

# Abstracts

Abad, Diwi Twi - Wim Douven - Frank R. Rijsberman .....	3
Abakerli, Stefania .....	3
Acheson, James M. ....	4
Alban,Frédérique - Jean Boncoeur.....	4
Aldrej Vázquez, José Antonio - Rubén C. Lois González, .....	5
Allut,García, Antonio - Juan Freire - Alvaro Barreiro - David E. Losada. ....	5
Amarasinghe, Oscar.....	6
Apostle, Richard - Olavur Waag Høgnesen - Andrias Reinert .....	6
Bailey, Peter.....	6
Baptista, Carlos - Luís Costa.....	7
Barrett, Gene.....	7
Bender, Andrea.....	7
Billé, Raphaël - Laurent Mermet .....	8
Blanchet, Gilles.....	8
Boissevain, Jeremy .....	9
Broad, Kenneth.....	9
Brown, David Nathaniel .....	9
Cesar, Herman S.J.....	10
Charles, Anthony - Chris Milley.....	10
Clifton, Julian.....	10
Collet, Serge.....	11
Cook, Beverly .....	11
Copes, Parzival .....	12
Davydov, Alexandre N. ....	12
Degnbol, Poul .....	13
Delaney, Alyne .....	13
Densen, van, Wim L.T.....	14
Diegues, Antonio Carlos.....	15
Dotinga, Harm M.....	15
Ducrocq, Mathieu - Abdelkader Ould Mohamed Saleck - Jean Worms.....	16
Eikeland, Sveinung .....	16
Elliott, Brian - Ralph Matthews - Susan Elliott .....	16
Frangoudes, Katia - Denis Bailly .....	17
Gorter, Waling T.....	18
Guevara-Gil, Armando .....	19
Gupta, Manoj .....	19
Hara, Mafaniso - Moenieba Isaacs.....	20
Harkes, Ingvild.....	20
Haughton, Milton O.....	21
Heijden, van der, P.G.M. - P. Spliethoff - M. Staljanssens.....	21
Helden, van, Flip.....	22
Hoeksema, Bert W.....	23
Hoekstra, Jeljer .....	23
Holm, Petter.....	23
Ibrahim, Yahaya - Norsiah Ahmad .....	24
Jambo, Collins M.- Sam Mapila .....	24
Jentoft, Svein .....	25
Jentoft, Svein - Knut H. Mikalsen - Hans- Kristian Hernes.....	25
Johansen, Mayvi B.....	25
Johnson, Derek Stephen.....	26
Just, Roger - Monica Minnegal - Peter D. Dwyer.....	26
Kearney, John .....	26
Kleinen, John - Nguyen, van, Chinh - Zwieten, van, Paul.....	27
Kousis, Maria.....	27
Kulbicki, M - J. Ferraris - P. Labrosse.....	28
Kumar, P.K. Dinesh.....	28
Levieil, Dominique .....	28

Llaneza Osuna, José Luis.....	29
Lutz, S. - L. Pendleton.....	30
Macinko, Seth.....	30
Macinko, Seth.....	30
Mahon, Robin - Sharon Almerigi - Patrick McConney - Christopher Parker - Leo Brewster.....	31
Martiñan, Piñeira M. J. - González Sánchez, F. J.....	31
Mathiesen, Christoph - Nielsen, Jesper, Raakjær.....	31
Matthíasson, Thórólfur.....	32
McCay, Bonnie J.....	32
McGaw, Richard.....	33
Menzies, Charles R.....	33
Mondardini, Gabriella.....	33
Nielsen, Jesper Raakjær.....	34
Neumann, Frank.....	34
Onyango, Paul.....	35
Oostenbrugge, van, J.A.E. - W.L.T. van Densen - M.A.M. Machiels.....	35
Otterstad, Oddmund.....	36
Owen, Daniel.....	36
Pálsson, Gísli - James R. McGoodwin.....	37
Pascual, Jose.....	37
Píriz, Clara.....	37
Píriz, Laura.....	38
Rajan, J.B.....	38
Rajan, J.B.....	39
Raux, Pascal - Denis Bailly - Katia Frangoudes.....	39
Rogelja, Nataša.....	40
Salmi, Pekka.....	40
Salo, Ken.....	41
Seixas, C.S. - F. Berkes.....	41
Selwijn, Tom.....	42
Semedi, Pujo.....	42
Sinclair, Peter R.....	42
Skorstad, Berit - Audun Sandberg.....	43
Soma, Katrine.....	43
Tarte, Sandra.....	44
Teitler, G.....	44
Toufique, Kazi Ali.....	44
Tunje, Joseph G.....	45
Varjopuro, Riku - Pekka Salmi.....	45
Varjopuro, Riku - Timo Peuhkuri.....	46
VanderZwaag, David - Gloria Chao - Mark Covan.....	46
Vlaming, Gerrit- Jan.....	46
Weber, Eberhard.....	47
Wiber, Melanie G.....	47
Wilson, Doug.....	48
Wilson, Julie C. - Brian Garrod - David M. Bruce.....	48
Young, James A. - Andrew P. Smith.....	49

## *Changes of power, its influences to the ICZM and the EIA process in Banten Bay, Indonesia*

*Abad, Diwi Twi - Wim Douven - Frank R. Rijsberman*

Indonesian policies have evolved significantly toward a democratic system since 1998. The passage of new acts and the changes of governmental cabinets to promote more decentralised process in governance system bring more power to the local governments. With the rapid growth of coastal areas in Java Island, has brought many concerns toward the sustainable use of coastal area as in the Banten bay. The overall problems within the area have been identified as, the need of information, communication and participation to improve the ICZM. Two main objectives have been developed as to better understanding of the natural resources and to incorporate this knowledge into an institutional framework to support the local government in co-ordinating coastal zone management, through the use of Environmental Impact Assessment (EIA). An analysis of the EIA guidelines, review of the EIS reports, interview of respondents on the use of sources of information to compose and to review the EIS, observation of the EIS-review meetings, and interview of local operators on environmental monitoring have been conducted. Some results have been identified. In all EIA guidelines reviewed, marine environmental information was lacking. The sources of information used to compose and to review the EIS are insufficient. All EIS reports showed weakness in all areas of assessments except in area of general description. The biology component received limited attention in the discussion of all EIS-review meetings observed. Most of the parameters are seldom being monitored by local operators. In conclusions, quality of environmental information in particular biology component in the guidelines and in the EIA practice is insufficient, priority of information sources to compose and to review the EIS are lacking, information sharing is limited, and monitoring activity is lacking. Improvement of guidelines, integration of existing information and information needs, integration of management strategies, development and improvement of local capacity for coastal monitoring have been recommended to the improvement of the EIA process in Indonesian coastal zones. This research is carried out in the collaboration of the Indonesian-Dutch research programme on coastal zone management in Banten Bay, and is funded by NOW/WOTRO and the Indonesian government.

Keywords: Indonesia, decentralisation, coastal zone, ICZM, EIA.

*Dwi Abad Tiwi, the International Institute for Infrastructural, Hydraulic and Environmental, Engineering, Delft, the Netherlands / the Indonesian Agency for the Assessment and Application of Technology, Jakarta, Indonesia.*

*W.J.A.M. Douven, the International Institute for Infrastructural, Hydraulic and Environmental Engineering, Delft, the Netherlands. F. R. Rijsberman, the International Water Management Institute, Sri Lanka*

## ***'A Critique of Development and Conservation Policies in Environmentally Sensitive Regions in Brazil'***

*Abakerli, Stefania*

More than a strategy for environmental conservation, protected area paradigm has represented a specific conception of nature–society relationship. Originated in a context of capitalist consolidation, rapid urbanisation and frontier development in the United States, this paradigm has given rise to a ‘politically viable rationale’ in which utilitarian use of natural resources by tourism development would ensure nature preservation. This political *rationality* has deeply influenced environmental policies in developing countries, fostering a paradoxical model in the history of nature preservation. Indeed, it has brought into play the power relations and diverse interests that have shifted patterns of local nature–society interaction, configuring a complex politicised environment. Established in ‘isolated’ regions, protected areas have been implemented often by top-down approaches, disrupting resident people’s livelihoods strategies through conflicts over the control of natural resources. Understanding the implications of development and conservation policies on resident peoples’ livelihoods may represent a starting point for an integrated developmental conservation policy towards the promotion of sustainable livelihoods in environmentally sensitive regions in developing countries. These issues are analysed in the coastal region of the Lençóis Maranhenses National Park in Brazil. This paper argues that the context facing the region reveals a *standardised* paradigm marked by the absence of wider ecological criteria informing nature protection and a disregard for the strengthening of sustainability in existent socio-economic dynamics. The regional development and conservation policies have not only promoted tensions between resident people’s livelihoods and the protected area paradigm, but also reinforced the legitimisation of social exclusion and environmental disruption under the prevalent rhetoric of nature protection

and tourism development. This context brings into question the appropriateness of the adoption of prevalent orthodox development and reactive conservation paradigms in traditionally inhabited environmentally sensitive regions in developing countries.

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***The Evolution of a Threat System: Changing Territorial Strategies in the Maine Lobster Industry.***

*Acheson, James M.*

Although territoriality is ubiquitous in human societies, very little information exists on the development of territories develop. This paper describes the development of the territorial system in the Maine lobster industry over the course of the past century using evolutionary game theory. In this industry, the territorial system developed in three stages. In the late 1800's, exclusive areas were in shallow water areas; by the middle of the 20<sup>th</sup> Century, in the middle of bays areas where fishers from only two or three harbors were allowed to fish and others were excluded; in the third stage large numbers of fishers were exploiting offshore areas where no efforts were made to establish territorial control. In all three stages, territorial rights are established when one group of fishers is able to occupy an area and prevent others from fishing there. Decisions to defend and invade areas can be modeled as games among fishers from different harbors. The structure of these games differs due to changes in the ecology, technology and the number of harbors involved. The payoff of the games reflect a large number of variables including the subtractability of the resource, the value of the fishery, transportation costs, cost of monitoring traps, the risks of prosecution, and the transactions costs of organizing a political team. Since the "rights" to an area are not recognized by the state, and so many factors can change the payoffs of the games, strategies can change quickly making the territorial system highly unstable.

*Acheson, James M. Department of Anthropology and School of Marine Science, University of Maine, Orono, Maine U.S.A. 04469*

***Potential Interest of fishermen in developing a boat-chartering activity, in a context of marine park. The case of the Iroise Sea, Western Brittany, France***

*Alban, Frédérique - Jean Boncoeur*

This paper investigates the possibility of lowering anthropic pressure on fish stocks by developing a pluri-activity in the inshore fishing industry, combining commercial fishing with boat-chartering for recreational fishing or / and eco-tourism. The area under investigation is the Iroise Sea, Western Brittany, and France. Several favourable conditions are met in this area, where a creation of a national marine park is planned. Among them, fishermen are really involved in the process of the marine protected area implementation and they would like to be in charge of the co-management of this area.

On the basis of a sample survey, the paper first analyses the potential demand for guided boat-tours on commercial fishing boats, devoted to recreational fishing and / or discovering the area. Secondly, it deals with the potential interest of fishermen to develop such a part-type activity and the economic incentives. Then, it investigates the institutional obstacles, which could disturb the development of this pluri-activity.

Keywords: marine protected area, eco-tourism, recreational fishing, pluri-activity, Iroise sea.

*Centre de Droit et d'Economie de la Mer  
Université de Bretagne Occidentale*

### *The Problem of Fishery Statistics in Spain*

*Aldrey Vázquez, José Antonio - Rubén C. Lois González,*

This paper consists of two parts, which are both distinct and complementary. The first part points at the problems faced by researchers to gather information about fish arrivals in Spanish ports. Researchers encounter mainly two liabilities. One is the absence of standardised statistics for the whole of Spain since 1986. This problem stems from the Public Administration's lack of concern about providing information on this topic. As a result, more arrivals enter the ports than are ever registered. Thus, according to the FAO, only 1,1 million mt were registered in the 1990s, whereas inner sources acknowledged 1,3 million mt, and ports 1,55 millions. Besides, fishery statistics are designed by each Comunidad Autónoma –ten out of the seventeen Comunidades Autónomas existing in Spain are on the coast. Disparity is the norm, since these regional administration do not have unified methodologies or criteria in terms of gathering and publishing information. The second part of the paper points at the ways in which these statistics can be used in order to avoid the problems that have been highlighted.

*Rubén C. Lois González, University of Santiago de Compostela  
José Antonio Aldrey Vázquez, Autonomous University of Madrid*

### *Integration of fishers' ecological knowledge in fisheries biology and management using Knowledge Representation [Artificial Intelligence]*

*Allut, García, Antonio - Juan Freire - Alvaro Barreiro - David E. Losada.*

The fisheries crisis of the last decades and the overexploitation of a great number of stocks (FAO 1995) have been due mainly to the inadequacy of scientific knowledge, uncertainties in assessments and/or failures of the management systems (McGoodwin 1990, Ludwig et al. 1993, Hilborn et al. 1995). These problems are critical when the management of coastal ecosystems and artisanal fisheries is involved. These systems show a great complexity due to the high number of human factors that influence their functioning and the fishing activity. The small-scale coastal fisheries have a much greater social significance than the offshore industrial fisheries, despite of the larger economical importance of the later (McGoodwin 1990, FAO 1995, Orensanz & Jamieson 1998).

The artisanal coastal fisheries in Galicia (NW Spain) (Xunta de Galicia 1992) are in a general state of overexploitation derived from the mismatch between management (derived implicitly from models designed for industrial finfisheries) and the biological and socio-economic context (Freire & García-Allut 1999). Freire & García-Allut (2000) proposed a new management policy (based in the establishment of territorial users' rights, the involvement of fishers in the assessment and management process in collaboration with the government agencies, and the use of protected areas and minimum landing sizes as key regulations) to solve the above problems. Along with a new management system, research should pay special attention to the design and use inexpensive and rapid methodologies to get relevant scientific data, and to introduce the local knowledge or traditional ecological knowledge of the fishers in the assessment and management process.

In this paper, we analyse the values and characteristics of fishers' ecological knowledge (FEK) (see Mackinson & Nottestad 1998, Neis et al. 1999). Using the artisanal coastal fisheries of Galicia as a case study, we present the objectives of the integration of FEK in fisheries biology and management and propose a methodology for that goal. The use of the Artificial Intelligence (AI) as a tool for the analysis and integration of FEK is discussed, and the role of a branch of AI, Knowledge Representation, is described to show the epistemological and technological adequacy of the chosen languages and tools in a non-computer science forum.

*Antonio García-Allut, Facultade de Socioloxía, Universidade da Coruña, Campus de Elviña s/n, E-15071 A Coruña, Spain - Juan Freire, Departamento de Biología Animal, Biología Vexetal e Ecoloxía, Universidade da Coruña, Campus da Zapateira s/n, E-15071 A Coruña, Spain. - Alvaro Barreiro, David E. Losada. AILab. Departamento de Computación. Facultade de Informática, Universidade da Coruña, Campus de Elviña, 15071 A Coruña, Spain.*

## ***Modernisation of marine small-scale fisheries in Sri Lanka and emerging conflicts among resource users***

*Amarasinghe, Oscar*

The process of modernisation of marine small-scale fisheries in Sri Lanka was mainly characterised by, mechanising the traditional crafts, introduction of mechanised crafts, and the introduction of new fishing gear and techniques. However, all fishworker categories have not equally benefited from the process of modernisation of fisheries and, new opportunities in resource exploitation, have also given rise to conflicts among resource users.

Conflicts among fishworkers using different technological categories and those using legal and illegal methods of fishing are well evident. Traditional institutional forms of managing common property resources have disintegrated under the forces of market penetration and technological change. Although, various ordinances and acts have made sufficient provisions to prohibit the use of destructive fishing gear, their implementation remains very weak.

Entry of outsiders into fisheries is a major cause of erosion of employer-employee relations, especially in the deep-sea sector. Asset owners and crew workers form two classes, who are in direct opposition to each other. In this class conflict, the status of the crew workers has deteriorated significantly.

Conflicts also exist between fishworkers and fish merchants. The former borrow from local fish merchants against the promise of handing over all their future catches to the lender-merchant. The merchants resort to extracting higher surpluses from their tied fishworkers by under-reporting market prices, giving rise to increased tension between the two groups.

In the absence of traditional institutional forms guaranteeing equal access and sustainability of resources, the state has an important role to play, by way of designing and enforcing rules and regulations which will ensure harmony among resource users and prevent degradation of open access resources.

Keywords: modernisation, institutions, conflicts.

## ***Aqua-culture as a Diversification Strategy in the Faroes***

*Apostle, Richard - Olavur Waag Hognesen - Andrias Reinert*

In the past twenty years, aqua-culture in the Faroes has undergone at least one major transformation. What began as a well-intentioned effort to distribute smolt and cage licenses to the more peripheral locations and actors for development purposes imploded under the joint impact of questionable business practices, overcrowding, and economic recession in the 1990s. The restructured industry, which has been pieced together from the failures of the 1980s, is based on the clearer appreciation of economic forces and constraints, greater technical and biological knowledge, as well as vertical integration. Ironically, the original aim of the process-economic diversification in a more peripheral parts of the country-remain as defensible as ever.

Keywords: aqua-culture, diversification strategy, peripheral regions, the Faroes, economic restructuring.

## ***Actors, Networks and Discourse in the Management of Fisheries***

*Bailey, Peter*

The European fisheries policy arena is characterised by networks of social actors who seek to forward their own perspectives and conceptualisations of how fisheries should be managed in European waters. The contributions by these actors within the fisheries policy arena constitute the discourse of fisheries management and science. Any single actor's contribution to this discourse is constrained, in part, by the contributions of the other social actors in the European fisheries policy arena. This paper explores the European fisheries policy arena by graphically mapping the networks associated with two cases, firstly, the issue of overfishing in Europe and secondly, the introduction of vessel monitoring systems. The discourse associated with these two issues is analysed and combined with the network mapping methodology. This provides an understanding of the main arguments used by the social actors in the management of European fisheries and how the arguments of different actors interact. The present domi-

nant discourse of fisheries management and science in Europe in practice excludes many alternative policies and decision-making processes. The paper concludes with a discussion of the implications of this dominant discourse for such alternatives as fisheries co-management.

