



incofish

INCO Contract No. 003739

Integrating Multiple Demands on Coastal Zones
with Emphasis on
Aquatic Ecosystems and Fisheries
(INCOFISH)

Instrument:
STREP

3rd Semi-Annual Progress Report

Period covered: 01/05/2007 to 31/10/2007

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Duration: 3 years

Project coordinator: Dr. Rainer Froese

Project coordinating institution: Leibniz Institut für Meereswissenschaften, Kiel, Germany

Rapporteur: Dr. Silvia Opitz, project manager

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Section 1 – Project objectives and major achievements during the reporting period

Objectives

According to the Technical Annex to the contract, the goal of INCOFISH is to conduct specifically targeted strategic research 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.

The scientific and technological objectives of INCOFISH are closely related to the work plan of its 11 work packages and can be summarised as follows:

Overcome the 'Shifting Baseline' Syndrome (WP2)

To resolve the “Shifting Baseline” Syndrome in Fisheries, historical data on catch and effort, biomasses, length-frequencies, maximum sizes, size and age at maturity, growth rates, natural mortality, etc. are being assembled, 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 assembled, collated and analysed to establish baselines against which the current status and restoration goals of selected marine ecosystems can be assessed.

Provide Authoritative Species Inventories (WP3)

INCOFISH uses biogeographic niche modelling to define the preferred environmental conditions for key marine coastal-zone species. This specific niche information is then being used to create standardised electronic maps of predicted distributions for all coastal zone species. In addition, the niche circumscription of species of interest is being connected with physical and bio-geochemical models thus producing dynamic distribution maps driven by models of forcing functions. This allows exploring changes in distribution of species resulting from natural and anthropogenic environmental changes. The maps and related tools are being made freely available on the Internet with an easy-to-use interface.

Provide Ecosystem Models (WP4)

INCOFISH will provide multispecies 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 draw on INCOFISH data such as species inventories and biomasses; in return they provide crucial inputs for sizing and siting of protected areas.

Assist in Sizing and Siting of Marine Protected Areas (WP5)

INCOFISH will provide best-practice concepts as well as tools for improved planning of MPAs, with a view of reconciling conflicting demands.

Provide Framework and Tools for Analysis of Interactions and Flows in the Coastal Zone (WP6)

INCOFISH is developing 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.

Provide Simple Indicators for Sustainable Resource Use (WP7)

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.

Valuation of Coastal Ecosystem Services (WP8)

INCOFISH is using 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.

Evaluate Pros and Cons of Ecotourism (WP9)

INCOFISH is analysing benefits and problems associated with ecotourism in selected MPAs and is producing best-practice guidelines for what may be termed 'sustainable ecotourism.'

Review Legal Instruments Relevant for Sustainable Coastal Resource Use (WP10)

INCOFISH is analysing and evaluating 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.

Provide Access to Relevant Data, Tools, and Concepts (WP1)

Data, tools, and concepts created by INCOFISH or otherwise relevant to integrated coastal zone management are being made accessible through a user-friendly web portal.

Bringing it All Together (WP11)

A combination of accommodating coordination with strong leadership ensures that the components of INCOFISH described above come together and form a comprehensive package with the potential to improve integrated coastal zone management.

Major achievements

During the reporting period, the INCOFISH consortium has been working on the tasks allocated to each WP. The main achievements of the project were:

WP2 in cooperation with WP1:

One problem of fisheries management is the lack of historical monitoring of stocks distributions. Such data has been assembled by the members of WP2 and made available in an easy-to-communicate format on the INCOFISH portal (www.incofish.org), see Figure 1 with an example of changes in Peruvian Hake abundance and distribution since the 1970s.

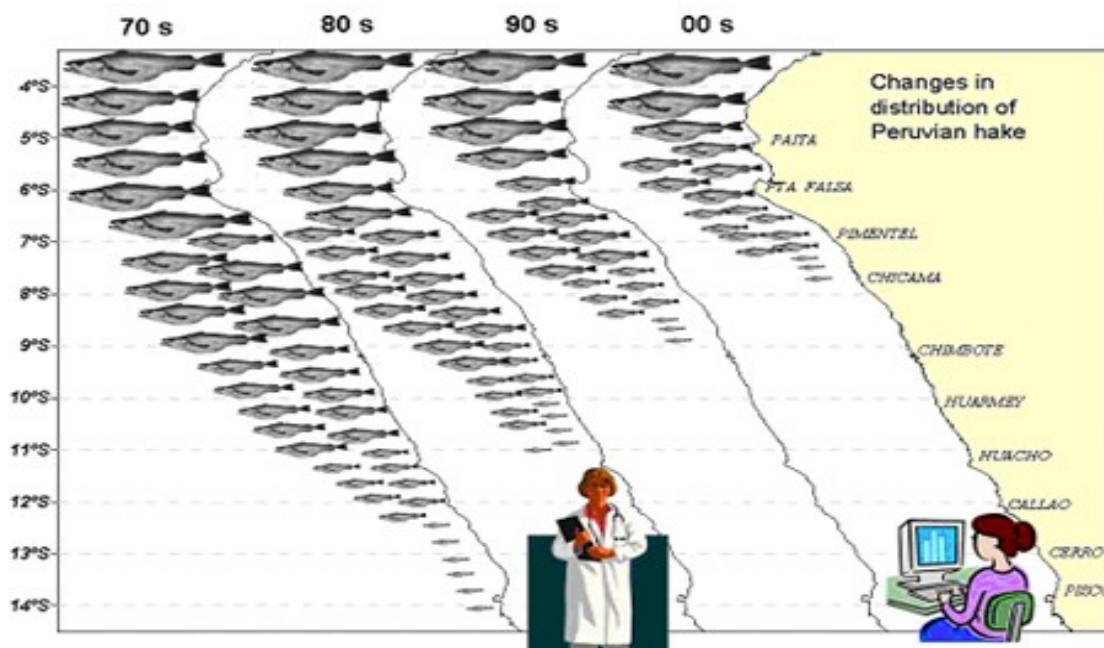


Figure 1: Changes in Peruvian Hake abundance and distribution from 1970-1990. (www.incofish.org/WorkPackages/WP2/backflash_spatial.php)

WP3 in cooperation with WP1:

INCOFISH uses biogeographic niche modelling to define the preferred environmental conditions for key marine coastal-zone species. This specific niche information is then being used to create standardised electronic maps of predicted distributions for all coastal zone species. In addition, the niche circumscription of species of interest is being connected with physical and bio-geochemical models thus producing dynamic distribution maps driven by models of forcing functions. This allows exploring changes in distribution of species resulting from natural and anthropogenic environmental changes. The maps and related tools are being made freely available on the Internet with an easy-to-use interface.

Standardized electronic maps with predicted distribution (likelihood of occurrence) for currently 7,200 coastal zone species relevant to this project are available on the INCOFISH portal. The most recent achievements are species richness maps for taxonomic families showing predicted biodiversity hotspots of the Earth's oceans. Figure 2 below shows an example for cod like species from www.aquamaps.org.

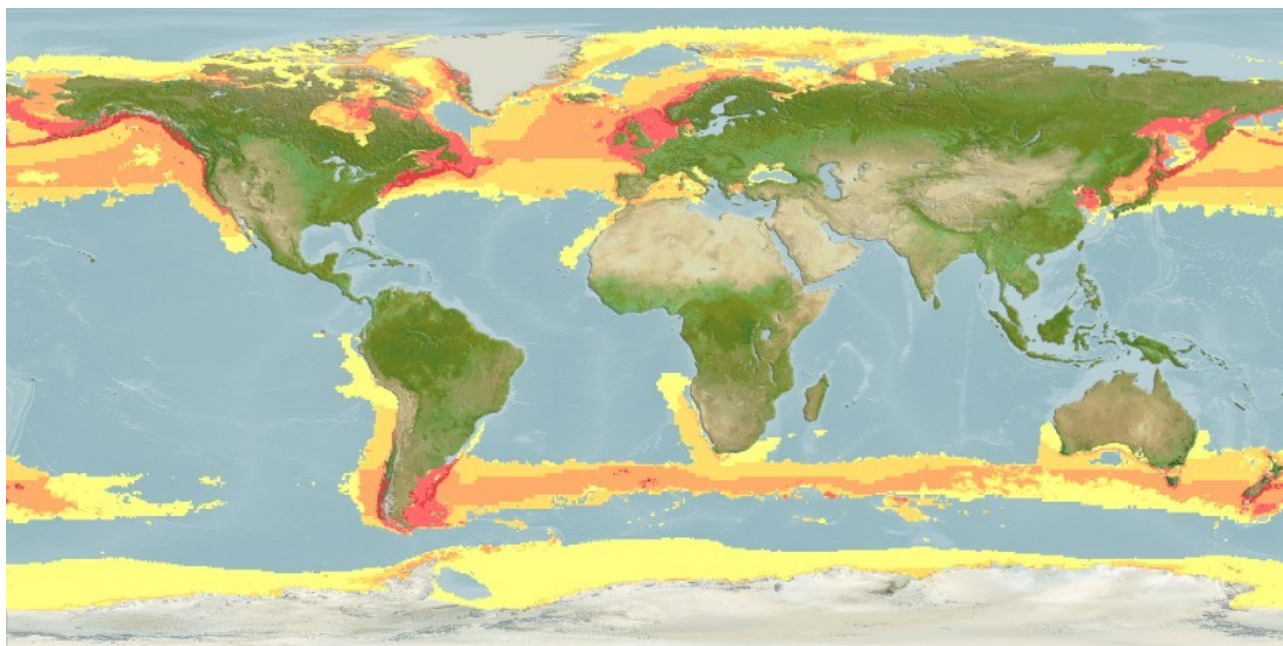


Figure 2: Species richness map of the family Gadidae, nicely showing the anti-tropical distribution of this family, with diversity 'hotspots' indicated in red.

WP7 in cooperation with WP1:



Figure 3:
Icons used in
the mobile
seafood guide:
top = enjoy,
middle =
questionable,
bottom = avoid.

A mobile seafood guide (www.seafoodguide.org) has been developed to help consumers to buy fish based on whether or not it has been caught in a sustainable way. The guide combines information from 18 different seafood guides published by the WWF, the Marine Conservation Society and others. In addition, the size at maturity is shown to enable consumers to recognize and reject 'babyfish'.

In accordance with a scientific assessment of the fish stock's general condition and the fishing grounds, the guide tells the consumer which fish can be eaten with a clear conscience. In this context, taking the size of the fish into consideration is important, as it indicates whether the specimen has reached sexual maturity and has thus had a chance to reproduce before being caught, ensuring the survival of the species.

The information is accessible online via computer or, more importantly, via web-enabled mobile phones, so that it is available anywhere at any time. In developing the tool we have used mainly symbols so that the guide simultaneously serves ten languages in 17 countries. A press release on occasion of the German launch of the "Fisch im Handy" was taken up by over 70 news outlets, including half a page in the local newspaper "Kieler Nachrichten".

All WPs:

By the end of the reporting period (month 30) the project as a whole had published 55 scientific articles in peer-reviewed journals, 27 articles had been submitted and 60 are under preparation.

Section 2 - Workpackage Progress

A review of the progress within each of the workpackages follows.

WP Number: 1	WP Name: Data, Tools and Outreach
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a) Workpackage objectives and starting point of work for the reporting period

Overarching objective:

The “Data, Tools, and Outreach” workpackage provides data, tools, and Internet outreach services to the other INCOFISH workpackages,.

Specific 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.

b) Progress towards objectives

Re (1) Achieved D1.1

Re (2) Achieved D1.2

Re (3) Close to finalized; Data submissions received for all tools with deadline Month 25: WP2 D2.2, D2.3 Datasets submitted and available, search engine finalized; WP3 D3.2, D3.3 and D3.4 available; WP4 D4.2 Report submitted and available, D4.2 Models submitted, D4.3 Reports submitted; WP5 D.5.2 Report submitted; WP6 D6.3 Implemented in CTAM. WP7 D7.3 Data submitted, tools under maintenance; WP8 D8.2 Report submitted, D8.3 Data submitted, tool under development; WP9 D9.1 Report submitted, D9.2 Data submitted, tool available; WP10 D10.2a Brazil, D10.1 India, 10.4b Mexico, Spanish, D10.3a Namibia, D10.1 Russia, D10.1 South Africa, D10.1 Sri Lanka submitted and available; WP11 D11.2 Second Annual Progress report (month 25) Achieved, News pages uploaded on portal for outreach and project orientation purposes. Still ongoing tools development, D8.3: Economic indicators to be linked to the work of WP 7; (report, step-by-step tools, month 25). Maintenance for WP7 tool Don't Eat babies! WP5 D.5.2 Report submitted and available, deadline for tool D5.3 Month 31.

Re (4) Done by CRIA previous reporting period, mapping layers from WP3 submitted to CRIA and implemented for improved project usage of their tool “Species mapper”.

Re (5) Achieved D1.5

Re (6) Achieved D1.5

Re (7) Achieved D1.5

Re (8) Achieved D1.5

Re (9) Continuously ongoing

c) Work performed by each contractor in WP1 during the reporting period.

FIN

All-INCOFISH tools

Portal at www.incofish.org

Programming: Christian Elloran, Sven Mohr, Maintenance: Joann Glorioso, Christian Elloran, Josephine Rius Barile, Eli Agbayani.

[Annotated Bibliography](#)

Programming: Christian Elloran, Database management: Josephine Rius, All WPs.

[Herbivores Tool](#)

Programming: Kit Elloran, Josephine Rius, Contents: Grace Pablico

[INCOFISH Seafood Guide](#)

Contents: Amanda Stern Pirlot, Charlotta Jarnmark, Grace Pablico, Programming: Josephine Rius Barile, Christian Elloran, Sven Mohr

[ISFG, International Seafood Guide](#)

Programming: Christian Elloran, Josephine Rius, Eli Agbayani, Contents: Auda Ortañez, Sheryl Yap, Charlotta Jarnmark, Grace Pablico.

[Invasive Exotics.](#)

Programming: Eli Agbayani, Contents: Christine Casal.

[Species Information Services,](#)

Programming: Eli Agbayani, Database management: Josephine Rius, external collaborators.

Workpackage tools

[WP2 Shifting baselines toolset; Back flash files](#)

Programming: Christian Elloran, Charlotta Jarnmark

[WP2 Shifting Baselines toolset; Datasets](#) with search engine

Programming: Christian Elloran, Charlotta Jarnmark, Eli Agbayani, WP2

[WP3 Aquamaps](#), Programming: Eli Agbayani, Contents: WP3, Kathy Reyes, Dora Ann Lange Canhos.WP4 [Ecopath model collection](#) and [WP4 Ecopath models](#)

Database maintenance: Sven Mohr, Christian Elloran, Contents: WP4, Elijah Laxamana, Charlotta Jarnmark.

[WP6 CTAM, Coastal Transects Analysis Model](#)

Programming: Christian Elloran, Graphic design: Rachel Atanacio, Contents: WP6.

[WP7 Don't eat babies!](#)

Programming: Christian Elloran, Database management: WP7, Josephine Rius.

[WP9 Ecotourism Step by step tool to MPA management](#)

Programming: Christian Elloran, Charlotta Jarnmark. Contents: WP9

[WP10 Country profiles](#)

Contents: WP10

CRIA

[CRIA openModeller](#)

Programming: Renato De Giovanni and Mauro E. S. Muñoz

d) Deviations from the workprogram (if any), and corrective actions taken/suggested:

No serious deviations to report.

e) Workpackage Co-ordination

WP1 communication and coordination of data submissions, software development, web implementations and outreach have been successful with all WPs. Workshop 1.2 was arranged where WP1 met individually with all WPs for development and outreach discussions during

Midterm workshop, La Paz, Mexico, March 2007 (C.Elloran), also presented progress report to all participants as well as outreach plans for Project Steering Committee; Second part of WS 1.2 progressed in Anilao, Philippines, March 2007 with the FishBase team, WFC Philippines OiC Nicolas Bailly, FIN executive director Maan Bimbao and INCOFISH Project Coordinator Rainer Froese; Participated in Workshop 2.2 Galapagos, Ecuador, July 2007 (E.Agbayani); Participated in Met with Jonathan Ready of WP3 in Stockholm, Sweden on submissions and cooperation, September 2007; Participated in WP2 Mini workshop, Hull, UK, October 2007.

f) Dissemination of knowledge

Overview on WP1 outreach activities

Actual Date	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
April 2007	Advertorial	EU Commission	EU	500	WP1, WP11, FIN, The Parliament Magazine
March 2007	Meeting Second part of WS 1.2 Anilao. Exhibiting rulers, brochures and posters;	NGO	Philippines	30	WP1, FIN, WWF Mabini
March 2007	Conference International Seaweed Symposium, Kobe, Japan, exhibiting project brochures and tool (G.Pablico);	International research	International, Japan	200	WP1, FIN, International Seaweed association
July 2007	Conference Coordinated Coastal Zone '07 event for WP6 in Portland, Oregon, USA, produced and exhibited overall project summary poster (A. Atanacio);	International research	International, N America	200	WP1, FIN, WP6, CDC, NOAA
September 2007	Conference 15th International Conference on Aquatic Invasive Species (ICAIS) Nijmegen, the Netherlands, exhibited project summary poster, rulers and brochures (C.Casal);	International research	International, Netherlands, EU	100	WP1, FIN, WFC Philippines, ICAIS
June 2007	Dissertation Seminar	National research, Fisheries Managers	Philippines	50	WP1, FIN, WFC, MSI, UP Dilliman
June 2007	Press conference Exhibit of fisheries maturity posters for the Sulu Sulawesi Seascapes project;	National research, Fisheries Managers, NGOs	Philippines	200	WP1, FIN, WFC, Conservation International, local NGOs, Philippine governmental units
August 2007	Review Ongoing collaboration with WFC Philippines and NFRDI Philippines on Fishruler for Lingayen area Philippines.	Local community	National	200	WP1, FIN, WFC, NFRDI
November 2007	Symposium FishBase symposium 2007, KVA, Stockholm, Sweden, presented project summary poster and brochures;	National research, press, NGOs	National/regional	200	WP1, WP3, FishBase, Museum of Natural History, Stockholm, Sweden
November 2007	Press event Census of Marine Life event for WP2, Auckland, NZ;	International research	International, NZ	200	WP1, FIN, WP2, CoML, Neville Newcomb Printers

Outreach Material prepared by WP1:

- INCOFISH Advertorial

- INCOFISH brochure, printed in April 2006 for WS 1.1
- INCOFISH poster, presented at "Coastal Zone 07", OR, USA, July 07
- Ongoing collaboration with WFC Philippines and NFRDI Philippines on Fishruler for Lingayen area Philippines.
- The Parliament Magazine article, printed in April 2007,
- Press releases: ISFG, DEB, Aquamaps, CTAM, INCOFISH, Ecotourism tool
- International Seafood guide, presented at Seafood Summit, FL, USA, January 2007
- Workpackage posters
- Collaboration with WorldFish Center and Conservation International, Philippines on fisheries maturity posters for the Sulu Sulawesi Seascapes project;
- T-Shirt prints
- Information flyers for all tools

g) Publications

Published, in press

Casal, C.M.V. 2006. Global Documentation of Fish Introductions: the Growing Crisis and Recommendations for Action. *Biological Invasions*. 8(1): 3-11.

