technology Committee of Shanghai; Science Academy of Sinica. She has also been involved in projects about combined impacts of physical, chemical and biological processes on the environments in the estuaries, supported by Ministry of Science and Technology, China; Ministry of Education, China. She has published over 30 papers and has been involved in some international workshops on coastal resources assessment for sustainability development sponsored by UNIDO and SCOPE. Dr. Cheng participates in WP 4.

The **State Key Laboratory of Estuarine and Coastal Research (SKLEC)** in the East China Normal University (ECNU) is one of the 75 key laboratories established in China with the aid of a World Bank loan under the ‘Key Disciplines Development Projects’. It is also one of the important steps that we put forward to carry out the policy ‘to develop our country on science and education’. For 47 years, it has undertaken the research projects entrusted by the Central Government and Coastal Local Government. The projects mainly concerned coastal resources investigation, assessment and ICZM for the sustainable development. SKLEC also carried out basic researches on estuarine evolution and sediment dynamics, coastal dynamics/geomorphologic processes and shorelines stability, resource exploitation and environmental management in the coastal zone, and coastal natural disasters and measures.

16	Gerd Winter	Uni Bremen	University of Bremen, Germany
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Gerd Winter, Prof. Dr., teaches administrative, European and international law at the University of Bremen and is founder and director of FEU. He has directed several national and international projects e.g. on long-range marine pollution, offshore installations, and integrated coastal zone management. He has broad experience in interdisciplinary work with a focus on nature protection, biotechnology, and chemicals law. He served as a member of high-rank governmental advisory bodies including the „Committee of Independent Experts for a German Environmental Code“, the „Risk Committee“ and the National Committee on Global Change Research. He has extensive experience in legal consultancy based on various technical assistance programmes. He is also cofounder and secretary of the avosetta group, a network of outstanding European environmental law experts. He leads WP 10.

The **University of Bremen** was founded in 1971 as an institution with focus on integrating disciplines as well as combining theoretical and practical education. It has gained world-wide reputation with its centers on marine research. FEU is a research unit addressing a broad range of environmental law questions in the comparative, European and international dimension. With about 15 researchers it has actively engaged itself in interdisciplinary work both with natural and social scientists. The present subjects of research include an evaluation of 30 years of EC environmental law, the elaboration of the new EC chemicals law, the implementation of the new EC biotechnology law, self-regulation by transnational corporations and business networks, and transnational bureaucracy networks as a form of multilevel global governance.

17	Mary Ann P. Bimbao	FIN	FishBase Information & Research Group, Philippines
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Mary Ann P. Bimbao, Ph.D., is director of FIN. She has more than 20 years of experience in various projects involving local people’s organizations, non-governmental organizations, research organizations and academic institutions in the developing world. She specializes in the fields of fisheries economics and gender issues. She has created databases on socio-economics particularly, having significantly contributed to the development of RESTORE (Research Tool for Natural Resource Management, Monitoring and Evaluation), a tool that comprises a set of participatory research procedures and computer-based analysis for sustainability indicators while she worked with the International Center for Living Aquatic Resources Management (formerly ICLARM, now WorldFish Center). Also, while at ICLARM for over 13 years, she served as the Secretary of the Network of Tropical Aquaculture Scientists and Assistant Editor of its newsletter Aquabyte. She managed the information exchanges among the 500 network scientific members in 100 countries. She will lead WP 1.

The **FishBase Information & Research Group (FIN)** is a new national non-stock, non-profit, nongovernmental Organization established in the Philippines. FIN has been created and is backed by the FishBase Consortium, a group of seven international institutes and organisations that is providing long-term support for FishBase. Members of the FishBase Consortium are: Food and Agriculture Organization of the United Nations (FAO, Rome, Italy); WorldFish Center (Penang, Malaysia); Institute of Marine Research (Kiel, Germany); Swedish Museum of Natural History (Stockholm, Sweden); Africa Museum (Tervuren, Belgium); Muséum National d'Histoire Naturelle (Paris, France); Fisheries Centre, University of British Columbia (Vancouver, Canada). The Chair and the Coordinator of the FishBase Consortium are Chair and Vice-chair, respectively, of the Board of Trustees of FIN. FIN has full access to the FishBase Programmer and Encoder Team which is based in the Philippines.

19	Carlos Benites Rodríguez	IMARPE	IMARPE (Instituto del mar del Peru), Chucuito, Perú
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Carlos Benites Rodriguez, bachelor of biological sciences 1973, biologist, 1974 (Trujillo University, Peru). Academic studies and training in fishery biology, Institut für Seefischerei Hamburg University, Germany. **Experience:** Member of the scientific staff of the Institute of the Peruvian Sea (IMARPE), involved in stock assessment of demersal (hake) resources, from 2003 on. National coordinator of projects of investigation and operations in the Peruvian sea. Author of publications on Biology and Fishery on Peruvian coastal marine resources. Administration and management of fishing resources. **Main Positions:** Research Scientist (1974 – 1985), Director of Extraction (Ministry of Fishery), Director of Research of Demersal and Coastal Resources (2003-2004). He participates in WPs 2 and 7.

Renato Guevara-Carrasco, Science Director of IMARPE, since September 2001. **Experience:** Field Biologist of the project “Fisheries Management Plan for the hydrobiological resources of Ucayali River (Peruvian Amazonia)” (1986 - 1987), San Marcos University, Tropical Station in Ucayali. Teacher of General Ecology and Evolution, Cayetano Heredia University (1989 - 1991). Since 1988 member of the scientific staff of the Institute of the Peruvian Sea (IMARPE), involved in stock assessment of both demersal (hake) and pelagic (anchovy and sardine) resources. **Institutional Representations:** Participation in national and international scientific meetings and development projects on fisheries management. Scientific advisor of Peruvian representatives in international fisheries bodies (FAO, ITTC, CPPS, OLDEPESCA). Publications on Peruvian demersal and pelagic fisheries. He participates in WPs 2 and 7.