*Bailey, Peter - University of York, Stockholm Environment Institute at York / Department of Sociology, Heslington, York YO10 5DD, United Kingdom*

***The Marisqueiros of village of the Bishop: soon contribute for its ethnographic study***

*Baptista, Carlos - Luis Costa*

Algarve windward is an area where the studies are scarce on the relation/interaction man versus space/environment. Our communication pretends to contribute less for the study of thematic of the "marisqueio" in Vicentina Coast. Referring itself it a geographic area so far worked in the Algarve context: Village of the Bishop. The marisqueiros, men who if dedicate to collect and sale of you perceive *Pollicipes pollicipes* (shellfish), making of this activity its main mode of life, had been chosen as object of anthropologic study, because they represent a representative maritime community of fishes traditional artisan of a Algarve in extinguishing. Being a subject that privileges the relations of the individual with its half natural/technical, since the first moment in them it interested its ethnographic knowledge. With the present work we analyse as the mechanisms of identification of the marisqueiros function while social group and professionally consisting. They are " labourers of the sea " who do not learn the profession in a school. The knowledge acquired technician-professionals, are a " treasure " that passes of parents for children. The secrets are part of the success of the profession. The learning is very little technique. It is appealed permanently to the collective memory. It is learned observing and hearing what oldest they say. To speak of the marisqueiros compels necessarily to a digression for the sea and the field. It also implies to speak of the changes that cannot leave of if making to feel in the proper earthing, however, in the response condicionante and stepmother however mother seek new and solutions.

*Carlos Baptista, anthropologist*

*Luis Costa, President of the Junta de Freguesia (municipality) of Village of Bispo*

***Social Sustainability and the Globalization of Aquaculture in Chile***

*Barrett, Gene*

This paper explores the complexities associated with globalization within the context salmon farming in Southern Chile. The central question we address is whether the recent foreign investment boom in the industry growth has impacted positively or negatively on the people and communities of the archipelago of Chiloé. It is our argument that the issue is not black and white and requires a subtle understanding of both the dynamics of community and the dialectics of modernity. We find substantial evidence that surplus labour, low wage levels, and poorly enforced or non-existent health and safety standards are a conditioning factor in the boom. We conclude that a 'sustainable community' approach is preferable to a 'social sustainable' approach as it focuses attention on the entire range of issues important to communities and the options open to them in confronting wider structures that affect their lives.

***From social to individual orientation: threats for a cultural institution in marine resource exploitation in tonga***

*Bender, Andrea*

Though in Tonga, unlike other Pacific countries, access to marine resources is open, the usual consequences – a decline of resources and an increase of non-cooperative strategies – do not occur to the extent expected. Resource use is stabilized through the cultural institution of food-sharing (*fe-tokoni'aki*) to a considerable degree. Believed to have evolved in response to scarce resources in the past, this institution is tightly connected to central values of the Tongan culture, such as cooperativeness, mutual respect and generosity, most of it concentrated in 'ofa. The influence of both, the value of 'ofa and the sharing principle, on resource exploitation is threefold and partly contradictory: (1) they motivate a concept of the environment as providing thereby reducing the responsibility of the fishermen to care for it; however, (2) they also function as a kind of insurance against shortfalls for the fish-

ermen thereby reducing incentives to overharvest the open-accessible fishing-grounds, and (3) they reduce conflicts which may arise from increasing competition over limited resources. In general, the sharing principle not only helps to stabilize the degree of resource exploitation but also primarily, strengthens the social cohesion which was at the center of coping with maritime stress in most Pacific societies. Food-sharing has had a high priority for the village people and thus maintained cultural resilience over time. Today, however, this institution is threatened partly by new technologies that increase the yields and, even more troubling, by tendencies to individualize parts of the harvest, thus weakening social cohesion.

*Andrea Bender - Psychology Institute, University of Freiburg, Niemensstrasse 10, D-79085 Freiburg, Germany. Information on the panel, see Delaney*

***How necessary are ICM-labelled organisational tools in addressing integration issues? Case studies on the French Atlantic coast.***

*Billé, Raphaël - Laurent Mermet*

The implementation of Integrated Coastal Management (ICM) meets many obstacles in practise, often due to the difficulties of collective action for the environment. Therefore, the study of organisational forms of integration, and the understanding of how they actually work, is fundamental for the analysis, assessment and improvement of coastal management systems.

Within this framework, our central emphasis is on the need to clearly distinguish on one hand the goals to be reached (the qualification "more or less integrated" is used as a criteria to assess the achievements of the management system as a whole), and on the other, the means (organisations, procedures, public action tools) implemented to attain a more integrated management. These means appear to be extremely varied, with only part of them being specifically designed with integrated coastal management in mind.

This presentation on ICM organisational tools will be based on two case studies we are presently carrying out on the French Atlantic coast (among the *Rade de Brest*, the *Département de la Charente Maritime* and the *Bassin d'Arcachon*). The different integration tools used on these sites (*Schémas de Mise en Valeur de la Mer*, *Contrats de Baie*, European Demonstration Programme on Integrated Coastal Zone Management) will be analysed with regard to their real role in the resolution of concrete integration problems faced by local stakeholders. We will then proceed to draw practical and theoretical conclusions on the respective contributions to integrated coastal management of specific ICM mechanisms and of other forms of public action.

***Pearl Farming and the Dilemma of Property Rights. Competition over resources and space in Tuamotu atoll development***

*Blanchet, Gilles*

Black pearl farming has grown very fast in French Polynesia along past decades and since the mid-eighties it has become the most valued territorial export. But classical growth problems and negative side effects of too fast a development process have emerged, especially in Tuamotu atolls where pearl farming has concentrated. Usual ways of life have dramatically changed, new social cleavages have emerged and it has become increasingly difficult to integrate newcomers.

The core of the problem seems to lay in gradual islanders' dispossession of their land and sea, a trend which goes hand in hand with post-colonial Tahitian administration's growing supervision over an activity which is generating a very much needed foreign currency. Regulatory measures and reinforced control are viewed by islanders as intrusive and constraining and they tend to react by escaping and avoiding behaviours. This is overwhelmingly due to gradual islanders' dispossession of what they still consider as their land and their sea and conflicting custom and law, as it is often the case in South Pacific small island countries. This is aggravated by territorial policies, which are encouraging private firms to develop what they consider as public resources.

As elsewhere, this tends to be done to the advantage of outsiders provided with capital and techniques and to the expense of insiders deprived of them, an evolution that deepens the gulf between the ones and the others.

Keywords: pearl farming, Tuamotu atolls development, insiders/outside competition, social problems, land dispossession.



### ***Contesting the foreshore in Malta***

*Boissevain, Jeremy*

The growth of mass tourism following independence in 1964 transformed Malta's economically marginal coastal zone into a prime economic resource. This change has precipitated social conflict and seriously affected the environment of the foreshore.

Tourist developments have taken up thirty-five per cent of Malta's coast. The annual arrival of 1.2 million tourists has intensified the existing water supply energy and waste disposal problems, necessitating the construction desalination units, a new power station, and a giant refuse tip. All are located on the coast. Desalination consumes one quarter of the Island's electricity output; the power station emits toxic fumes; the noxious smoke from the tip affects four down-wind villages and an adjacent hotel and leaches toxic effluent into both aquifer and foreshore. Eighty-six per cent of sewage is discharged untreated into the sea.

NGOs have vigorously campaigned to halt this environmental degradation. They have had some success in alerting the public to the dangers. Some of the issues they have raised have gained a measure of political recognition. The 1990s saw the implementation of a more rigorous planning procedure. Waste disposal, coastal zone management and protection of heritage sites have begun to figure in election manifestos, but so far without concrete action.

NGOs have been somewhat more successful in mobilising public support to contest commercial encroachment of undeveloped foreshore sites. They successfully prevented the establishment of a marina, a fun park, a large hotel and an extensive leisure complex. Recently they forced the relocation of an experimental tuna penning project threatening a rare colony of sea birds. Conflicts over access to coastal resources continue.

The European Union's has warned the Malta government that it must immediately clean up its environment in order to qualify for admission in the next round. This has strengthened the position of the NGOs.

### ***Linking Climate and Fisheries: Implications for Fisheries Management***

*Broad, Kenneth*

The recent increase in understanding of the relationship between climate and fisheries on multiple timescales has implications for fisheries management. This study examines the use of seasonal to inter-annual climate information in private sector and government decision making in the fisheries sector of Peru and Chile during the 1997-98 El Niño event. Opportunities and constraints on the application of climate forecasts are identified, and practical and methodological challenges to understanding the impact of climate on the biological and human dimensions of fisheries are discussed. Further, questions concerning distributive and participatory justice of current forecast dissemination practices are raised, and a conceptual model for addressing this issue is presented.

Keywords: climate, fisheries, South America, El Niño.

### ***Experiences with Fisheries Resource Co-management in the Caricom Region***

*Brown, David Nathaniel*

This paper traces the historical trends that the development and management of fisheries in the English-speaking Caribbean Community (CARICOM) have undergone from colonial policy standpoint, to changes in policies and institutional building evolving in the post-colonial era. It tracks the evolution from the initial development of open access, centrally controlled, technologically and developmentally driven policies, to the creation of a gradualist and calculated shift from rigid centrally controlled systems, to more inclusive and participatory systems, with resource conservation and sustainable management of resources as the central focus. It shows the consequences of the colonial and immediate post-colonial policies in terms of increasing stock depletion and habitats degradation, necessitating the creation of an enabling environment for the establishment of collaborative forms of resource management, that has resulted in the establishment of different types and processes of resource co-management

institutional arrangements. The outcome has been the creation of a mosaic of resource co-management pilot projects at different levels of maturation and with different processes of implementation. The comparative institutional analysis method is used in analysing the different factors and processes, illustrating them with selected case studies. From the analysis, an attempt is made to develop some key conditions and principles that lead to successful implementation, of co-management, under differing conditions in the CARICOM region.

Keywords: centrally controlled systems, enabling environment, participatory systems, co-management, institutional analysis.

***The Economics of Coral Reefs: Degradation, Conservation and Valuation***

*Cesar, Herman S.J.*

Coral reef ecosystems provide many services and goods to coastal populations, especially in developing countries. A variety of anthropogenic practices threatens reef health and therefore jeopardizes the benefits flowing from these services and goods. These threats range from local pollution, sedimentation, destructive fishing practices and coral mining to global issues like coral bleaching. In this paper the characteristics, impact and economic costs and benefits of blast fishing, overfishing, sedimentation and coral bleaching will be presented. This analysis showed a net loss associated with all these threats, even though there are often some key stakeholders that benefit from their involvement in causing the threat. This paper also looks at the costs and benefits associated with reef conservation by presenting recent case studies for marine parks in Southeast Asia and the Caribbean. Indonesia focusing on Taka Bone Rate and the Spice Islands and the net economic costs of destructive fishing practices. In both cases, economic valuation is used as a key tool in raising awareness about reef destruction and conservation by getting 'some numbers on the table'.

*Herman S.J. Cesar, Institute of Environmental Studies, Vrije Universiteit, Boelelaan 1115, 1081 HV Amsterdam, the Netherlands*

***Current developments in the native fisheries in the Canadian maritimes***

*Charles, Anthony - Chris Milley*

Historically, the Mi'Kmaq, the indigenous people of Atlantic Canada, relied on and managed fisheries through a system based on clan groupings and natural cycles. However, their participation in harvesting and management has been eroded over time through treaty relationships and government policies. Today, recent court decisions upholding Mi'Kmaq rights to the Atlantic Canadian fisheries are increasing Mi'Kmaq involvement in fishery management. The Marshall decision, in particular, which was met by conflict between Mi'Kmaq and non-native communities, offers potential for further development of local co-operation in fishery management. This paper explores the evolving state of Mi'Kmaq nation-based and community-based management systems.

*Anthony Charles, Management Science/Environmental Studies, Saint Mary's University, Halifax, and Chris Milley, Acadia First Nation, Yarmouth, Canada.*

***Evaluating contrasting approaches to marine eco-tourism: 'dive tourism' and 'research tourism' in the Wakatobi Marine National Park, Indonesia***

*Clifton, Julian*

This paper reports upon research conducted in July 2000 in the newly established Wakatobi Marine National Park, Sulawesi, Indonesia. As the second largest Indonesian marine protected area in a region renowned for its marine biodiversity, park management is under considerable pressure to generate income through attracting tourists to this remote part of the country. This research therefore examines the economic, social and environmental impacts of two differing forms of eco-tourism currently operating within the park in order to evaluate their potential to contribute positively towards empowering local communities and furthering the objectives of park management. Despite their similar commitments to principles of sustainable tourism, the contrasting ethos behind these two operations was found to be manifest in considerable differences in economic returns to local communities. The extent to which

these economic benefits could be realised and the equity of their distribution within local communities were reflected in varying perceptions of eco-tourism as voiced by local residents. Furthermore, existing social divisions within local communities were exacerbated where opportunities to benefit from eco-tourism were limited. These issues were found to contribute towards differing perceptions of the need to actively conserve marine resources and willingness to work with managers in order to promote further tourism development within the park. This research underlines the need for more participatory modes of eco-tourism in remote destinations which actively engage local communities and set an example for future eco-tourism developments to follow.

Keywords: eco-tourism, local communities, participation, protected areas.

***Appropriation of halieutical resources: From Management to the ethical approach of the fisheries governance.***

*Collet, Serge*

In a very high turbulent, ecological, institutional, social and economic context of the European and world fisheries can the coming out of a « post modern » governance paradigm aiming at to preserve if not to rebuild the regenerative capacity of marine ecosystems ignore the ethic's dimension defined as setting in order, regulation of the human power to act in inegalitarian and asymmetrical situations? The new historical fragility or vulnerability of the marine resources and ecosystems induced by the industrialisation process of fishing down the food web, seems then to require to enlarge the scope of the golden rule, of the morality ruling in principle the human relations in order to incorporate in its horizon the preoccupation or the worry about marine nature and more ahead its take care (responsibility).

This process of rearrangement of the modes of use of the res halieutica, of crafting new harmonic relations with marine environment, tends to assert the intrinsic value of the diversity of the ecosystems, coming to induce an exigence of co-operation in their respect.

Nevertheless, it is proper here to note the difficulty to think this exigence in term of duties in the sense that this no reciprocal take care which requires to be collective to be efficient, has to deal with complex natural dynamism's, which have no other law, beyond the unfairness of the eat or to be eaten balances, as that one of their continuous transformations, perturbations, surprises, of their chaotic processing ways.

Thus the true uncertainty in their understanding makes that the possible human co-operation in their respect cannot not call for the precaution as it may be found in many traditional or aboriginal forms of use of the halieutical nature in the world.

Key words: ethic, ecosystem, vulnerability, rebuilding, res halieutica, human co-operation.

<p><i>PANEL « Ethics and Fisheries Management in Europe » Contribution n°4 See for information on the panel: Frangoudes, Katia Serge Collet, Ethnologisches Institut der Universität Hamburg</i></p>
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***The New Brunswick Salmon aqua-culture industry: challenge or opportunity***

*Cook, Beverly*

Salmon aqua-culture is a growing industry in the Bay of Fundy on Canada's Atlantic coast. The vast majority of aqua-culture sites are located along the southwestern coastline of the province of New Brunswick (NB). Issues surrounding salmon aqua-culture in this region have become highly controversial as fish growers, capture fishery groups and environmentalists dispute benefits and costs of this aqua-culture industry.

On the one side, the salmon aqua-culture sector contends that the growth needs of the industry require additional sites and less government constraint. According to the NB Salmon Grower's Association, rising harvest volumes and expanding employment opportunities have stimulated the rural economy of south-western New Brunswick through rising incomes in both primary and secondary sectors. On the other side, groups such as NB's Conservation Council and the Atlantic Salmon Federation contend that the industry is not sustainable at current output capacity levels and that further growth must be curtailed because of the external costs. Factors involving effluent flushing capabilities of the tides, interference

with other fish harvesting activities such as lobster, and the intermingling impacts of farm stock escapements on wild salmon are all cited as concerns.

In addition to these concerns, there are large property rights issues relating to site allocation, tenure, and transfer of herring weir site licenses. In the past, the allocation process itself has not appeared transparent and this has created tensions among various stakeholder groups. At the same time, both the Canadian and NB governments have jurisdictional claims on specific aspects of fish farm management. The NB Department of Agriculture, Fisheries and Aqua-culture introduced a new aqua-culture site allocation policy in October 2000. As a result, there are currently sixteen applications for new fish farm sites now under review. This is the first time in three years new sites have been permitted. Meanwhile, Canada's Department of Fisheries and Oceans (DFO) is undertaking an Atlantic Fisheries Policy Review and proposes to develop policy in four areas: conservation; economic and social viability; access and allocations; and governance. There are areas of potential conflict in the NB and Canadian approaches with respect to salmon aqua-culture as DFO is promoting integrated oceans (ecosystem) management while NB is promoting the survival and growth of the local salmon aqua-culture industry.

This paper traces the development of salmon aqua-culture into a \$200 million NB industry from its inception in 1978. Positive and negative effects are clarified and inherent conflicts defined. Net benefits are quantified in terms of incomes, employment levels, and community viability. The long run outlook for the industry in NB is assessed within the framework of government policy.

*Beverly Cook Department of Economics, University of New Brunswick, PO Box 4400, Fredericton, NB, Canada E3B*

### ***Management and co-management in Canadian small-boat fisheries: getting it right***

*Copes, Parzival*

This paper explores suitability of alternative management systems for Canada's small-boat fisheries, with appropriate roles for government agencies and stakeholder groups in the management process. Two prototypical visions of management systems are identified. A structured neo-classical economic vision favours market-driven rationalisation through individual transferable quotas (ITQs). A more amorphous socio-economic vision contains fishing capacity through limited-entry, while according equitable access rights to individual fishers and communities. Conceptual analysis, informed by empirical observations, is used to assess capacities of the two systems to meet common policy objectives in respect of biological conservation, economic efficiency and social equity.