<http://www.springerlink.com/content/75238u732kr0n440/>

Pablico, G.T., N. Bailly, R. Froese and E. Elloran. 2007. Seaweeds Preferred by Herbivorous Fishes. *Journal of Applied Phycology*.

Incofish portal at www.incofish.org.

in prep (with planned date of submission)

Agbayani, E., C.Elloran, R.Froese, C.Jarnmark, A. Ortanez, J.Rius, A Stern Pirlot, S.Yap 2008: "INCOFISH seafood guide; Dodging the dodgers in sustainable seafood industry, providing worldwide consumer advice for commercial species." (Planned date of submission January 15 2008)

Cooking sustainable fisheries: INCOFISH (Book project).

INCOFISH Seafood guide, paper in prep (January 2008)

h) Budget

WP1 is planning to spend the remaining budget on outreach products and activities such as events and conferences for the benefit of the outreach for the entire INCOFISH project. For the reporting period (May to October 2007), WP1 budget expenditures consisted of: a) professional fee for the WP1 Project Leader (Ms. Charlotta Järnmark); b) travels regarding participation to conferences (Coastal Zone 2007 Conference, 22-26 July 2007, Portland, Oregon, USA; International Conference on Aquatic Invasive Species, 22-29 September 2007, Nijmegen, Netherlands) and in other WPs workshops (WP2 in Galapagos, 2-5 July 2007; WP2 in Hull, UK, 7-10 October 2007); and c) workshop costs for outreach activities such as printing of INCOFISH tools and other promotional materials (fish rulers).

From November 2007 until the project ends in April 2008, the remaining INCOFISH budget will be expended as planned, for: a) personnel costs would include the professional fee for WP1 Leader; b) subcontracts would include the payment for the work commissioned to The WorldFish Center; c) travel budget for attendance to workshops initiated by WP2 (November 2007, in New Zealand; WP4-5 (January 2008, Shanghai, China); WP11 (February 2008, Kiel, Germany), and participation as an Exhibitor in the Seafood Summit 2008 (January 2008, Barcelona, Spain); d) workshops budgets for the printing of INCOFISH tools, press releases and promotional activities.

WP Number: 2**WP Name: Shifting Baselines**a) Workpackage objectives and starting point of work for the reporting periodOverarching objective:

To 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.

Specific objectives:

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.

b) Progress towards objectives

Re (1): Objective 1 has been attained.

Historical data pertaining to fishing catch and effort in the Gulf of Thailand and the Gulf of California has been assembled by UHULL. This complements the historical data relating to the eight previously selected LMEs, which has been submitted by the WP2 partners and incorporated in the WP2 database.

Re (2): Objective 2 has been attained.

The WP2 partners are analysing the historical data they have collated in respect of the selected species and LMEs. The data are disseminated through the INCOFISH website, which is connected to WP2 website and data facility (<http://www.hull.ac.uk/incofish>) developed by UHULL in conjunction with colleagues in WP1.

Metadata has been submitted by each WP2 partner and edited by the WP leader before dissemination via the INCOFISH website. The Internet Toolset that will drive the WP2 database search engine has been developed in collaboration with WP1.

Re (3): Objective 3 will be attained by month 34.

Establishing baselines and restoration goals formed the focus of workshop 2 held in the Galapagos in July 2007. A strategy was devised at that meeting for meeting objective 3 in February 2008. This is currently being executed by the WP2 partners.

c) Work performed by each contractor in WP2 during the reporting period

CDF

- Complete dataset of collated data submitted comprising catch and effort data from 1997-2005 corresponding to lobster fisheries and to sea cucumber fisheries.
- Assisted WP2 Team Lead with organisation of the 2nd Workshop (month 27).
- Outreach work for "Incofish WP2 Highlights" progressed with UHULL.

CEFAS

- Complete dataset of collated data submitted comprising North Sea catch data gleaned from UK railway traffic returns.
- Published the following papers (see Publications below): "What relative seafood prices can tell us about the status of stocks" and "The 'shifting baseline' phenomenon: a global phenomenon".
- Joint "High Impact" paper (with UHULL, CEFAS) progressed.
- Outreach work for "Incofish WP2 Highlights" progressed with UHULL.

IMARPE

- Complete dataset of collated data submitted. This includes time-series of the distribution of the 15°C isotherm by depth and latitude off Peru in conjunction with an evaluation undertaken of time series of length-weight relationship of Peruvian hake, calculating the condition factor to investigate more about the condition of these fish over time.
- Submitted and progressed papers (see Publications below): “Comparative analysis of the community structure of hake and its by-catch between 1995 and 2001” and “Patterns of long-term changes in four selected demersal species off Peru”.
- Outreach work for “Incofish WP2 Highlights” progressed with UHULL.

MEI

- Complete dataset of collated data submitted based upon landing data from the Baltic Sea LME.
- Published the following papers (see Publications below): “Introduction: historical development of fisheries in northern Europe – reconstructing chronology of interactions between nature and man”; “Multi-decadal scale variability in the eastern Baltic cod fishery 1550-1860: evidence and causes”; “Fisheries of the Gulf of Riga (Baltic Sea) in the late 17th century”; Fisheries on the northeast coast of the Baltic Sea in the first half of the 19th century: what can be learned from the archives of Karl Ernst von Baer”; “Swedish Baltic Sea fisheries during 1868-1913: spatio-temporal dynamics of catch and fishing effort”.
- Outreach work for “Incofish WP2 Highlights” progressed with UHULL.

RUC

- Two Complete datasets of collated data submitted based upon catch & effort data in Limfjord eel and herring fisheries from the North Sea LME.
- Published the following papers (see Publications below): “The importance of historical baselines to fisheries management - an abundance estimate of ling (*Molva molva*) and cod (*Gadus morhua*) in the north-eastern North Sea, 1872” and “A fishery of historical magnitude. Reconstructing the 17th-19th centuries catches of herring, eel, whitefish and plaice in Limfjorden, Denmark”.
- Outreach work for “Incofish WP2 Highlights” progressed with UHULL.

UHULL

- Synthetic analysis of data submitted by partners progressed.
- WP2 datasets compiled and provided to WP1 for website assimilation and outreach.
- Internet-ready Toolset that will drive the WP2 database search engine completed and ready for release.
- Complete dataset of collated data submitted based South East Australian Coast LME.
- Further dataset of data being collated for Benguela Current LME for submission by week 34
- Research & writing of papers in conjunction with partners: High Impact paper with UNIABDN and CEFAS and “Data Management and Communication” (with WP1).
- Outreach work for “Incofish WP2 Highlights” progressed with all WP2 partners, WP3 and WP1.

UNAL

- Complete dataset of collated data submitted based upon interviews in the northern part of the Caribbean coast completed early 2007. Interviews in central and southern areas completed June 2007.
- Presentation for COLACMAR meeting in Brazil.
- Published the following papers (see Publications below): “Demersal fish density in the upwelling ecosystem off Columbia, Caribbean Sea: Historic outlook” and “Status of coastal ecosystems in Columbia: Bottom-up vs. top-down pressures”.
- Outreach work for “Incofish WP2 Highlights” progressed with UHULL.

UNIABDN

- Complete dataset of collated data submitted based landing data in the Celtic-Biscay Shelf LME.
- Work progressing on a further dataset of landing data in the Gulf of Thailand based on records supplied by WP6.
- Lead on joint "High Impact" paper (with UHULL, CEFAS) progressed.
- Outreach work for "Incofish WP2 Highlights" progressed with UHULL.

d) Deviations from the workprogram (if any), and corrective actions taken/suggested:

None

e) WP2 Co-ordination activities

The WP2 co-ordinator has received regular progress reports from partners, which have yielded information for the monthly INCOFISH bulletins disseminated by WP11.

The WP2 data manager at UHULL has collaborated closely with WP1 regarding the development of the WP2 database, the dissemination of the historical data collected by WP2 partners and the development of the WP2 data tool.

The WP2 co-ordinator collaborated with colleagues at CDF regarding the organisation of WP2 workshop 2, which was held in the Galapagos in July 2007. He also collaborated with colleagues at CEFAS, UNIABDN and colleagues in WP1, WP3 to organise an intermediate workshop which was held in Hull in October 2007.

The WP2 co-ordinator has continued to cultivate the strong synergies which exist between INCOFISH WP2 and the History of Marine Animal Populations (HMAP) project, in terms of scientific objectives, research methods, data dissemination and the institutions and personnel engaged in both initiatives. He furthermore has continued to cultivate the strong synergies which exist between INCOFISH WP2 and the EU-funded Marine Biodiversity and Ecosystem Functioning (MarBEF) network of excellence, which has an historical dimension in its socio-economic research theme.

f) WP2 Dissemination Activities

Table: Overview on WP2 outreach activities

Actual Date	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
April 2007	COLACMAR Conference, Brazil	International scientists and managers	South America	200	UNAL
Sept 2007	MPA Symposium, Spain	International scientists and managers	Europe	200	UNIABDN
Nov 2007	CoML All programme meeting for the HMAP project, Auckland, New Zealand	International scientists and managers	Australasia	50	UHULL/ WP1
Ongoing	Outreach Workpackage Highlights	Public dissemination via web	all	public	All WP2 partners, WP2 Lead, WP3, WP1

g) Publicationspublished, in press

- Pinnegar J.K, Hutton T.P. & Placenti V. 2006. "What relative seafood prices can tell us about the status of stocks" *Fish and Fisheries* 7 (3): 219-226.
- Pinnegar, J.K & Engelhard, G. "The 'shifting baseline' phenomenon: a global phenomenon" *Reviews in Fish Biology & Fisheries*.
- Camilo B. Garcia, C.B., Duarte, L.O., Altamar, J. & Manjares, L.M. 'Demersal fish density in the upwelling ecosystem off Columbia, Caribbean Sea: Historic outlook' *Fisheries Research*.
- Duarte, L.O., 'Status of coastal ecosystems in Columbia: Bottom-up vs. top-down pressures' in *Coastal Ecosystems: Hazards Management and Rehabilitation (NAM S&T Centre)*.
- Poulsen, R., Cooper, A., Holm, P. 'The importance of historical baselines to fisheries management - an abundance estimate of ling (Molvamolva) and cod (Gadus morhua) the north-eastern North Sea, 1872' *Fisheries Research*, 87 (2-3), Nov 2007.
- Poulsen, B., Holm, P. 'A fishery of historical magnitude. Reconstructing the 17th-19th centuries catches of herring, eel, whitefish and plaice in Limfjorden, Denmark' *Fisheries Research*, 87 (2-3), Nov 2007.
- Bager, M., Søndergaard, M. K. 'The Danish Baltic Sea fisheries c. 1875-1911' *Fisheries Research*, 87 (2-3), Nov 2007.
- MacKenzie, B. R., Myers, R. A. 'The development of the northern European fishery for north Atlantic bluefin tuna (Thunnus thynnus) during 1900-1950' *Fisheries Research*, 87 (2-3), Nov 2007.
- Eero, M., MacKenzie, B. R., Karlsdottir, H. 'Dynamics of international fisheries for cod (Gadus Gaumiga, R.morhua) in the eastern Baltic Sea during 1880-1938' *Fisheries Research*, 87 (2-3), Nov 2007.
- Enghoff, I. B., MacKenzie, B. R. Nielsen, E. E. 'The Danish fish fauna during the warm Atlantic period (ca. 7000 - 3900 BC): forerunner of future changes?' *Fisheries Research*, 87 (2-3), Nov 2007.
- Lotze, H. 'Rise and fall of fishing and marine resource use in the Wadden Sea, southern North Sea' *Fisheries Research*, 87 (2-3), Nov 2007.
- Gaumiga, R., Karlsons, G., Uzars, D. 'Gulf of Riga (Baltic Sea) fisheries in the late 17th century' *Fisheries Research*, 87 (2-3), Nov 2007.
- Ojaveer, H. Lajus, J., Ojaveer, H., Tammiksaar, E. 'Fishing in the NE Baltic during the 19th century: what can be learned from the archives of Karl Ernst von Baer?' *Fisheries Research*, 87 (2-3), Nov 2007.
- Lajus, D., Alekseeva, Y., Lajus, J. 'Herring fisheries in the White and Barents Sea in the 18th - beginning of the 20th cc: factors effecting the catch fluctuations' *Fisheries Research*, 87 (2-3), Nov 2007.
- Lajus, D., Dmitrieva, Z., Kraikovski, Lajus, J., Yurchenko, A., Alexandrov D. 'Historical records of the 17 - 18th century fisheries for Atlantic salmon in northern Russia: methodology and case studies of population dynamics' *Fisheries Research*, 87 (2-3), Nov 2007.
- Lajus, J., Kraikovski, A., Lajus, D. 'Coastal fisheries in the Gulf of Finland basin in the 15-20th centuries on the base of Russian historical sources' *Fisheries Research*, 87 (2-3), Nov 2007.
- Ojaveer, H., Awebro, K., Karlsdottir, H. MacKenzie, B. 'Swedish Baltic Sea fisheries during c. 1870-1913: spatio-temporal dynamics of catch and fishing effort' *Fisheries Research*, 87 (2-3), Nov 2007.

Submitted

- C. Wosnitza-Mendo, M. Ballon, C. Benitez & R. Guevera-Carrasco 'Changes in the distribution area of Peruvian hake: effect of fisheries' *Progress in Oceanography*.

in prep (with planned date of submission).

- Benites & Wosnitza (IMARPE) "Comparative analysis of the community structure of hake and its by-catch between 1995 and 2001" (February 2008)
- Benites & Wosnitza (IMARPE) "Patterns of long-term changes in four selected demersal species off Peru" (February 2008)

Pita, C., Pierce, G., Starkey, D.J., Pinnegar, J.K., 'Long-term Patterns of Overfishing' to be submitted to *Fish and Fisheries* (March 2008).

h) Budget

The WP2 budget has largely been allocated to pay the salary costs of the Workpackage data manager, with a lesser portion devoted to the organisation of workshops. The workshop portion has now been spent, and the remaining budget will be spent on salary costs by 29 February 2008.

WP Number: 3	WP Name: Biomapping
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a) Workpackage objectives and starting point of work for the reporting period

Overarching objective:

The “Biomap” workpackage will provide authoritative knowledge about the occurrence of marine species in space and time and in response to climate change.

Specific objectives (SpOb):

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.

Starting point of work for the reporting period was 1st May, 2006 (Project month 13).

b) Progress towards objectives

<u>Achievements made</u>	<u>Planned objectives</u>	<u>Contractors involved</u>
Re (1): Data has been made available from all WP3 members and has also been collected through contacts with other WP's (especially historical data coming from WP2) and through further observations in areas identified as gaps in geographical coverage (Tropical Eastern Pacific, Western Indian Ocean [including publication of data] and South Western Atlantic Ocean). Additional data has been obtained from existing databases (OBIS/GBIF) It has been processed to provide the data for 2).	Large data providers will be checked for updates and new data incorporated.	NRM (Data provision, collection, processing and administration [shared with WP1]), CDF (data provision), CEFAS (data provision and processing), DINARA (data provision), WCS (data provision).
Re (2): Compiled environmental data for the current environment (measurements) and modelled current and future environments (for 5). Incorporated data into the HCAF and occurrence tables used by the AquaMaps niche modelling system. Liaised with WP technical team regarding the development and application of the AquaMaps niche modelling system to produce standardized range maps for species.	Continued liaising with AquaMaps group to monitor automated output quality. Incorporate any new environmental datasets and update datasets where appropriate.	NRM (in collaboration with WP1 and AquaMaps workgroup)
Re (3): “Create your own map” expert review process enabled within AquaMaps niche modelling system.	Reviewing of maps for important species, with incorporation of a star rating system based on expert status.	NRM (in collaboration with WP1 and AquaMaps workgroup)

Re (4): Inclusion of various definitions of administrative geographic regions into the HCAF table of the AquaMaps niche modelling system to allow for summarisation of outputs by area.	Development of the correct queries and interface to allow searches by administrative unit and produce a checklist of species known to occur and predicted to occur.	NRM (in collaboration with WP1 and AquaMaps workgroup)
Re (5): Tested the modelling of potential suitable habitats in future environments in the AquaMaps niche modelling system. Published on the Environmental Perturbation and Coastal Benthic Biodiversity in Uruguay and prepared analysis on invasive species in the same region for future publication. Published on the importance of deep water kelp refugia as potential hotspots of tropical marine diversity and productivity.	Summarisation analyses and publication of results	NRM (climate model), DINARA (Uruguayan environmental perturbation and invasive species), CDF (Importance of deep water kelp refugia).

c) Work performed by each contractor in WP3 during the reporting period.

NRM

Coordinated all WP activities, worked full time towards all objectives and deliverables, incorporating data, testing modelling methods, comparing outputs, developing uses of output maps, collaboration with WP2, public outreach through teaching of modelling and mapping methods and writing towards publications.

CDF

Resources were used to train staff in modelling, work towards the publication of predicting areas of deepwater kelp in the Galapagos, and preparing environmental layers which can be used to model species at a finer scale in the Galapagos reserve area.

CEFAS

Resources were used to provide technical support toward testing the distribution models predicted by the AquaMaps system against those produced by other modelling methods.

DINARA

Resources were used to compile national and regional databases from surveys and provide them to the international community through the FishBase/AquaMaps occurrence table, as well as work towards publications on environmental perturbation and invasive species in the La Plata estuary area.