The **Peruvian Marine Research Institute (IMARPE)** is oriented to the scientific research, as well as to the study and knowledge of the Peruvian sea and its resources. The Institute's investigation comprises the knowledge of the sea and its dynamics, through the study of the physical, chemical and biological oceanographic processes with an ecosystemic criterion. The Institute gives advice about resource and marine environmental management, with due respect and promotion of the concepts of sustained development, marine biodiversity conservation, environmental conservation and responsible fishery. The Institute adds its research efforts with other national institutions, to investigate the El Niño phenomenon, as well as other anomalies occurring in the oceanic space.

21	Robert Kay	IGS	International Governance Solutions, LTD., UK
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Robert Kay, Ph.D., has extensive theoretical and practical coastal management skills and experience. He has worked in a variety of coastal management roles in government, consulting and academic sectors and has published widely. His private sector experience includes projects in North America, Europe, New Zealand, Australia, Bangladesh, the Middle East and the Pacific. His public sector experience includes seven years in senior positions in the State Western Australian Government responsible for the coordination and application of coastal management. He has an Honours degree in Geology (Wales) and PhD in Environmental Science (University of East Anglia). Robert Kay has written widely on coastal management and planning with around 70 papers, articles and consultancy reports. His first book ‘Coastal Planning and Management’, co-authored with Jackie Alder was released in February 1999. A second edition is scheduled

for publication in December 2004. Dr. Kay participates in WP 6.

International Governance Solutions (IGS) is a new entity that has been created in response to an increasing worldwide demand by public administrators for practical, high level advice attuned to the realities of civil government. IGS is an independent team of professionals, each of whom have held senior executive positions in civil administration and have managed the expectations and constraints on government capacity building and reform both in developing and developed countries. IGS brings contemporary expertise to the design, development, and implementation of governance strategies to improve the efficiency, integrity and effectiveness of public sector systems and service delivery. The team is committed to provide support for these activities to the highest professional standards and competencies. An important component of our work is to provide targeted advice on sustainable environmental management. Our particular focus is coastal and marine management where we bring a worldwide reputation through one of our IGS Directors, Dr Robert Kay. Our professionals each have broad international experience with public administration including in Australasia, Europe, Latin America, the Gulf, India, and Africa.

22	Luca Palmeri	UNIPAD	University of Padova, Faculty of Engineering, Department of Chemical Processes Engineering, Laboratory for Environmental Studies and Analyses LASA, Padua, Italy
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Luca Palmeri, Ph.D., is a researcher with more than 10 years experience in scientific environmental issues and related information technologies. He specializes since 1998 in GIS based Ecosystem Modelling, Water Resources Management, Water Quality and Environmental Policy. Since 1996, he works as a freelance consultant. He has conducted consultancies for the Environmental Protection Agency (national and regional); United Nations (FAO) and several private clients. He is an active researcher in the field of Thermodynamics and Theoretical Ecology, is member of the editorial board of the Journal of Ecological Modelling, and has published several papers and books. Dr. Palmeri is currently employed as Contract Professor at the Faculty of Engineering of the University of Padua and coordinates the research team of the Environmental System Analysis Laboratory (LASA – Dept. of Chemical Processes Engineering). He participates in WP 4.

LASA is part of the Department of Chemical Processes of Engineering - Faculty of Engineering - University of Padua, Italy. LASA was founded at the beginning of the 80's. During its 15 years of activities, under the direction of Dr. G. Bendoricchio, LASA carried out research on: modelling eutrophication in water bodies, monitoring and modelling macroalgae and seagrass in the Lagoon of Venice, modelling diffuse pollution at the field and basin scale, modelling, design and monitoring of reconstructed wetlands, monitoring of river and lagoon waters. LASA was/is involved, in the following European research projects: - MAST 2, JEP TEMPUS, STD3 (Philippines), TMR - WET, EUROCAT and ELME. LASA is scientific consultant for public and private institutions concerned with water quality.

23	Lynne Shannon	MCM DEAT	Marine and Coastal Management, Branch of Environmental Affairs and Tourism, South Africa
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Lynne Shannon works as an ecosystem modeller at the Marine and Coastal Management institute. She studied at the University of Cape Town, obtaining her PhD in 2001. Lynne has published on the Benguela ecosystem, its food web dynamics and trophic functioning (10 papers as first author, 16 others co-authored, 5 in press in the primary scientific literature). She chairs the Ecosystem Approaches to Fisheries Management Working Group at MCM DEAT, exploring practical ways (a framework) in which ecosystem considerations can be incorporated into fisheries management procedures in South Africa. Lynne is playing a leading role in the regional Ecosystem Approaches to Fisheries project of the Benguela Current Large Marine Ecosystem (BCLME) Programme. From 2001-2004, Lynne served on the SCOR/IOC Working Group 119: Quantitative Ecosystem Indicators, co-chairing the Trophodynamics Task Group. She participates in WPs 4 and 7.

Marine and Coastal Management (Branch of Environmental Affairs and Tourism) is a branch within the Department of Environmental Affairs and Tourism, South Africa. MCM DEAT is responsible for the development and conservation of the South African marine and coastal environment. Through the provision of appropriate scientific liaison, logistical, administrative and personnel management, MCM DEAT advises the Minister and the Department of Environmental Affairs and Tourism on the development and conservation of marine and coastal resources to ensure the sustainable utilization of such resources, as well as to maintain marine ecosystem integrity and quality. MCM DEAT administers the Marine Living Resources Act, the Sea Birds and Seals Protection Act and the Territorial Waters Act. The three primary functions of MCM DEAT are marine research, resource management and fishery compliance.

24 Henn Ojaveer

MEI

Estonian Marine Institute, Estonian Marine Institute, Tallinn, Estonia

Henn Ojaveer has experience in data interpretation and regional coordination (North and Baltic seas) of the History of Marine Animal Populations (HMAP) project of the global Census of Marine Life (CoML) program. He serves as a Local Project Manager on coastal fisheries of the World Bank financed Baltic Sea regional Project. He is the national contact person for several EU projects (BIOMARE, MARBENA, EUROCEANS). He has experience in fish biology/ecology and studies in long-term changes of intermediate and upper trophic levels of the Baltic Sea food-webs as a response to natural and human impacts. Participates in WP 2.