The benefits of co-management, making greater use of fishers' local knowledge and traditional insights through collaboration of managers and stakeholders, are well recognised. Yet, serious negative externalities concerning conservation, distributional equity, and long-term economic benefits, may result from devolution of management powers to self-interested stakeholders and stakeholder groups. Powers that need to be retained and exercised by government in the public interest are identified.

The paper concludes that socio-economically sensitive management may sustain an independent owner-operator fleet enjoying distributional equity and life-style benefits in healthy communities committed to responsible stewardship of adjacent resources. ITQ management will likely weaken the independent owner-operator sector, favouring financial and geographical concentration of fishing operations and access rights. Surviving small-boat fishers will often have to rely on company-tied loans and/or leased quotas, reducing their net income prospects.

*Parzival Copes, Institute of Fisheries Analysis, Simon Fraser University, Canada*

### ***Pomor - coastal population of the White Sea: yesterday, today, and ...?***

*Davydov, Alexandre N.*

Pomor can be determined as ethnic-social group inside Russian ethnos alongside with such groups as, for example, kossak. Allocation of group Pomor among Russian ethnos promoted both geographical and historical-social specifics of formation of the coastal population of the White Sea. The coast of the White Sea was populated from Great Novgorod not later than 11 century. In the early period the mixture with Finno-Ugric population took place, that proves to be true by presence Finnish substrate in

culture of Russian North and Pomor (geographical names, instrument of fishing etc.). The geographical factors have determined features of formation of traditional economy focused not on agriculture (as at all other Russian), but on sea fishery and sea hunt in conditions of Arctic Region with area of navigation down to Spitsbergens, Novaya Zemla islands and mouth of the river Ob'. Pomor did not know serfdom, had highest percent of the literate population among the villagers of Russia. The significant influence on formation of spiritual shape and life of Pomor has rendered by Old-Believers, received distribution among them from second half of 16 century. The special social status of Pomor was amplified in second half 19th century by an establishment of a mode of free navigation to Norway of the seaside inhabitants of Arkhangelsk gouberny. Pomor villages were larger than others of village settlements of gouberny. Concerning Russian continental population Pomor distinguished characteristics of sea culture: an openness, tolerance, spirit of enterprise and syncretism of consciousness. In the Soviet time the system traditional Pomor economy was destroyed and is modified. The large private fleet was destroyed; the collective farms were created. In system of socialist economy many Pomor collective farms became the shipowners (area of fishery up to Atlantic), collective farms - millionaires has extended, that together with system of northern privileges has created much better social conditions for Pomor inhabitants, in comparison with the continental village population. The status of frontier territories promoted preservation of unique natural landscapes. At the same time wars (1 and 2 World wars, Civil war), the reprisals have resulted in destruction of large percent of the active population. The process of industrialisation has strengthened outflow of the Pomor population to cities (Moscow, Arkhangelsk, Murmansk, Severodvinsk etc.). Now steady development of village settlements of coastal territories of the White sea sees in formation of system of protected natural and historical - cultural territories (national parks " Onezhskoe Pomor'e ", " Belomorsko-Kouloiskoe plateau ", complex of Solovky islands), revival of the traditional forms of nature use and development of tourism.

*Alexandre N. Davydov, Institute of ecological problems of North, Ural branch of Russian Academy of Sciences, Arkhangelsk, Russia*

#### ***Sustainability Indicators and the Community Imagination***

*Degnbol, Poul*

The methods for measurement and prediction of the impact of fisheries on stocks and ecosystems as used within mainstream fisheries science are complex, uncertain and costly. The institutions to produce and integrate such measurements and predictions into fisheries management generally do not exist in developing countries. It may not be feasible or relevant to develop such institutions. Attempts are being made to develop indicators of sustainability which are supported by research without requiring a full understanding and quantification of all processes involved. Such indicators should however not only be evaluated on basis of their scientific merits but also on basis of their acceptability by important stake holders including both government, research institutions, fishers and the community. The presentation will discuss criteria for use of sustainability indicators based on two case studies from South East Asia.

*Degnbol, Poul - Institute for Fisheries Management, North Sea Center, Willemoesvej 2 Box 104 DK-9850 Hirtshals, Denmark*

#### ***Helping One Another Out: Swapping Ocean Space to Mitigate the Effects of Coastal Pollution on Japanese Seaweed Harvests.***

*Delaney, Alyne*

This paper examines Japanese seaweed cultivators' exchanges of fishing grounds through the use of kinship and social ties. Seaweeds, especially nori (*Porphyra tenera* sp), have traditionally been grown in Japanese bays and inlets. Bay areas are ideal as they contain calm waters and run-off from the land and rivers provide the nutrients and conditions needed for growth. Coastal areas, however, have disproportionately received the brunt of Japanese industrialization. Wastes and discharge from industrial processes, combined with land reclamation, limited water circulation, and a population boom, have meant the decline of numerous fish, shellfish and seaweed species. In the community of study, the region's largest nori seaweed producer with harvests averaging \$US 15 million, nori can no longer be cultivated in the inner bay area. The inability to grow a crop that is the main occupation is problematic for Fishing Cooperative Association (FCA) members who reside in a country where access to fishing commons is limited by membership in an FCA and further restricted to residents of the local commu-

nity. With cultivable space limited and legal access even more guarded, cultivators have turned to their relatives and friends to gain access to additional areas. Today, in the face of marine pressure from pollution, it is the use of these social exchanges of fishing ground access that allows nori cultivation to continue. In making an analysis of local social and environmental conditions for marine resource usage, the importance of such local institutions must not be overlooked. Understanding the local culture provides us with a window for understanding not only the health of the coastal area, but also the resources found therein.

***Panelinformation: Confronting and Mitigating Maritime Stress: The Adaptive Role of Cultural Institutions***

The goal of this session is to bring together research on maritime regions from throughout the globe that highlight the important role social institutions play in maintaining both the health of the environment and that of the people who harvest the resources. In calculating the value of maritime resources and making decisions about those resources, researchers must not overlook important social or cultural institutions which affect individuals' actions as much as any 'economic rationality.' Social institutions play two roles: first, they may serve to reduce stress on resources through limiting harvests. Second, in the face of stress, such as through marine pollution, they may play a role in enabling the local people to continue working in the sea through providing solutions to problems such as political and economic instability, coastal pollution and resource management in the face of over-harvesting. All of the presentations will address the issue of stress in coastal areas and the role social institutions play in addressing the problems associated with this stress. Additionally, rather than focus on a single region or resource, the papers circle the globe: the papers investigate the role of social institutions among abalone divers South Africa, seaweed cultivators in Japan, fishers in Indonesia, the Philippines, and the Kingdom of Tonga. This research shows that an examination of the cultural contexts enlightens not only our understanding of the roles institutions play in the lives of residents of coastal areas, but they also present surprises and force us to question certain assumptions about the equity of systems in place. Of major concern is not only the health of the coastal environment, but the people who live in these areas and rely on the marine environment for their livelihood.

*Alyne Delaney, University of Pittsburgh, Department of Anthropology, 3H01 Posvar Hall, Pittsburgh, PA 15260, USA.*

***How to merge local knowledge with scientific understanding in co-managing fisheries?***

*Densen, van, Wim L.T.*

In a Green Paper on its new Fisheries Policy (2003) the European Commission made a strong call for a larger participation of fishermen in policy making and management of fisheries in EU-waters, for regionalisation of the fisheries management where possible, for better communication of research findings to the fishery, and for greater use of fishermen's knowledge in managing these fisheries. To assess the potential for the merging of fishermen's, local knowledge with scientific understanding in being complementary and mutually adjusting, it is necessary first to characterise their respective nature, format and availability. Examples are given from North Sea fisheries that demonstrate the generally high spatial and temporal resolution of fishermen's knowledge and that this knowledge, once documented, could be used to improve on the information content of fishery-independent surveys, on the interpretation of catch and effort data, and on the design of management measures to take. The necessary more long-term view on resource dynamics and on fishery impacts to identify fishery problems and objectives, is not easy to develop on the basis of experiences in the fishery as such. Fishermen should therefore be guided and instructed how to evaluate time series of fisheries data themselves, as for instance the series with annual catch, spawning stock biomass, recruitment and fishing mortality published in the EC-Green Paper (2001). In this way fishermen could develop the necessary skill and balance their position with authorities and researchers in information handling on behalf of a long-term view in co-managing fisheries.

Keywords: fisheries co-management, local knowledge, long-term view, North Sea, European Community.

*Wim L.T. van Densen, RIVO Netherlands Institute for Fisheries Research, the Netherlands*

### *Traditional fisheries knowledge and management in Brazil.*

*Diegues, Antonio Carlos*

Most of these habitats have been traditionally used by artisanal fishermen, where they have developed sophisticated traditional management. In most cases, it can be said that these areas were ecologically protected not in spite of artisanal fishermen but because of their traditional way of life. Yet in practice, the first step to establish a "national park" is to expel traditional fishermen from their subsistence territory and ancestral land. Estuaries, lagoons and islands are viewed as empty spaces but in fact they are marked by several types of "sea marks" and management structures set up a long time ago by artisanal fishermen. Some recent studies, however (Cunha, 1989, 1992; Diegues, 1992, 1989), have shown that ill-conceived conservation, like uncontrolled "development", can be a pathway to increasing marginalization of local coastal populations. Most of these habitats have been traditionally used by artisanal fishermen, where they have developed sophisticated traditional management. In most cases, it can be said that these areas were ecologically protected not in spite of artisanal fishermen but because of their traditional way of life. Yet in practice, the first step to establish a "national park" is to expel traditional fishermen from their subsistence territory and ancestral land. Estuaries, lagoons and islands are viewed as empty spaces but in fact they are marked by several types of "sea marks" and management structures set up a long time ago by artisanal fishermen. Some recent studies, however (Cunha, 1989, 1992; Diegues, 1992, 1989), have shown that ill-conceived conservation, like uncontrolled "development", can be a pathway to increasing marginalization of local coastal populations. Most of these habitats have been traditionally used by artisanal fishermen, where they have developed sophisticated traditional management. In most cases, it can be said that these areas were ecologically protected not in spite of artisanal fishermen but because of their traditional way of life. Yet in practice, the first step to establish a "national park" is to expel traditional fishermen from their subsistence territory and ancestral land. Estuaries, lagoons and islands are viewed as empty spaces but in fact they are marked by several types of "sea marks" and management structures set up a long time ago by artisanal fishermen. Some recent studies, however (Cunha, 1989, 1992; Diegues, 1992, 1989), have shown that ill-conceived conservation, like uncontrolled "development", can be a pathway to increasing marginalization of local coastal populations.

### *Conservation of Biological Diversity in the North Sea: the Role of the OSPAR Convention*

*Dotinga, Harm M.*

Many marine environmental problems are not confined to individual States, but are of a regional or global nature. The conservation of marine biological diversity (the variety of life in the oceans) is a typical example of an issue that requires some form of co-operation between States. This is a logical consequence of the ecological and geographic realities and the interconnected nature of the oceans, which transcend legal boundaries. The 1992 UN Convention on Biological Diversity (CBD) has provided us with an international legal framework that identifies the world-wide loss of biological diversity as a problem of common concern to all States and sets out a wide range of general obligations for States to achieve its objectives. This paper examines the role of the 1992 Convention on the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention) in support of the implementation of the CBD at the (sub) regional level of the North Sea. Particular attention is given to the new Annex V to this Convention on the Protection and Conservation of the Ecosystems and Biological Diversity of the region that was adopted in 1998 and has recently entered into force. It discusses the type of human activities that can be regulated under the Annex and what kind of measures is currently being developed under the auspices of a subsidiary body of the OSPAR Commission. This is illustrated by an example. The paper concludes that the OSPAR Convention can perform an important role in the development of a network of marine protected areas in the North Sea and the adoption of minimum regional standards with regard to several human activities affecting marine biodiversity. Such measures need, however, to be coupled with the adoption of necessary measures in other international organisations dealing with two of the most important human uses affecting marine biodiversity in the North Sea (fisheries and shipping) that fall outside the scope of the OSPAR Convention and Annex V.

Keywords: biological diversity; Convention on Biological Diversity, OSPAR Convention, North Sea, maritime uses.

### ***A concerted approach towards managing living marine resources in a Marine Protected Area***

*Ducrocq, Mathieu - Abdelkader Ould Mohamed Saleck - Jean Worms*

The Parc National du Banc d'Arguin - PNBA, in Mauritania (West Africa) is a 12.000 Km<sup>2</sup> protected area established in 1976. Half of it is coastal and marine and a resident population established there more or less permanently since the most ancient times has long exploited the sea bounty in a sustainable way. However, since the mid 80's, a perverse evolution of the fishing strategies prompted by outside operators has forced resident fishermen into exploitation techniques which are contrary to the very status of the Park and, aside from threatening the integrity of biological diversity, drastically affect the fragile social equilibrium of the whole population.

Since 1998, managers, scientists and the local population have established a dialog to try to reach a more balanced approach to exploiting the marine resources inside the Park. Control measures on the shark and ray fishery have been adopted by consensus and applied on a voluntary basis. Meanwhile, accompanying measures have been discussed and acted upon in order to offset the loss in income due to reduction of the fishing effort on selachids.

Diverting the fishing effort towards high value species while allowing local fishermen to draw more revenue from their catch by giving them a better handle on transformation and marketing is one of the avenues presently explored. Also, an effort is being made to revive traditional fish treatment techniques based on a unique know-how that was bound to disappear.

Keywords : Mauritania, Banc d'Arguin, marine protected area, co-management

<p><i>Mathieu Ducrocq, Head, Projet d'appui à la diversification de la pêche Imraguen, PNBA</i> <i>Abdelkader Ould Mohamed Saleck, Head, Department of Scientific Co-ordination, PNBA</i> <i>Jean Worms, Scientific Advisor to the PNBA Director</i></p>
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### ***Demographical Driven Growth Processes in Vietnamese Fisheries in the 1990s***

*Eikeland, Sveinung*

Demographic growth in developing countries is often a scourge for the fisheries. Due to that the fishery households neither accumulate surplus for investments nor have motives for reinvesting the benefits in new modes of production. The population growth leads to an explosion of artisan fishing that is increasing the pressure on the marine resources in near shore areas. In Vietnam the dramatic demographic growth has however also contributed to a structural change of the fisheries indicated by that the capacity in the fisheries has increased much more than the number of vessels and fishermen.

The paper will elucidate how the population growth driven processes taken place in the fishery households after the closing of the socialist fishing co-operatives in the 1980s have contributed to the modernisation of the Vietnamese fisheries. The analysis being presented covers mainly the household processes developing the coast fishing (e.g. pair trawling and pure seine fishing) operating on wide fishing areas. These processes are contrasted with the situation where demographic growth has impoverished the fisheries, as in the previously co-operative based fishing and in the subsistence lagoon fishing. The development of the fisheries is also compared with the privatisation processes in the agricultural sector, where analysis from Vietnam shows that the household's restricted access to land resources reduces the opportunities for accumulating capital for investing in new kinds of production. While investments carried out by agricultural households can accumulate capital by putting household members into the open fishing common.

Keywords: Vietnamese fisheries, household based economic growth, transition economics

### ***The Conceptual Ecology of a Contested Industry: Canadian aqua-culture in the new millennium***

*Elliott, Brian - Ralph Matthews - Susan Elliott*

Systems of production occupy not only physical spaces, and economic niches, they also exist in complex conceptual eco-systems. Whether they flourish or fail depends as much on their relationship to sets of ideas as it does on material resources, flows of capital or pools of labour.



Such is the case with aqua-culture which, in many countries has become a controversial, fiercely contested industry, whose every move is scrutinised by environmental groups, traditional fishers and (often) aboriginal peoples. In this paper we examine the Canadian experience and explore the struggles of industry, government, communities, and environmental groups in terms of the ideas, rhetoric and images they use to win public acceptance and influence policy.

This paper seeks to broaden our understanding of the way in which social constructions have influenced the policy process and hence the development of the aqua-culture industry in Canada. This will be done through an examination of the ways in which scientific and forms of vernacular knowledge are used in public and policy debates to legitimate or refute different representations of the industry. Particular attention will be given to major policy processes and moments of change in which policies are shifted. At a broader level, this paper contributes to our understanding of how competing representations within civil society have shaped the process of governance and governmentality which, in turn, have led to distinctive patterns of aqua-culture industry formation on Canada's Atlantic and Pacific coasts.

Keywords: conceptual ecology, environment, governance, social construction, vernacular knowledge.

### ***The present and future of fisheries management in Europe: analysing the discourse of key actors***

*Frangoudes, Katia - Denis Bailly*

Fisheries Management in Europe is much debated in Europe since the « Bonino » survey was conducted in 1998 and as the process of evaluation and revision of the CFP gets close to the deadline of 2002. The publication of the Green Paper of the CFP has reactivated many important issues for the future of fisheries management in Europe. Many new directions are indicated to overcome the shortcomings of a public policy that appears too much based on scientific expertise and political bargaining at the European level of decision. More concern for the ecological and social dimensions is suggested. The fisheries under national jurisdiction should be more taken into account at the European level as they largely contribute to employment and catches. To improve the decision making capacity and the commitment of actors towards the enforcement of the regulations, both participation and autonomy of intermediate levels should be promoted. Pluri-annual or economic instruments should be given more attention in the management schemes. Though these directions given in the Green Book are only declarative intentions, their endorsement by the Commission tends to legitimate many of the criticisms but also fears raised within the industry and by the analysts.