KESCOM

Resources were used to compile data into databases from the fisheries of the Western Indian Ocean (an area which previously had very limited occurrence data) and publish the data for sea cucumber fisheries.

d) Deviations from the workprogram (if any), and corrective actions taken/suggested:

Minor changes to the planned dates for submission of publications have arisen due to delays relating to the departure of a member of staff from CEFAS and the transfer of his duties to another staff member at CEFAS and (partially) to existing staff at NRM.

e) Work package Co-ordination

Communication between partners has been maintained mainly through e-mail. Monthly reports have been preceded by requests for updated status from all WP members, with responses typically being limited by the summer break and at times when WP members have been in the field. Meetings have been held to take advantage of the availability of staff from within WP3 and of others (e.g. WP1 staff being available after INCOFISH mid-term workshop in Mexico). Co-operation within INCOFISH has been mainly with WP2 (Shifting Baselines), to whom time has been dedicated to provide mapping solutions to their data and with WP1 (Data, Tools and Outreach) with whom there is considerable collaboration in terms of the development and web display of AquaMaps.

f) Dissemination of knowledge

Table: Overview on WP3 outreach activities

Actual Date	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
July 2-5	WP interaction – demonstration of mapping tools and how to display data simply using freely available software	WP2	Ecuador, Peru, Colombia, Estonia, Denmark, UK	10	NRM, CDF
July 10/11	Teaching on EUROCEANS Summer school on Habitat Modelling in the Marine environment.	Doctoral Students	Many European countries	25	NRM
September 10-13	International Conference presentation – European Congress of Ichthyology	Research Scientists	Europe + a few extra	35	NRM
October 2-4	International Conference presentation – Ocean Biodiversity Informatics meeting	Research Scientists	Global	100	NRM
November 5	National Conference presentation – FishBase Sweden 2007 Symposium – Fish and Climate	Research Scientists	Sweden	175	NRM

g) PublicationsPublished, in press

- Brugnoli, E.; Muniz, P.; Venturini, N.; and Burone, L. 2007. Environmental Perturbation and Coastal Benthic Biodiversity in Uruguay. In: Irma C Willis. (Org.). Progress in Environmental Research. 1 ed. New York: Nova science Publishers Inc., 2007, v. 1, p. 1-52.
- Conand, C. and Muthiga, N. (eds) 2007. Commercial sea cucumbers: A review for the Western Indian Ocean. WIOMSA Book Series No. 5 v + 66.
- Graham, M. H.; Kinlan, B. P.; Druehl, L. D.; Garske, L. E. and Banks, S. 2007. Deep water kelp refugia as potential hotspots of tropical marine diversity and productivity. Proceedings of the National Academy of Sciences of the USA. 104(42) 16576-16580.

In prep (with planned date of submission).

- Ready, J. S.; Munson, L.; Hasbún, C. R. and Kullander, S. O. Los Cóbanos rocky reef, El Salvador: the need for protection of a stepping stone in the Tropical Eastern Pacific. Submission November 2007.
- Ready, J. S.; Kaschner, K.; South, A. B.; Eastwood, P. D.; Rees, T.; Rius, J.; Agbayani, E.; Kullander, S. O. and Froese, R. Predicting the distributions of marine organisms using global occurrence data. Submission late November or December 2007.
- Froese, R.; Kesner-Reyes, K.; Agbayani, E.; Barile, J.; Ready, J. S.; Kaschner, K.; Eastwood, P. D.; Rees, T. and Kullander S. O. (author list provisional) Global Marine Biodiversity. Submission March 2008??
- Unknown author list including DINARA staff. 'Invasive snails' paper. Submission January 2008.
- Unknown author list including DINARA staff. 'Sciaenidae' paper. Submission February 2008.
- Eastwood et al. (CEFAS). North Sea fish distribution modelling. (Unknown re-submission date).
- Ready et al. Effects of climate change on suitable habitats for marine fishes. (Unknown submission date – potentially March 2008 if no delays).
- Kaschner et al. (to include NRM) Marine mammals analysis including climate change effect. (Unknown submission date).

i) Budget

The budget for the current period has mostly been processed on salaries. There is a current deficit of about SEK 224 000, which will be covered by the pending reimbursement for Period 2. We will use remaining funds to cover salaries November-February inclusive, and cost for work package attendance at the final project workshop.

WP Number: 4	WP Name: Ecosystem Modelling
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a) Workpackage objectives and starting point of work for the reporting period

Overarching objective:

To provide standardized ecosystem models for all selected ecosystems.

Specific objectives:

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 behavior, etc...).

Three specific objectives were attained in previous periods by preparing three related deliverables (D4.1, D4.2, D4.3). The present reporting period focused on Objective 4 by working on D4.4 and D4.5.

The starting point of work for the reporting period correspond to May 2007 to October 2007.

b) Progress towards objectives

Re (4) Various analyses on effects within and between ecosystems ongoing; analyses of study cases as well as comparative and even meta-analyses ongoing. All partners are participating.

Re (5): 19 manuscripts have been published and/or are accepted for publication; 14 have been submitted, and 24 manuscripts are in prep. All partners are participating.

c) Work performed by each contractor in WP4 during the reporting period.

CEFAS

- Preparing information for participation in conferences and writing papers and technical reports; all these based on running models for scenarios and testing hypothesis. Contributions on which partner are working on are aimed to Marine protected areas, role of fishing and climate on ecosystem dynamics, role of specialists and generalist feeders, and trophic cascades.
- During this work, further analysis of time series trends and fitting of Ecosim simulations has been conducted. The 1990s model fits well to the available time series data. Fishing appears to be a more important driver than environmental effects in explaining the past trends in species dynamics. Particularly an analysis on the role of fishing and forcing factors are being analyzed.
- Cefas has been working mainly on tuning the spatial model of the North Sea and time series investigation on the relative roles of climate and fishing. Both pieces of work are still in preparation and it is anticipated that draft manuscripts will be ready for the next workshop. Paper still in progress. For the forcing functions paper some technical changes are being done and fitted Ecosim models from co-authors are still awaiting.

UNIPAD (LASA)

- Some problems arose with respect to high degree aggregation for fish species, and consequently Ecopath model structure was discussed and a new Ecopath-Ecosim-Ecospace model was set up. To test climate influences some groups were split in juveniles and adults demanding additional search for information and data to be incorporated into the model; particularly experimental data on biomasses and discards. The new model with more groups has been completed and balanced. Network analysis was done in order to evaluate ecosystem characteristics, stress state and ecological maturity. We have collected and are going deep into literature material regarding trophic network properties and comparisons.
- Ecosim calibration and simulations were carried out in order to test several scenarios and analyses: The socio-economic analysis indicated that a reduction in weekly fishing days in Northern Adriatic (a choice considered feasible by local fishermen) should lead to an increase both in biomasses of commercial species and catches; however biomass trajectories of some groups (sprats, rays) behave strangely and the problem was analyzed and solved. A systematic sensitivity analysis on all parameters was done and the calibration and forcing data checked. We decided to extend simulation to year 2000-2006 and cut out 1992-1994 since inputs were not so good. Better effort data were achieved from literature. The model was forced by calculating time series of F' from catch and biomass time series where possible. Finally, the best fitting was achieved calculating F 's from landings and biomasses. Calibration data were also revised, cutting out some outliers and trying to smooth some unrealistic trends of biomass time series taken from trawl surveys, using CPUE calculated with the new effort data.
- An Ecospace model for the Northern Adriatic sea was constructed and calibrated. Some hypotheses are being tested (i.e. if Croatian rocky zones function as refuge).
- Activity for a couple of papers to be done together with other WP4 participants ((currently being discussed in a brainstorming with the people involved); they are focused on metabolic scaling relations in aquatic trophic networks, and on network indicators. For these analysis codes were written to calculate SDB indicators automatically.

ECNU

- An Ecospace model for East China Sea (ECS) has been developed. The main spatial information of environmental factors of ECS have been briefly reviewed, such as basic data input to the ECS Ecospace model as habitat, MPAs location, and fleets allocation. Input data was consistently reviewed and checked to prepare simulation scenarios and simulations of fishing policy, including MPAs. There is good progress in examination of fishery trade-off from fishery protected areas in the East China Sea" based on the ECS Ecospace modelling.
- Coordination for the WP4 & WP5 4th workshop in January 2008 is under way. We have got the official document for approval of the joint workshop of WP4 & WP5 from the Ministry of Education of China, Beijing and preparation for the financial support is on the way. Arrangements with attendants have started.

IOUSP

- Continued modelling the South Brazil Bight ecosystem : time series fitting, calibration, scenarios exploration and testing are under way. Several draft manuscripts are under development, including a report on model's documentation. Manuscripts about "ecosystem-based fisheries modeling of the South Brazil Bight: a new conceptualization with emphasis on the fishery system" and about "fitting time series to environmental data and culling to a better modeling process" have been prepared. Surveys done during July/August provided information to complete data required for the analysis, particularly associated to socio-economic analysis.
- Data for spatial modeling and running simulations are being prepared. For this several discussions and meetings with oceanographers and other scientists occurred during the period. Data have being collected (on environment, fleets etc.).

- Partner asked for assistance for spatial modeling; however, until now, it has not been possible because potential participants have not agreed on dates and place. We are still trying to coordinate this work.
- Studied proposals and prepared data for three manuscripts on metabolic scaling relations, the role of specialist feeders and ecosystem indicators (coordinated by UNIPAD, CEFAS, and UNIConcepción, respectively).

CRODT

- Spatial dynamic simulations have been conducted to explore management scenarios based on Ecosim and Ecospace for the coastal Senegambian marine ecosystem, many of them in relation with MPAs. For these data had to be collected, analyzed and tested.
- Modelling data have been prepared for the WP7 study "Metabolic Scaling Indicators".
- Working sessions and visits were carried out with partner WWF Senegal for the preparation of the launching campaign of Fish Ruler Senegal. Planned date for the campaign will be 18 October 2007 at Dakar/Sénégal.
- Participated at Goteborg, Sweden 19-23 September 2007 in the Kungsfenan awards ceremony (see <http://www.svenskfisk.se/kungsfenan-the-swedish-seafood-award/english-/kungsfenan-2007.aspx>)

UNIConcepcion

- Work on modelling scenarios continued with emphasis on the ecosystem perspective of the trophic relationship between the common hake and giant squid, which resulted in strong changes in fishing yields. Spatial analyses about predation mortality between marine resources off central Chile using Ecospace, was initiated following guidance obtained during the last WP4-workshop in La Paz (Baja California Sur, Mexico; March 2007). A scientific manuscript must emerge via WP4. Several publications are expected to result from the modeling process and the testing of hypotheses.
- A paper on ecosystem indicators is under preparation.

MCM DEAT

- Extensive modeling was carried out by Lynne Shannon to finalize the fitting of the Southern Benguela ecosystem model to time series data, generate model results and develop a comparative approach.
- Simulations have been conducted to understand the behaviour of ecological indicators using food web models fitted to time series data for three ecosystems.
- Model inputs were prepared by Lynne Shannon, for the collaborative metabolic scaling papers, covering three model periods: 1980-1989; 1990-1997; 2000-2004.
- Masters student, Kate Watermeyer, contributed outputs to the metabolic scaling papers, from her models of the northern and southern Benguela across several time periods, from before fishing to the modern period.

UNEW

- As leader of WP5, UNEW has been working assisting ECNU with modifying the ECS Ecopath paper submitted to Ecological Modelling which was accepted. Partner has also been assisting and guiding several contributions associated with Ecospace focused on exploration of MPAs.

CICIMAR

- Continued to work on construction of trophic Ecopath models of Northern and Central Gulf of California, and continental shelf of the Mexican Gulf of Mexico. Selection, aggregation and splitting up of trophic groups have been revised based on regional and fishing criteria. Diet composition also required a strong revision.
- Temporal and spatial modeling continued for the Northern Gulf of California, Central region of the Gulf of California, Southern Gulf of California, La Paz Bay, West coasts of southern peninsula of Baja California and Campeche Bank. Several simulations were conducted based on trophic ecosystem models: assessment of fishing pressure, environmental forcing

and fisheries management. Impacts of fishing reserves on the ecosystem of La Paz Bay, MPA as refuge on the northern continental shelf, and MPAs as a strategy for the red grouper ecosystem-based fishery management in the Campeche Bank, were conducted based on spatial ecosystem simulations (last two in collaboration with WP5).

- Meta-analysis of ecosystems was initiated including structural, functional (metabolism) and organizational attributes. Several aspects are in focus: the role of key species, ecosystem responses to fishing, ecosystem metabolism among others. Within this framework several algorithms to estimate such indices are under development (i.e. keystone index proposed by Libralato et al. 2006).
- Good progress has been made with modeling spatial dynamics of the red grouper on the Campeche Bank as well as its spatial distribution in relation to the environment. Aspects on catchability, population dynamics, and connection to types of bottom have been concluded. Main patterns of movements have been modeled. At present a model to identify habitats associated to stock abundance and the fishery, as well as distribution in relation to temperature and primary production are being developed. A documentation data bank with spatially explicit variables is being compiled. Several maps have been prepared.
- Prepared a workshop on "Assessment of the midterm / longterm effects of shrimp-trawl by-catch mortality on ecosystems" to be held in La Paz, Baja California Sur, Mexico, 5-9 November, 2007. Study cases confirmed are Northern Gulf of California ¹, Central Gulf of California ¹, La Paz Bay ¹, Campeche Bank ¹, Southern Sinaloa (Gulf of California) ², Jalisco_Colima coasts (Mexico) ², continental shelf of Veracruz ³ (¹ = Model within Incofish project, ² = No-Incofish project but model included in D4.3 as part of the Ecospace workshop, ³ = No-Incofish project). Analytical tools to estimate ecosystem indices are being prepared to support analysis during the workshop.
- Organization of the 4th Incofish-WP4 workshop to be held in Shanghai, China, in January 2008 is under way coordinated on location by WP4 partner ECNU.

UNIABDN

Partner has not reported any activity.

d) Deviations from the workprogram (if any), and corrective actions taken/suggested

As reported in the second annual project UNIABDN has not fulfilled its contributions to WP4 deliverables except for D4.1. Partner argued the lack of funds to dedicate person-months to this part (WP4) of the INCOFISH project. Project coordinators know this situation. Following recommendation of project leaders, regular communications have been maintained in a similar way than for all WP4 partners.

The second point is related to the support required by the IOUSP partner for advice on Ecospace modelling. This action could not be completed until now since potential participants have not agreed on dates and place. WP4 coordination is still trying to coordinate this work by offering the necessary logistic support.

e) Workpackage Co-ordination

No changes in responsibilities and WP membership have occurred.

Regular communication between partners has been maintained.

Each partner continued working on his/her own study case but also, in case of particular interest the WP leader has promoted cooperation with regard to the programmed collaborative papers. There are now three collaborative papers on the way that have been promoted by the WP leader.

Interaction with WP5 has been maintained particularly by supporting and collaborating with spatial modelling and MPA analysis. Several WP4 partners are interacting with other WPs as programmed.

The 4th and last WP4 workshop was initially programmed for October 2007. The workshop was moved to January 2008 to allow for an improved integration and finalization of WP4 deliverables.

f) Dissemination of knowledge

Conferences:

CEFAS

1. Steve Mackinson presented a paper at the ICES asc in Helinski, entitled '*which forcing factors fit?: the relative roles of fishing and climate on modelled ecosystem dynamics*'. The presentation was well received, generating interest in extending the analysis to other ecosystems.

UNIPAD

2. An oral presentation of the Ecopath model outputs focusing on Northern Adriatic Sea ecosystem trophic structure, stress level and maturity has been prepared and presented at the 42nd European Marine Biology Symposium held in Kiel (Germany) at the end of August, 2007.

ECNU

3. Contribution titled "Influence of Large Jellyfish Bloom on the Pelagic Energy Balance of East China Sea Ecosystem" was presented in the 2nd Global Conference on LMEs in Qingdao on September 11~13, 2007 (presented by Jiang Hong and Li Na).
4. Contribution titled "Spatial simulation of fisheries management scenarios in the East China Sea" was presented in the "European Symposium on MPAs as a toll for Fisheries Management & Ecosystem Conservation", on September 25-28, 2007, in Spain.

CRODT

5. Problématique de la répartition des zones de pêche : Cas de la pêche démersale côtière dans la ZEE du Sénégal", at the International Conference on Rapid Urbanization and Land Use Conflicts in Coastal Cities 30 October- 01 November 2007, Aqaba- Jordan
6. As participating partners in the Nansen Programme over several decades, IMR and FAO invited Birane Samb to attend the ceremony in Goetenburg 19-22 september 2007. The Nansen programme has recently won an international prize for its contribution to sustainable management of marine resources.

IOUSP

7. Gasalla, M. A. 2007. Ecosystem-based fisheries modeling in the South Brazil Shelf: a review based on the LME perspective. Poster to be presented at the 2ND Conference on Large Marine Ecosystems, Qingdao, China, September 2007
8. Participated in the I SENAPE (First Brazilian Symposium on Fisheries Statistics and Monitoring), Brasilia, Brazil.
9. Participation at the "National Week of Oceanography", São Paulo, Brazil.

CICIMAR

10. Zetina Rejon, M.J., F. Arreguín-Sánchez, V.H. Cruz-Escalona, M. Albañez-Lucero, J.A. López-Rocha and C. López-Ferreira. Simulating a MPA as strategy for the red grouper ecosystem-based fishery management in the Campeche Bank, Mexico. European Symposium on MPAs as a toll for Fisheries Management & Ecosystem Conservation" on September 25-28, 2007 Murcia, Spain.

Planned Conferences

UNIPAD

1. An oral presentation for the 6th European Conference on Ecological Modelling to be held in Trieste (Italy) at the end of November has been accepted. The presentation will mainly focus on the outputs of Ecosim and Ecospace models.

MCM DEAT

2. Paper in preparation for oral presentation at the ECOMOD 2007 Conference to be held in Trieste in November 2007: Shannon, L.J. , Coll, M. and Neira, S. Understanding the behaviour of ecological indicators using food web models fitted to time series data for three ecosystems

UNIConcepción

3. An invitation from NOAA (USA) was extended to Dr. Hugo Arancibia to participate in the CalCOFI annual meeting to be held in San Diego (California), November 26-28, 2007. An overview of the present state of common hake (*Merluccius gayi*) stock with a forecast of its biomass including jumbo squid (*Dosidicus gigas*) prey-predator relationship in central Chile (33° S - 39° S). (by Arancibia, H. and S. Neira).
4. Neira S., Moloney C., Cury P., Christensen V., Shannon L., Jarre A. and Arancibia H. Identifying mechanisms underlying the behavior of ecosystem-based reference points in an exploited upwelling system. 6th European Conference on Ecological Modelling, ECEM07 November 27-30, 2007. Trieste - Italy
5. Hugo Arancibia's Talk to the Fishing Council of Chile entitled "Interactions between common hake and jumbo squid in central Chile using a post-modern method: EwE". Talk aimed at the members of the Chilean Fishing Council showing results derived from activities within WP4. Predation by squid on hake explain 16% of predation mortality (M2) of hake. The main cause of mortality in hake has been due to fishing. Total allowable catch (TAC) to next year (2008) was estimated as 30,000 tons, which is ca. 1/5 of TAC in year 2004.