The Estonian Marine Institute was established in 1992 under the Ministry of Environment and is affiliated to the University of Tartu since 2001. The institute has two field stations (Pärnu and Kõiguste) and one research vessel. The total number of staff is ca. 70, incl. 2 persons with D.Sc. degree and 14 with Cand. Sci. or Ph.D degree. The main goals of the fundamental scientific activities of the institute are: (1) exchange of matter and energy between the ecological subsystems of the Baltic Sea; (2) structure, dynamics and functioning of the Baltic ecological subsystems and their internal exchange of matter and energy; (3) changes in the ecosystems caused by natural and human impacts and (4) development of the ecosystem and prognostic models and their verification. The main efforts in applied science are: (1) stock assessment of fish and macroalgae in the Baltic Sea, composition of forecasts of possible catches and management advice to national fisheries authorities; (2) marine monitoring, incl. participation in national and international Baltic Sea Marine Monitoring Programme and (3) expert evaluations (e.g., environmental impact assessments) and advice for marine management.

The institute has wide international cooperation with several countries (e.g., UK, France, Turkey, Greece, Denmark, Italy, USA, Germany) and has experience from several international projects funded by NATO, EU (FP4 & FP5), Sloan Foundation (HMAP, CoML), International Science Foundation, the Nordic Council of Ministers, the US State Department and the US Environmental Protection Agency. The institute represents the country in the International Council for the Exploration of the Sea (ICES), Intergovernmental Oceanographic Commission (IOC) and the Baltic Sea Environmental Protection Commission (HELCOM).

25 **David J. Starkey**
Michaela G. Barnard

UHULL

Maritime Historical Studies Centre,
University of Hull, Blaydes House, Hull
HU1 1NE, UK

David J Starkey, Ph.D., born 1954, Director, Maritime Historical Studies Centre, University of Hull, BA Economic History (Leeds 1976), MA History of the Atlantic Economy (Exeter 1978), PhD Economic History (Exeter 1985), Member, Steering Group, History of Marine Animals Population project Publications: Joint editor, *The Exploited Seas: New Directions in Marine Environmental History* (St John's Newfoundland, 2001); Editor, *England's Sea Fisheries: The Commercial Sea Fisheries of England and Wales since c1300* (London, 2000). David leads WP 2.

Michaela G Barnard, Research Associate, Maritime Historical Studies Centre, University of Hull, BA History (Hull 1997), MA in Historical Research (Hull 1998), Publications: “Trade Unionism in Grimsby’s

Trawling Industry, 1850-1980” in Starkey et al (eds.) *People and Politics in the North Atlantic Fisheries* (Hull, 2003); “An Antiquated Relationship? Trawler Owners and Trawlermen, c1890-1980” in Starkey et al (eds.) *England’s Sea Fisheries: The Commercial Sea Fisheries of England and Wales since c1300* (London, 2000). Participates in WP 2.

The Maritime Historical Studies Centre (MHSC) is a research unit of the Department of History, University of Hull, UK. Its mission is to develop into a research centre of international standing in the fields of maritime and marine environmental history. The staff and postgraduates of the MHSC have acquired expertise in two areas of relevance to the INCOFISH Specific Targeted Research Project:

Research: the MHSC has expertise in the assembly, validation and analysis of historical data relating to fish catches and the human harvesting effort in particular ecosystems. These data have been used to construct catch and effort time series, CPUEs and estimates of fish populations over the last 500 years. Such experience will prove invaluable in the design, organisation and execution of INCOFISH WP2.

Data management: the MHSC has considerable experience in the management of extensive datasets. It has the capacity to design and maintain searchable, interoperable databases, to synthesize data mined from diverse contemporary and historical sources, and to disseminate such products via the web. This expertise is not only deployed to manage the data generated by the 12 research teams active in the ‘History of Marine Animal Populations’ (HMAP) programme (www.hull.ac.uk/history/MHSC/hmapUH), but also informs to the design and content of the Ocean Biogeographical Information Service (OBIS). Such expertise will prove invaluable in the collation of the data assembled by members of INCOFISH WP 2, and in the dissemination of these outputs (in conjunction with INCOFISH WP 1).

26	Haigen Xu	NIES	Nanjing Institute of Environmental Sciences, State Environmental Protection Administration of China, Nanjing, China
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Haigen Xu, Ph.D., Professor and Director, Division of Nature Conservation and Biodiversity, Nanjing Institute of Environmental Science under State Environmental Protection Administration of China (SEPA), has been working on the planning and management of nature reserves in China, including marine protected areas, and completed many national and international projects which were supported by SEPA, the Ministry of Science and Technology, UNEP. He is now leading the establishment of a national database of nature reserves (www.biodiv.org.cn). He has published more than 50 papers in national and international peer reviewed journals. Recent papers include Xu, H. G., Xue D. Y. et al.. 1999. Biodiversity conservation in China: Legislation, Plans and Measures. *Biodiversity and Conservation*, 8(6): 819-837 (in English) Xu, H. G. & Bao H. S. 2004. The methodology of ecological security design for nature reserves. *Chinese Journal of Applied Ecology*, No. 7 (in Chinese) Xu, H. G., Wang L. L. & Bao H. S. Design of Nature Reserve System for Red-Crowned Crane in China. *Biodiversity and Conservation* (accepted) (in English). He participates in WP 5.

Nanjing Institute of Environmental Sciences (NEIS), which is one of the three subordinate institutes under the State Environmental Protection Administration (SEPA) of China, is a specialized institute on nature conservation and biodiversity, including marine protected areas. SEPA is responsible for the overall supervision of nature reserve and biodiversity conservation in China. Over the past decade, NIES has been working on the selection, construction and management of MPAs, such as policies, regulation, planning and participatory management of MPAs, and completed many national and international projects which were supported by SEPA, the Ministry of Science and Technology of China, UNEP. NIES has established a national database of Pas (www.biodiv.org.cn). Remarkable progress has been made, especially in the area of policy, design and planning of in situ conservation of marine biodiversity, which has greatly contributed to the conservation and sustainable use of marine biodiversity in China.