The material of more than 200 interviews realised in 10 European countries in the course of an EU 4<sup>th</sup> Framework Programme funded research ("ELSA-pêche" programme) provides a unique empirical support to study the perception of management practices by key actors of fisheries management from the local to the international level in Europe. Interviewed persons are representatives of all types of fishermen organisations, of administrative and scientific bodies, of politicians and of environmentalists NGO's. Those people have been asked both to react to ethical issues and to give their evaluation of the present management systems. This paper is based on the information collected under the second heading, ethical issues being treated in separate papers. Three themes of discussion have been selected to present the diversity of opinions on achievements, failures and prospects of fisheries management. The level of analysis chosen is the institutional framework that supports design and implementation of collective action. The three themes are: (1) fisheries governance including such issues as players participation, regionalization, role of expertise and politics in forming decision or enforcement, (2) the objectives of collective action designed for the purpose of fisheries management and (3) the means/tools to define access right structure. Besides the identification of the main "stream of views" that can be identified in Europe on these issues across the player groups, we shall look for the structure of political, economic, cultural or other vested interests that contribute to the formation of these representations.

### ***Information on the Panel: 'Ethics and Fisheries Management in Europe'***

For three years, a multidisciplinary group of researchers in social sciences, has analysed the Ethical, Legal and Social Aspects of fisheries management in Europe. This « ELSA-Pêche » programme is funded under the « ELSA » (Ethical, Legal and Social Aspects) line of the FAIR programme (4th Framework Programme). Among other initiatives, the group has conducted a review of management policies in 10 of the European countries, more than 200 interviews of representatives of the groups involved in fisheries management across Europe and a postal survey among European fishermen (1600

respondents). Material from case-studies conducted in other research works has also been revisited to illustrate the discussion. The group has emphasized the ethical entry in the analysis of results from the bibliographic and field works. The programme, started in July 1998, will be terminated at the end of 2001. The « ELSA-Pêche » panel in the MARE conference is the first public presentation of the main results of the programme. Being part of the programme, the discussion of the panel is conceived as an input for the group to finalise the analytical work. Four contributions are presented to illustrate various aspects of the programme.

*PANEL « Ethics and Fisheries Management in Europe » Contribution n°1*  
*Katia Frangoudes, OIKOS environnement-ressources, Brest, France*  
*Denis Bailly, UBO-CEDEM, Brest, France*

### *The impact of collectivisation on far-distance fishing and trading of the White Sea people*

*Gorter, Waling T.*

In north-western Russia the White Sea with its 90.000 km<sup>2</sup> both unites and separates people living in villages and small towns. One of Russia's main rivers, the Northern Dwina, runs into this sea, passing the old town of Archangel. After St. Nicholas (where now the town of Severodvinsk is situated) close-by Archangel was Russia's main import and export centre from the end of the 16<sup>th</sup> century until the establishment of St. Petersburg in the beginning of the 18<sup>th</sup> century. This town was the capital of the province (Arkhangelsk Gubernia) which for hundreds of years included virtually all White Sea coasts, the White Sea itself and adjoining coasts and inland along the Barents sea (until Norway) and the Kara Sea (until just beyond the 'border' between Asia and Europe at the island of Vaigach. Vaigach and Novaya Zemlya in reality being extensions of the Urals. Up the river Dwina and beyond, convenient travel by boat to Moscow and even the Black Sea was possible. A road already known to Scandinavians ('Vikings') before the 12<sup>th</sup> century when the first Russians settled at the coasts of the White Sea and came to be called 'Pomors' – people living close to the sea.

By the end of the 16<sup>th</sup> century English and Dutch merchants re-established international sea trade in the North. Already then Pomors went to Norway. Mainly for fishing but also for trade Willem Barents saw them himself e.g. in Norwegian Vardø in 1594. Pomors went to Svalbard, Novaya Zemlya in addition to the coasts of the Kola Peninsula (the Murman coast) and the Kanin peninsula.

Long distance fishing (cod, halibut, catfish) and hunting of sea mammals (seals, white whale, walrus, ice bears) were always of paramount importance beside local fishing (salmon, navaga, herring), sealing (Greenland seals, ring seals), hunting (fowl, bears) and farming (arable farming and livestock farming).

While the old Russian colonists were considered as 'Pomors' proper also Carelians, Saami, Nenets and later even Komi settled along the White Sea. Soon the ecology and their participation in the same trading systems made for close co-operation.

While the long distance international trade was most important for central trading-houses and their merchant representations of Russians and foreigners in mainly Archangel, the closer distance hunting, fisheries and routes via Northern Norway to Svalbard (Spitsbergen) favoured the development of intimate contacts between the White Sea and notably the Eastern part of Northern-Norway.

During the first part of the 20<sup>th</sup> century international upheavals, revolutions and wars affected the White Sea people very much as the main maritime part of their economy by that time was solidly international. The most dramatically revolution was not the proclaimed one of 1917 but the one launched by Stalin at the 27<sup>th</sup> of December 1929, 6 days after massive celebration of Mr. Joseph Dzhugasvilli's 50<sup>th</sup> birthday. 'Complete collectivisation' was launched and the Decree on Land of October 26, 1917 which legalised the peasants private use of the (here mainly) State lands was cancelled. This meant the forced introduction of the so-called kolkhoz-system but also 'dekulakazation'. Any agriculturist having employed someone, being defined as a 'kulak' which was to be liquidated this soon meant that the local boats for far-distance fishing, trading and hunting were nationalised, the owners liquidated and the local village crews put out of work and business. This way the White Sea people were cut off from both the Barents Sea, the Ice Sea and from abroad. Farming, local fishing and hunting could not compensate for this as the population had grown too and pressure on local resources now got too heavy. Villages were transformed in agricultural kolkhozes and in fishing kolkhozes. Many inhabitants left for new Soviet towns elsewhere such as Murmansk. As time would show fishing kolkhozes have survived to the extent that from the thirties fishing vessels were assigned to them. These fishing vessels were usu-

ally based on the Murman coast (Kola Peninsula) of the Barents Sea and delivered most of their catch there. But again both the crews and command came from the White Sea kolhoz running and 'owning' them. As time went on also people outside the kolkhozes were employed on these fishing vessels. After the Soviet system came to an end, formally in 1991, the fishing kolhoz system has usually been kept without changes. Not only in order to keep control over the trawlers and their state assigned quota but also in lack of an alternative system. In recent years though both trawler fishing and sealing are under increased financial pressure from in-between financing and trading companies usually based in either St.Petersburg, Moscow or both. Thus linking up the still existing stalinist revolutionary kolhoz-system with the new 'revolutionary' system of black finance introduced under Boris Jeltsin's regime at the 1990'ies.

Due to the complete break-down of fish processing industries and infrastructure at the Russian side on land, an unstable rubble, unclear and often unreasonable taxation and fee systems at the Russian side most of the fish and skins caught are now delivered or exported abroad. Much of this new trade pattern, while causing economic havoc and unemployment at the Russian White Sea and Murman coast side, follows in the footprints of the trade connections with Northern- Norwegian towns remembered from before Stalin's revolution of December 1929 when the old Pomor Trade with Northern-Norway abruptly came to an end. Trade connections between the village of Koida at the Winter Coast east in the White Sea and the village of Vadsø, the capital of the province of Finnmark, in the Northern-Norwegian Varangerfjord are a good example of this.

***Contesting legal imaginations and conflicts over meaning: communal and state legal fictions over Lake Titicaca's resources (Peru, 1990s)***

*Guevara-Gil, Armando*

Lake Titicaca lies across the border between Bolivia and Peru. It is the highest (12,545 feet above sea level), largest (3,200 sq.mi.), tropical (16° S) lake in the world. The interesting point is that the 151 Peruvian Quechua and Aymara shoreline communities that surround it have a high degree of autonomic control over their local aquatic resources, including fisheries, reed beds (Scirpus totora) and waterfowl.

First, using court cases, administrative proceedings, communal documentation and my own fieldnotes, I study how shoreline communities enforce and maintain their exclusive communal fishing territories (TURFs) despite state regulations aimed at defining an 'open access' fishing and reed bed extraction regime. Second, I analyse the competing legal fictions and classificatory systems regarding Lake Titicaca's fisheries and reed beds. I stress how shoreline communities and state agencies ground their different policies and regulations on contrasting views about these "natural" resources. Different definitions such as private/public, communal/national, and natural/domestic are key to claim control, management and distribution of fisheries and reed beds.

Finally, I study the contest over meaning. Here I stress the analysis of the cultural foundations of the state and communal definitions of fisheries and reed beds. Since legal fictions and classificatory systems embed the worldview of the societies that propose them, and law is in itself a social theory, my goal is to trace the structuring conceptual frameworks that support the different claims over Lake Titicaca's resources.

Keywords: Lake Titicaca, fisheries and reed beds, legal pluralism, cultural foundations of law.

***A proposed generic institutional framework for Integrated Coastal Zone Management: An Indian Perspective***

*Gupta, Manoj*

The complex and dynamic nature of the coastal and marine area is prompting many nations to consider the internalisation of Integrated Coastal Zone Management (ICZM) policy as part of a deliberate strategy for sustainable development. The institutional structures required to deliver such internalisation are subject to debate. This paper presents a suggested generic institutional framework derived through consideration of the core ICZM process and proven organisational models. The proposed framework is built around a scientific and people oriented 'operating core' which facilitates local issue identification, evaluation and monitoring; an 'administrative component' of central and state government to set policy direction, manage funding, and provide guidance on implementation and operation; a 'strategic apex' within central government to oversee the transition from ICZM concept to practice; and a 'co-

ordinating mechanism' to allow open communication of ideas and information. The proposed framework is then applied to India, which currently faces the challenge of developing a suitable institutional framework to deliver ICZM aspirations. The framework addresses the urgent need for integrating science and management, grass-root level to be at the cutting edge of management and transparency in the management process. It is concluded that the generic institutional framework works well when applied to India, with existing organisations and agencies requiring relatively minor organisational changes to address coastal and marine issues more effectively.

Keywords: coastal, co-management, co-ordination, co-operation, collaboration.

<p>Commander Manoj Gupta, India MSc Defence and Strategic Studies, India MSc (Distinction) Exclusive Economic Zone Management, United Kingdom</p>
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### ***Developing a framework for quantifying 'transformation' in the South African fishing industry***

*Hara, Mafaniso - Moenieba Isaacs*

South Africa's Living Marine Resources Act, the Reconstruction and Development Programme and the Constitution are all premised on the need for 'Transformation' in order to rectify the effects on non-whites wrought by the dis-infranchisement of 50 years of apartheid and 300 years of colonial rule. Transformation has therefore become the operative word for most of what the nation is trying to achieve. Among government policy analysts, developmentalists and the private sector, the definition of Transformation and how to quantify it remain issues of debate and, in some instances, contestation.

The research initiative on which this presentation is based will attempt to develop a composite and universally agreed definition of Transformation and a framework for objective quantification of the process in the context of the South African fishing industry. It is argued that Transformation includes three main elements, namely Political Transformation (an equitable racial distribution of access rights, ownership and participation in the fishing sub-sector), Economic Transformation (increased welfare gains) and Structural Transformation (which emphasises the development of small and medium enterprises). In order to test the framework, some data and information will be applied to the framework in order to 'crank' it.

The importance of the framework lies in the fact that unless there is some kind of benchmark, Transformation will continue to mean many things to many people, making it impossible to measure and gauge the progress of the process.

<p><i>The two authors are Research Fellows at Programme for Land and Agrarian Studies (PLAAS), School of Government, University of the Western Cape, P/Bag X17, Bellville 7535, Republic of South Africa.</i></p>
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### ***Co-management and Local Institutions: Issues of Representation and Legitimacy***

*Harkes, Ingvild*

The idea behind co-management is collaboration between the national government and local institutions. A question that often arises though is what local institutions we are talking about and to what extent they share responsibility in fisheries management and decision-making? The degree to which responsibility is shared is partly decided upon by the national government, partly by the process instigated by outsiders, and partly by the local government or local leaders. The decision about who is allowed to make decisions and which people represent the local community, are also made by one of these parties. This decision, however, is crucial for the legitimacy and stability of the management institution.

In many non-western countries depending on agriculture or fisheries, a local institution exists that from early days on arranges access to fishing grounds and land. In many newly established co-management schemes, these traditional institutions are neglected. This can be partly explained from the fact that new social structures create opportunities for new leaders, but also because the process is often initiated by government representatives who have a preference to work with 'modern' structures such as fishing committees. The advantage for the government is that by setting up new structures it has direct control over the process and access to the committees once in place. Additionally they feel it may better suit

the expectations of outside agents. These new institutions often include people chosen on a basis other than an interest in the fishery, such as wealth, social standing, or relation to a leader or fisheries officer. Representation then becomes an issue and lack of legitimacy can lead to breakdown of the institution. Research has demonstrated that the degree of overlap between traditional institutions and new management structures is decisive for the success of the management system. This paper will discuss the various paths to institution building, the involvement of traditional institutions, representation, and the consequences for the functionality and resilience of management institutions.

*Ingvild Harkes - Institute for Fisheries Management, North Sea Center, Willemoesvej 2 Box104, DK-9850 Hirtshals, Denmark*

***Towards Pan-Caribbean Management of marine biodiversity: establishing a regional mechanism for sustainable fisheries in the caribbean***

*Haughton, Milton O.*

A great challenge facing the countries of the Caribbean is the development and management of the living aquatic resources of the region in a responsible and sustainable manner, to improve the quality of life of the thousands of persons who depend upon these resources for their well-being and livelihood. Many of the fish stocks of economic importance in the region either straddle or migrate across the national maritime boundary of several Caribbean states and require co-operation among the countries for sustainable development and management. Most Caribbean states, as a consequence of their small size and fragile, developing economies, have limited human, financial and institutional resources to devote to sustainable fisheries or conservation of the coastal and marine ecosystems. Since 1996 several Caribbean countries have been working together to define and establish a permanent regional fisheries mechanism (RFM) to facilitate management of shared stocks, provide a mechanism for regional co-operation and delivery of technical advisory support for sustainable development of the fisheries and other aquatic resources of the region. This paper provides an overview of the process of development of the RFM to date. The paper discusses the multi-disciplinary consultative approach being used to develop the arrangements for the mechanism. This approach considers fisheries, socio-economics, political and legal issues as well as provide opportunity for involvement of stakeholders in the planning and decision making. The paper also discusses the justification, possible scope, functions, organisational structure and financing arrangements of the proposed RFM.

Keywords: caribbean, marine biodiversity, fisheries, regional co-operation.

*Milton Haughton CARICOM Fisheries Unit P.O. Box 642, Belize City, Belize*

***"Pulling down the fences and cooling down the fights"***

*Heijden, van der, P.G.M. - P. Spliethoff - M. Staljanssens*

Development, exploitation and other uses of the coastal zone and its natural resources is increasing all over the world, resulting in an increasing number and intensity of conflicts within and between these different uses and users. A fragmented management approach by separate government departments, directorates and institutions has proven not to be very effective to solve the conflicts and issues. In recent decades a co-ordinated approach that allows all stakeholders that benefit, have an impact on or are influenced by a certain development, issue or activity to play a role in the management of an area or sector has been promoted as a more effective way of managing an area.

The exploitation of fish, shellfish and other aquatic resources living in the coastal area is discussed in more detail as an example of the activities in the coastal zone that needs management to avoid exhaustion and to reduce or solve conflicts. Traditionally fisheries management had a rather top-down, command and control approach with the government issuing laws, rules and regulations and the fishers being expected to follow and obey. More recently a more inclusive approach is favoured for which the term collaborative or co-management is used. In such an approach responsibilities for fisheries management are shared with the aquatic resource users and possibly with other stakeholders that are directly affected by or connected with the capture of living marine resources. Successful co-operation in the management does not come automatically. There is a wide gap in education, experience and perceptions between administrators, scientists and fisheries department staff on one side and fishers and

other people working in the fishery sector on the other. We will explore how formal and informal training of the various parties participating in the management of the fishery can contribute to successful collaborative management.

Fisheries management addresses primarily the direct and indirect (side-) effects of exploitation of aquatic resources on the fish stocks, the wider aquatic ecosystem and other concerns of the fishing population. But fishers, their communities and fish stocks are also affected by activities undertaken on the land as well as on the sea by people from outside the fishery sector. The fisheries department and the fishing sector will probably not have the authority or the competence to address and influence these activities. And fishing itself may have an impact on other sectors. Only when the area under consideration is managed as a whole with co-operation of all relevant departments, sectors and stakeholders can such mutual effects and the conflicts resulting from the multiple uses of the space and resources be addressed. Management of the fishery in the coastal zone should ideally be part of (nested in) the Integrated Management of the Coastal Zone (ICZM).

Attempts to ICZM in the past have often resulted in series of reports and maps but the next step: making it operational has proven to be difficult in many places. A conceptual framework for Integrated Coastal Zone Management will be presented. The major components essential to make this form of management address concrete issues effectively and solve problems are described. The approach is issue-driven, uses the relevant tools to collect and integrate data and information from various sources, and relies on the needed disciplines in order to gain a comprehensive view of the problems. It involves community-based decision making. The approach makes it possible to initiate an on-going problem solving process that responds to the need to co-ordinate the integration of relevant available expertise. A minimum level of awareness among the communities and agencies to obtain support and commitment, an authority recognised by all parties and responsible for stimulating and guiding the process, transparency, true participation, feed back mechanisms and documentation are identified as essential conditions for successful application of the approach.

*P. Spliethoff, M. Staljanssens and P.G.M. van der Heijden, Department of Sustainable Management of Natural Resources International Agricultural Centre, Wageningen, Netherlands.*

### ***Integrating Biological and Social Considerations for Protected Area Establishment: The Case of Papua New Guinea.***

*Helden, van, Flip*

In recent decades strict preservationist policies have come under fire for both moral and practical reasons. As a result, conservationists are increasingly looking towards establishing a variety of 'integrated' and 'community-based' conservation regimes in and around protected areas. Papua New Guinea (PNG) represents a special case in the field of international conservation as both land and marine resources are owned by local communities, and as the Government of PNG has no means to alienate land for the purpose of conservation. This implies that the resource owners, and not the Government, are the first interested parties when it comes to negotiations concerning the use of natural resources. The only practical means to conserve nature in PNG left open is thus to negotiate directly with local communities and to make conservation attractive by combining it with development services and income generating opportunities.