CICIMAR

6. Zetina-Rejón, M.J., F. Arreguín-Sánchez and V.H. Cruz-Escalona. Are changes in biodiversity reflecting at ecosystem level? European Conference on Ecological Modelling. "Challenges for ecological modelling in a changing world: Global Changes, Sustainability and Ecosystem Based Management". Trieste, Italia, 27-30 November, 2007
7. Arreguín-Sánchez, F. Natural long term effects associated to depletion of the pink shrimp (*Farfantepenaeus duorarum*) stock on the Campeche Bank: a new challenge for management. European Conference on Ecological Modelling. "Challenges for ecological modelling in a changing world: Global Changes, Sustainability and Ecosystem Based Management". Trieste, Italia, 27-30 November, 2007.
8. Albañez-Lucero, M. and F. Arreguín-Sánchez. Neural Network Analysis approach to explore effects of global change on distribution of the red grouper, *Epinephelus morio*, in the Campeche Bank, Mexico. European Conference on Ecological Modelling. "Challenges for ecological modelling in a changing world: Global Changes, Sustainability and Ecosystem Based Management". Trieste, Italia, 27-30 November, 2007
9. Albañez-Lucero, M. and F. Arreguín-Sánchez. Application of artificial neural networks for the spatial distribution of the red grouper, *Epinephelus morio*, in the Campeche Bank, Mexico. CLIOTOP (CLimate Impacts on Oceanic TOP Predators) Symposium. in La Paz, Mexico, 3-7 December 2007
10. Arreguín-Sánchez, F. and G. García-Gómez. The role of sharks in the ecosystem dynamics: are they a control factor for ecosystem integrity?. CLIOTOP (CLimate Impacts on Oceanic TOP Predators) Symposium. in La Paz, Mexico, 3-7 December 2007
11. Arreguín-Sánchez, V.H. Cruz-Escalona, L.A. Salcido-Guevara, M.J. Zetina-Rejón, I. Loeza and R. Ronzón-Rodríguez. Do sharks response to global change following similar patterns?, an ecosystem based exploration. CLIOTOP (CLimate Impacts on Oceanic TOP Predators) Symposium. in La Paz, Mexico, 3-7 December 2007
12. López-Rocha J. A. and F. Arreguín-Sánchez. Seasonal patterns of movement of the red grouper *Epinephelus morio* on the north continental shelf of the Yucatan Peninsula, Mexico. Manuscript to be present in the 60th Gulf and Caribbean Fisheries Institute Meeting at Punta Cana, Dominican Republic 5-9 November 2007

Workshops

13. As part of the Benguela Current Large Marine Ecosystem (BCLME) project: "Ecosystem Approaches for Fisheries (EAF) Management in the BCLME, a feasibility study", risk assessment workshops were carried out following the Australian "ecological risk" framework

(Fletcher et al.) on three of South Africa's major fisheries. This process involves a group of stakeholders (researchers, industry, NGOs, conservation bodies etc) identifying issues pertaining to the fisheries, and independent subsequent scoring by the stakeholder group, of the likelihood of the issue occurring and the severity of the issue if it were to occur, to rank issues in order of priority. Subsequently, indicators that would help to quantify or measure the effectiveness of corrective management actions (also identified) are identified for each issue. As part of South Africa's work under INCOFISH, a Risk Assessment for Squid was completed and previously reported on (February-March 2007). In April 2007, a risk assessment was undertaken for the South African Large Pelagics Fishery (tuna pole and line), facilitated by WWF-SA, who have partnered us in this initiative. INCOFISH-funded reports have been prepared as mentioned in section on technical reports above – Nel and Petersen 2007a, b):

14. F. Arreguín-Sánchez was invited to the workshop on “Modelling Ecosystem Interactions for Informing an Ecosystem Approach to Fisheries: Best Practices in Ecosystem Modelling”, organized by FAO. Tivoli, Italy, July 3-6, 2007

Planned workshops

15. Workshop on impact of shrimp trawling bycatch mortality on ecosystems
Objective: Comparative analysis of the long term impact of shrimp trawling bycatch mortality on ecosystems. It will be based on Ecosim simulations and evaluation of ecosystem indices. It is expected to work at least with 7 ecosystem models and publish a technical document with results. It will developed in November 2007 in La Paz, Baja California Sur, Mexico. Study cases are: (1) Alto GoC, 2) Central GoC, 3) Sur Sinaloa, 4) La Paz, 5) Jalisco-Colima, 6) Campeche, 7) Veracruz y tentativamente 8) Tamaulipas y 9) Bahia Magdalena).
16. Organization of a meeting focused on the “Impact of shrimp trawl fishery in the Gulf of California ecosystem”; in collaboration with two independent regional projects. It involves stakeholders, managers & scientists. It is expected to be developed in February 2008. Objective: To get a formal opinion of sectors involved with the trawl shrimp fishery in the Gulf of California and valuate their perspective about impact of the fishery on ecosystems

g) Publications

Published / in press

- Arancibia, H. and S. Neira. 2007. Assessing the potential role of predation by jumbo squid (*Dosidicus gigas*) and fishing on small pelagics (common sardine *Strangomera bentincki* and anchovy *Engraulis ringens*) and Chilean hake (*Merluccius gayi*) in central Chile, 33-39°S. In: Olson, R.J. and J. W. Young (eds.) The role of squids in open ocean ecosystems. Report of a GLOBEC-CLIOTOP/PFRP Workshop, 16-17 November 2006, Honolulu, Hawaii, USA : 68-70.
- Arreguín-Sánchez, F., P. del Monte-Luna, J.G. Díaz-Urbe, M. Gorostieta, E.A. Chávez and R. Ronzón-Rodríguez. In press. Trophic model for the ecosystem of La Paz Bay, Southern Baja California Peninsula, Mexico. Fisheries Centre Research Report, UBC, Canada.
- Arreguín-Sánchez, F. and Arcos-Huitrón, E. 2007. Fisheries catch statistics for Mexico. p. 81-103 In: Zeller, D. and Pauly, D. (eds.) Reconstruction of marine fisheries catches for key countries and regions (1950-2005). Fisheries Centre Research Reports 15(2). Fisheries Centre, University of British Columbia.
- Arreguín-Sánchez, F., M. Ramírez-Rodríguez, M.J. Zetina-Rejón and V.H. Cruz-Escalona. Natural hazards, stock depletion, and decision making in southern Gulf of Mexico fishery of pink shrimp, *Farfantepenaeus duorarum*. Special issue on Mitigating impact of Natural hazards on ecosystem fisheries. Amer. Fish. Soc. Proc. Symp.
- Barausse A., A. Duci, C. Mazzoldi, Y- Artioli, L. Palmeri. In press. Trophic model of Northern Adriatic Sea, an eutrophic and highly-exploited ecosystem. Fisheries Centre Research Report, UBC, Canada.
- CHENG, He-Qin, Hong JIANG, Hai-Gen XU, Jun WU, Hui DING, Will Le QUESNE, Francisco Arreguín-Sánchez. In press. Spatial Resources and Fishery Management Framework in East China Sea. Fisheries Centre Research Report, UBC, Canada.

- Del Monte-Luna, P., F. Arreguín-Sánchez and D. Lluch-Belda. In press. Marine ecosystem analyses: BAC meets Ecopath. Fisheries Centre Research Report, UBC, Canada.
- Lercari D., F. Arreguín-Sánchez, W. LeQuesne. In press. An ecosystem simulation model of the Northern Gulf of California. Fisheries Centre Research Report, UBC, Canada.
- Mackinson, S. and Daskalov, G. 2007. In press. An Ecosystem model of the North Sea for use in Fisheries Management and Ecological Research: description and parametrisation. Cefas Tech Rep 142.
- Neira S. and H. Arancibia. In press. Modelling the food web in the upwelling ecosystem of central Chile (33°S-39°S) in the year 2001. Fisheries Centre Research Reports (Fisheries Centre, University of British Columbia).
- Nel, D.C., Cochrane, C.L., Petersen, S.L., Shannon, L.J., van Zyl, B., Honig, M.B. 2007. Ecological Risk Assessment: A Tool for Implementing an Ecosystem Approach for Southern African Fisheries. WWF South Africa Report Series – 2007/Marine/002.
- Nel, D.C. and Petersen, S.L. 2007. Ecological Risk Assessment (ERA) Workshop for the South African Squid Fishery. Technical Report. 22pp.
- Nel, D.C. and Petersen, S.L. 2007. Risk Assessment for Sustainable Fisheries (RASf) Workshop for the South African Large Pelagic Fishery. Technical Report. 21 pp.
- Salcido-Guevara L. A. and F. Arreguín-Sánchez. In press. A benthic ecosystem model of the Sinaloa continental shelf, Mexico. Fisheries Centre Research Report, UBC, Canada.
- Shannon, L.J., Coll, M., Neira, S., Cury, P.M., and Roux, J.-P. In press. The role of small pelagic fish in the ecosystem. In Checkley, D.M., C. Roy, J. Alheit, and Y. Oozeki (eds.), Climate Change and Small Pelagic Fish.
- Sumaila, R. and F. Arreguin-Sanchez. 2007. "Experts Describe Challenges Facing Marine EBM" In: Marine Ecosystems and Management. International news and analysis on marine ecosystem-based management. Marine Affairs Research and Education. Vol. 1, No. 1, September 2007.

ECNU: "Trophic controls of jellyfish blooms and links with fisheries in the East China Sea" accepted for publication in "Ecological Modelling".

CRODT: "Spatial Modelling of Senegambian Ecosystem" accepted for publication into the special issue of the FCRR.

Submitted

- Arancibia, H. & S. Neira. 2007. An overview of the present state of common hake (*Merluccius gayi*) stock with a forecast of its biomass including jumbo squid (*Dosidicus gigas*) prey-predator relationship in central Chile (33°S – 39°S). Jumbo Squid Symposium, Los Angeles (USA), November 26-28, 2007.
- Barros, M.1, S. Neira² and H. Arancibia³. Trophic interactions in the upwelling ecosystem of northern Chile, year 1997. Submitted to Investigaciones Marinas, Valparaíso, Chile.
- Arreguín-Sánchez, F., M.J. Zetina-Rejón, V.H. Cruz-Escalona, D. Lercari-Bernier, V.H. Galván-Piña, Pablo del Monte-Luna. Simulated effects of shrimp trawling by-catch mortality on benthic ecosystems. Submitted to Aquatic Conservation.
- Arreguín-Sánchez, F. Exploring management strategies to optimize harvesting of fisheries in the Central Gulf of California ecosystem. Submitted to Ecological Modelling.
- Arreguin-Sanchez, F., M. Zetina-Rejón, M. Ramírez-Rodríguez. Exploring ecosystem-based harvesting strategies to recover the collapsed pink shrimp (*Farfantepenaeus duorarum*) fishery in the southern Gulf of Mexico. Submitted to Ecological Modelling.
- Cabrera-Neri, E., M.J. Zetina-Rejón and Francisco Arreguín-Sánchez. Trophic structure and energy flows of the continental shelf ecosystem off Tabasco, México. Submitted to Estuarine Coastal and Shelf Science.
- ECNU (authors?). Impact of Jellyfish Bloom on the Pelagic Energy Balance of East China Sea Ecosystem. Submitted to the journal of Chinese Science Bulletin.
- Lercari, D. and F. Arreguín-Sánchez. An ecosystem modelling approach to deriving viable harvest strategies for multispecies management of the Northern Gulf of California. Submitted to Aquatic Conservation.

López-Rocha J. A. and F. Arreguín-Sánchez. Seasonal patterns of movement of the red grouper *Epinephelus morio* on the north continental shelf of the Yucatan Peninsula, Mexico. Submitted to Proc. Gulf and Caribbean Fisheries Institute.

Gasalla, M. A. & Spinkosky, D. Ecosystem-based fisheries modelling of the South Brazil Bight: a new conceptualization with emphasis on the fishery system. Submitted to ?

López-Rocha J. A., F. Arreguín-Sánchez and J. A. de Anda-Montañez. Spatial and seasonal trends of catchability of red grouper *Epinephelus morio* on the continental shelf of Yucatan, Mexico and its connotation for fishery management. Submitted to ?

Shannon, L.J. , Coll, M. and Neira, S. Examining indicators of ecosystem changes and effects of exploitation from trophic models fitted to time series data in three ecosystems. Submitted to ?

Shannon L.J., P.M. Cury, M. Coll, S. Neira and J.-P. Roux. Can ecosystem models focussing on small pelagic fish be used to suggest tentative guidelines for exploitation rates across ecosystems? Submitted to ?

In prep. (with planned date of submission)

- Arreguín-Sánchez, F. and L.A. Salcido-Guevara. Metabolic scaling regularity in aquatic ecosystems". To be submitted to Nature.
- Shannon, L.J., Neira, S., Moloney, C.L., Roy, C. and Cury. P.M. Comparing internal and external drivers in the southern Benguela and southern Humboldt Upwelling ecosystems. This paper will be submitted in October/November 2007.
- Heqin C. et al. A manuscript to review the research progress on spatial modelling and simulations of fishery policy and MPAs in marine ecosystem is under preparation for the East China Sea Ecosystem.
- Data collection for a paper whose tentative title is "*Metabolic scaling relations in marine ecosystems trophic networks*" has been planned and carried out in cooperation with other Incofish participants and WP4 members. Some preliminary numerical analysis on data has been made (under LASA-UNIPAD coordination).
- (tentative title) Mapping key species in world food webs (Journal to be defined. Author leading Hugo Arancibia & Sergio Neira).
- (tentative title) Metabolic scaling relations in marine ecosystems trophic networks (Journal: Science or Nature. Author leading Luca Palmeri).
- (tentative title) Fishing and climate: comparison of model based indicators. Journal to be defined. Author leading Steve Mackinson).
- (tentative title) Simulating long term impact of shrimp trawl bycatch mortality on ecosystems. Journal to be defined. Author leading Francisco Arreguín-Sánchez.

Special issue on ecosystem assemblages

- Manuel J. Zetina Rejón, Francisco Arreguín-Sánchez, V. Cruz-Escalona, M. Albañez-Lucero, Jorge A. López-Rocha and César López-Ferreira. The Campeche Bank Ecosystem South of Gulf Mexico.
- Francisco Arreguín-Sánchez, Juan Gabriel Díaz-Uribe, Victor H. Cruz- Escalona, Diego Lercari. Assembling ecosystem trophic models: the North and Central Gulf of California LME.
- Cruz-Escalona, V. F. Arreguín-Sánchez and M.J. Zetina-Rejón. A trophic model integrating Mexican continental shelves of the Gulf of Mexico.
- Salcido-Guevara, L., F. Arreguín-Sánchez and M.J. Zetina-Rejón. Coupling trophic models: a coastal lagoon and the adjacent continental shelf in the southern Gulf of California.
- Cruz-Escalona, V.H., Arreguín-Sánchez and M.J. Zetina-Rejón. Integrated model of Alvarado Lagoon and adjacent continental shelf in the central Gulf of Mexico.
- Zetina-Rejón, M.J., F. Arreguín-Sánchez and V.H. Cruz-Escalona. Coupling adjacent ecosystems: Lagoon of Terminos and Campeche Sound, in the southern Gulf of Mexico.
- Del Monte-Luna, P., F. Arreguín-Sánchez and S. Chávez-Rosales. Trophic model for Magdalena Bay and the adjacent marine ecosystem.
- Arreguín-Sánchez, F., V. Cruz-Escalona, M.J. Zetina-Rejón, P. Del Monte-Luna, L.A. Salcido-Guevara, J.G. Díaz-Uribe, D. Lercari. On the dynamics of interacting ecosystems.

From the workshop on impact of shrimp trawling bycatch mortality on ecosystems several papers will be prepared; one for each case study ecosystem. Contents is as follows (leading authors):

- Ecosystem indicators to measure impact of fishing (Arreguín-Sánchez, F. and L. Salcido-Guevara)
- Northern Gulf of California (Arreguín-Sánchez, F. and D. Lercari)
- Central Gulf of California (Arreguín-Sánchez, F.)
- La Paz Bay (Del Monte Luna, P.)
- Southern Sinaloa, Gulf of California (Salcido-Guevara, L.)
- Jalisco-Colima coast, Central Pacific of Mexico (Galván-Piña, V.H.)
- Veracruz coasts, western Gulf of Mexico (Cruz-Escalona, V.H.)
- Campeche Sound, Southern Gulf of Mexico (Zetina-Rejón, M.J.)
- Long term patterns of ecosystem response to bycatch mortality in shrimp tawl fisheries (Arreguín-Sánchez, F.)

WP Number: 5**WP Name: Marine Protected Areas**a) Workpackage objectives and starting point of work for the reporting periodOverarching objective:

The objectives of the WP5, "MPA" workpackage, are to improve the basis for planning of MPAs with a view to reconciling demands especially of fisheries, biodiversity conservation and industrial uses including coastal aquaculture.

Specific objectives:

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.

The starting point of this reporting period is 1st May 2007

b) Progress towards objectives

During this reporting period the Ecospace models developed in conjunction between WP4 and WP5 were completed. All WP partners were involved in the model development.

After delivery of the Ecospace models all partners ran simulations of three existing and specifically proposed MPAs on their respective models for D5.2. The D5.2 report that examines and discusses these simulations has been completed and made available on the INCOISH web portal.

As part of the model development members of WP4 and WP5 prepared model descriptions for publication. Some of the model descriptions have been published in institutions own report series, although a combined report containing model descriptions of nine models developed within the Incofish project has been published as a UBC Fisheries Centre Research Report edited by Le Quesne, Arreguin-Sanchez and Heymans.

The final WP5 meeting was held in Murcia in September alongside the European Symposium on MPAs. At the WP meeting plans for a more comprehensive set of MPA simulations were discussed and agreed to work towards the requirements for D5.3. The timescale for the simulations and analysis were discussed and agreed.

Six oral presentations on MPA analyses conducted within WP5 were presented at the MPA Symposium by partners from UNEW, ECNU, CICIMAR, CEFAS and SAMS.

During this reporting period 1 paper (UNEW) was published and 4 were submitted (ECNU, NIES and UNEW) to peer review journals.

c) Work performed by each contractor in WP5 during the reporting period.

UNEW

- Developed the strategy for analysis of results to examine the outcomes of the MPA simulations for the D5.2 report. Will Le Quesne substantially conducted the results analysis

of the MPA simulations and drafted the report for D5.2. Will Le Quesne also assisted with the preparing simulations for the MPA analyses.

- Two papers examining aspects of MPA design using population models were written and submitted to the ICES Journal of Marine Science.
- In conjunction with project partners Will Le Quesne developed the strategy for the simulations to be run for D5.3 examining the implications of the size and location of MPAs. UNEW employed Aileen Mill for 6 weeks to assist with running initial Ecospace simulations to test possible strategies for simulations to be run for D5.3. The time scale in which the simulations are to be completed by partners was agreed, and Will Le Quesne circulated instructions to WP partners on the simulation preparation and results analysis for these simulations.
- Will Le Quesne presented two talks on MPA simulations at the European Symposium on Marine Protected Areas, and a talk to the Marine Sciences research group at Essex University on the implications of juvenile discards for MPAs.
- Will Le Quesne maintained project co-ordination, arranging the WP meeting, ensuring WP5 was up to date with required project reporting, liaised with WP partners over the simulations for D5.2 and D5.3, arranged for project partners to attend the MPA symposium.
- Will Le Quesne worked with Sheila Heymans (WP5) and Paco (WP4 and 5) on editing the UBC Fisheries Centre Research Report (FCRR) containing model descriptions of Incofish Ecopath models. This required extensive communication with individual section authors. UNEW employed Marieke Steuben to assist with the linguistic editing and formatting of the report.