27	Sven Kullander	NRM	Ichthyology, Dept. Of Vertebrate Zoology, Swedish Museum of Natural History, Stockholm, Sweden
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Sven Kullander is Senior Curator of Fishes, Swedish Museum of Natural History; Associate Professor, Department of Zoology, Stockholm University. Holds a PhD and associate professorship in systematic ichthyology; specialized in systematics and biogeography of Neotropical cichlid fishes and Asian cyprinid fishes. Team leader for FishBase Sweden. Author of desktop and web applications for museum collections, author of two books and 70 scientific papers, editor of two books. Organised numerous field studies in South America, Asia, and Africa. Coordinator of EC projects CHINAFISH and ECOCARP, concerned with aquaculture fishes in Asia; workpackage leader for EC project FISHTRACE (Online genetic catalog of European marine fishes). He leads WP 3.

The Swedish Museum of Natural History is a government institution under the Department of Culture, with a strong research division including biosystematic, geological, and environmental research departments. The museum is active in biodiversity, e.g., as a national node for GBIF, with a secretariat for FishBase, and participating in European networks such as ENBI, BioCase, Fauna Europea, and Synthesys. 63% of the staff is dedicated to research and collections management, including 51 scientists. The collections and research are of international significance, including 9 million objects, more than 650 visiting researchers annually, and 180 scientific papers annually (based on 2003 figures). The Department of Vertebrate Zoology has about 28 staff of which 6 PhDs in ichthyology, and one ichthyology collections assistant. Collections include over 400 000 specimens from all over the world. The collection was one of the first in Europe to be presented online (1991), and collections database development and web presentations remain in the frontline. Current activities include incorporation of Baltic country occurrence databases into GBIF, OBIS, and FishBase. The ichthyology group focuses on Scandinavian, Asian and South American fishes, and includes a FishBase secretariat with two permanent staff.

30	Annabelle Cruz Trinidad	PRIMEX-FAME	PRIMEX- Foundation for Alternative Management of the Environment (FAME), Philippines
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Ms. Annabelle Cruz-Trinidad spent more than ten years of her professional life at ICLARM, initially as Program Assistant of the Resource Assessment and Management Program, acting as coordinator of the Network of Tropical Fisheries Scientists and assistant editor of its newsletter FISHBYTE, and later on, getting involved in research projects on co-management, socio-economics of fisheries, and resource valuation. Ms. Trinidad has authored several journal articles and technical reports including “Valuation of tropical coastal resources: theory and application of linear programming“ and “Bioeconomics of the Philippine small pelagics fishery“. After her stint with ICLARM, Ms. Cruz-Trinidad joined the USAID-funded Coastal Resource Management Project as Policy Advisor. She worked with national agencies on various aspects of coastal resources policy including foreshore management, fisheries, protected area management, delineation of municipal waters, development of national coastal resources framework and establishing and strengthening the coastal office of the Department of Environment and Natural Resources. She is currently the Resource Economist of the ADB and JBIC-funded Fisheries Resource Management Project. She participates in WP 8.

PRIMEX Foundation for the Alternative Management of the Environment (FAME) is a young NGO affiliated with PRIMEX, a consultancy firm that specializes in coastal management and fisheries projects. FAME is both a philanthropic organization and an environmental NGO with interest in advocacy, community management systems and capacity building and governance and empowerment. The Foundation shall assist national and local government agencies to plan and implement resource management policies, strategies, approaches, and interventions through field-level coaching, on-the-job training, and effective and efficient transfer of knowledge and skills from specialists to their counterparts. FAME assisted local stakeholders in developing a community-based resource management project in Banilad, Dumaguete City, Philippines, that integrates fish sanctuary and mangrove management. Presently, FAME is completing the conference proceedings for the Resource and Social Assessments conducted in eighteen important bays in the Philippines. The publication will highlight the ecological and economic research conducted in these bays by different NGOs and academic institutions.

31	Vachira Lheknim	PSU	Prince of Songkla University PSU, Thailand
<p>Vachira Lheknim has a Ph.D. in Marine Biology and broad experience with taxonomy. As an aquatic biologist, he is interested in the factors affecting the structure and function of aquatic ecosystems with an emphasis on the Songkla Lake Basin (SLB). He is also interested in many other aspects of aquatic biology including: feeding biology, primary and secondary production, effects of pollution and habitat degradation. He participates in WP 7.</p> <p>Prince of Songkla University was established in 1967 with the purpose of extending opportunities for tertiary education to the south, in order to raise the educational standard and support the development of the region. Hat Yai campus in Songkla Province is the largest campus, and used to serve as a center for sciences and technology of the university. The Hat Yai campus presently has twelve faculties, including Agro-Industry, Engineering, Environmental Management Sciences, Management Sciences, Natural Resources, Science and Graduate School.</p>			
32	Sandra Bessudo Hernando Zambrano	Fundacion Malpelo	Malpelo Foundation / Unidad Administrativa Especial del sistema de Parques nacionales naturales, Colombia
<p>Sandra Bessudo is the Executive Director of the Malpelo Foundation, a marine biologist and professional diver. She has specialized in animal behavior (in particular sharks), and ecotourism. In a joint effort with the National Army, she worked for the declaration of Malpelo Island as Sanctuary of Flora and Fauna in 1995, for its designation as Particularly Sensitive Sea Area by the International Maritime Organization and for the enlargement of the protected marine area of Malpelo.</p> <p>Hernando Zambrano, Biologist, works since twelve years on conservation of biodiversity, analysis of socioeconomics and biological possibilities for the development of local communities, in particular those in the rural sector. Even though of classic studies and oriented towards protection of natural systems, the professional experience has managed to modify his concepts and criteria initially acquired in the academy, towards less strict schemes that are more adapted to the real situation of Colombia and the region. At present, he is working with the Foundation Malpelo and the National Management. Both Sandra and Hernando participate in WP 9.</p> <p>The Unidad Especial Administrativa del Sistema de Parques Nacionales Naturales (UAESPNN) administers 49 national parks of Colombia, including that of Gorgona, an island located at 56 km from the Pacific coast. NP Gorgona, created in 1984, comprises 60000 ha marine area and receives approximately 4000 visitors per year. The Park has a research station that provides infrastructure facilities to the scientific community. Amongst more than 100 publications on the marine environment, the recent compendium ‘Marine Gorgona - contribution to the knowledge on a unique island’ (in Spanish), summarizes various studies. Working in close collaboration with the UAESPNN, the Malpelo Foundation was created in 2000 in order to promote the conservation, protection and investigation of the oceanic island of Malpelo, Colombia, located at 506 km west of the continental coast. SFF Malpelo now covers 651 km². The programs of the Foundation Malpelo include: biodiversity; interactions between humans, species and environments; environmental education; and ecotourism.</p>			
33	Camilo Bernardo Garcia	UNAL	National University of Colombia, Science Faculty, Biology Department, Santa Marta, Colombia
<p>Camilo Bernardo Garcia, Ph.D. About 30 scientific papers on several aspects of marine ecology, fish biology and fisheries. Participant and proponent of a number of research projects financed by local sources, the last one with the purpose of rescuing, compiling and reanalyzing historic information on every aspect of the upwelling area north of Colombia. Camilo participates in WP 2.</p>			