The realisation that in the context of communal land tenure the choice for a specific area of work is dependent on the co-operation of local people is leading to a significant turn around in the way in which conservation agencies develop protected areas. Usually biologists take the lead, defining the areas of maximum biodiversity, following which they design protected areas on the basis of requirements such as location, habitat diversity, endemism, minimum size and preferred shape. Only once this is done the conservation agency gets around to designing measures to secure the co-operation of local people. In the PNG situation however, social and economic aspects, as well as measures to integrate conservation with income generating activities have to be taken into account from the start. This means that the shape that conservation interventions and the resulting protected areas take are not so much guided by the technical standards used by biologists, but much more by the social, political and economic features of local society.

The presentation will use two or three examples from both terrestrial and marine conservation projects to show how these aspects are changing the practice of conservation area siting in PNG.

### ***The Indo-pacific centre of Marine Biodiversity***

*Hoeksema, Bert W.*

For nature conservation organisations and users of marine resources, such as those involved in the maritime tourist industry, it is relevant to know which coastal areas are rich in animal species.

The highest marine biodiversity occurs in the Indo-Pacific, particularly on coral reefs in the coastal areas of East Malaysia, Indonesia, the Philippines, and northern Papua New Guinea. Most of the species here show broad Indo-West Pacific ranges, from the western Indian Ocean and the Red Sea toward the central Pacific, whereas others occur predominantly in the Indo-Pacific convergence. Hence, the highest concentration of species is found where most distribution ranges overlap. Well-defined boundaries of this centre are important for understanding its history and present situation, since they may relate to the area's oceanographic and geological past.

Sustainable use of species-rich natural resources requires innovative approaches. Two examples are given. At the north-east coast of Bali, Indonesia, the village of Tulamben is involved in the diving industry by the establishment of a co-operation of porters who assist divers by bringing their heavy gear to the dive spots. At Cebu, Philippines, a fishermen's community is involved in the development of coral cultivation for the aquarium trade with the assistance of the local university.

Keywords: Indo-Pacific, species richness, marine resources, diving tourism, coral cultivation

*Bert W. Hoeksema, Nationaal Natuurhistorisch Museum / Naturalis, Postbus 9517, 2300 RA Leiden, The Netherlands*

### ***Ecosystem dynamics and sustainable shell-fisheries***

*Hoekstra, Jeljer*

In the ecosystem of the Waddensea, some birds feed on commercially attractive shellfish. The ecosystem is not stable. Stock levels of birds and shellfish fluctuate from year to year. These natural dynamics make it difficult to establish a sustainable fishing strategy. This paper investigates the effect of several fishing/regulation strategies on the stock levels of protected birds through computer model experiments. The model simulates the feeding behaviour of birds, the way they distribute themselves over the area and recruitment of young birds and shellfish. Not only average stock levels but also the resilience such as the ability to recover and speed of recovery after shocks notably harsh winters are investigated. A ban of all shellfisheries (the natural system), no regulation at all, and the effect of protected areas and quota are the strategies under scrutiny.

Keywords: ecosystem dynamics, resilience, sustainable fishing strategies.

*Jeljer Hoekstra, Free University, Faculty of Economics, De Boelelaan 1105, 1081 HV Amsterdam*

### ***Realism and Constructivism in LEK Scholarship***

*Holm, Petter*

Scientific knowledge with regard to the status of fishery resources has until recently been assigned a privileged position within the established system of fisheries management. During the last few years, fisheries management has increasingly been perceived to be in crisis. To some, this crisis also includes severe flaws in fishery (stock assessment) science. As part of a more general argument for broader and better user participation in fisheries management, it has also been argued that the knowledge basis for fishery management should be made more democratic. Hence, local or indigenous ecological knowledge has been presented as a complement to or replacement for formal scientific ecological knowledge within modern fisheries management.

This paper is only indirectly interested in local ecological knowledge (LEK) and scientific ecological knowledge (ScEK). Instead, it focuses on the scholarship on LEK, i.e. how LEK has been portrayed and analysed within academic discourse. More precisely, the paper investigates the sociologies of science that are employed within LEK scholarship with regard to LEK and ScEK. In particular, the paper

looks at the deployment of realist and constructivist repertoires in order to sort out the validity of LEK and ScEK knowledge claims, and how these two knowledge systems relate to each other.

*Petter Holm - Norwegian College of Fishery Science, Breivika 9037, Tromsø, Norway Tel: +47 776 45548*

### ***Tourism development and its impacts on maritime community of Rendang Island, Malaysia***

*Ibrahim, Yahaya - Norsiah Ahmad*

It cannot be denied that the development process experienced by a once remote area will result in changes to its environment as well as the life styles of its community. This is the case experienced by the community in Redang Island with the introduction of tourism-related development process. The socioeconomic transformation and changes related to the everyday lives of this local community are the main focus of this study.

The findings show that the traditional fishing community in Redang Island are not exempted from this change process resulting from the said development. The once 'isolated' community has now been awakened by the invasion of investors and developers who perceived Redang Island as a 'gold mine' that promises lucrative returns in the future.

Generally, after years of waiting, the promised change and development process has finally arrived in Redang Island although its benefits as enjoyed by the local community could be said to be only a tiny portion of the benefits actually generated and enjoyed by others. Even then, only a few members of the community enjoy the benefits. This is because development has proceeded without sufficient social, economic, physical and psychological planning and preparation on the part of the locals. Thus, the benefits derived from the development process are seen as fulfilling the economically motivated objectives and agenda of the investors without much thought being given to its social and economic contribution to the local community.

Although initially the community in general had hoped to experience an occupational transformation from being a fisherman to other types of occupation on land, which are perceived to be more stable in terms of income and prospect, that hope has now diminished somewhat. The direct impacts of the development process are yet to be clearly experienced and seen by the community. In fact it can be said that the tourism-related development has not delivered the social and economic benefits promised to the community.

*Yahaya Ibrahim, Faculty of Social Science and Humanities - Norsiah Ahmad, Faculty of Business Management  
University Kebangsaan Malaysia, 43500 UKM Bangi, Selangor, MALAYSIA*

### ***Commercial and artisanal fishers' conflict resolution: an overview of Lake Malawi scenario***

*Jambo, Collins M.- Sam Mapila*

The demand for fish in Malawi has grown high in the past decade and will inevitably continue to increase for the foreseeable future, *intertalia*, due to anthropogenic activities impinged on the aquatic environment by the increasing fishing population. The current demand of food fish in Malawi is extremely high such that annual fish supply per capita per person is about 9 Kg, far much below the World Health Organisation recommended minimum (13-15Kg). Unfortunately, in the past eight years, there has been a notable-declining trend of landed catches resulting into inadequate fish on the market to meet the escalating demand. It is believed that such a fish demand–supply imbalance has, to a certain extent, ignited conflicts between commercial and artisanal fishers as regards to quantities and type of fish being exploited. Artisanal fishers have been accusing the commercial fishers of catching more fish than artisanal fishers. There have also been claims that the commercial sector is responsible for the decline of the most economic valued chambo (*Oreochromis* Spp.) stocks in Lake Malawi. Such misconceptions have attributed to violation of “*de jure*” fishing regulations by artisanal fishers. To resolve the conflict, catch effort data from the artisanal, semi-commercial and commercial sectors were analysed, with a view of re-actualising the catch trends by fishing sector and species of economic importance. Results indicate that, in overall, artisanal fishers have been catching more chambo, nullifying



allegations that the commercial fishers are responsible for the decline of chambo. Recommendations indicate that the concept of civic education through multisectoral approach needs to be adopted as a tool for fisherfolk to understand why catches and fish stocks of economic importance have dwindled. Politicians, chiefs, resource users at grassroot level and policy makers need to collaborate and formulate measures that could aim at attaining equitable and sustainable fish yields; hence develop and improve the livelihoods standards of the fishing communities.

*Collins M. Jambo & Sam Mapila Fisheries Development Office, P.O. Box 47 Mangochi, Malawi. Fisheries Headquarters, P.O. Box 593, Lilongwe, Malawi.*

### ***Co-management, the Community and Representation***

*Jentoft, Svein*

In this paper I discuss a problematic but important design issue of the co-management model in fisheries co-management. This is the nature of user involvement, which can mean many things and involves some hard choices. First, there is the matter of degree, or how much involvement. There are both benefits and costs to consider, and more involvement is not always better. Secondly, involvement may assume different forms. Exactly how and as what users should be included in the management process is a pertinent co-management question. Ideal as it may seem from a democratic perspective, direct participation in decision-making is not always possible or preferable. Scale can make representation, i.e. participation by proxy, indispensable. But also representation is a concept of diverse contents, and may not always have to be a substitute for direct participation. Thirdly, there is the issue of capability, what user-groups may realistically take responsibility for. Overload is a clear danger. I debate which factors count and the means needed for increasing users ability to become effective co-management.

*Jentoft, Svein - Institute of Planning and Community Studies, Faculty of Social Science, University of Tromsø, N-9037, Tromsø, Norway.*

### ***Representation in fisheries co-management***

*Jentoft, Svein - Knut H. Mikalsen - Hans- Kristian Hernes*

In this paper we discuss a difficult but important issue in fisheries co-management: the scope and nature of stakeholder involvement. We suggest that the issue of representation should be discussed with regard to four questions: First, who should be considered a stakeholder? Not only fishers are affected by management decisions, and the number of groups claiming a stake is increasing as fisheries management has come to be regarded as more of an environmental issue. Second, there is the question of the appropriate co-manager role: as what should stakeholders be represented? Should they represent their group, their community, the public interest - or simply be independent players? Third, there is the issue of how much involvement. More involvement may not always be better and direct participation may - in some cases - be neither desirable nor feasible. Fourth, there is the question of how to represent. What does it take - of knowledge and skills - to make representation effective?

### ***Implications of Revising the "Tragedy of the Commons" by Introducing a Cultural Concept.***

*Johansen, Mayvi B.*

This paper discuss some implications of the "revisionist perspective" which represents a theoretical problem. The studies of man's adjustment to marine resources have been accompanied by discussions of revisions of what have been seen as established conditions for an appropriate management of common resources. Many of these studies have had as their starting point the relations between man and commonly owned natural resources as Garrett Harden expressed them in the theory of the "Tragedy of the Commons" (1968). Steered by the motivation of presenting a more realistic and complex picture of the interaction between fishermen and the marine resources, and to hold on to the powerful metaphor that the "Tragedy of the Commons" represent in a political management context, the "revisionists" modifies the theory by introducing a cultural concept. By doing so the revisionists have come to develop a perspective that carry some epistemological implications which is a hindrance to a good understanding of the ecological relation. The author suggests a way out of the trouble by presenting an alternative ecological fundament.

***Fishy comparisons or valid comparisons? An assessment of an historical comparative approach to the current global fisheries malaise, with reference to Indian and Canadian cases***

*Johnson, Derek Stephen*

It is widely acknowledged that the world is currently facing a fisheries crisis of global proportions. This paper examines some of the methodological problems of speaking about a 'global' crisis in fishing. It focuses in particular on the issue of how it is possible to talk about a collectively experienced fisheries crisis when maritime areas of the world have such dramatically different histories, cultures, and political systems. One main case, the fishery of Gujarat State, is compared against the fisheries of Kerala and the Canadian east coast as a basis for the examination of the problems and benefits that arise through the use of a comparative and historical method.

Like many other maritime areas, Gujarat, Kerala, and the Canadian east coast are all facing serious problems of resource depletion, yet all three places reached that state despite substantially different social, cultural, and policy contexts. Various axes of difference and similarity run between these three cases, raising questions about the validity of comparison between them. The Kerala and Canadian east coast fisheries, for example, have both been marked by strong state involvement in their development, while the Gujarat state government adopted a more laissez-faire position. Ecologically, however, the Gujarat and Kerala fisheries are clearly much more similar to each other than to the Canadian case.

Central to the argument of the paper is the claim that anthropology and sociology offer important methodological lessons for the necessarily interdisciplinary study of fisheries problems. The long history of debate in those two disciplines over the comparative method has much precautionary relevance for current attempts to depict the fisheries crisis as global. Both disciplines excel at highlighting particularity, but both also have a strong understanding of global power of capitalism. Fishing and fishing communities present a fascinating site in which the local and the global interact.

Keywords: Gujarat, Kerala, Atlantic Canada, fishing, comparative historical approach

***Deep Identity, shallow time: sustaining a future in Australian fishing communities***

*Just, Roger - Monica Minnegal - Peter D. Dwyer*

Like commercial fishers everywhere most fishers living in coastal communities of Victoria, Australia, perceive themselves to be under threat from imposed management regimes, recreational fishers, environmentalists and globalisation of the industry. Like commercial fishers everywhere they appeal to lifestyle, specialised knowledge and an 'ethnicity' peculiar to their profession in seeking to ameliorate these threats. But unlike other commercial fishers, the historical genealogy of Victorian fishing communities is very shallow, rarely reaching five or six generations of a family fishing out of the one port, and fishing practices have been flux throughout those 150 years. Victorian fishers combine a strongly articulated commitment to place, profession and past practice with relatively high mobility and innovative responses to opportunities provided by changing markets, targets and technology. An implication of these observations is that a strong sense of social identity may emerge and be established in relatively short periods. In this paper we explore this process of rapid identity formation and raise the possibility that there are particular facets of fishing as a way of life that promote appeal to tradition.

***The Canadian atlantic movement for community-based management***

*Kearney, John*

Despite the depletion of fish and forest resources relied on by the small-scale sector in the Canadian Atlantic Provinces, many small rural communities have been experimenting with models of self-regulation and ecosystem-based management that diverge sharply from the privatisation and single species approaches currently promoted by federal and provincial governments. Even more interesting, are their attempts to organize broadly-based regional groups that link community health with sustainable natural resource management. This paper will explore some of the more interesting organisational

challenges and innovations that have arisen through this process of experimentation. It will further discuss their potential relevance for issues of community-based resource management globally.

*John Kearney, Manager, Centre for Community-Based Management, St. Francis Xavier University, P.O. Box 5000, Antigonish, Nova Scotia, Canada B2G 2W5*

***Fishing in marginal waters. The case of coastal Nam Dinh (Vietnam).***  
***General Theme : conquest of the sea (chinh phuc bien).***

*Kleinen, John - Nguyen, van, Chinh - Zwieten, van, Paul*

Fishery in Vietnam has a long tradition. Nevertheless, Vietnam never became a sea-borne empire in spite of its long coastline and dynastic interest in naval power. State formation processes since the 10<sup>th</sup> century have been interrupted many times by internal strife and competing dynasties whose leaders fought mainly battles on solid ground. This paper examines the history of coastal and inland fishery (including aquaculture) in three districts of Nam Dinh and looks at the important changes over time which occurred in this region. The inland fishery is treated only as a part which deals with fluvial fishery.

The paper deals with the following topics:

1. The role and production of aquaculture and its effects on maritime livelihood.
2. How has fishing effort and output changed over time, and how have people responded to these changes?
3. What knowledge, perceptions and experiences do local people have on the effects of environmental change including fisheries on their livelihoods, and vice versa? More specifically: how perceive people their environment ? How was it developed in the past ?

*Dr. John Kleinen: University of Amsterdam*  
*Dr. Nguyen Vanm Chinh: University of Singapore and University of Hanoi*  
*Drs. Paul Van Zwieten: University of Wageningen*

***Environmental Conflicts regarding Coastal and Marine Ecosystem Impacts in Greece, Spain and Portugal (1974-1994)***

*Kousis, Maria*

This paper aims to provide an exploratory overview of 397 local environmental conflicts related to negative environmental impacts on coastal and marine ecosystems which took place between 1974 and 1994 in three Southern European countries. These are drawn from a larger data set of 2,718 environmental protest cases. Each case represents collective incident/s in which five or more persons from a specific geographic area, excluding members of the national government, express criticism, protest, or resistance, making a visible claim for their health, physical environment or economic status, which, if realised, would affect the interests of some person(s) or group(s) outside their own numbers during a given time period.

The evidence stems from protest-case analysis, a method that combines elements from both the qualitative and quantitative approaches to environmental protest. [For more details see Kousis, M. (1999) 'Sustaining Environmental Mobilizations: Groups, Actions and Claims in Southern Europe,' *Environmental Politics*, spring special issue.] Articles were located by reading every issue of the major national newspapers *Eleftherotypia* (GR), *El Pais* (ES), *Jornal de Noticias* (PT), and *Publico* (PT), as well as the ecology magazines, *Oikologia and Perivallon* (GR), *Nea Oikologia* (GR), *Integral* (ES), *Quercus* (ES), and *AAVV-Forum Ambiente* (PT) for the same period. About 80 percent of the articles come from national newspapers.

According to grassroots environmental activists in Greece, Spain and Portugal, coastal and marine ecosystem impacts are mainly attributed to sources or activities related to: construction, fishing, tourism, sand extraction, manufacturing, water transport, military installations, improper planning, waste and energy installations. Almost half of such environmental protest occurs in urban areas, followed by rural and semi-urban respectively. A small but important

portion of such mobilisations (one tenth) is the product of collaboration between urban and rural activists. Using illustrative examples, in addition to analysing these further, the paper will also present the basic features of the groups challenged, such as the state and private entrepreneurs, along with their responses.