CICIMAR

- CICIMAR finalised development of the Northern Gulf of California and Campeche Bank Ecospace models, and prepared a report detailing model development of the northern Gulf of California model for inclusion in the FCRR.
- CICIMAR have been analysing the spatial distribution of different life history stages of the red grouper in relation to benthic habitats to allow definition of movement parameters of red grouper in the Campeche Bank model.
- Simulations of existing and proposed MPAs in the northern Gulf of California and Campeche Bank were conducted for D5.2. CICIMAR assisted with the analysis of the Mexican D5.2 simulations for the D5.2 report.
- CICIMAR have commenced preparations for running the MPA simulations for D5.3 with the northern Gulf of California and Campeche Bank models. MPA and region maps for the Ecospace scenarios have been developed in accordance the objective criteria for MPA sizing and placement agree at the WP5 meeting in Murcia.
- Manuel Zetina-Rejon attended the WP5 meeting in Murcia presented a talk on the Campeche Bank Ecospace simulations of MPAs at the European Symposium on MPAs at Murcia.

ECNU/NIES

- ECNU/NIES finalised development of the East China Sea (ECS) Ecospace model, and prepared a report detailing model development for inclusion in the FCRR.
- Simulations of existing MPAs in the ECS were conducted for D5.2.
- ECNU have completed the initial simulation runs for D5.3 as part of the examination of the effects of size and location on MPA performance.
- Jiang Hong and Cheng Heqin prepared a revised version (with assistance from CICMAR and UNEW) of the paper on the possible trophic mechanisms underlying jellyfish blooms in the ECS in line with reviewers comments. The revised version has been accepted for publication by Ecological Modelling.
- Cheng Heqin presented a talk on the ECS Ecospace simulations of MPAs at the European Symposium on MPAs at Murcia.
- LI Na, JIANG Hong, CHENG Heqin have drafted and submitted a paper on the application of Ecospace for evaluating MPAs to the Journal of Basic Science and Engineering (in Chinese).

- A paper on the trade-offs between different sectors of the fishery in the ECS as a result of MPA establishment is in preparation.
- Jiang Hong has been awarded a scholarship to spend six months working at CEFAS where she will try and develop routines for validating Ecospace predictions against spatial data of catches and abundances.
- Cheng Heqin (ECNU) and Ding Hui (NIES) attended the WP5 meeting in Murcia. In September Cheng Heqin, Jiang Hog and Li Na attended the 2nd Global Conference on LMEs in Qingdao and presented a poster on the Incofish work on the ECS.

CEFAS

- CICIMAR finalised development of the North Sea Ecospace model, and prepared a report detailing model development of the North Sea model as a CEFAS Technical Report.
- Simulations of existing MPAs in the North Sea were conducted and analysed for D5.2. CEFAS assisted with the analysis of the North Sea D5.2 simulations for the D5.2 report.
- CEFAS have commenced preparations for running the MPA simulations for D5.3 with the North Sea model. MPA and region maps for the Ecospace scenarios have been developed in accordance the objective criteria for MPA sizing and placement agree at the WP5 meeting in Murcia. Initial simulations have been run.
- John Pinnegar and Georgi Daskalov attended the WP5 meeting in Murcia and assisted in development of the objective criteria for MPA selection for the D5.3 simulations. John Pinnegar presented a talk on the North Sea Ecospace simulations of MPAs at the European Symposium on MPAs at Murcia.

SAMS

- Sheila Heymans finalised development of the Northern Benguela Ecospace model, and prepared a report detailing model development of the northern Benguela model for the FCRR.
- Simulations of possible MPAs in the northern Benguela were conducted and analysed for D5.2. Sheila Heymans assisted with the analysis of the northern Benguela D5.2 simulations for the D5.2 report.
- Sheila Heymans has commenced preparations for running the MPA simulations for D5.3 with the northern Benguela model. MPA and region maps for the Ecospace scenarios have been developed in accordance the objective criteria for MPA sizing and placement agree at the WP5 meeting in Murcia. Initial simulations have been run.
- Sheila Heymans attended the WP5 meeting in Murcia and assisted in development of the objective criteria for MPA selection for the D5.3 simulations. Sheila also presented a talk on the northern Benguela Ecospace simulations of MPAs at the European Symposium on MPAs at Murcia.

d) Deviations from the workprogram, and corrective actions taken/suggested:

The final version of D5.2 report was submitted in early November, slightly later than the planned delivery date. Initially the delay was caused by the late delivery of the Ecospace models that meant that the MPA simulations could only be conducted at the last moment.

The final WP5 meeting was held in month 29, rather than month 25 as specified by Annex I. This change was made for two reasons. Firstly all WP partners were due to attend the European Symposium on MPAs in Murcia, Spain in month 29. As all WP partners would be assembled for this meeting anyway it was a more cost effective use of WP funds to hold the WP meeting in Murcia rather than organising travel and accommodation for a separate meeting. Secondly by delaying the meeting until after the D5.2 simulations and report had been completed we were able to have a more informed and focussed discussion of the strategy to meet the requirements for D5.3.

After consultation with the project co-ordinators the deadline for D5.3 was moved from month 31 to month 33. This change mirrored the delay in D5.2 and meant that WP5 still have the same amount of time to prepare D5.3 after the delivery of D5.2 as originally envisaged in Annex I.

e) Workpackage Co-ordination

Oversaw the preparation and delivery of D5.2.

Made preparations for the delivery of D5.3 and agree the strategy and timetable for D5.3 delivery with WP partners.

Co-ordinated (and edited) submission of model descriptions by partners to the FCRR.

Arranged the WP5 meeting that was held in Murcia. The strategy for D5.3 was discussed and agreed between WP partners at this meeting, and the time scale for delivering D5.3 was defined.

Arranged for WP partners to attend the European Symposium on MPAs, and arranged for some WP members to attend the European Symposium on Ecological Modelling to be held in November.

Discussed with project co-ordinators deviations of delivery times from the original workprogram, and agree further changes to the work program to make allowance for upstream delays.

Communicated with Villy Christensen (UBC) to arranged for modifications and additions to be made to the results outputted by Ecospace in accordance with wishes from WP5 partners.

f) Dissemination of knowledge

Table: Overview on WP5 outreach activities

Actual Date	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
16/5/2007	Presentation to Marine Sciences research group University of Essex ,A comparison of no-take zones and traditional fishery management tools'	Scientific researchers	UK	15	(UNEW)
Sept 2007	European Symposium on MPAs as a tool for fisheries management and ecosystem conservation – Conference presentations	Scientists, policy officers and fisheries managers	International	50	
	Spatial simulations of fishery management scenarios of the East China Sea				(ECNU)
	Simulating a MPA as a strategy for ecosystem-based fishery management of the red grouper in the Campeche Bank, Mexico				(CICIMAR)
	The use of marine protected areas as part of ecosystem based management in Namibia				(SAMS)
	Managing mobile species with MPAs; the interaction between mobility and fishing mortality				(UNEW)
	Are bad MPAs any good, or just				(UNEW)

Actual Date	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
	a new way of making old mistakes				
	An evaluation of existing and proposed MPAs in the North Sea using Ecospace				(CEFAS)

g) Publications

Published, in press

Le Quesne, Hawkins and Shepherd (2007) A comparison of no-take zones and traditional fishery management tools for managing site-attached species with a mixed larval pool. *Fish and Fisheries* 8: 181-195

Le Quesne, Arreguin-Sanchez and Heymans (eds) (2007) INCOFISH ecosystem modelling; transiting from Ecopath to Ecospace. *Fisheries Centre Research Reports* 15(6). [This report contains nine Ecopath model descriptions with substantial contributions by WP5 members]

Submitted

Le Quesne and Codling (submitted) Managing mobile species with MPAs; the interaction between mobility, larval dispersal and fishing mortality. (*ICES J Mar Sci*)

Le Quesne (submitted) Are 'bad' MPAs any good, or just a new way of making old mistakes? (*ICES J Mar Sci*)

Ding Hui, Xu Haigen, Wu Jun, Le Quesne W.J.F. , Sweeting, C.J., Polunin N.V.C. (submitted) An overview of spatial management and marine protected areas in the East China Sea. (*Coastal Management*)

LI Na, JIANG Hong, CHENG Heqin. (submitted) Application of the Ecospace model in evaluating Marine Protected Areas. *Journal of Basic Science and Engineering* (in Chinese).

In prep (with planned date of submission)

JIANG Hong et al: Examining fishery trade-off from fishery protected areas in the East China Sea (planned submission December 2007)

Le Quesne et al: An evaluation of MPA network designation schemes using spatial ecosystem models (Planned submission February 2008)

Daskalov, Pinnegar, & Mackinson. Evaluation of Existing and Proposed MPAs in the North Sea using Ecospace. (Planned submission by 15 Feb 2008)

Le Quesne et al: Added value of spatial management when used in conjunction with effort controls (Planned submission March 2008)

h) Budget

At present WP5 is scheduled to come in within budget. Following a recent WP5 budget review we are currently going to end the project with a surplus of approximately 20k Euros, although we are currently examining how WP5 may be able to employ the budget to increase the outputs from WP5.

WP Number: 6**WP Name: Coastal Transects**a) Workpackage objectives and starting point of work for the reporting periodOverarching objective:

To provide a framework for compilation and analysis of data relevant to the understanding of interactions, impacts and flows in the coastal zone. It aims also at providing coastal managers with a decision-making framework and communication tool for integrated coastal management.

Specific objectives:

1. To review concepts and tools for ICZM, with a special focus on stakeholder involvement;
2. To categorize coastal areas using coastal transects and related software; and
3. To develop and test decision-making framework for integrated coastal management based on coastal transects using selected cases around the world.

b) Progress towards objectives

The main activities for WP6 during this reporting period were developing and fine-tuning of CTAM software (including model validation, sensitivity test and algorithm check), working on the decision-making scenarios and prototypes, as well as preparing for the final stage of the work, which includes stakeholders' consultation, model testing and publications. Also, dissemination of CTAM (mainly through presentations) was another major activity that the team has been concentrating on. Progress was made in achieving objectives, except in some areas that adjustment was required, namely the publications (see below).

c) Work performed by each contractor in WP6 during the reporting period.

CDC

- Contributed to CTAM software development, testing and fine-tuning
- Presentation of CTAM at various venues (see details in # 5)
- CDC organized a stakeholder consultation at Krabi Province, Thailand, as part of the EU-funded CHARM Project Final Workshop (August 23, 2007)
- Planning of the second stakeholders' meeting in Thailand (in December)
- Field observation and data collection for CTAM (Chao Phraya Model);
- Meeting with key informants to discuss data for CTAM
- Lead author of WP6.3
- Co-authors of the first submitted manuscript (based on WP6.1)
- Lead author of two manuscripts under preparation on CTAM

IGS

- Lead author of the first submitted manuscript (based on WP6.1)
- Contributed to CTAM software development, testing and fine-tuning
- Contributed to the preparation of WP6.3
- Co-authors of the two manuscripts under preparation on CTAM (conceptual and methodological framework and case studies)
- Mass distribution of news and invitation about CTAM Phase II

UNIABDN

- Contributed to CTAM software development, testing and fine-tuning
- Performed sensitivity analysis on CTAM variables
- Lead discussion on GIS mapping and spatial analysis of CTAM data
- Lead discussion on possible stakeholders meeting in Scotland

- Invited Ratana to present CTAM at the Marie Curie Training Program in Crete (May 7, 2007)
- Contributed to the preparation of WP6.3
- Lead author of the other paper on CTAM

d) Deviations from the workprogram (if any), and corrective actions taken/suggested

WP 6 faces some difficulties related to Deliverable WP 6.5 (publications). Our understanding is that the software itself counts as an 'online publication.' We recognized, however, that we still have to publish more papers. The nature of the work is such that a paper cannot be written too early (before the model is 'published' on the website). We are now in the process of preparing at least 3 papers with case studies to illustrate the utility of CTAM. We are still waiting to hear from the first manuscript that we submitted in June.

e) Workpackage Co-ordination

WP members continued to communicate mainly by e-mail. Members always looked for avenue to meet in person. An example of this was when Graham Pierce (UNIABDN) invited Ratana Chuenpagdee (CDC) to a meeting in Crete in May 07 to present CTAM. It was also an opportunity to discuss work.

f) Dissemination of knowledge

Table: Overview on WP6 outreach activities

Actual Date	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
May 3, 2007	Lecture at University of La Laguna, Tenerife, Canary Islands	University students, professors, researchers	Spain	40	CDC
May 7, 2007	Lecture at the ECOSUMMER, Marie Curie Training Program, in Heraklion, Crete	University students, researchers	Global	20	CDC, UNIABDN
July 6, 2007	Conference presentation, People and the Sea IV Conference in Amsterdam	University students, professors, researchers	Global	35	CDC
July 25, 2007	Presentation, Coastal Zone'07 Conference in Portland, Oregon	University students, professors, researchers, environmental organizations	Global	45	CDC
October 15, 2007	Seminar, Marine Affairs Program, Dalhousie University, Halifax	University students, professors, researchers, environmental organizations	Global	30	CDC
October 24, 2007	Public lecture, Canada Research Chair Lecture Series, Memorial University of	University students, professors, researchers, environmental	Canada	85	CDC

Actual Date	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
	Newfoundland, St. John's	organizations, general public			

g) Publications

Published, in press

"Coastal Transects Analysis Model" (on-line publication: www.coastaltransects.org)

Submitted

"Engaging stakeholders in coastal management through online visualization tools" (submitted to Ocean and Coastal Management Journal, under review)

"Coastal transects analysis of Chao Phraya Delta" (submitted for publication as part of a peer-reviewed book, under revision);

In prep (with planned date of submission).

"Visualizing coasts with Coastal Transects Analysis Model" (to be submitted to Geoforum, December 2007)

"Planning for change: engaging stakeholders in coastal management" (to be submitted to Journal of Environmental Planning and Management, January 2008)

h) Budget

WP6 is on track with the use of the budget and will be able to spend the remaining budget within the remaining project time.

WP Number: 7**WP Name: Simple indicators for sustainable fisheries**a) Workpackage objectives and starting point of work for the reporting period

Overarching objective: To overcome overfishing by identifying, testing, and implementing simple indicators for sustainable fisheries management for direct use by fishers, fish traders, consumers, managers, and media.

Specific objectives:

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

b) Progress towards objectives

A Small-Scale fisheries self-assessment tool has been conceptualized and designed. It is now with our programmer awaiting implementation.

Graphs showing the extent of overfishing worldwide (the percentage of undeveloped, developing, fully exploited, overexploited, and collapsed fisheries each year since 1950) grouped by FAO area have been constructed. They are awaiting upload to the FishBase "FAO catches" page by our programmer.

A tool allowing users to see where their particular fishery stands on a relative-yield per recruit isopleths graph in relationship to length at first capture and exploitation rate has been conceptualized and designed. It is now with our programmer awaiting implementation.

The Don't Eat Babies! Fish Ruler Tool has been undergoing improvements.

Fish Rulers:

A new batch of 5000 German Fisch-O-Meter were printed and distributed through the German consumer protection agency (Verbraucherzentrale) in Hamburg and by WP7 members at IfM-GEOMAR at local outreach events. This new printing was made possible in part by a new local sponsor who donated 2500 Euro to the project.

IMARPE designed and printed 4 more versions of the Chikipez fish ruler, with species and lengths specific to different locations along the Peruvian coastline. There are now five Chikipez in total: Lima/Callao, Ilo, Santa Rosa, Paita, and Chimbote.

CRODT secured the funding and logistical backing necessary to publicly launch the Senegalese Poisson-metre (already designed and printed). WP 7 Colleagues there are now waiting for their ministry to clear their schedule for a launch date. This is expected to occur in December 2007.

Indicator Testing:

All contractors have been working since the mid-term workshop in La Paz on a collective WP7 case study paper, to evaluate the usefulness of WP7's simple indicators under different management and data-availability regimes. Contractors agreed to research one or two fisheries from their respective geographic areas and contribute their analysis to the collective undertaking, to be written up and completed by WP 7 coordinator. All contractors fulfilled their initial obligations to this paper during the last 6 months, and it is now in the process of being written.

Mobile seafood guide:

A mobile seafood guide (www.seafoodguide.org) has been developed to help consumers to buy fish based on whether or not it has been caught in a sustainable way. The guide combines information from 18 different seafood guides published by the WWF, the Marine Conservation Society and others. In addition, the size at maturity is shown to enable consumers to recognize and reject 'babyfish'.

In accordance with a scientific assessment of the fish stock's general condition and the fishing grounds, the guide tells the consumer which fish can be eaten with a clear conscience. In this context, taking the size of the fish into consideration is important, as it indicates whether the specimen has reached sexual maturity and has thus had a chance to reproduce before being caught, ensuring the survival of the species.

The information is accessible online via computer or, more importantly, via web-enabled mobile phones, so that it is available anywhere at any time. In developing the tool we have used mainly symbols so that the guide simultaneously serves ten languages in 17 countries.

c) Work performed by each contractor in WP7 during the reporting period.

IfM-GEOMAR

- Presented "Empowering fisheries sustainability with social marketing: successes, impact and lessons learned from INCOFISH WP7's Fish Rulers" at the MARE People and the Sea conference in Amsterdam, NL in July, 2007
- Completed concept and design of the three online tools listed in section 1.
- Worked on Global Cost of Overfishing and the collective WP case study paper.
- Worked on improvements for Don't Eat Babies! Online tool.
- Developed algorithm for the INCOFISH seafood guide, which uses resilience, bycatch, and exploitation status of a fishery to assign consumption advice for almost all commercial fish species in FishBase.
- Integrated ruler/maturity functionality into the INCOFISH Seafood guide for mobile phones.
- Provided data and background facts for various interviews and panel discussions conducted by Rainer Froese on the topic of overfishing in the North and Baltic Seas and globally.

IMARPE

- Developed and printed four more regional Chikipez fish rulers.
- Contributed data and analysis on two demersal fisheries from Peru for collective WP case study paper.

CABAL

- Contributed data and analysis on two fisheries from Nicaragua for collective WP case study paper.

CRODT

- Printed Senegalese Possion Metre, and collaborated with WWF Senegal and other local NGOs toward organizing an official public launch.
- Contributed data and analysis on four fisheries from Senegal for collective WP case study paper.

PSU

- Contributed data and analysis on one fish species from the Gulf of Thailand for collective WP case study paper
- Participated in the Technical Consultation Meeting: Fishery Information Gathering for Fishery Policy and Management in Bangkok from 21-22 August, 2007. Gave an invited talk about gathering length-frequency data on most economic species so sustainability indicators can be applied and used as basic information for management policy.
- Processed more than 80% of the field samples collected from the fishing ports around the Gulf of Thailand, and using these in the preparation of a publication.