<p>The Universidad Nacional de Colombia is the biggest University in the country with a history of about 100 years. The department of biology promotes all aspects of biology from biotechnology to marine biology. Concepts like conservation biology and management of ecosystems are stressed in current curricula and research. The biology department has 6 professors, 2 of them with PhD and 4 with MSc. It actively promotes their involvement in international initiatives.</p>			
34	<p>Ussif Rashid Sumaila Kevin Stephanus Manfred Hinz</p>	<p>UNAM</p>	<p>University of Namibia (UNAM), Windhoek, Namibia</p>
<p>Ussif Rashid Sumaila specializes in marine ecosystem valuation, bio-economics, and the analysis of global fish trade. Sumaila has experience working in fisheries and natural resource projects in Norway, Canada and the North Atlantic region; Namibia and the Southern African region; and Hong Kong and the South China Sea. He has recently published articles in <i>Journal of Bioeconomics</i>; <i>Land Economics</i>; <i>ICES Journal of Marine Science</i>; <i>Environmental and Resource Economics</i>; and <i>Ecological Economics</i>. Sumaila's work has generated a great deal of interest, and has been cited by, among others, the <i>Economist</i>, the <i>Boston Globe</i>, and the <i>Vancouver Sun</i>. Current research activities include the ecological, economic and social impacts of subsidies to the fishing sector; the economics of shared fish stocks (including previous work on the development of game theory models to study the bioeconomic effects of cooperative and non-cooperative management of the coo-capelin stocks in the Barents Sea and Namibian hake in the Benguela upwelling marine ecosystem); values from marine ecosystems; globalization, fish trade and marine ecosystem sustainability; economics of marine protected areas; and the economics of aquaculture. He leads WP 8.</p> <p>Kevin Stephanus is fisheries economist at the University of Namibia with background on the economics of fishing in the Benguela marine ecosystem. He will work closely with Rashid Sumaila in WP8.</p> <p>Manfred Hinz, Prof. Dr., obtained his doctor degree in law from the University of Mainz. After studying sociology, anthropology and African languages at the same University, he became assistant lecturer, teaching anthropology and public law. In 1971, he completed his higher doctorate (<i>Habilitation</i>) and was appointed full professor at the University of Bremen. In 1989, he went to Namibia where he, after independence, assisted the Ministry of Justice. He was later seconded to the now VC's office to help build up UNAM'S Faculty of Law. He joined the Faculty with its inception. He is currently the Dean of the Faculty, Executive Co-Director of the Centre for Applied Social Sciences (CASS) and holds the UNESCO Chair: Human Rights and Democracy in the Human Rights and Documentation Centre of the Faculty of Law. He has published widely in his fields of specialisation, which are legal anthropology, constitutional law and international law. Prof. Hinz is participating in WP 10.</p> <p>University of Namibia (UNAM) conducts research on marine and coastal resources, zero emissions, biotechnology, as well as multi-disciplinary research. It promotes sustainable development and utilization of marine and coastal resources in consultation with stakeholders.</p> <p>The Faculty of Law of the University of Namibia is a product of educational developments after the independence of the country in 1990. The Faculty admitted its first students in January 1994. Departments of Public Law and Jurisprudence, Private and Procedural Law, and Commercial Law were established. In cooperation with the Ministry of Justice, the Justice Training Centre (inter alia responsible for the theoretical side of training of legal candidate practitioners) and the Human Rights and Documentation Centre (responsible for extramural human rights course) were created as departmental entities of the Faculty. The Legal Department of the Centre for Applied Social Sciences (CASS) was affiliated to the Faculty of Law of the UNAM. The main aim of the affiliation was to make the services of CASS, in terms of generating legal research and providing technical assistance, available to the Faculty of Law.</p>			
35	Hugo Arancibia	Uni Concepcion	Universidad de Concepcion, Chile
<p>Hugo Arancibia works as Associated Professor at the Universidad de Concepcion, Chile (Department of Oceanography, Faculty of Nature Sciences and Oceanography). He lectures for M.Sc. students in Fisheries</p>			

and in the Doctoral Program in Oceanography (Fisheries Biology, Fisheries Ecology, Multispecies stock assessment). His area of interest within the last 5 years: Multispecies fisheries management and quantitative ecosystem indicators in the upwelling ecosystem of the Humboldt Current and comparative ecosystems. From 1989 to 1996 he was head of the Department of Fishing Statistic and Stock Assessment, Fisheries Research Institute in Talcahuano, Chile. He received his Ph.D. degree in 1989 from the University of Bremen, Germany. From 1986 to 1989, he held a grant of the German Exchange Academic Service (DAAD) at the Alfred Wegener Institute for Polar and Marine Research (Bremerhaven, Germany). He participates in WP 4.