*Maria Kousis, University of Crete, Department of Sociology, Rethimno, Greece - The data for this paper come from an EC, DGXII funded project on "Grassroots Environmental Action and Sustainable Development in Southern Europe" (EV5V-CT94-0393) co-ordinated by M. Kousis.*

***Proposition for an ecosystemic approach to fisheries management in Pacific Island countries***

*Kulbicki, M - J. Ferraris - P. Labrosse*

Pacific island countries are submitted to a very important demographic growth and to major changes in their economical structure. This is translated by a dramatic increase in the use of their coastal resources, which is their main source of protein (subsistence fishing represents 80% of the catch in these coastal fisheries). The lack of information on these highly diversified resources and the absence of a general framework are major problems in their management. An analysis from the ecological standpoint indicates that the diversity of these resources and of their environment are strongly linked to regional factors and local factors. Regional factors involve biogeographical region, island size and island type. They have a direct influence on species diversity, environmental conditions and the characteristics of species. Local factors include biotope, geomorphology, perturbation levels (fishing, pollution ...) and physical factors such as bottom type or depth. These factors act in conjunction with the regional factors. Each island can be considered as an isolated system with limited exchanges, either from an ecological or social-economical (relative to subsistence fishing) point of view. An analysis of the resource types and levels, their environment and their uses among a limited number of islands representative of the major trends of these factors should enable models predicting these variables. From this work various types of indicators on resource status and potential will be developed. A regional data base and a subsequent regional monitoring program are envisioned from this ecosystemic approach.

Keywords: Pacific, island, ecology, resource, fishing

***Management and Sustainable Development of Coastal Zones of Developing Countries – Long term Perspectives***

*Kumar, P.K. Dinesh*

Rapid deterioration of the highly fragile zones of the coastal ecosystems due to multiple and conflicting human activities have resulted into the reconciling the development objectives and conservation aims of the coastal zones in several developing countries. As the environmental and resource management issues of the coastal zones are further aggravated by the global climate change scenarios, the policy of short term economic planning in terms of achieving sustainable development too has been severely criticised. climate change scenarios. Recently, a number of coastal zone management initiatives are on in several regions which are reviewed in this paper to have an integrated profile with a point of identifying promising approaches for the future. An analytical framework focusing on environment, human health and economic significance has also developed, based on which it's suggested that conflicts of interests between short term economic benefits and long term ecologic assets should be identified by means of a balanced coastal zone management approach. Considering the long lead time take to create institutional infrastructure to become fully effective, it's emphasised that more research effort is to be initiated immediately to look into the possibilities of resource substitutions across a range of spatial scales and into mechanisms to mitigate the effects of uncertainties which will allow closer definition of problems, higher rates of practical success and greater public confidence and to such an extent it should be placed high on the agenda of development co-operation.

Keywords: developing countries, coastal zones, sustainable development

***Support to fisheries research within the new framework programme (FP6) 2002-2006***

*Leviell, Dominique*

The new framework programme (FP6) will provide support to Research and Technological Development (RDT) activities within Europe and the associated states, over the 2002-2006 period. This new programme is aimed at promoting the development of a European Research Area (ERA). Its organisation and content will be described as they reveal a number of innovative aspects compared to previous framework programmes. Implementing instruments whether already used in previous programmes or introduced in this new one (integrated projects, networks of excellence, national co-operation in the sense of article 169) will be presented. Options for the future support of fisheries social sciences or for submitting in the ensuing calls for proposals will be envisaged.

***Evaluation: An essential Requirement for Fisheries Policy Planning***

*Llaneza Osuna, José Luis*

The new circumstances resulting from the consolidation of an Economic (and Monetary) Union: Full economic integration, enlargements to include future members and changing relationships with third countries, mean that the steering principles of the future common fisheries policy must be:

- 1) Social and political consensus to facilitate the participation of all social and economic agents in its planning and implementation.
- 2) Resource, structure market and social policies must be placed at the same level by means of the principles of subsidiary public action, solidarity and co-operation among institutions.
- 3) Enhanced competitiveness by reinforcing market links of fishing activities and adopting a central role in the integral preservation of resources by means of social and business collaboration.

In order to achieve this fisheries policy must focus on the integration with industrial, commercial and environmental actions, respecting social and cultural values in each area and giving priority to the use of techniques available at local and/or regional level and a realistic determination of prospective scenarios of each national and/or regional programme, which must meet economic and financial feasibility criteria.

Therefore, the involvement of all social and economic agents together of experts becomes essential for the drafting of policies as well as for their implementation, follow-up and evaluation.

The guidelines helping to steer the participation of all social, economic and institutional agents, with conflicting interests that must be harmonised, must be complemented during the planning process.

Thus, adaptability and flexibility in economic planning shall become a basic principle of the planning model to be adopted,

The operative programmes of the different member countries do not include this feature and therefore the entire fisheries policy of the Union is doomed to failure.

The plan's flexibility requires on the one hand an ongoing review of the current situation and of the changes it is experiencing during the Plan's implementation period, and on the other, an analysis of the policy implementation process and of its effects so that appropriate changes can be introduced to make the Plan operative and effective. Evaluation and review are therefore two key mechanisms whose final objective is to ensure the Plan's success and to make possible the achievement of the final objectives it sets out.

Evaluation is not auditing and legal controls. Its task is not just to verify whether the forecasted resources have been adequately deployed or not, or if it abides to the existing regulations - there are other administrative control mechanisms for these purposes - but rather, and above all, to assess the opportunity of policies and programmes. Likewise, evaluation should neither be identified with follow-up, since the final objective of the latter is to regularly verify the progressive, physical and financial implementation of all actions included in the Plan.

In accordance with the above and with the planning methodology recently implemented in the ERDF Funds by the D.G. XVI, evaluation understood as an analysis of the concepts, design, implementation

and usefulness of the policies, must consolidate as a philosophy and practice making the future fisheries policy of the European Union more rational.

*Prof. Dr. José Luis Osuna Llaneza, Institute for Regional Development*

***Fleet In Transition, Purse Seiners of San Pedro, California***

*Lutz, S. - L. Pendleton*

The coastal community of San Pedro is a major commercial fishing center of Southern California. The purse seine fleet of California, which fishes sardines, mackerel, anchovies, and squid, has sustained many peaks and crashes throughout its history. Following collapses in several regional fisheries, State and Federal agencies have mandated strict regulations for the purse seine fisheries. This new regulatory activity, combined with a recent increase in competition from out of state vessels, is causing significant socio-economic changes in the fleet.

This paper examines the socio-economic attributes of the San Pedro purse seine fleet and the possible consequences on the historical fleet of new regulation and competition. A detailed survey of costs, earnings, and socio-economic information from 21 purse seine vessels demonstrates both the long history of purse seine fishing in San Pedro and the contribution of the fleet to the local community and economy. Many purse seine vessels in the fleet are doing well while others are struggling. The fleet of today is heavily invested in purse seine fishing; captains estimate that the replacement value of the fleet's vessels and gear would exceed \$24 million. The analysis of this information is intended to empower the fleet to help realise its true value and contribution to the local community as well as the State of California and to be a direct tool for decision making entities at the state and federal level.

*Lutz, S., Pendleton, L. University of Southern California.*

***Gertrude Stein, the Emperor, and Researching Rural Maritime Communities: In Search of Relevance, Competence, and Humility***

*Macinko, Seth*

Within the formal structure of fisheries management in the USA, there is increasing emphasis on the fate of rural fishing communities. Amidst this heightened attention to community impacts, there is little agreement on how to put this concern into action. This paper reflects on this situation and presents an in-progress report on a deliberate trial of community research methods. In addition to reporting on the trial, epistemological aspects of the "science" of fisheries management are explored.

*Seth Macinko, Department of Geography, University of Connecticut, USA*

***Property, Place, and Community: Fisheries Management in the 21<sup>st</sup> Century***

*Macinko, Seth*

In the context of fisheries management, much contemporary debate is focused on concepts of property (or so-called rights based fishing) and community. Much less attention is focused on place. This paper suggests that this relative ranking ought to be reversed. Contemporary emphasis on property rights relies upon a particular view of construction of mobility as an asset. This view of mobility is inherently incompatible with attachment to place. New constructions of "community" (virtual communities) have arisen to complement this hostility to place. In contrast, other institutional arrangements emphasize a place-based concept of community. Significantly, mobility also plays an important role within these place-based schemes. However, mobility is conceptualised as an asset in the struggle to remain viable in a place rather than as an asset in exiting a place. Future management trajectories are explored relative to alternative emphases on place and the relationship of place to property and community.

*Seth Macinko, Dept. of Geography, University of Connecticut, USA*

### ***Participatory methodology used for a sea urchin co-management in Barbados***

*Mahon, Robin - Sharon Almerigi - Patrick McConney - Christopher Parker - Leo Brewster*

This project aimed to develop methods for co-management of exploited marine fishery resources in Barbados using the sea urchin fishery as a test case. The approach was to work with stakeholders, primarily the fishers, to establish a co-management mechanism that could be operated by the fishers themselves with technical and advisory support from the Fisheries Division. The project used a participatory methodology, the Technology of Participation (ToP), developed by the Institute of Cultural Affairs (ICA). ToP methods used included Focused Conversation and Participatory Strategic Planning. To our knowledge, this methodology has not previously been applied in small-scale fisheries co-management. Fishers involvement was developed in stages: identification of groups of fishers in communities and a contact person for the group; dialogue with individuals and the small groups; discussion in larger groups to derive approaches to management; and full group participation to reach consensus regarding the most appropriate approach to management. Key persons identified in communities helped organise meetings to discuss the sea egg fishery. From these community meetings, individuals were selected to take part in the strategic planning. Two vision meetings with separate groups of fishers, produced similar results. These groups were combined at a planning meeting, where fishers examined the blocks to achieving the vision, developed strategies to overcome the blocks, and an action plan to implement the strategies. Fishers and government officials concluded that the methodology had successfully facilitated the input of both parties and produced a workable, consensual approach.

*Present affiliation: Coastal and Marine Management Program (CaMMP), Caribbean Conservation Association (CCA), "Chelford", Bush Hill, The Garrison, St. Michael, Barbados - Robin Mahon, People Dynamics Associates, 48 Sunset Crest, Barbados - Sharon Almerigi, People Dynamics Associates, 48 Sunset Crest, Barbados - Patrick McConney, Fisheries Division, Ministry of Agriculture and Rural Development, Barbados - Christopher Parker, Fisheries Division, Ministry of Agriculture and Rural Development, Barbados - Leo Brewster, Coastal Zone Management Unit, Ministry of Health and the Environment, Bay Street, St. Michael, Barbados*

### ***The development of the Galician fishing activity in recent times. Fleet restructuration and the struggle for fish resources.***

*Martiñan, Piñeira M. J. - González Sánchez, F. J.*

Fishing activity is one of the main features of Galician coastal areas. It owns strong historical roots, which have played an essential role in both settlement and economic development, making of Galicia the Spanish most important fishery region. For centuries, Galician fishermen have sailed into relatively remote fishing grounds in order to overcome the restrictions in their nearest coastal waters, conditioned by a narrow continental shelf. Since the 1960's a powerful offshore fleet has been consolidated in Galicia bound to a government political initiative, becoming one of the largest worldwide. The intense renewal, based on the modernisation of both vessels and infrastructures, enabled the Galician fleet to reach the fisheries all over the world. This trend went into a crisis due to the changes in the international framework, such as the establishment of the EEZ of 200 miles, or the entrance of Spain into the European Union. The Galician fishery system has been forced by this new context to face a significant restructuration process to assure their survival. In this paper we will be focusing on the main strategies that have been followed to cope with the new challenges of this activity, specially addressing the policies carried out to guarantee the access to the fishing resources.

**Key words:** Economic exclusive zones (EEZ), fishing grounds, Galicia, joint ventures, offshore fleet.

*Piñeira Martiñan, M. J. - González Sánchez, F. J., University of Santiago de Compostela.*

### ***Important Factors Influencing Compliance in Fisheries - Lessons from Danish Fisheries -***

*Mathiesen, Christoph - Nielsen, Jesper, Raakjær*

This paper presents the results of a research project, which focus on Danish fishers' acceptance of imposed fisheries regulations and their confidence with the management system. The analytical frame-

work developed by Raakjær Nielsen (1998) and Raakjær Nielsen and Vedsmann (1999) has been applied. The research focus on three Danish fisheries: the cod fishery in the Baltic Sea, the demersal and Nephrops fishery in Kattegat and the industrial fishery for non-human consumption species in the North Sea.

The research is based on interviews with 56 fishers and a mail based questionnaire survey covering all vessels (skippers) in the three selected fisheries. Furthermore, interviews have been conducted with enforcement agents and officials of the Directorate of Fisheries.

The following factors are concluded to have a major impact on compliance in fisheries: 1) the economic gains to be obtained from non-compliance; 2) the risk of being detected and the severity of the sanction; 3) the compatibility between regulations and the practice and patterns of fishing; 4) perceived meaningfulness of regulations in terms of stock conservation; 5) the actual and expected behaviour of other fishers and the moral of the individual, 6) finally there is indication, that management procedures, including co-management and enforcement procedures, has an impact on the incentive to comply with the regulations.

Keywords: Compliance, fisheries management, legitimacy, Danish fisheries, fisher's behaviour.

<i>Mathiesen, Christoph - Nielsen, Jesper, Raakjær - Institute for Fisheries Management and Coastal Community Development (IFM), The North Sea Centre, 9850 Hirtshals, Denmark</i>
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### ***Changing rules for regulation of Icelandic fisheries***

*Matthíasson, Þórólfur*

The diplomatic corps of Iceland has used much of its time during the third quarter of the 20th century to convince other nations that Icelanders should control and utilise the resources of the waters within 12, then 50 and finally 200 nautical miles around the island. Icelandic politicians have used much of their time and effort during the fourth quarter of the 20th century to debate how to organise the utilisation of the resource and in what way one should distribute the rents from its harvesting. In the paper give a short account of the development of the regulatory reforms in four types of Icelandic fisheries. No one of the reformatory processes can be said to be a replica of the any of the other processes. It seems evident at the face of things that each reformatory process is unique and distinct from the other except for the final outcome, the rule of the ITQs. But that may seem to be to short sighted conclusion. It should be evident from the earliest history of regulatory reforms that the ITQ system was not the intentional outcome. It came to be, eventually. There is a common pattern for all the fisheries, however. First of all: the serious attempts to reform the management practise starts first when the fishery has collapsed or is close to a collapse. Secondly, the first thing that stake holders seem to get done is to close the club that has access to the given fishery. Thirdly, a variety of rules was used to allocate participation rights when the club of participants had been closed. Fourthly, prices were used to manage fisheries in Iceland prior to the invention of the ITQ system. Lastly, management of fisheries by ITQs rather than some form of taxes or fees may have historical rather than logical roots.

### ***Participatory Research: Plus ça change plus c'est la....?***

*McCay, Bonnie J.*

Participatory research can be seen as a radical, constructivist enterprise (Frank Fischer and others) or as a more-or-less manageable challenge to business as usual, where lay participants are brought into the domain of standard science and bureaucracy. In the United States federal fisheries, the latter is the way participatory research, which resurfaced in the late 1990s, is being expressed and communicated in the media and by public officials. In this paper I will depict recent efforts at participatory research for several species in the Atlantic coast region—scallops, squid, scup, surf clams, and ocean quahogs, or a smaller combination of these five. I will describe attempts by the managerial and scientific establishment to claim and maintain control over the process of research and interpretation of the results and counter-claims and efforts by university scientists and members of the fishing industry. The stories I will tell are embedded in more complex situations, some of which will figure in this account, including the involvement of environmentalist NGOs and the workings of the regional fishery management councils, which themselves are weird democratic mixtures of managers with scientific training and lay people.



Bonnie J. McCay - Department of Human Ecology, Rutgers University, New Brunswick NJ 08903 USA

***Licence buybacks and the aboriginal fisheries strategy of atlantic Canada: a preliminary review***

*McGaw, Richard*

Two Supreme Court decisions (Marshall and Sparrow) recognized the Aboriginal right in Canada to fish for food, social, and ceremonial purposes. The Federal Department of Fisheries and Oceans began an Aboriginal Fisheries Strategy in 1992 as a response to the grey areas left by the Supreme Court, and to the need to improve the economic well-being of the Aboriginal communities. The Auditor General reported recently that the "major issue the Department faced during the 1990s was balancing rights to access and shares in the fisheries harvests among competing groups - commercial fishers, Aboriginals, fish farmers and recreational fishers - as the nature of the resource changed."

Since there are no fisheries where there is a deficiency of effort, part of the strategy is a voluntary buy-out of licences and gear of existing fishers. These are then transferred to the Aboriginal communities as communal licences. According to the Department of Fisheries and Oceans, in the "Scotia-Fundy Fisheries sector alone over \$3.6 million has been allocated by Ottawa to facilitate this program."

The purpose of this paper is to review to the extent possible the outcomes of the buyouts and the resulting expansion of the Aboriginal fisheries.

*Richard McGaw, Department of Economics, University of New Brunswick, P.O. Box 4400, Fredericton, NB E3B 5A3;*

***Fishing, Families, and the Survival of Boat Ownership in the Bigouden Region of France***

*Menzies, Charles R.*

Small-scale, family fishing enterprises manage to persist despite the difficult economic and ecological changes and disruptions they almost constantly have experienced during the past several decades. Drawing upon long-term ethnographic and historical research in the Bigouden region of France, this paper asks why and how family-based fishing enterprises continue in the face of what seem to be overwhelming odds. This is accomplished through an evaluation of the social reproduction of family-based fishing enterprises in the Bigouden region of France. Specific attention is paid to: (1) the factors that contribute to the maintenance of boat ownership from one generation to the next generation, and (2) an exploration of the extent to which boat-ownership in one generation can be linked to a family's continued participation in the fishery in subsequent generations. The paper concludes by arguing that continuation in the fishery during a period of overall declining employment has been contingent upon the degree of vessel ownership in the preceding generation.

Keywords: Bigoudennie, Brittany, social reproduction, boat ownership.

*Charles R. Menzies, University of British Columbia*

***Property rights and multiple-use conflicts in the Mediterranean sea***

*Mondardini, Gabriella*

My papers aim to find out the interactive process between the traditional practices of sea tenure by fishermen and the environmental conservation policies and touristic activity. For this purpose it identifies a Mediterranean area in the Northern Sardinia, where, although a massive touristic flow, there still persist traditional economies, knowledges and practices.