- Spoke with local units of Department of Marine and Coastal Resources as well as Department of Fisheries about becoming sponsors to publish the maturity chart but it is still quiet at the moment due to the retirement of some higher-ranking officials and filling the replacement. A follow-up visit is planned.
- Began developing a research proposal on Biodiversity Assessment of Songkhla Lagoon System, which is the largest lagoon in Thailand. A part of this proposal will relate to fisheries monitoring program and public participation in which sustainability indicators will be introduced to the public and probably local schools around the lagoon to collect their own data and look after their own resources.

UNIABDN

- Contributed data and analysis on two fisheries from Scotland's West Coast for collective WP case study paper.

CDF

- Contributed data and analysis on two invertebrate fisheries from Galapagos for collective WP case study paper.
- Published life-history studies of two invertebrate species and overfishing analysis based on WP 7 simple indicators.
- Worked toward implementing a Galapagos fish ruler within the "Pesca vivincial" initiative.

MCM-DEAT

- Contributed data and analysis on two demersal and two pelagic fisheries from South Africa for collective WP case study paper.

d) Deviations from the work program (if any), and corrective actions taken/suggested:

Senegalese fish ruler was originally scheduled to be officially launched to the public in April or May 2007. Because of scheduling difficulties from the ministry, etc. the launch has been postponed until probably December of 2007. However, the rulers are finished, and the preparations and financing are in place for the event.

The development of the Galapagos fish ruler is also stalled, due to political problems between CDF and the fishing community in Galapagos. However, colleagues there are attempting to work around this by arranging to have a Galapagos ruler printed in an edition of CDF's monthly newspaper.

The implementation of WP7 online tools are somewhat stalled in the programming phase due to INCOFISH programmers having an overload of work. However, it is anticipated that all tools will be implemented before February 2008.

e) Workpackage Co-ordination

WP coordination was done mainly through email and telephone communication during this period. There were no workshops, however the work laid out at the WP7 workshop in La Paz in March has been carried out during this reporting period, namely WP members have contributed to the collective WP indicators case study paper currently in progress. In general, the coordination of the WP is going quite well, with most parties contributing and participating actively and delivering their respective responsibilities on time. One partner, Joe Ryan from CABAL in Nicaragua, has been out of contact for the past 4-5 months, despite numerous attempts to reach him via email and telephone.

WP7 has also been working in collaboration with WP8 and colleagues from UBC Fisheries Centre on assigning dollar values to the catch-loss calculations previously completed for the Global Cost of Overfishing manuscript.

f) Dissemination of knowledge

Table: Overview on WP7 outreach activities

Actual Date	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
June 2007	Meeting with West African Trade Hub (part of USAID) on the topic of fisheries sustainability in Senegal	NGO, business	West African Countries	20	CRODT
June 2007	Meeting with Galapagos fisheries stakeholders about integrating fish rulers into "pesca vivincial"	NGO, Fishing industry, public	Ecuador	+20	CDF
June 2007	TV interview on fisheries management in Europe during Kieler Woche	Academic, Public	Germany	30 on site, ?? through TV	IfM-GEOMAR
14 June 2007	Radio Interview about new Western Baltic fishing quotas	General Public	Germany	Thousands	IfM-GEOMAR
11 June 2007	TV Interview (ZDF) on EU eel and bluefin tuna fisheries	General Public	Germany	Thousands	IfM-GEOMAR
July 2007	Conference Presentation: MARE People and the Sea IV: Who owns the coast?	Academic/policy makers	International	30	IfM-GEOMAR
August 2007	lecture on new approaches to fisheries management and Chikipez distribution	Post graduate students at Lima's Agraria University	Peru	50	IMARPE
21-22 August, 2007	Technical Consultation Meeting on Fishery Information Gathering for Fishery Policy and Management	Fisheries Policy makers	Thailand	30	PSU
September 2007	Panel Discussion on fisheries management in Germany/Europe	Academic, industry, NGO, public	Germany	40	IfM-GEOMAR
October 2007	Exhibition: Future Oceans (fish rulers were distributed)	General Public	Germany	More than 1000	IfM-GEOMAR
Dec 2007	Press release on occasion of German launch of "Fisch im Handy" taken up by over 70 news outlets	General Public	Germany	Thousands	IfM-GEOMAR / FIN

g) Publications

Published, in press

- Fairweather TP, Hara M, van der Lingen CD, Raakjaer Nielsen J, Shannon LJ, Louw GG, Degnbol P, Crawford RJM (2006a) The knowledge base for management of the capital-intensive fishery for small pelagic fish off South Africa. *African Journal of Marine Science* 28: 645-660.
- Fairweather TP, van der Lingen CD, Booth AJ, Drapeau L, van der Westhuizen JJ (2006b) Indicators of sustainable fishing for South African sardine (*Sardinops sagax*) and anchovy (*Engraulis encrasicolus*). *African Journal of Marine Science* 28: 661-680.
- Hearn A & JC Murillo (2008) Life history of the red spiny lobster *Panulirus penicillatus* (Olivier, 1791) (Decapoda: Palinuridae) in the Galapagos Marine Reserve, Ecuador. *Pacific Science* 62 (2).
- Hearn A & MV Toral-Granda (2007). Reproductive biology of the red spiny lobster *Panulirus penicillatus* and the slipper lobster *Scyllarides astori* in the Galápagos Islands. *Crustaceana* 80 (3): 297–312.
- Stern-Pirlot, A and R. Froese (2006) Can the knowledge society turn around 500 years of overfishing? 10 pages. In: Proceedings of the Thirteenth Biennial Conference of the International Institute of Fisheries Economics and Trade, July 11-14, 2006, Portsmouth, UK: Rebuilding Fisheries in an Uncertain Environment. Compiled by Ann L. Shriver. International Institute of Fisheries Economics and Trade, Corvallis, OR, USA, 2006. CD ROM. ISBN 0-9763432-3-1
- Toral M.V. & P. Martinez (2007) Reproductive biology and population structure of the sea cucumber *Isostichopus fuscus* (Ludwig, 1875) (Holothuroidea) in Caamaño, Galápagos Islands, Ecuador. *Marine Biology*.

Submitted

- Froese, R. Stern-Pirlot, A., Winker, H., and Gascual, D. Size Matters: How Single-Species Management Can Contribute To Ecosystem-based Fisheries Management. *Fisheries Research* (MS # FISH1473) Submitted 7 Sept. 2007
- Wosnitza, C., Ballon M. Overfishing and El Niño cause reproductive failure in Peruvian hake, *Merluccius gayi peruanus*. (submitted)

In prep (with planned date of submission).

- Changes in size composition of spiny lobster *Panulirus penicillatus* and sea cucumber *Isostichopus fuscus* in the Galápagos Marine Reserve – a combination of overfishing and sporadic recruitment (planned submission date: unknown)
- Global Cost of Overfishing (planned submission date: end of 2007)
- Applying sized-based simple indicators under various fisheries management scenarios (indicators case studies from WP7 members/fisheries). (planned submission date: end of 2007)
- Historical trends in stocks and associated indicators in Scotland. (planned submission date: unknown)
- Trends in mean length-at-maturity of four Peruvian demersal fish species: searching for common indicators (planned submission date: soon)
- Population biology of assessment of [Nemipterus spp.], in the Gulf of Thailand (planned submission date: unknown).

h) Budget

All WP members are on budget.

WP Number: 8	WP Name: Valuation of Coastal Ecosystem Products and Services
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a) Workpackage objectives and starting point of work for the reporting period

Overarching objective: To overcome overfishing by providing economic and social data and analysis for sustainable fisheries management.

Specific objectives:

1. Provision of social and economic data to the project database;
2. Valuation of marine ecosystem goods and services;
3. Develop economic and social indicators of ineffective management;
4. Develop policy options for sustainable coastal resources management.

WP8 began working for this period on May 1, 2007.

b) Progress towards objectives

WP8 is at the moment exceeding all its objectives.

c) Work performed by each contractor in WP8 during the reporting period.

UNAM

- WP8 coordination;
- work on subsidies
- work on D8.3;
- work on poverty index;
- work on habitat values;
- publishing;
- work on a Gulf of Thailand ecosystem model;
- presentations at conferences, interviews with news media;
- high level briefing at the UN and the WTO.

University of Tromsø

- work on D8.3;
- work on poverty index;
- work on habitat values;
- publishing;
- presentations at conferences.

CDC

- work on D8.3;
- work on poverty index;
- work on a Gulf of Thailand ecosystem model;
- Presentations at conferences.

Primex-FAME

- work on D8.3;
- work on poverty index;
- work political sensitivity index;
- work on papers on non-market values;
- presentations at conferences.

UWC

- Presentations at conferences.

d) Deviations from the work program (if any), and corrective actions taken/suggested:

None at this point.

e) Workpackage Co-ordination

Lots of email, phone and personal contact by members of the WP during the reporting period.

f) Dissemination of knowledge

Table: Overview on WP8 outreach activities

Actual Date	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
June	Two keynote addresses at a FAME Workshop on "Social & Natural Scientific Advice in Marine Renewable Resource: Closing the Gap between Politics & Theoretical Ideals in Fisheries Management", University of Southern Denmark, Esbjerg, Denmark 6-8 June 2007	Academics	Europe	30-40	UNAM
July	Coastal Zone 2007 Conference	Global	Global	Many	UNAM, Primex, CDC
30 Aug.	Sumaila et al. in <i>Journal of Bioeconomics</i> . Cited by Steven D. Levitt the famous co-author of <i>Freakonomics</i> : see http://freakonomics.blogs.nytimes.com/2007/08/30/shrimponomics/	Global	Global	Many	UNAM
19 Sept.	Time Magazine quote (see http://www.time.com/time/printout/0,8816,1663604,00.html)	Global	Global	Millions	UNAM
20-21 Sept.	Workshop in Fiji	Managers and stakeholders	Fiji	40-50	UNAM
Sept	Contributed to a cover article for the most recent issue of Conservation Magazine.	Global	Global	Many	UNAM
3 Oct.	Briefing to G77 at the UN	UN Delegates	Developing country delegates at the UN	30-40	UNAM
11-12 Oct.	Workshop	Academics	Nordic	30-50	Univ. of Tromsoe
29-30 Oct.	Workshop	Academics	Norway	30-50	Univ. of Tromsoe

g) Publications

Published, in press

- Ainsworth, C.H. and U.R. Sumaila, 2005. Intergenerational valuation of fisheries resources can justify long-term conservation: a case study in Atlantic cod (*Gadus morhua*). *Can. J. Fish. Aquat. Sci.* 62: 1104–1110.
- Bailey, M., Rotinsulu, C., and Sumaila, U.R. (*in press*) The Migrant Anchovy Fishery in Kabui Bay, Raja Ampat, Indonesia: Catch, Profitability, and Income Distribution. *Marine Policy*.
- Berman, M. and U.R. Sumaila (2006). Discounting, amenity values and marine ecosystem restoration. *Marine Resource Economics*. 21 (2): 211-219.
- Claire Armstrong: A note on the ecological-economic modelling of marine reserves. *Ecological Economics* 62, 242-250, 2007;
- Sumaila, U.R., D. Zeller, R. Watson, J. Alder and D. Pauly (2007). Potential costs and benefits of marine reserves in the high seas. *Marine Ecology Progress Series*, 345: 305–310.
- Sumaila, U.R., Khan, A., Watson, R., Munro, G., Zeller, D., Baron, N., Pauly, D. (2007) The World Trade Organization and global fisheries sustainability. *Fisheries Research*, 88, 1-4.
- Sumaila: Briefing at the United Nations on global fisheries. SAUP Newsletter, 2007
- Sumaila: Fisheries Centre at the World Trade Organization. Fishbytes, 2007.
- Sumaila, U.R. and C.W. Armstrong (2006). Distributional and efficiency effects of marine protected areas: A study of the Northeast Atlantic cod fishery. *Land Economics* 82 (3): 321-332;
- Sumaila, R.S. 2005. Differences in economic perspectives and implementation of ecosystem-based management of marine resources. *Mar Ecol Prog Ser* 300: 241–296, 2005.

b) submitted

- Armstrong and Falk-Petersen. Habitat Fisheries – a missing link.
- Armstrong and Kahui. A bioeconomic model of habitat impacts.
- Heymans, Sumaila and Exploring policy options and tradeoffs in the northern Benguela ecosystem.

h) Budget

The outlook for the WP8 budget is just fine. We should be able to come out at the end with expenses equating our budget.

WP Number: 9**WP Name: Impacts of Ecotourism**a) Workpackage objectives and starting point of work for the reporting periodOverarching objective:

Provision of scientific guidelines for management of marine areas where ecotourism activities are being developed.

Specific objectives:

1. To determine the most appropriate criteria for evaluating the effects of marine ecotourism practices in multi-use reserves (carrying capacity and/or LAC).
2. To develop and test chosen criteria with appropriately designed and defined indicator categories.
3. To elaborate and implement efficient, cost-effective monitoring and evaluation protocols (integrating biophysical, socio-economic, user perceptions and governance metadata).
4. To assess human impacts on biological communities at specific case study sites and the implications of environmental variability (ENSO, PDO, global warming etc) upon sustainable business practices in the Equatorial Pacific.
5. To apply lessons learned to new and existing decision support systems and mechanisms (e.g. coastal zoning etc.) for MPA conservation and management.
6. To establish a regional conservation network (Eastern Tropical Pacific) for ecotourism practices within developing frameworks (e.g. Seascape etc).

b) Progress towards objectives

Re (1): The Criteria and Indicator System (C&I) was tested through its application (data collection). Analyses for final reports will be developed on December 2007. CDF, ECOLAP/USFQ, Fundación Malpelo, Parques Nacionales Naturales de Colombia and Dirección Parque Nacional Galápagos.

Re (2): The C&I was included in Tourism Management Plans based on VERP (all the MPAs except Gorgona) and VIM (only Gorgona) methodologies. CDF, ECOLAP/USFQ, Fundación Malpelo, Parques Nacionales Naturales de Colombia, Parque Nacional Machalilla and Parque Nacional Galápagos.

Re (3): The monitoring protocols for the indicators were reviewed and improved. The Step-by-step tool based on the C&I and the protocols was uploaded in the Website of WP9 at INCOFISH portal. CDF, ECOLAP/USFQ, Malpelo Foundation, Parques Nacionales Naturales de Colombia.

Re (4): Tourism Management Plans were presented to the administrators to start participatory processes for their revision, improvement and approval. CDF, ECOLAP/USFQ, Fundación Malpelo, Parques Nacionales Naturales de Colombia, Parque Nacional Machalilla and Parque Nacional Galápagos.

Re (5): The C&I System started to be applied in Cocos Island National Park, Costa Rica, as part of efforts to include it in the Marine Corridor of the Pacific lead by Conservation International. CDF, ECOLAP/USFQ, Fundación Malpelo

c) Work performed by each contractor in WP9 during the reporting period

Charles Darwin Foundation (CDF)

- applied the monitoring protocols of Conservation and Visitor Experience aspects on *Aggressor*, *Sky Dancer* and *Sagitta* live-a-board ships. Daily SCUBA diving tours were also

- covered through the support of SCUBA Iguana local agency. Socio-economic and management indicators were measured considering information from 2004 to 2007.
- This exercise was not only made in terms of testing the applicability and value of the System of Criteria and Indicators (C&I) of WP9 but was part of its official integration in the tourism management system of the Galápagos National Park Direction. A six-month monitoring report was created considering the indicators defined in the regional C&I battery as well as additional indicators proposed specifically for the Galápagos Marine Reserve.
 - Significant advances on a Visitor Management Plan based on VERP methodology were made involving the development of a consultancy process with tour guides and dive masters as well as scientists to characterize the 83 marine visit sites of the Galápagos Marine Reserve. This will act as the framework that will guide the administration in the application of the monitoring indicators and management responses. A participatory process for reviewing, improving and approving the VERP plan will be made in the four coming months until the project ends on February 2007. Advances on WP9 for the GMR were presented to tour operators.
 - A presentation of the C&I System was made in the II Congress of National Parks and other Protected Areas of Latin America, held in Bariloche, Argentina, from September 29th to October 8th. Codes of Conduct for each of the four MPAs were created as technical documents based on information generated through the biophysical and visitor experience indicators and four scientific papers are being developed.

Colombia National Natural Parks and Malpelo Foundation

- got focused on the application of indicators, especially those related with conservation and visitor experience through the participation in tourism cruise ships. This exercise allowed adjusting the C&I system and to integrate it in the National Monitoring Strategy of the National Park System in Colombia, specifically for Malpelo and Gorgona. It is expected that this will serve as a basis to expand the C&I to other MPAs in Colombia.
- New personnel was trained to be in charge of the application of indicators in Gorgona through the "Training Workshop on good practices for SCUBA diving and whale-watching". Members of WP9 joined the forum "Colombia, a World SCUBA diving destination" in four cities of Colombia where SCUBA diving instructors and operators of all over the country were invited. The objectives and advances of WP9 were presented and a survey was applied to know perspectives of the participants about the impacts of SCUBA diving in the natural environments, including essential elements of the System of Criteria and Indicators (C&I) generated by Incofish.
- A second meeting of the Tourism Network of the Marine Corridor of the Eastern Tropical Pacific is being organized for November 2007 to discuss about impact of ecotourism through the revision of the results generated by WP9. This will allow the C&I System to spread out in a wider context and from a regional perspective.

ECOLAP from Universidad de San Francisco de Quito

- distributed field tools to collect data for the indicators to tour guides, park rangers, administrative personnel and tour operators all of which received training through several workshops and through support for the reinforcement of administrative processes including a recording system for infringements. Workshops were also directed to the Supporting Committee of the MNP to give advice for planning processes for the next 6 months on issues related to tourism management.
- A catalog including the monitoring protocols and a photographic guide with common marine species during snorkeling activities was created for the natural guides and a visitor book to collect statistical information of visitation to the protected area was provided to the National Park.

d) Deviations from the workprogram (if any), and corrective actions taken/suggested:

Management responses have not started to be developed yet. WP9 team will need the results generated along 2007 to count, on an objective basis, and propose the Limits of Acceptable

Change (LCAs) for each indicator, and to define the management responses. It is estimated that this task will start November 2007 and end February 2008 for the four MPAs of WP9.

On the other hand, technical documents developed as Codes of Conduct for each MPA of WP9 have been created. Four additional scientific papers are being developed at present and are scheduled to be finished by January 2008.

e) Workpackage Co-ordination

Given the relative isolation of the WP members, communication has been conducted mostly through e-mail, or *Messenger*. The participation of three members of WP9 in the II Congress of National Parks and other Protected Areas, in Bariloche, Argentina, allowed to share advances in the project and to define the agenda for the third workshop to be held in Machalilla in January 2008.