Universidad de Concepcion is an autonomous institution of higher education, created by the community of Concepcion (Chile), organized as Private Corporation, which is ruled by their own statutes and by the Title XXXIII of the First Book of the Chilean Civil Code. The Corporation is administrated by the Directory, which is integrated by the Rector as President, and ten Directors elected by the General Reunion of Partners as indicated in the Article 13th of the statutes. The directory is aimed to administrate the Corporation Patrimony, make pronunciations about the operations budget and investments, and to dictate the regulations needed to the functioning of the Institution. The goal of the Corporation is to produce activities of an university, i.e. create, transmit, and maintain the culture in all kind of manifestations. In fulfillment of its mission, the Corporation contributes to the scientific and technologic development of the country. This University is the third largest Chilean universities (1,400 professors and 15,400 students. More than 25 doctoral programs in several areas of the knowledge). Universidad de Concepcion, in their 85 years of existence, has always shown a special interest to contribute to the rational use of natural resources. Since the 1970s decade, the Universidad de Concepcion has made an important effort to develop the marine sciences by creating the career of Marine Biology and participating in basic and applied research related to fishery resources and their environment. This university has a highly qualified team of professionals, technicians and administratives, and an infrastructure at international standards. In this context, the station of Marine Biology, located at Dichato, and the oceanographic research vessel “Kay-Kay” can be mentioned. In March 1995, the Universidad de Concepción created the Fisheries Section inside the Oceanography Department with the aim to contribute to the development, and sustainability of the regional fisheries sector. This section focuses in research on management of fisheries resources and the formation of professionals in this area.

36	Nicholas Polunin, UK	UNEW	Univ. of Newcastle upon Tyne, Marine Science and Technology, UK
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Nick Polunin, Ph.D., is an ecosystem ecologist whose work has focused on reefs in the South Pacific, Mediterranean and Caribbean. He has played key roles in tropical projects on fishing effects, marine protected areas and ecosystem dynamics, has published over 70 research papers, and edited an international environmental journal since 1996. He is currently president of the International Society for Reef Studies (www.fit.edu/isrs), directs the Newcastle MSc in Tropical Coastal Management, is supervising 6 PhD students and is leading a multinational study of coral bleaching effects on reef fish assemblages. Work in his group includes underwater video and visual census, ecological modelling and use of stable isotope natural abundance data. The group aims to conduct research of fundamental scientific interest but also relevant to coastal management issues. He leads WP5 and participates in WP 4.

Newcastle University and the School of Marine Science & Technology

From its 19th-century origins in medicine and the physical sciences, Newcastle University has developed a strong and vibrant interdisciplinary research base. More than 2,000 international students from over 100 countries are studying at Newcastle University, and its graduates are much sought-after by employers. The Institute for Research on Environment & Sustainability has been recently established to foster and promote the University's expertise in environmental and sustainability research. One of the new schools is Marine Science & Technology, formed from the Departments of Marine Sciences & Coastal Management and Marine Technology, which both have 100-year traditions of excellence in teaching and research. MST houses 22 academic teaching staff, 400 undergraduate students, 60 taught postgraduates, 53 research students and 30 research associates and fellows. Twenty percent of students are from outside the UK.

37	Claire Armstrong	UiT	The Norwegian College of Fishery
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			Science, University of Tromso, N-9037 Tromso, Norway
<p>Claire Winifred Armstrong, Ph.D., is Associate Professor at the Department of Economics and Management at the Norwegian College of Fishery Science, University of Tromsø, Norway. Her research interests include environmental and development economics, fisheries management and bioeconomic modeling. She is currently involved in projects on marine reserves and coastal zone management, financed by the Norwegian Research Council. She has taught at the University of Western Cape in South Africa and the University of Namibia. Armstrong has published and refereed widely in academic journals, and is currently a member of the Executive Committee of the International Institute of Fisheries Economics and Trade (IIFET). She participates in WP 8.</p> <p>The Norwegian College of Fishery Science (NCFS), University of Tromsø, Norway has a particular responsibility for the development of fundamental and scientific expertise within all areas of fisheries and aquaculture research in Norway. NCFS is also responsible for educating candidates for employment in the fishing industry and fisheries management. NCFS has four departments: Department of Aquatic Biosciences, Department of Marine Biotechnology, Department of Economics and Department of Social Science and Marketing. The number of students at NCFS is steadily increasing, and is expected to reach 700 in a year or two. NCFS has a permanent staff of 130, 60 of these engaged in teaching and research activities. Additionally, externally funded contract staff counts about 50 people, the majority performing research. The breadth of professional competence provides the NCFS with exclusive opportunities for basic and applied research in natural and social sciences. A co-operative partnership with R&D institutions in Norway and other countries gives NCFS a solid foundation for conducting teaching and research within fisheries sciences.</p>			
38	Moenieba Isaacs	UWC	University of Western Cape, Programme for Land and Agrarian Studies, South Africa
<p>Moenieba Isaacs has experience in social sciences related to use of marine ecosystems. She participates in WP 8. She is currently engaged in the National Coastal and Fisheries Co-management programme in South Africa with particular focus on the Northern and Eastern Cape province. She also forms part of a collaborative team with University of British Columbia on a BCMLE trans-boundary project between South Africa and Namibia. Her main research focus would be on the coastal communities that will include poverty reduction strategies, sustainable livelihoods and developing baseline socio-economic data for coastal communities. Other research areas of interests in this sector are gender equity and the social impacts of HIV/AIDS.</p> <p>The Programme for Land and Agrarian Studies (PLAAS) is a constituent unit of the University of the Western Cape’s School of Government, and was initiated in 1995. PLAAS has established itself as the leading centre for research and teaching on land reform within the Southern African region. It currently comprises six senior researchers, all with doctorates, and eight other researchers, one female with a doctorate. The bulk of PLAAS staff and students are black, consistent with its goal of building capacity within the land and rural development sectors through creating training opportunities for the historically disadvantaged. PLAAS currently undertakes research, policy support, post-graduate teaching, training and advisory and evaluation services. Specific focus areas comprise: land restitution, tenure reform and land redistribution programmes; community based natural resource management (e.g. in relation to rangelands, wildlife, woodlands, water catchments); coastal and marine resource management and policy; rural livelihoods; rural governance and chronic poverty and development policy.</p>			
39	Graham Pierce M. Begoña Santos Vázquez Elena Mente, Jianjun Wang	UNIABDN	Department of Zoology, School of Biological Sciences, University of Aberdeen, UK
<p>Graham Pierce, Ph.D., Senior Lecturer in Zoology. Extensive experience in EC-funded research in marine</p>			

ecology and fisheries. Co-ordinated FP5 projects BIOCET and CEPHSTOCK and part of co-ordinating team for AQCESS, which studied environmental and socio-economic impacts of aquaculture and inshore fisheries. Collaborative links with Scottish Executive Marine Laboratory in Aberdeen. Over 80 peer-reviewed publications. Dr. Pierce and his team participate in WPs 2, 4, 6, and 7.