Studies carried out among fishermen of the Northern Sardinian coasts (Mondardini 1984,1990,1997), have verified that sea territory appropriation by fishermen is connected to rights of use concerning specific places, seasons, ichthyc species and capture techniques. Such rights are sedimented in time and guaranteed by social dynamics of the community and therefore structured by the maritime local knowledge. Consequently they constitute an important aspect about fishing communities' identity and autorepresentation.

At present it seems that traditional practices come into conflict with technical and social innovation, marketing patterns bring pressure to superexploit ichthyic resources, while urban and industrial pollution together with uncontrolled bathing threaten the sea environment. To solve this problem, the policies of environmental protection and control (laws on fishery, biological stop, marine parks and protected areas) set up a reorganisation and a use of the territory which can overlap with traditional uses, sometimes with some contrast. To give a contribution at a comparative level, I could like to analyse the interactive process among different patterns of material and symbolical appropriation of marine territory.

Keywords: fishing, tourism, Mediterranean sea.

### ***Co-management, Legitimacy and Fishing Effort Reduction***

*Nielsen, Jesper Raakjær*

Reduction of effort is widely seen as a key objective for fisheries management. This paper is a contribution to the on-going discussion on how to design appropriate management institutions in fisheries and develop appropriate measures to control fishing effort. It reviews the issue from the perspective of the role that can be played by co-management approaches. Focus will be given to the questions: Can fisheries co-management institutions contribute to effort reduction, and maintain/increase legitimacy among fishers.

This paper will draw on empirical experiences from different institutional designs of fisheries management systems in Southern Africa and Northern Europe. This approach will enable a comparison across different scales of fisheries and a broad variety of institutional set-ups that govern the fisheries in the two regions.

A critical issue in relation to effort reduction and legitimacy is how important is fishing mortality for the conservation of fish stocks and what are the driving forces for effort development. Based on the empirical findings, the paper will illuminate important biological, economic and social factors, which need to be taken into consideration when addressing the issue of effort reduction, which is a challenge for the institutional management set-up, as it often will be required, that effort reduction is adjusted to the conditions of the specific fisheries.

<i>Jesper Raakjær Nielsen, Institute for Fisheries Management, North Sea Center, Willemoesvej 2, Box 104, DK-9850 Hirtshals, Denmark</i>
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### ***Consequences of the Habitats Directive for decision-making on land reclamation and other infrastructure projects in the European Union***

*Neumann, Frank*

All large ports in the Hamburg- Le Havre range are expanding in order to obtain a market share of the expected rise in container capacity. While in the 1970s the decision-making and implementation of port expansions went unquestioned and swift, the studies preceding the decision-making were primarily focussed on the technical realisation and safety. Many environmental regulations were not yet in place. Resistance of environmental groups was relatively weak and the attention was on economic growth without taking the environment into account.

Particularly since the end of the 1980s, the situation is different. Besides national regulators within the EU there is now the European Commission as an important entity that has some authorities of its own. Also, environmental groups have grown and professionalised and know the opportunities that EU policy and the dynamics of the European administrative layer can offer. National governments as well as local authorities however, seem to have stayed behind in the transposition of EU directives in general as well as in the dealing with the European administrative layer as a strategic or decisive factor in public decision-making compared with environmental groups. In an increasing amount of cases decisions of local and national governments are challenged successfully in national courts as well as in the European court of Justice upon basis of European regulation.

A good example of the sector in which these processes play a role is the port sector. This sector seems to have raised considerable interest from interest groups as well as from the European Commission.

Decisions on the expansions of ports are particularly in focus, perhaps because of the multitude of functions of these areas: recreation, fisheries, maritime transport, defense activities, and mining. Particularly port expansions in proximity of estuaries that are nominated or designated as SPAs (Special Protection Areas) in perspective of the Habitats Directive have to do with balancing the traditional economic values of such expansion against ecological consequences. Nearly all ports along the Hamburg/Le Havre range have to do with the European Habitat and Bird directives, which pose requirement for the decision-making on plans or projects that are expected to have effects on protected species and habitats or protected areas and the Natura 2000 network. Besides nature protection policy, also other international regulation of course has consequences for port expansions, as for example, international zoning laws (e.g. the 12 mile zone), the Malta treaty (regarding possible sites of archeological value), or state aid regulation. This paper however, will concentrate on the Habitats directive and then particularly on article 6 of that directive. First, an overview is given of general experiences in the European Union with 11 infrastructure projects and article 6. Then, examples are given of cases in the European Union with reference to similar situations in the United States. Finally, some preliminary conclusions will be presented regarding the effects of the Habitats Directive on the decision-making regarding port expansions in general and regarding land reclamation in particular.

Keywords: Habitats directive, port expansions, marine ecosystems, European nature protection policy

*Neumann, Frank - Institute for Infrastructure, Environment and Innovation*

### ***Co-management: a solution or an alternative management regime for Lake Victoria***

*Onyango, Paul*

Management of Lake Victoria has been a central concern for the riparian states (Kenya Uganda and Tanzania). This concern has been felt after realising a downward trend in the catches and overall production from the lake. Efforts to reverse this trend were felt should be addressed through a change in the management regime. This resulted in a discussion on finding a suitable management regime for the lake, and top on the discussion was co-management. More efforts were directed on this management regime with the Research Institutes focusing on looking at the suitability and relevance of this regime for this important lake. On the other hand, the Fisheries Division of Tanzania established management units at the beach level called Beach Management Units (BMU). This redirected the discussions from finding a suitable regime, to discussing the BMU's and the research activities on co-management. Two differing views emerged out of this last discussion. One view argued that co-management is the solution to the lake's problems and as such BMU's are an important requirement for the establishment of this regime in the lake. The other view argued that before implementation of any regime there's need to be sure of its pros and cons as well as compare how that regime has worked elsewhere. While the debate was on decision makers resolved to go on with the idea of BMU's and that all efforts should be directed to improving these BMU's. This paper will present both views and in addition it will give results of research carried out by the research Institutes on the suitability of co-management for Lake Victoria. The paper looks at co-management whether it is a solution or just an alternative to the lake fishery.

Keywords: co-management, Lake Victoria, fisheries, property rights.

### ***Coping with high income variability in a highly uncertain fishery on pelagics around Ambon and the Lease Islands (Moluccas, Indonesia)***

*Oostenbrugge, van, J.A.E. - W.L.T. van Densen - M.A.M. Machiels*

High uncertainty in daily catch rates can be an important structuring factor in small-scale fisheries. To cope with the high variability in the catch from one day to the next, variations in catch rates should be either compensated by price elasticity or fishermen should seek for other sources of income to combine with the fishery. Analysis of daily market prices for fish as landed by the coastal fishery on small pelagics around Ambon shows that the large variability in the daily catches in this fishery is stabilised only to a small extent by price fluctuations. Because of sharing system in use, the variability in the income of individual crewmember equals the variability in the daily catch rates of a fishing unit (CV= 3.4). The average income of an individual crewmember is low (<1 US \$ - day<sup>-1</sup>) and insufficient to sustain basic needs, but incidentally large amounts of money can be earned (up to 35 US\$-day<sup>-1</sup>). This has consequences for many characteristics of the fishery, including the large proportion of part time

fishermen who have other, more certain occupations, effort allocation and technical innovations implemented.

***Towards a comparative database of European fishing communities:  
Approaches, experiences and challenges.***

*Otterstad, Oddmund*

How to build an information system concerning the life in fishing communities that might serve as a useful instrument for policy-making - for professional policy-makers as well as the people experiencing the outcome of the policies? This is the basic idea behind the INDICCO project (FAIR CT98-4399: A European Database of Indicator Coastal Communities) which is about to finish year two of a concerted action programme of three years.

The presentation is divided in three parts. Since it is given one section alone in the conference programme there should be plenty of time for interaction with the audience. Especially participants with practical experiences and engagement in local fishing community life are welcome to take part.

The INDICCO project has developed a framework for compilation of information from such communities in a way that everything submitted is instantly presented on the WEB-site (<http://www.indicco.ntnu.no>). In that way the reality in a local community, documented statistically as well as subjectively (as experienced by local opinion leaders), might be communicated to the relatively few individuals at national or European Community levels involved in formulating the policies.

Part one of the presentation summarises more than twenty years of personal experiences with a chain of projects dealing more or less with the same basic idea. It started with an intensive study of the development of one single Norwegian fishing community during the 1970s, trying to document scientifically why all of a sudden this community declared war against Norwegian fishery policies. During the 1980s several projects followed, and they all were concerned with aspects of interest group involvement and the problematic border zone between politics and science. During the 1990s the instruments of information technology and the availability of huge statistical material have made it possible to widen the scope, both in terms of communities involved and complexity of life. The last project, INDICCO, financed by the European Commission and involving the whole European area, aims at being both statistically comparative and providing a holistic understanding of local realities. To avoid 'breaking our necks' by having too high ambitions we chose to concentrate on a few 'indicator' communities.

Part two summarises the experiences of INDICCO after two years. This is done in contrast to other contemporary European database projects. It is here admitted that the project really was challenging, especially for scientific partners who had few contacts in fishing communities and belonged to nations with weak statistical cultures.

Part three points at the most important challenges, both for the last year of INDICCO, where new cooperative partners are wanted, and the challenges involved when the 'real' database of European fishery dependant coastal communities some time in the near future should be developed.

Keywords: local communities, comparative statistics, fishery policies, interest group involvement, the European Community

*Oddmund Otterstad, Faculty of Marine Technology, Department of Marine Systems Design, Norwegian university of science and technology (NTNU), Trondheim, Norway.*

***Working offshore with nature and maritime activities: the European Community's Birds Directive and Habitats Directive***

*Owen, Daniel*

The European Community's Birds Directive and Habitats Directive aim to conserve the biodiversity, both terrestrial and marine, of the 15 Member States. They establish a key mechanism to help achieve this aim: protected areas, known as "special protection areas" and "special areas of conservation". These are sites where nature conservation is paramount: in themselves, the sites are therefore not an

integration tool. But human activities are not necessarily banned in the sites. Instead, they may continue to the extent that they do not conflict with the nature conservation aims. In the marine environment, a Member State may in principle designate a site within the limits of its coastal State jurisdiction. It may then manage some activities (for example oil and gas production) unilaterally. Other activities, such as fishing or shipping, are not necessarily within the unilateral control of the Member State. Management of these activities may require interaction with the European Community and the International Maritime Organization.

Keywords: biodiversity, marine, European Community, fisheries, shipping.

***Icelandic Fishing People's Adaptive Responses to Climatic and Environmental Variability: Implication for Fisheries Management and Future Fisheries Policies***

*Pálsson, Gísli - James R. McGoodwin*

A discussion of preliminary findings from a research project which is aimed at increasing understanding of the dynamic linkages between Icelandic fishing people and variability in climatic and ocean conditions. The focus will be on searching for correlates between historical variations in Icelandic fisheries production and fishing strategies and variations in climatic and ocean conditions. Tentative suggestions will also be offered regarding the development of sustainable fisheries-management policies for Arctic and sub-Arctic fishing people, who in the near future may have to cope with rapid change stemming from global warming and other environmental changes.

Keywords: climate, fisheries, fisheries management, Iceland, Arctic and sub-Arctic.

***Fishermen attitudes towards aqua-culture and conflicts for the maritime space in the Canary Islands***

*Pascual, Jose*

The coastal zones in the Canary Islands have been object of multiple uses throughout the time. Commerce and fisheries were two of the main activities in the littoral. During second half of this century, nevertheless, other alternative uses were going to struggle by those same spaces.

The tourist activity on the islands littoral rose mostly on those zones in which fishermen establishments had previously existed, and even fish factories. Especially in the south-west this process led to the traditional spaces of fishing communities being invaded by tourists and service activities. An example of this situation is seen in the fact that fishermen did hardly have place for their boats and the uses of the sector in the fishing harbours, firstly constructed to solve the necessities of the fishermen.

During the eighties, but especially in the nineties, also the aqua-culture activity has begun to compete in the use of some coastal spaces, and frequently obtains the rejection of fishermen. Only in rare instances the attitude of the local *cofradias* has been favourable to the activity, and the implication of fishermen in the creation of new aqua-culture farms has been null. Different factors limit their incorporation to this activity, related with capital, knowledge or productive strategies. In this sense, the reconversion to this new activity is not easy, and the impact of tourism on the fishing workforce and on the fishermen strategies of capital investment contributes to it. Moreover, the institutional funding of this new activity has been important, and fishermen frequently reject this fact and the expansion of those activities.

Keywords: fisheries, aqua-culture, tourism, conflicts, maritime space.

*José Pascual, Instituto de Ciencias Políticas y Sociales, Campus de Guajara, Universidad de La Laguna, La Laguna, Tenerife, SPAIN*

***The Ecoplata Program in Uruguay: social participation in a IMC experience***

*Piriz, Clara*

Ecoplata is a IMC program with a very special system of intern organization. Ecoplata is not an institution but an agreement. That means that people of different Governmental Organizations work together in a interdisciplinary team to co-ordinate policies and activities to promote the integrate management of

the coast of Rio de la Plata. The Program has different components. One of them is Pilot Areas, which objectives are to demonstrate that IMC is possible and is the best way we know to do something reasonable with the coast before it's too late in our country. To learn from our experiences: what are our skills, our mistakes, which are the new interrogations, what are the results and the conclusions, what must be done to continue.

This paper explains and reflects on the topics analyzing one of the micro-experiences: with the participation of primary and secondary school people, together with people of the third age, two private enterprises, technicians of the municipality and the interdisciplinary team from Ecoplata we started a process to evaluate and to manage the solid wastes on our coasts. The whole process was useful, because together with the participants we found a sinergical way to work with very important educational consequences and potential in the transforming of our social behaviour.

### ***Problems in multiple use as regarded by coastal fishermen from the West Coast of Sweden***

*Piriz, Laura*

Those making a living on coastal fishery resources can not escape being affected by other coastal users directly or indirectly. This interdependence, which is the essence of conflicts in use of common pool resources, needs to be continuously translated into management approaches, something that ICZM endeavours to do.

If ICZM is going to address conflicts on the allocation of resources to different uses and users, and be organised on the basis of co-management principles, then what the fishermen regard to be an issue in the multiple use of commons turns into a matter relevant for examination. In Sweden the fishermen's associations representatives have been normally heard at different levels of the management process and the Swedish authorities have taken the efficiency of the mainstream co-management model for granted.

The paper reports on results from a survey made in a particular area of Western Sweden, where biological resources and fishery patterns are most heterogeneous, and examines what the fishermen sharing these waters perceive to be problematic in the multiple use situation. This is compared with the results from a similar survey that addressed fishermen's delegates to the Regional Fishermen's Association.

The data uncovers a problem of representation and suggests that a co-management link at the local level is missing.

*Laura Piriz, Dep of Human Ecology, Univ. of Göteborg*

### ***Disappearing indigenous regulations on fishery: a case of kada\_kkodi (sea court) in Kerala, South India***

*Rajan, J.B.*

The traditional fishing in the State of Kerala, India has been carried out by certain communities who from time immemorial ventured into it as an artisanal occupation. Through continuous interaction with the ocean and fish, the artisanal fishermen accumulated trans-generationally a treasure of scientific knowledge on diverse marine eco-system and fish behaviour. The traditional fishing technologies had evolved to suit marine terrain and the specific local fishing conditions. The local communities also had regulated the fishery through ritualised and indigenous patterns. The *kada\_kkodi* (sea court) that had a strong hold in the central and north Kerala, South India is an example for this. The *kada\_kkodi* consist of a committee unanimously elected by the village community. This indigenous court had enjoyed social control. There were regulations on fishing technologies, seasons, timing, etc, which are binding (socially, not legally) to the community. The court had vested with powers to settle social and family issues too. These indigenous regulations had a positive impact from the point of view of fisheries management. This indigenous court in the fisheries sector, which once had a fisheries management regime, has almost disappeared now! Are the old patterns of social relations have given way to more individualistic and competitive patterns, with the result that the organisations of fishing communities has become more atomistic? Do the new patterns of production, marketing, and distribution patterns fuelled by the government's modernisation efforts and development values ruined those systems? What are the lessons of indigenous court for wider canvas of fisheries management? In view of these pertinent ques-

tions, this paper attempts to examine the relevance of indigenous court and reasons for its disappearance. This would help, it is hoped, for formulating a community based fishery management model so as to ensure the sustenance of fishers and marine life forms at large.

*Dr. J.B. Rajan, Fisheries Research Cell, Programme for Community Organisation (PCO), TC-36/291, Pettah-PO, Thiruvananthapuram - 695024, INDIA.*

***Conflicts in the traditional fisheries and issues of property right: two case studies from Kerala, South India***

*Rajan, J.B.*

India is the seventh largest fish producing country in the world. The State of Kerala, on the south-west coast, has always been the leading producer of marine products in India. The coastal margin is densely populated and fishing provides the principal occupation of the coastal villages of Kerala. These small-scale fishermen using traditional technologies are collectively responsible for the major share of the catch. But the things have changed since the fifties with the advent of Indo-Norwegian Project (INP), which introduced mechanised trawlers. The fisheries sector which once was a homogenous entity of traditional fishermen became a two distinct entities - mechanised and traditional; conflicting to each other. Except the changes in gear material in sixties, the traditional sector remained the same. Perhaps the fish production of traditional sector reached its lowest ebb in the dawn of eighties, the sector witnessed series of technological changes -in gear, craft, and propulsion. This had resulted in conflicts within the sector. Why is there a difference of opinion even in the traditional sector? Do these point to the maturing internal contradictions on technology conflict and fishing right? Are the values of equity, sustainability and production for livelihood no more realistic? This paper attempts to discuss these issues by analysing conflicts arose in Kerala in the context of Fish Attracting Lanterns (FAL) in the south coast and the Ringseine in the central and north coast. The introduction of these had resulted confrontation within the traditional fisheries sector - between those who arguing for and against the introduction of the new technology. In view of the mounting social tensions on these issues, the Fisheries Research Cell of PCO has rendered a number of studies. The present paper attempts to highlight the aforesaid issues in the light of the findings emerged from these studies.