WP members work closely as technical advisors to government authorities and user groups in each National Park. This has allowed WP9 activities to become a key in the official management processes of the MPAs and to get closely linked to a variety of ongoing projects with management outcomes developed by NGOs or private enterprises with compatible goals. The C&I system is being replicated in Coco's Island National Park, Costa Rica and has been involved in activities of the Marine Corridor of Eastern Tropical Pacific.

f) Dissemination of knowledge

Table: Overview on WP9 outreach activities

Actual Date	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
May to October , 2007	Conferences and exhibitions	Primary and secondary schools, guide courses National and international Conferences and Fairs, tourism operators and guides	Ecuador/ Colombia	Local Communities	ECOLAP / CDF/ Fundacion Malpelo
May to October 2007	Media briefing	Local authorities and technical and scientific partners	Seascape/ Incofish/ other international projects	Strengthen common tourism research in Eastern Pacific bioregion	ECOLAP / CDF / Fundacion Malpelo

g) Publications

in prep (with planned date of submission)

- Cubero-Pardo, P., Herrón y F. González. Assessing the effect of SCUBA diving on sharks and sessil benthos in two Marine Protected Areas of the Eastern Tropical Pacific
- Green, E., P. Cubero-Pardo, F. González. Marine megafauna responses to SCUBA diving tourism in the Galapagos Marine Reserve: an impact assessment.
- González, F, y P. Cubero. Efecto a corto plazo del tipo de actividad turística en el comportamiento de fauna representativa de las Islas Galápagos.
- Martinez, C. Las actividades turísticas de observación de ballenas en la zona Costero insular de Ecuador y Colombia y su impacto sobre las poblaciones de Ballena Jorobada, *Megaptera novaengliae*.

- Zambrano, H. Indicadores para evaluación de impacto de ecoturismo en áreas marinas protegidas.

h) Budget

No indication

WP Number: 10	WP Name: Legal Instruments
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a) Workpackage objectives and starting point of work for the reporting period

Overarching objective:

The WP will analyse the national and international legal framework with a focus on sustainable use of marine living resources, both in overfished and surplus regions, taking account of legal structures as they relate to increasing pressure on resources, options for managing of resources, and options for sharing of benefits.

b) Progress towards objectives

Objective	Tasks and major achievements	Contractor
Analysis of legal structures relating to increasing pressure on resources and options for managing of resources	Completed D 10.2a (Brazil country report), currently under revision; draft submitted to the project management.	APPRENDER, UNI HB
Analysis of legal structures relating to increasing pressure on resources and options for managing of resources	Advanced D 10.2b (Nicaragua country report). Announced for submission to project management on Nov. 19, 2007	CABAL, S.A., UNI HB
Analysis of legal structures relating to increasing pressure on resources and options for managing of resources	D 10.2c (Mexico country report). Draft was submitted to project management in Spanish and English versions. Still to be commented and improved.	UNI HB (via subcontract)
Analysis of legal structures relating to increasing pressure on resources and options for managing of resources	Completed D 10.3a (Namibia country report). Final draft was submitted to project management, but needs some further polishing. An additional report on customary law of coastal fisheries was commissioned. It will be submitted to project management by end November	UNAM2, UNI HB
Analysis of legal structures relating to increasing pressure on resources and options for managing of resources	Completed D 10.3b (Kenya country report). Final draft was submitted, but needs some further polishing	UNI HB (via subcontract)
Analysis of legal structures relating to increasing pressure on resources and options for managing of resources	Advanced D 10.4 (Indonesia country report). Full draft was submitted to project management. Still to be commented and improved.	UNI HB (via subcontract)
Analysis of legal structures relating to increasing pressure on resources and options for managing of resources in EU	D 10.5 (EU report) and D 10.6. (TACs in comparative perspective) advanced but still under work	UNI HB

c) Work performed by each contractor in WP10 during the reporting period

UNI HB

- Organised and held a side-event to the European Conference on Maritime Policy on “Sea-Use Planning in the EU Coastal and Exclusive Economic Zones” in Bremen on 2 May 2007.
- Communication with other WPs and external institutions.
- Scientific research on, and advancing of deliverables (D10.2c, 3b, 4, 5 and 6).
- Coordination and supervision of all deliverables.
- Addressed miscellaneous administrative tasks.
- Dissemination activities (see under f))

APRENDER

- Completed D 10.2a (Brazil country report) (currently under revision).

UNAM

- Completed preliminary D 10.3a (Namibia country report) (currently under revision).

CABAL S.A

- Advanced D 10.2b (Nicaragua country report).

d) Deviations from the workprogram (if any), and corrective actions taken/suggested:

None.

e) Workpackage Co-ordination

- Communication with other workpackages (WP 1, 11) and external institutions (EC general Directorate on Fisheries, Bundesamt für Seeschifffahrt und Hydrographie).
- Co-ordination and supervision of deliverables.

f) Dissemination of knowledge

Table 10.3: Overview on WP10 outreach activities

Actual Date	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
Continuing	WP 10 web-sites INCOFISH portal New FEU (UNI HB) portal, http://www.feu.uni-bremen.de/en/projects.html	(Environmental) jurists, academics, fisheries managers	Coastal states	?	UNI HB, Fishbase
Month 25	Side-workshop to the European Conference on Maritime Policy: ‘Sea-Use Planning in the EU Coastal and Exclusive Economic Zones’	Professionals (IOs, academics and administrative staff)	Belgium, Germany, Netherlands, Portugal, UK	50	UNI HB
Month 25	Presentation at the conference “Sustainable Development in National and International Law. 20 years after Brundtland”, held in Oslo on May 2 and 3	Academics, professionals	USA, Canada, Norway, Denmark, Sweden, Germany	50	UNI HB
Month 30	Seminar “Introduction to the law of the seas”	PhD students of Graduate School “Global Change in	World-wide	15	UNI HB

Actual Date	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
		the Marine Realm” (GLOMAR), University of Bremen			

g) Publications

Published, in press

Silvia Pestke, Die Zulassung von Offshore-Windenergieanlagen (The legal regime of offshore wind energy installations): in press (Nomos Verlag)

Gerd Winter, Natur ist Fundament, nicht Säule. 20 Jahre „nachhaltige Entwicklung“ als rechtspolitisches Konzept, in press (GAIA)

submitted

David Wille, Rechtsprobleme des Integrierten Küstenzonenmanagement (Legal Aspects of Integrated Coastal Zone Management). Submission planned for December 2007

Gerd Winter, *A fundament and two pillars*. The Concept of Sustainable Development 20 Years after the Brundtland Report. Submitted to Editors of collection of articles on sustainability, Oslo University

In prep. (with planned date of submission)

- All deliverables are meant to be published after completion. Submission planned for January- May 2008.

Furthermore:

- Caroline v. Kries and Gerd Winter, Meeresnutzungen und Meeresökosysteme als Rechtsproblem (Uses of seas and marine ecosystems in legal perspective). Submission planned for end of November 2007

h) Budget

The budget will generally be spent as planned within the remaining project time. However, the date of final delivery of D.10.5 and D 10.6 needs to be shifted to the end of April 2008.

WP Number: 11**WP Name: Project Management**

a) Workpackage objectives and starting point of work:

Overarching objective:

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

Specific objectives:

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.

Work for this reporting period started on May 1, 2007.

b) Progress towards objectives

Re (1): Monthly short progress reports from all work packages are being assembled, and disseminated to all members and partners. This initiative was started in November 2005.

WP11 continued to supervise the development of the INCOFISH portal services and is responsible for style and update of the “About us” page on the portal.

Re (2) The 2nd periodic report was prepared and submitted to the Commission in June 2007. It was approved by Commission representatives in October 2007.

Also, the deliverables due in the reporting period (D1.3, D1.4, D2.2, D4.3, D5.2, D6.3, D8.3, D10.2a, 3a, 3b, 4b) were carefully evaluated and commented upon. Guidance with regard to deliverables that are due next was given.

Re: (3): The 3rd pre-payment arrived shortly after the end of the period covered in this report and was dispersed to contractors during the preparation phase of this report. Confirmation of receipt from contractors is still ongoing.

Re (4): Synergy between workpackages is constantly encouraged, especially though cross-WP participation in workshops; this is working very well and all WPs are well connected with at least one or two other WPs.

c) Deviations from the workprogram (if any), and corrective actions taken/suggested

No deviations from the workprogram are to be reported for this period.

Section 3 - Other Issues

Budget modifications

Subcontracting costs for financial audits

A query made within the Consortium last year showed that ca. 55 000 Euros will have to be used by the end of the project for audits from external auditors in form of subcontracts. In the original budget funds have been set aside for audits but not declared as subcontracting funds.

A request for a rider to the contract was prepared and submitted to the Commission in June 07 with respect to this budget modification. An official permit from the Commission is still pending.

Extension of the 45 days allowance for final report preparation

Based on Article 7.3 of the INCOFISH contract another request has been sent to the Commission in June 07 asking for an extension of the final reporting time from mid-June 2008 to end of July 2008, including the use of funds (direct costs) for the payment of personnel engaged in the preparation of the report. An official permit from the Commission is still pending.

Budget shift from IfM-GEOMAR to CDC for book project

In October 2005 the INCOFISH Project Steering Committee approved the co-financing of a book project on "Coastal Fisheries of Latin America and Caribbean: A Synthesis of Fisheries Assessment and Management" in which INCOFISH scientists are involved. This was also supported by Dr. Nauen, the scientific officer of the first project year, who was present during the meeting in October 2005. The financial support should not exceed 10.000 Euros (basically costs for translations and printing) and should be covered from excess money originally set aside for audit costs.

The book project is proceeding well and the editors have now asked for a transfer of the financial contribution to finalize the work. Provided the Commission agrees to the use of funds for this purpose IfM-GEOMAR will shift 10 000 Euros to partner CDC since Dr. Chuenpagdee, the contact scientist for this partner and leader of WP6 is one of the editors of the book project.

Budget shift from IfM-GEOMAR to FIN for additional programming time of INCOFISH tools and data culling from Russian literature.

WP1 is in need of additional programming time to prepare tools from workpackages for upload on the INCOFISH portal. IfM-GEOMAR is prepared to shift 6000 Euros to FIN for this purpose. These additional funds would have to be added to the subcontracting costs of FIN for Worldfish Centre, Philippines. Thus, we are asking the permission from the Commission for FIN to use this amount for an additional subcontract with the World Fish Centre, Philippines.

FIN will invite a Russian colleague to its headquarters in Los Banos, Philippines to extract biological and occurrence data from Russian literature and incorporate them into FishBase. These data would feed into INCOFISH tools of workpackages 1, 3, and 7. IfM-GEOMAR will shift 2.400 Euros to FIN to pay travel, accommodation and per diems.

INCOFISH contractor UNEW to use funds for publication of ECOSPACE models in a special issue of the Fisheries Centre Reports series of UBC, Canada.

A problem that WP4 and WP5 have been facing with publications based on Ecopath (+Ecosim + Ecospace) models is that complete model descriptions are long, technical and tedious. Once this is packaged with aims and analysis for the paper it makes the paper long and loses focus. It is very much preferable if the model description can be published separately and is just referenced in subsequent analysis papers. However very few journals these days will just publish a model description, therefore WPs 4 and 5 have been looking in finding an institutional report series that is referenciable and will take a large number of the model reports in one volume. WP5 has arranged for it to be possible to publish all in an issue of the Fisheries Centre Research Reports (University of British Columbia, Canada). This would allow to swiftly publish technical descriptions of the models that have been developed and allow WPs4 and 5 to get on with the proper publications. There will be approximately 500-700 Euros printing and publishing costs associated with this. WP5 has the funds and is asking permission from the Commission to use them for this purpose?

Communications

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 is being maintained by regular meetings, by an electronic portal established for the project, 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.

INCOFISH participants communicate mainly by e-mail and through the INCOFISH website (www.incofish.org).

The Project Steering Committee, meeting once per year, met for the third time in March, 2007 (see 2nd periodic project report. If necessary, decisions can be taken by e-mail between meetings.

There are other specific WP meetings that partners and members are attending. The complete list of past and future meetings is attached as Annex II.

Use and dissemination of knowledge

All data, tools and concepts developed by INCOFISH are considered public goods and are made available through the INCOFISH web portal (www.incofish.org). 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.

Incoming day-to-day information on subjects considered to be of interest to INCOFISH objectives is being distributed to participants by the management team via e-mail.

A monthly newsletter - initiated in October 2005 - is informing INCOFISH participants and colleagues from partner projects on major achievements and working success within the project.

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 is also being 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 is an essential part of work packages 3, 5, 6, 7, 8 and 9. (For examples of success see Section 1 – Major achievements).

**Annex I
INCOFISH Deliverables**

Indications of date refer to month after project start.

Deliverables due during 1st reporting period are highlighted in green; due during 2nd reporting period are highlighted in blue, due during 1st half of 3rd reporting period are highlighted in pink.

WP no.	Del. no.	Deliverable name	Date due*	Actual / Forecast delivery date*	Indicator of success	Evidence by end of reporting period 2 1/2	Lead contractor
1	D1.1	Free online access to all data relevant to this project	19	19	Web portal available and working.	Web portal available and working at www.incofish.org .	FIN
	D1.2	Data Archive for all relevant data of D1.1 not archived elsewhere (database)	19	19	Database with archiving function for ICZM data available online.	So far, all relevant data sets could be archived in existing databases.	FIN
	D1.3	Online ICZM tools including coastal transects , and special step-by-step tools for common ICZM tasks	25	25	Available on INCOFISH portal.	Tools have been uploaded on INCOFISH portal according to schedule.	FIN
	D1.4	Electronic maps for all relevant marine organisms	25	25	Electronic maps available on portal.	More than 5000 maps available on portal.	FIN
	D1.5	Internet portal running	13	13	Internet portal running including Forum, Data Upload and Links at www.incofish.org .	Internet portal running including Forum, Data Upload and Links at www.incofish.org .	FIN
	D1.6	Maintenance of portal, uploading of WP data & tools	36	32	Improved version of web portal available; more than 10.000 visitors to ICZM tools & data per month; more than 100 citations in Google Scholar (http://scholar.google.com).	Web portal is being constantly improved: presently ca. 4.200 visitors to ICZM tools & data per month; over 20 citations in Google Scholar (http://scholar.google.com).	FIN
	D1.7	Scientific publications	36	36	At least five scientific papers published or submitted.	3 published, 3 in prep.	All WP members
2	D2.1	Historical data relating to selected key aquatic resources (stocks) in particular large marine ecosystems.	19	19	Creation of online database containing data of the change in stock abundance over time of various species in at least 10 LMEs.	Datasets comprising historical data relating to stock abundance in 10 LMEs (see section 1a) are available online.	UHULL

WP no.	Del. no.	Deliverable name	Date due*	Actual / Forecast delivery date*	Indicator of success	Evidence by end of reporting period 2 1/2	Lead contractor
	D2.2	Derived from D2.1, baseline data for the respective stocks and LMEs, for utilisation in WPs 4, 5, 7 and dissemination through WP 1.	25	25	Analyses conducted and baseline data available to indicated WPs.	Analyses conducted and baseline data available to indicated WPs.	All WP2 partners
	D2.3	Population of databases, interactions with WPs 1, 3, 4, 7, report on baseline data and analysis	34	34	Report available on INCOFISH portal.	The WP2 datasets will be fully populated by month 34. Report will be available on time.	UHULL
	D2.4	Scientific publications	34	34	At least five scientific papers published or submitted.	17 papers published, 1 submitted, 3 in prep.	All WP members
3	D3.1	Standardized electronic maps with predicted distribution (likelihood of occurrence) for all coastal zone species relevant to this project (web-based maps)	13	13	Maps, with species distributions, available on INCOFISH portal.	More than 5000 maps available on INCOFISH portal.	NRM
	D3.2	Before-After maps with predicted distribution before and after a certain point in time	19	23	Tool for creation of Before-After maps available, with examples for more than 10 key species.	Tool for creation of Before-After maps available, with almost 500 examples.	NRM
	D3.3	Maps with predicted seasonal distribution	26	24	Maps available on INCOFISH portal.	Seasonal maps available on INCOFISH portal for almost 200 species.	NRM
	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)	31	31	Maps available on INCOFISH portal.	Conceptual framework ready	NRM
	D3.5	Further population of maps, interactions with WPs	34	34	Final report available and satisfactory.	Reports from meetings showing interaction with WP2	NRM
	D3.6	Scientific publications	34	34	At least five scientific papers published or submitted.	1 book chapter published; 1 book published; 1 paper published; 1 paper due for resubmission; 5 papers being written just now, 2 other papers planned.	All WP members
4	D4.1	Data relevant for ecosystem modelling disseminated through WP 1	13	15	Ecosystem parameters available through portal for more than 100 ecosystems.	153 Ecopath models with corresponding database uploaded to INCOFISH portal.	CICIMAR / All WP members
	D4.2	Ecosystem models available for all INCOFISH ecosystems (models, month 19)	19	19	Models constructed by all contractors within WP4 will be available on the INCOFISH portal.	12 ecosystem models uploaded to INCOFISH portal.	All WP members

WP no.	Del. no.	Deliverable name	Date due*	Actual / Forecast delivery date*	Indicator of success	Evidence by end of reporting period 2 1/2	Lead contractor
	D4.3	Spatial ecosystem models available for all selected LME's (models, month 25)	25	25	Spatial models based on D4.2 available on INCOFISH portal.	Preparation of spatial models finished and uploaded to portal, Draft of Report with spatial models (currently under review) ready for upload to INCOFISH portal and available to WP5 leader to continue with MPA research.	CICIMAR / All WP members
	D4.4	Further development of models, interactions with WPs, final report (report, month 34)	34	34	Final report available and satisfactory		CICIMAR
	D4.5	Scientific publications	34	34	At least five scientific papers published or submitted.	18 papers published / in press; 13 submitted, 25 in prep.	All WP members
5	D5.1	MPA review	16	19	Review available on INCOFISH portal, including links to relevant partners and data sources.	Review available on INCOFISH portal, including links to relevant partners and data sources.	UNEW
	D5.2	Model based analysis of MPA size and placement	28	28	Report produced and available on INCOFISH portal.	Report submitted to coordinator for revision, revised version pending.	UNEW
	D5.3	Conceptual model for MPA planning	31	31	Concept for MPA planning available on INCOFISH portal together with "web wizard" and access to relevant data.	Conceptual model and guidance tool preparation in progress	UNEW
	D5.4	Final Report on WP5	34	34	Final Report available and satisfactory.		UNEW
	D5.5	Scientific publications	34	34	At least five scientific papers published or submitted.	1 paper published, 1 volume in press, 5 papers submitted, 5 in prep.	All WP members
6	D6.1	Report on 'Concepts and tools for ICZM, with a special focus on stakeholder involvement'	13	13	Review of ICZM tools available on INCOFISH portal.	Review of ICZM tools available on INCOFISH portal.	IGS
	D6.2	Coastal Transects Software to classify and display common typology of coastal cross-sections	17	17	Prototype of software available on INCOFISH portal.	CTAM was successfully launched at CZAP Conference in Batam; report describing CTAM model available on INCOFISH portal.	CDC/ UNIABDN

WP no.	Del. no.	Deliverable name	Date due*	Actual / Forecast delivery date*	Indicator of success	Evidence by end of reporting period 2 1/2	Lead contractor
	D6.3	Decision-making framework based on coastal transect analysis and related software	25	25	-Decision framework and related data and software available on portal.	CTAM Phase II is being developed to include the analysis of interactions and flows; two prototype models have been incorporated and are available on the INCOFISH portal.	CDC
	D6.4	Testing of framework, interactions with other WPs, final report	34	34	Final report available and satisfactory.	Potential case studies are three systems in the Gulf of Thailand, one in the North Sea, one in the Gulf of California, and one in Nicaragua.	CDC
	D6.5	Scientific publications	34	34	At least five scientific papers published or submitted.	1 published, 2 submitted, 2 in prep.	All WP members
7	D7.1	Review of indicators and selection of suitable, simple indicators	7	7	Selection and justification of simple indicators published on INCOFISH portal.	Selection and justification of simple indicators published on INCOFISH portal.	IFM-GEOMAR
	D7.2	Database containing necessary biological parameters for application of indicators	13	13	Database with data needed for indicators available online, for more than 500 species.	Parameters are available for over 500 species.	IFM-GEOMAR/FIN
	D7.3	Internet-based wizard to help in application of indicators	19	19	Indicator wizards available on portal.	Wizard available for use on INCOFISH portal, see www.incofish.org/donteatbabies.php	IfM-GEOMAR / FIN
	D7.4	Final report (after testing of indicators with real-world fisheries and stakeholders)	34	34	Final report available and satisfactory.	Testing of indicators ongoing	IfM-GEOMAR
	D7.5	Scientific publications	34	34	At least five scientific papers published or in press.	6 published, 2 submitted, 6 in prep.	All contractors
8	D8.1	Economic & Social Database with information relevant for ICZM	13	13	Database with social and economic information relevant for ICZM available on INCOFISH portal.	Several socio-economic databases have been created (see report) and are available from the INCOFISH portal.	All contractors (CDC)
	D8.2	Valuation of ecosystem goods and services	19	19	First report on valuation of ecosystems available on INCOFISH portal.	Report available on INCOFISH portal.	All contractors (UNAM).
	D8.3	Analysis of ineffective management: Indicators	25	30	Report and wizard on economic indicators available on INCOFISH portal.	Report submitted to coordinator and reviewed. Almost ready for upload to INCOFISH portal.	All contractors (Tromsø).