M. Begoña Santos Vázquez, Ph.D., Research Fellow in Zoology. Over 10 years experience working in marine ecology and fisheries including studies on marine mammals and pelagic fish. Over 25 peer-reviewed publications.

Elena Mente, Ph.D., Research Fellow in Zoology. 10 years research experience in crustacean physiology and environmental and socio-economic impacts of aquaculture on coastal communities. Publications include a book and 10 peer-reviewed papers.

Jianjun Wang, Ph.D., Postdoctoral Research Assistant. Experienced in GIS applications, e.g. to fisheries data and for management / planning purposes.

The Department of Zoology is part of the **School of Biological Sciences**. Marine Biology (Head: Prof. I.G. Priede) is one of five research themes in the School. Researchers within the Marine theme conduct fundamental and applied studies in a wide range of contrasting marine ecosystems. A broad suite of approaches including molecular techniques, remote sensing, instrumentation and modelling are used to study populations at all levels of the food chain, from zooplankton to top predators. Particular emphasis is placed on understanding how individuals and populations respond to extreme and changing environments, and using these studies to inform the sustainable exploitation and conservation of marine resources. Marine theme staff have co-ordinated and participated in marine research projects funded by all the EC Framework Programmes. Dr Pierce’s group specialises in fishery and ecological studies on cephalopods (CEPHSTOCK project) and marine mammals (BIOCET project) as well as carrying out research on inshore fisheries (AQCESS project), pelagic fisheries and distant-water fisheries (ROCKCOD project). Dr Pierce also has a long-standing research link with partner 31.

41	Günther Reck Camilo Martinez	USFQ	Corporación de Promoción Universitaria- Universidad San Francisco de Quito, Quito, Ecuador
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Günther Reck is the head of ECOLAP. He is a fisheries biologist with a Ph.D. in marine science, from Kiel University in Germany. Through his research in artisanal fisheries as employee of Ecuadorian governmental institutions, and later on his activity as Director of the Charles Darwin Research Station (CDF) in the Galapagos islands (Ecuador) he became more and more involved with non extractive use management, particularly through tourism, and with general conservation research, management and policy making. As founding dean of the school of Life Science at USFQ he has kept working on issues which establish compatibilities with fisheries uses and non extractive uses both on the Galapagos and the Ecuadorian mainland, being involved in Ecopath modelling and with carrying capacity and tourist site research and planning in coastal sites. He keeps strongly involved with the Galapagos Marine Reserve, where he has served as advisor to the GNPS, and particularly the CDF.

Camilo Martínez is an Ecuadorian marine ecologist with a M.Sc. in management in marine and coastal resources from University of Las Palmas de Gran Canaria in Spain, who gained his basic practical experience with fisheries and ecosystem research in the Galapagos Marine Reserve, where he also became involved in participative management activities and zoning issues. With ECOLAP, he is now starting to strengthen marine conservation along the Ecuadorian mainland, always in strong coordination with colleagues on the Galapagos Islands. His orientation will be particularly with underwater impact management and zoning for the increasing diving and whale watching industry in Machalilla. Günther and Camilo participate in WP 9.

ECOLAP (Institute of Applied Ecology) belongs to the School of Life Science of Universidad San Francisco de Quito (USFQ). As University owned institution it executes conservation and management oriented research and consulting projects, particularly related to natural areas, both publicly and privately owned. ECOLAP has executed projects in all of the Ecuadorian main regions, Amazon rainforest, coastal area, highland, and the Galapagos Islands. Projects have covered a wide range of topics and issues, but a

common denominator in all of them has been community involvement at different levels with clear consciousness about the importance of governance and co-management. The creation of Marine Protected Areas has been a particular concern, among others, as a complement to the Galapagos Marine Reserve. ECOLAP, among other projects, also is preparing a series of texts for guide training in the Galapagos which involve biological and physical topics, as well as tourism theory and visitor management methodologies in natural situations.

43	Nyawira Muthiga	KESCOM	Kenya Sea Turtle Conservation Committee, Mombasa, Kenya
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Nyawira. A. Muthiga, Ph.D., is chairperson of the Kenya Sea Turtle Conservation Committee (KESCOM) and conservation scientist with the Wildlife Conservation Society (WCS). She facilitates WCS marine programs in the Western Indian Ocean region; responsibilities include developing and implementing the marine and coastal research and biodiversity conservation programs for the WCS Western Indian Ocean project including research on coral reefs, mangrove and coastal forest, and studies on species of special concern such as marine mammals and marine turtles as well as the development of community conservation and awareness initiatives. Additional roles include President of the Western Indian Ocean Marine Science Association (WIOMSA). She participates in WP 3.

The Kenya Sea Turtle Conservation Committee (KESCOM) is a community based NGO registered in Kenya under the Department of Social Service (Ministry of Social Services). KESCOM has signed a partnership agreement with the **Wildlife Conservation Society (WCS)** that provides technical support for KESCOM and has implemented several projects.

The **Wildlife Conservation Society (WCS)** is based in Mombasa, Kenya, and conducts research on marine and coastal biodiversity. In particular, it conducts conservation-oriented research on both healthy and declining reef systems and the impact of MPAs.

A.2 Sub-contracting

IfM-GEOMAR (participant 1, INCOFISH coordinator and leader of WP 7 and 11):

Because of peculiar German regulations which prevent short-time hiring of experienced scientific staff IfM-GEOMAR will subcontract the INCOFISH project management position (see CPF 3.1 and the INCOFISH extended budget table attached to the “Description of Work”. This position will be covered by Dr. Silvia Opitz (compare section on IfM-GEOMAR in the consortium description).

Uni Bremen (participant 16):

will subcontract 2 researchers in Indonesia and Kenya, to collect and summarise the relevant legal documents, reports and existing literature needed for the studies on fisheries legislation in Indonesia and Kenya.