WP no.	Del. no.	Deliverable name	Date due*	Actual / Forecast delivery date*	Indicator of success	Evidence by end of reporting period 2 1/2	Lead contractor
	D8.4	Policy options for sustainable fisheries and coastal management	31	32	Report on policy options available on INCOFISH portal.	Work on this deliverable is ongoing. Each project team member will contribute at least one policy option derived from the results of their work on this project. These will be compiled into a report by the WP leader and reviewed by all.	All contractors (UNAM).
	D8.5	Final report	34	34	Final report available and satisfactory.	Each project team member will write up his/her contribution to the report, to be compiled by WP leader, and reviewed by all members before submission.	All contractors (UNAM).
	D8.6	Scientific publications	34	34	At least five scientific papers published or submitted.	More than 5 primary literature papers published.	All contractors (UNAM).
9	D9.1	Criteria to determine carrying capacity of MPAs for ecotourism	10	12	Report on carrying capacity available on INCOFISH portal, including links to relevant ecotourism data sources.	Report on carrying capacity available on INCOFISH portal, including links to relevant ecotourism data sources. www.incofish.org/Workpackages/WP9/WP9Downloads.php	CDF, ECOLAP, Fundación Malpelo
	D9.2	Indicators to monitor impact of ecotourism on MPAs	21	24	Ecotourism impact report and wizard available on INCOFISH portal.	Ecotourism impact report available on INCOFISH portal; prototype wizard to follow soon (month 32) www.incofish.org/Workpackages/WP9/WP9Downloads.php	CDF, ECOLAP, Fundación Malpelo
	D9.3	Testing of concepts and indicators, interactions with WPs	33	33	Final report available and satisfactory.	Application and evaluation of ecotourism concepts, standards and indicators between WP's and MPA stakeholders and managers is in progress.	CDF, ECOLAP, Fundación Malpelo
	D9.4	Scientific publications	33	33	At least five scientific papers published or submitted.	Dissemination of results to stakeholders, park administrators and academic community. 5 publications in prep.	CDF, ECOLAP, Fundación Malpelo
10	D10.1	Report on international and national legal commitments to sustainable marine fisheries (with database)	10	8 + 14	Report with database available on INCOFISH portal	Report with database available on INCOFISH portal	UNI HB

WP no.	Del. no.	Deliverable name	Date due*	Actual / Forecast delivery date*	Indicator of success	Evidence by end of reporting period 2 1/2	Lead contractor
	D10.2	a) Report on the promotion and management of marine fisheries in Brazil: focus on participatory approach to MPA management D 10.2a.1 Focus on coastal zone D 10.2a.2 Focus on EEZ	25	25	Report available on INCOFISH portal.	Report available on INCOFISH portal.	APPRENDER
		b) Report on the promotion and management of marine fisheries in Nicaragua: focus on communal approaches outside MPAs with local property rights	13	32	Report available on INCOFISH portal.	Work in progress.	CABAL S.A.
	D10.3	a) Report on the promotion and management of marine fisheries in Namibia D 10.3.1 Focus on coastal zone D 10.3.2 Focus on EEZ	25	25	Report available on INCOFISH portal.	Report available on INCOFISH portal.	UNAM
		b) Report on the promotion and management of marine fisheries in Kenya: focus on communal approaches outside MPAs and without property rights	-	25	Report available on INCOFISH portal.	Report available on INCOFISH portal.	KESCOM
	D10.4	a) Report on the promotion and management of marine fisheries in Indonesia D10.4.1 Focus on coastal zone D10.4.2 Focus on EEZ	25	32	Report available on INCOFISH portal.	Final draft under revision.	UNI HB
		b) Report on the promotion and management of marine fisheries in Mexico	-	28	Report available on INCOFISH portal.	Report (in Spanish) available on INCOFISH portal.	
	D10.5	Report on the promotion and management of marine fisheries in EU in comparison to the other selected countries D10.5.1 Focus on coastal fishery	31	33	Report available on INCOFISH portal.	Work in progress	UNI HB
	D10.6	a) Summary comparison of national legal instruments for the promotion and management of marine fisheries	-	33	Report available at INCOFISH web portal.	Work in progress	UNI HB

WP no.	Del. no.	Deliverable name	Date due*	Actual / Forecast delivery date*	Indicator of success	Evidence by end of reporting period 2 1/2	Lead contractor
		b) Allocation and management of offshore fisheries resources: an in-depth legal analysis of instruments in comparative perspective	31	34	Report available at INCOFISH web portal.	Work in progress	UNI HB
	D10.7	Overall synthesis; recommendations	34	34	Report available at INCOFISH web portal.		UNI HB
	D10.8	Scientific Publications	34	34	At least five scientific papers published or submitted.	Four scientific papers published or submitted.	All contractors
11	D11.1	First Annual Progress Report	13	14	Report delivered to European Commission.	Delivered on time	IfM-GEOMAR
	D11.2	Second Annual Progress Report	25	26	Report delivered to European Commission.	Delivered on time	IfM-GEOMAR
	D11.3	Third and Final Report	36	38	Reports delivered to European Commission.		IfM-GEOMAR

Annex II: INCOFISH Milestones

Milestones within 1st reporting period are highlighted in yellow; within 2nd reporting period are highlighted in orange, within first half of 3rd reporting period are highlighted in olive-green.

W P No .	Milestone no.	Milestone name	Date due	Actual /Forecast delivery date	Comments	Lead contractor
1	M1.1	First workshop	6	6	Conducted in conjunction with start-up workshop (see M11.1)	FIN
	M1.1.1	Intermediate workshop	-	13	Additional milestone. The scheduling of an additional workshop was considered beneficial for overall performance and improvement of the INCOFISH portal after. Workshop was held in Los Baños, Philippines in May 2006.	FIN
	M1.2	Second workshop	26	22	Conducted in conjunction with mid-term workshop (see M11.4.1)	FIN
2	M2.1	First workshop	5	6	Conducted in conjunction with start-up workshop (see M11.1).	UHULL
	M2.1.1	Intermediate workshop	-	11	Additional milestone; workshop held in Tallin, Estonia, in March 2006, to examine concept of shifting baselines	UHULL
	M2.1.2	Intermediate workshop	-	23	Held in conjunction with mid-term workshop	UHULL

W P No .	Milestone no.	Milestone name	Date due	Actual /Forecast delivery date	Comments	Lead contractor
	M2.2	Second workshop	27	27	Setting baselines	CDF
	M2.2.1	Intermediate workshop	-	30	Synthesising results	UHULL
3	M3.1	First workshop, review data body	5	6	Conducted in conjunction with start-up workshop (see M11.1)	NRM
	M3.1.1	Intermediate workshop	-	12	Additional milestone. Not all aspects could be clarified during the Start-up workshop. During the intermediate workshop the WP3 work plan was adjusted to comply with requirement to coordinate with other workpackages and be scheduled to avoid overlap. Was held in Campinas, Brazil, in April 2006.	NRM
	M3.2	Second workshop	27	23	To review maps, tools, etc. Held in conjunction with Mid-Term workshop in Mexico	NRM
4	M4.1	First workshop	5	6	Conducted in conjunction with start-up workshop (see M11.1). Partners learned about rational of the project, global strategies of the whole project and WP's, first synergies were established. Partners got to know each other.	IfM-GEOMAR
	M4.1.1	Intermediate workshop	-	10	Additional milestone. Workshop organized in cooperation with WP5 in London, UK, in February 2006. The work plan was discussed, study cases defined, as well as criteria for models standardization and comparisons.	UNEW & CICIMAR
	M4.1.2	Overseas consultancy	-	12, 13, 17	Additional milestone. Overseas consultancy for construction of East China Sea ecosystem model consisting of three meetings. Because of poor experience of ECNU and NIES in modelling with the Ecopath with Ecosim suite of programs a particular strategy was developed to guarantee to fulfil deliverable D4.2 for all the partners. It includes an overseas consultancy in three major steps: Two meetings in China (hosted by ECNU) with an Ecopath model constructed as final result. The third step, a meeting in Mexico (hosted by CICIMAR) for model calibration, time simulation based on Ecosim and an introduction to Ecospace (spatial modelling).	ECNU (in collaboration with CICIMAR, UNEW and NIES)
	M4.2	Second workshop	13	17	Workshop on Ecosim	MCM-DEAT / CICIMAR
	M4.3	Third workshop	19	23	An Ecospace workshop was organized in March 2007 with the objective to construct spatial ecosystem models (deliverable D4.3) until May 2007.	CICIMAR
	M4.4	Fourth workshop	30	32	To present Ecosystem models, and to prepare meta-analysis.	CICIMAR
5	M5.1	First workshop	5	6	Conducted in conjunction with start-up workshop (see M11.1)	UNEW
	M5.1.1	Intermediate workshop	-	10	Additional milestone. The project start up meeting in Kiel enabled many of the early issues to be covered, but not all. Therefore, an intermediate workshop has been organized in cooperation with WP4 in London, UK, in February 2006.	UNEW / CICIMAR

W P No .	Milestone no.	Milestone name	Date due	Actual /Forecast delivery date	Comments	Lead contractor
	M5.2	Second workshop	19	23	Analysis of spatial models. Held in conjunction with INCOFISH Mid-Term workshop in La Paz, Mexico.	UNEW
	M5.3	Third workshop	25	29	Develop and finalise frameworks for D5.3. This workshop is being timed to coincide with an MPA conference of which the INCOFISH project is a partner organiser, allowing more efficient usage of the WP travel budget.	UNEW
6	M6.1	First workshop	6	6	Conducted in conjunction with start-up workshop (see M11.1).	CDC
	M6.1.1	Intermediate workshop	-	9	Additional milestone. Workshop held in Aberdeen, UK, in January 2006.	CDC, IGS, UNIABDN
	M6.1.2	Intermediate workshop	-	13	Additional milestone. Workshop organized in cooperation with WP8 in Bangkok, Thailand, in May 2006.	CDC / UNAM
	M6.2	Second workshop	25	23	Conducted in conjunction with project mid-term workshop (see M11.4.1)	CDC + UNAM
7	M7.1	First Workshop	5	6	Conducted in conjunction with start-up workshop (see M11.1).	IfM-GEOMAR
	M7.2	Second Workshop	20	20	Workshop organized by IMARPE and IfM-GEOMAR in Lima. Launch of fishruler "chikipez" for Peru.	IfM-GEOMAR
	M7.2.1	Additional workshop	-	23	Conducted in conjunction with mid-term workshop (see M11.4.1)	IfM-GEOMAR
8	M8.1	First Workshop	5	6	Conducted in conjunction with start-up workshop (see M11.1).	UNAM
	M8.1.1	Intermediate workshop	-	13	Additional milestone. Workshop held in Bangkok, Thailand, in cooperation with WP6.	UNAM / CDC
	M8.2	Second Workshop	25	23	To assess findings and adjust actions. Conducted in conjunction with mid-term workshop (see M11.4.1).	UNAM
	M8.2.1	Intermediate workshop	-	27	In conjunction with ICZM conference in Oregon, USA	UNAM
	M8.3	Third Workshop		32	Will take place from Dec 8 – 11, 2007 in Windhoek, Namibia.	UNAM
9	M9.1	First workshop	5	6	Conducted in conjunction with start-up workshop (see M11.1).	CDF
	M9.1.1	Intermediate workshop	-	12	Additional milestone. Intermediate workshop was held in Bogota in April 2006. Drafting of 1 st deliverable with all WP9 partners.	CDF
	M9.2	Second workshop	19	21	To compare results, adapt monitoring protocols and define changes of strategy.	CDF
	M9.3	Third workshop	31	31	To discuss results and prepare final report.	CDF
10	M10.1	First workshop	5	6	Conducted in conjunction with start-up workshop (see M11.1).	UNI BREMEN
	M10.1.1	Intermediate workshop	-	14	Additional milestone, held in June 2006 in Bremen, Germany.	UNI BREMEN
	M10.1.2	Participants meeting	-	23	In conjunction with Mid-Term workshop (see M11.4.1)	UNI BREMEN
	M10.2	Second workshop	29	29	To review and finalize work	UNI BREMEN

W P No	Milestone no.	Milestone name	Date due	Actual /Forecast delivery date	Comments	Lead contractor
11	M11.1	Start-up workshop for all INCOFISH members	5	6	Start-up workshop took place in Kiel, Germany, in October 2005, with 52 participants from 22 countries. All WPs were provided space and time to conduct their 1 st WP workshop during the start-up workshop.	IfM-GEOMAR
	M11.2	First Steering Committee meeting	5	6	Held in conjunction with start-up workshop in October 2006 in Kiel, Germany (see M11.1).	IfM-GEOMAR
	M11.3	Second Steering Committee meeting	12	13	Conducted in conjunction with intermediate workshop of WP1 (see M1.1.1).	IfM-GEOMAR
	M11.4	Third Steering Committee	24	24	Conducted in conjunction with mid-term workshop	IfM-GEOMAR
	M11.4.1	Mid-Term Workshop	-	23	Additional milestone, held for all project participants in March 2007 in La Paz, Mexico.	IfM-GEOMAR
	M11.5	Final Steering Committee meeting	34	34		IfM-GEOMAR

Annex III: INCOFISH Budget Overview with Budget Shifts

Parti c. no.	Participant short name	Cost Model	Original EC grant to the budget	Budget Shifts March 07	Total eligible costs (Euro)	Revised grant to the Budget Old	Budget Shifts scheduled for Dec 07	Revised grant to the budget New
1	IFM-GEOMAR	AC	1127800	-30.700,00	1.097.100,00	1.097.100,00	-18.100,00	1.079.000
2	APRENDER	AC	40200		40.200,00	40.200,00		40.200,00
3	IP	AC	22200		0,00	0,00		0,00
4	CABAL S.A.	FC	34500		69.000,00	34.500,00		34.500,00
5	CDC	AC	348000		348.000,00	348.000,00	9.600,00	357.600,00
6	CDF	AC	254400		254.400,00	254.400,00		254.400,00
7	CEFAS	FC	164600		329.200,00	164.600,00		164.600,00
8	CICIMAR	AC	340200	2.520,00	342.720,00	342.720,00		342.720,00
10	SDU	AC	45000		18.697,49	18.697,49		18.697,49
11	CRIA	AC	72000		72.000,00	72.000,00		72.000,00
12	CRODT	AC	62400		62.400,00	62.400,00		62.400,00
13	DINARA	AC	48000		48.000,00	48.000,00		48.000,00
15	ECNU	AC	59400		59.400,00	59.400,00		59.400,00
16	Uni Bremen	AC	173120	23.680,00	193.800,00	196.800,00		196.800,00
17	FIN	AC	446400		446.400,00	446.400,00	8.500,00	454.900
19	IMARPE	AC	33960		33.960,00	33.960,00		33.960,00
21	IGS	FCF	30000		60.000,00	30.000,00		30.000,00
22	UNIPAD	AC	28800		28.800,00	28.800,00		28.800,00
23	MCM DEAT	AC	50400		50.400,00	50.400,00		50.400,00
24	MEI	AC	43200		43.200,00	43.200,00		43.200,00
25	UHULL	AC	138600		138.600,00	138.600,00		138.600,00
26	NIES	AC	52200		52.200,00	52.200,00		52.200,00
27	NRM	AC	232200		232.200,00	232.200,00		232.200,00
30	PRIMEX- FAME	AC	18000		18.000,00	18.000,00		18.000,00
31	PSU	AC	34800		34.800,00	34.800,00		34.800,00
32	Fundacion Malpelo	AC	96000		96.000,00	96.000,00		96.000,00
33	UNAL	AC	43200		43.200,00	43.200,00		43.200,00
34	UNAM	FCF	256200	2.400,00	517.200,00	258.600,00		258.600,00
35	Uni Concepcion	AC	23700		23.700,00	23.700,00		23.700,00
36	UNEW	AC	255600		255.600,00	255.600,00		255.600,00
37	UiT	AC	76800		76.800,00	76.800,00		76.800,00
38	UWC	AC	14400		14.400,00	14.400,00		14.400,00
39	UNIABDN	AC	136800		136.800,00	136.800,00		136.800,00
41	USFQ	AC	64000		64.000,00	64.000,00		64.000,00
43	KESCOM	AC	32400	2.100,00	34.500,00	34.500,00		34.500,00
44	IOUSP	AC	0		22.200,00	22.200,00		22.200,00
45	RUC	AC	0		26.302,51	26.302,51		26.302,51
	Total		4899480	0,00	5.384.180,00	4.899.480,00	0,00	4.899.480,00