FIN (participant 17, leader of WP1):

will subcontract programming, web-mastering and data encoding (see CPF 3.1 and the INCOFISH extended budget table attached to the “Description of Work”).

USFQ (participant 41):

will need subcontracting funds for renting of dive-personnel and equipment (see attached justification).

A.3 Third parties

The Fisheries Centre at the University of British Columbia, Canada, will be the main third party participant. The Fisheries Centre is the world leader in Coastal Zone Management issues and Ecosystem Modelling.

A.4 Funding of third country participants

No funding for third country parties is foreseen in INCOFISH.

Appendix 2 Optional/mandatory Deliverables

a) Project Presentation (*optional*)

<u>Contract no.:</u>	PL 003739
<u>Project acronym:</u>	INCOFISH
<u>Project name:</u>	Integrating Multiple Demands on Coastal Zones with Emphasis on Fisheries and Aquatic Ecosystems
<u>Priority:</u>	Integrated Coastal Zone Management
<u>Project Logo:</u>	see www.incofish.org

List of participants (organisation name, country):

- Leibniz Institut für Meereswissenschaften (IfM-GEOMAR), Germany
- Ações Para Preservação dos Recursos Naturais e Desenvolvimento Economico Racional (APRENDER), Brazil
- Instituto de Pesca (APTA/SAA/SP) (IP), Brazil
- Empresa de Consultoria e Inversiones (CABAL, S.A.), Nicaragua
- Coastal Development Centre (CDC), Thailand
- Charles Darwin Foundation for the Galapagos Islands (CDF), Ecuador
- The Centre for Environment, Fisheries and Aquaculture Science (CEFAS), United Kingdom
- Centro Interdisciplinario de Ciencias Marinas del IPN (CICIMAR), Mexico
- Syddansk Universitet (SDU), Denmark
- Centro de Referencia em Informação Ambiental (CRIA), Brazil
- Centre de Recherches Oceanographiques de Dakar Thiaroye (CRODT), Senegal
- Direccion Nacional de Recursos Acuaticos (DINARA), Uruguay
- East China Normal University (ECNU), China
- Universität Bremen (Uni Bremen), Germany
- FishBase Information and Research Group, Inc. (FIN), Philippines
- Instituto del Mar del Peru (IMARPE), Peru
- International Governance Solutions Ltd. (IGS), United Kingdom
- Universita degli Studi di Padova (UNIPAD), Italy
- Marine and Coastal Management Branch of Environmental Affairs and Tourism (MCM DEAT), South Africa
- Estonian Marine Institute (MEI), Estonia
- University of Hull, Maritime Historical Studies Centre (UHULL), United Kingdom
- Nanjing Institute of Environmental Sciences (NIES), China
- Naturhistoriska Riksmuseet (NRM), Sweden
- PRIMEX Foundation for the Alternative Management of the Environment (PRIMEX-FAME), Philippines
- Prince of Songkla University (PSU), Thailand
- Fundacion Malpelo y Otros Ecosistemas Marinos (Fundacion Malpelo), Colombia
- Universidad Nacional de Colombia (UNAL), Colombia
- University of Namibia (UNAM), Namibia
- Universidad de Concepcion (Uni Concepcion), Chile
- The University of Newcastle upon Tyne (UNEW), United Kingdom
- Universitetet i Tromsø (UiT), Norway
- University of the Western Cape (UWC), South Africa
- The University Court of the University of Aberdeen (UNIABDN), United Kingdom

- Corporacion de Promocion Universitaria /Universidad San Francisco de Quito (USFQ), Ecuador
- Kenya Sea Turtle Conservation Committee (KESCOM), Kenya.

Total cost (€): 5.408.480,00

Commission funding (€): 4.899.480,00

Project main goal(s)

Integrating Multiple Demands on Coastal Zones with Emphasis on Aquatic Ecosystems and Fisheries.

Key issues

Coastal Zone Management, Aquatic Ecology, Socio-Economic issues.

Technical approach

Document historical performance of ecosystems to deal with the 'shifting baselines' syndrome and provide sound reference points for resource restoration; provide electronic maps for all coastal species to establish authoritative species inventories and explore scenarios of global change and invasive species; create spatial ecosystem models for the coastal systems treated in this project as a basis for understanding the resource; provide guidelines and tools for best sizing and placement of marine protected areas; research impact of ecotourism on coastal ecosystems and provide best-practice guidelines; identify suitable simple indicators to promote and monitor sustainable fisheries; provide valuation of coastal ecosystem products and services and of different management regimes; review legal instruments for sustainable fishing in coastal zones; revisit coastal transects as a tool for structuring and understanding multiple demands on coastal zones; provide an archive and web portal for public access to all data and tools relevant for ICZM.

Expected achievements/impact

Tools and concepts from INCOFISH will be tested in real-world scenarios in selected coastal systems worldwide. They will form a package with the potential to impact on solving societal problems in the coastal zone in Europe and in developing countries.

Coordinator contact details

Dr. Rainer Froese, Leibniz Institut für Meereswissenschaften, Wischhofstr. 1-3, 24148 Kiel, Germany; phone: 0049431 600 4579, fax: 0049431 600 1699, e-mail: rfroese@ifm-geomar.de.

b) Obligatory deliverables for Specific Targeted Research or Innovation Projects**Final Plan for using and disseminating knowledge**

All data, tools and concepts developed by INCOFISH will be considered public goods and will be made available through the INCOFISH web portal and also on CD-ROM for users who have difficulties accessing the Internet. Members of INCOFISH have volunteered to archive data and continue to make tools available beyond the duration of this project. Workpackage 1 “Data, Tools, and Outreach” is particularly designed for using and disseminating knowledge.

Report on raising public participation and awareness

Public participation is envisaged mainly through the INCOFISH web portal where lay persons can upload data such as observations of species or pollution events, attach their own web sites if relevant to INCOFISH, or discuss issues with experts in the relevant forum. Public awareness will be raised through traditional means such as regular press releases demonstrating success stories and guiding lay persons to the INCOFISH web portal.

Ways and methods of raising public participation and awareness will be part of the report of workpackage 1 “Data, Tools, and Outreach”.