*Dr.J.B.Rajan, Fisheries Research Cell, Programme for Community Organisation (PCO), TC-36/291, Pettah-PO, Thiruvananthapuram - 695024 INDIA*

***A group analysis of fishermen perception of the stakes for the future of fisheries: results of a postal survey***

*Raux, Pascal - Denis Bailly - Katia Frangouides*

In the framework of the ELSA Pêche programme a postal survey has been organised to gather the diversity of opinions among fishermen across Europe. This survey deals with the Ethical, Legal and Social Aspects of fisheries management. A questionnaire has been sent to more than 8,000 boat owners in the following countries : Greece, Italy, Spain, Portugal, France, United-Kingdom, Ireland, the Netherlands, Denmark, Norway and Iceland. 1600 answers have been received.

The questionnaire has been structured in four items : a global statement on fisheries and marine ecosystems, the problems in fisheries and their causes, governance of human to nature relation and governance of human to human relation in fisheries. Fishermen were asked to give their opinion according to a scale system. The opinion expressed are then analysed according to major characteristic of localisation in Europe (country, maritime space), of the type of activity (gear), of the area of activity (coastal/offshore). Finally the results of a multidimensional analysis of the responses are confronted to the main view expressed by the fishermen representative during the interview conducted in the first phase of the programme.

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*PANEL « Ethics and Fisheries Management in Europe » Contribution n°2 (Thursday morning)*  
*See for information on the panel: Frangoudes, Katia*  
*Pascal Raux, Centre de Droit et d'Economie de la Mer, Université de Bretagne Occidentale, Brest, France*  
*Denis Bailly, Katia Frangoudes, OIKOS Environnement Ressources, Brest, France*

### ***Fishermen from Izola between yacht clubs, beaches and state borders***

*Rogelja, Nataša*

The paper is about the fishermen community in Izola, a coastal town in the northeastern part of the Upper Adriatic. Attention is given to the wider socio-natural context within which fishermen from Izola find themselves situated after the break up of Yugoslavia. The principal change that fishermen find most influential to their situation is the new state border that caused losses of previous fishing territory along nowadays Croatian coast. Special attention is given to one of the several adaptive strategies devised by the fishermen from Izola, which was increasingly demonstrated after 1991; combining fishery with tourism. Two points are central to the research: *what is the fishermen's attitude towards tourism activities in comparison with fishery* and *what is it that they are marketing for the tourists*. The last of the two questions partly brings to the fore the tourism discourse of the newly established Slovene state about its coastal area, and the analysis of the fishermen's perspective on the new situation and their adaptation to tourism. Stressed are also the wider socio-natural contexts within which this adaptive strategy occurs, and the believed-in facts such as the diminishing of the fishing waters, and the pollution of the sea are examined. These beliefs are often seen as the ultimate parameters within which we *are allowed to/can* understand this adaptation. The answers to the above questions are in this way possible considering various ecological, economical and political contexts as they get articulated within the institutionalized discourses, and perceived, transformed and represented through the individual's actions and knowledge.

*Nataša Rogelja, Junior researcher; social anthropology, Institute for Humanistic Studies ISH, Breg 12, 1000 Ljubljana, Slovenia*

### ***Private water owners and multiple-use conflicts in the Finnish Archipelago Sea***

*Salmi, Pekka*

Finnish coastal fisheries are characterised by a multiplicity of user groups and a hierarchic decision making regime. The user groups have diversified during the last few decades. Employment in commercial fishing has decreased. Various types of recreational fishing have become popular. The Finnish coastal water bodies have traditionally been privately owned in conjunction with possession of land and jointly managed by statutory fishery associations. However, currently the responsibilities concerning fisheries management in coastal waters are shared among governmental public fisheries authorities, Fisheries Regions at the intermediate level and the fishery associations at the local level of the decision making regime.

This paper focuses on the local fisheries management and conflicts aroused with the arrival of new user groups and management institutions in the Archipelago Sea Region, south-western Finland. These conflicts reflect problems related to the transformation of the archipelago from a primary production area towards a landscape of recreation and consumption. The state level of the decision making regime has promoted urban and recreational interests by changing the management structure and fishing license policy. Local water owners have opposed the changes in legislation and interpreted those as interference in private ownership. This study describes the perspectives of the local water owners and other stakeholders towards the fisheries management system, based on interviews made with various interest



groups. The analysis focuses on social and cultural dimensions behind the conflicts and opportunities for more co-operative management arrangements.

Keywords: multiple-use conflicts, water ownership, co-management.

***Renewed struggles over privatizing the marine fisheries commons in post-apartheid South Africa***

*Salo, Ken*

The re-distributive marine fisheries policy of the neo-liberal South Africa is being highly contested. Disparate social actors are engaged in struggles over the control of the marine commons including artisanal fishers for equitable access, sustenance and culturally meaning activities; state for tax revenues and expanded jurisdiction and corporations for commodities and increased surplus value. Their different claims pivot on whether privatizing the marine fisheries commons is either the *cause* or *antidote* for the gross social inequalities and ecological devastation of the apartheid fisheries policies.

Artisanal fishers, as the intended beneficiaries of re-distributive policy objectives, are mobilizing against the withdrawal of the interventionist state from the regulatory arena in the face of mounting challenges by vested corporate interests, as apartheid beneficiaries. The apartheid beneficiaries are seeking to dilute the impact of re-distributive policy changes and place the marine fisheries commons beyond the reach of the state by substituting consumer sovereignty for political accountability. However these attempts at privatizing the marine fisheries commons is not going unchallenged. Artisanal fishers and marginalized fishworkers are joining anti-privatization social movements to hold the state accountable for implementing its policy objectives.

This paper focuses on attempts by local fishers to re-assert and claim control of their local commons on the resource rich west coast of South Africa. It reports on an ongoing study that compares the relative impact of campaigns by artisanal fishers and their social movements on the responsiveness of the state to implement its policy imperatives. Links between the consequences of movement activities and policy outcomes are sought considering how social movements shape and are shaped by the contradictions of a simultaneously democratizing and liberalizing South Africa.

Keywords: re-distributive policy, fisheries privatization, social movements.

<p><i>Ken Salo, University of Illinois at Urbana Champaign 1009 Plant Sciences Lab 1201 S Dornier Drive Urbana, Illinois 61801.</i></p>
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***User-groups conflicts and solutions across political scales: The Ibiraquera Lagoon, Brazil***

*Seixas, C.S. - F. Berkes*

Conflict among user-groups is common in small-scale coastal fisheries. Understanding the roots of user-groups conflicts helps think about appropriate policy mechanisms to solve them. This paper examines the small-scale coastal fishery the Ibiraquera Lagoon, Santa Catarina State, Southern Brazil. Conflicts exist (a) between fishers and tourists for the use of the Lagoon area; (b) between gill-netters and cast-netters; and (c) between local fishers and those who come from outside the Lagoon area. The conflict between gill-netters and cast-netters has existed at least since the 1940s, but it temporarily disappeared from 1981 to 1994 due to strong regulation enforcement provided by State and Federal agencies. The conflict between local fishers and outside fishers, as well as between fishers and tourists, has only emerged in the last 25 years after major growth of the communities around the Lagoon. To investigate user-groups conflicts, interactions among management institutions across a political scale (local community councils, municipal, state, and federal governments) and how these institutions help minimize or exacerbate conflict, we used analytical tools from common-property theory. Promising conflict resolution measures included: empowerment of community councils, agreements between groups of stakeholders, and co-management between local resources users and government agencies. Municipal government may serve to mediate discussion about resource use among community councils, and it may also legitimize agreements between groups of stakeholders (i.e., it may turn an informal agreement into a Municipal by-law). The Federal government may promote the decentralization of the enforcement function from Federal and State governments to the Municipal government, or even to community councils and local fishers' organization. This can result in a more effective, and probably less expensive, enforcement regime, as local inspectors are more familiar with the local conditions than are outsiders. Finally, better co-ordination among fishery agencies across political scales can minimize

discrepancies in management goals and fisheries policies – the cause of breakdown in regulation enforcement in the Lagoon system in 1994.

Key words: small-scale coastal fisheries, user-groups conflicts, fisheries management across political scale.

### ***Tourism and Coastal Development in the Mediterranean***

*Selwijn, Tom*

This paper uses the issue of tourism development in the Mediterranean as a prism through which to look at more general questions of socio-cultural, politico-economic, and environmental processes in the region. The paper is underpinned by a concern with space and spatial transformations. The starting point is the acceleration of coastal development, engendered, as much of this has been, by tourism.

Tourism related shifts of economic gravity to coasts, particularly obvious in the case of islands, has been accompanied by the deepening and extension of more purely capitalist relations of production in the region. Ethnographic signs of this have taken a variety of forms. One has been the urban demographic and spatial transformations that have led to a continuing rise of urban individuation and the associated further erosion of historic Mediterranean patterns of relationships within and between different sorts of urban collectivities. Another has been the continuing de-coupling of spatial and kinship boundaries. Movements of populations, particularly of young people, to the coast have increased the autonomy of individual members of kinship structures while decreasing the moral authority of elders and other representatives of kin groups as wholes. Interior landscapes have witnessed a continuing decline in the *polyculture* characteristic of the historic Mediterranean. Such landscapes are themselves influenced by the rise of the coastal monocrop of tourism. One of the most striking manifestations of this is the growing disrepair and degradation of terraces and dry stone walls. Finally, there is the broadening disjunction between, on the one hand, tourist imagery built on rhetorical references to the traditional Mediterranean, to be found in post-cards (of peasant farming and fishing, for example) or internet advertisements (of second homes in 'unspoilt' island bolt holes, for example) and the daily facts of the overuse and the running down of natural resources. Holding in mind aspects of the historical Mediterranean as they come to be measured against contemporary developments in the region, we are left with the question of whether the Mediterranean is being, to coin a term, de-Mediterraneanised.

### ***Political life of Javanese fishermen***

*Semedi, Pujo*

This paper is about political life among Javanese fishermen. Some authors argue that sea fishery modernisation has brought fishermen into better political position. Observation on Javanese fishermen, however, shows that it is not the case. Political structure among them is weak. If it appears that during the course of sea fishery modernisation that political life among Javanese fishermen become more and more active, the activities are not carried by the fishermen but by government officials, managers of fishing co-operative, fish traders, and party cadres. Meanwhile the fishermen themselves remain as political object rather than subject.

*Pujo Semedi, Dept. of Anthropology, Gadjah Mada University*

### ***What's Next? Agency and constraint in restructuring life after Newfoundland's cod moratorium***

*Sinclair, Peter R.*

In 1992, with the cod stocks exhausted in most of the northwest Atlantic, the federal government of Canada declared a moratorium on the fishery. Up to 25,000 rural Newfoundlanders were suddenly without work in a region with minimal economic diversification. In many of the small villages or outports, the service sector was also in disarray because the fishery was the only productive base of their local economies. For seven years, special state programs provided financial and educational support. In this context, what did people do? How can we understand their actions? I show that the crushing blows of outside forces were followed not by passive acquiescence in a common pattern, but by a restructuring of experience in which people drew diversely from what was available in their environment and sustained local life in new forms. I rely on four detailed cases (two men and two women) supplemented

by reference to a much larger body of survey and fieldwork data collected in 1994-95. For each person, I review both their work in the fishing industry and what happened after the moratorium, prior to interpreting this material sociologically.

### ***Prevailing attitudes on eco-ethics among fishermen and resource managers***

*Skorstad, Berit - Audun Sandberg*

Attempts to manage marine resources have been politically problematic and ecologically uncertain. The management tools used for land resources are not easily transferable to the marine environment. Increased ethical responsibility may therefore be one way to deal with an uncertain future, i.e. man's duties toward humanity as well as nature in itself. New approaches, for which current policies, ideologies - or theories do not provide answers, require institutional changes as well as new moral considerations. A new approach is therefore called for, and this implies knowledge about the prevailing level of consciousness and moral attitudes among core stakeholders in fisheries and marine resource use. Thus it becomes relevant to ask how the core stakeholders in fisheries and resource management think and what their moral attitude towards nature and marine life is. And what are the differences between the attitudes of fishermen, policy makers and resource managers on these questions?

The paper is a presentation of data from the interview material on attitudes toward ethics and resource management among fishermen and fisheries managers. It will synthesise major findings from the **ELSA-Pêche** project under the EU-FAIR program. ( Ethical, Legal and Social Aspects of Fisheries Management). The Northern part of this project is an analysis of the attitudes among fishermen and managers in Norway, Denmark and Iceland. The findings are presented and systematised around independent variables related to core stakeholder groups which are: fishermen, administrators, politicians and researchers. The dependent variables are views or moral attitudes toward man-to-man or man-to-nature relations, feelings of duty toward marine resources and species and feelings of duty towards the next generation of man.

This discussion on a holistic versus reductionistic view on nature is carried on in a final section on the future ethical challenges in marine use, when the conflicts between wild fish concerns and the human cultivations of the sea increasingly enter the realm of policy-making.

*PANEL « Ethics and Fisheries Management in Europe » Contribution n°3*

*See for information on the panel: Frangoudes, Katia*

*Berit Skorstad and Audun Sandberg, Nordland Research Institute and Bodø Regional University*

### ***Assessment of the analytic hierarchy process (AHP) as a decision-support technique in fisheries management - a country case study undertaken in the shrimp fishery in Trinidad & Tobago***

*Soma, Katrine*

The purpose of this study is to make an assessment of the suitability of the analytic hierarchy process (AHP) methodology for assisting decision-making in fisheries management. The AHP methodology is used to determine the priorities for establishing a viable and sustainable fishery. Furthermore, the use of the AHP methodology in Trinidad & Tobago represents a case study in a developing country. The results of the application indicate the different groups' preferences of both objectives and fisheries management options for the shrimp fishery.

The AHP methodology involves four main steps: 1) developing a hierarchy of interrelated decision elements describing the problem; 2) performing pairwise comparisons on the decision elements using a nine-point weighting scale to generate the input data; 3) computing the relative weights of the decision-elements by using the "eigenvalue method"; and 4) aggregating the relative weights of the decision-elements to calculate ratings for the alternative decision possibilities.

Identified fisheries objectives for the shrimp fishery in Trinidad & Tobago, include: "economic efficiency"; "conservation of fish resources"; "employment and way of life"; and "governance/institutions". Stakeholder groups in the shrimp fishery are categorised as fisheries managers, owners of inshore vessels, owners of offshore vessels, fishermen-crew and vendors. Identified groups are asked what they find more important of identified objectives, and also, which management options re-

garding the allocation of shrimp/fish resources they prefer. The management options relevant for the shrimp fishery in Trinidad & Tobago were identified as open access, restrictions on gears, restrictions on number/size of vessels and closed seasons/areas.

The results of the study shows that the *AHP* methodology is recommendable as a decision support technique in the fishery, mainly due to: 1) involvement of stakeholder groups in the decision-making process and 2) ability to assist decision-making in fisheries management. For these reasons, in particular for decision-making in a developing country where availability of data is not sufficient for quantitative analysis, the *AHP* methodology is seen as being a good alternative.

Key words: AHP-methodology, fisheries-management, decision-making, shrimp-fishing industry, Trinidad & Tobago.

### ***The International Politics of Tuna Management in the Western and Central Pacific***

*Tarte, Sandra*

International law of the sea recognizes the sovereign rights of coastal states to manage and conserve the living and non-living marine resources within their 200 nm exclusive economic zone (EEZ). For highly migratory fish stocks (such as tuna), these rights are to some extent circumscribed by the 'duty to cooperate' with other coastal states and fishing nations in order to ensure long-term sustainability of the stocks. In the western and central Pacific, coastal states and fishing nations recently adopted an historic agreement creating a multilateral regime for the conservation and management of the region's tuna stocks. While hailed as a milestone in international and regional fisheries law, the convention reflects the problems of harmonizing the competing and conflicting interests of the various actors in the negotiation process. Prominent among these actors are the Pacific island coastal states, within whose EEZs much of the tuna is found, and the rich and powerful fishing nations of the Pacific Rim, who account for most of the region's tuna catch. This paper assesses the convention, exploring its strengths and weaknesses in terms of meeting its overall goal – to promote sustainable utilization of the tuna stocks. It focuses on how political tradeoffs in the negotiation process account for many of the flaws in the convention. These (tradeoffs) in turn reflect the long-standing and still unresolved question of how to achieve effective management of the resource without compromising the sovereign rights of state parties. The paper explores some of the dilemmas facing the region as it attempts to establish the new regime and suggests a way forward. This discussion is relevant to the subject of global environmental regimes, and specifically how to promote cooperation in conserving and managing trans-boundary resources.

Keywords: Pacific, tuna, politics, regime.

### ***Piracy in Southeast Asia. A Historical Comparison***

*Teitler, G.*

Southeast Asia nowadays forms a pirate-infested area. During the nineteenth century the situation was not much different. This paper examines the similarities and differences between the colonial period and present times, paying special attention - as regards the nineteenth century - to the problems facing the Dutch in the Indonesian archipelago. Of course, not only the pirates' side is analysed. Ample attention is paid to the ways and means with which the governments concerned tried and try to eradicate piracy.

### ***Community Responses to Environmental Degradation due to Shrimp Culture in the Coastal Region in Bangladesh***

*Toufique, Kazi Ali*

Environmental degradation due to extensive shrimp culture in the coastal region of Bangladesh is generally known, although not much in quantitative terms. Such environmental degradation typically involves increase in salinity of the soil, losses to common property resources, biodiversity and the like. While this is known to some extent by now at least in qualitative terms, what is not known is how the people who are affected by such degradation of their environment have responded. Existing literature

assumes that the actors play a passive role. The main rationale for studying community responses to natural resource degradation due to shrimp culture is that part of the solution to environmental degradation due to shrimp cultivation must also come from the immediate sufferers. Their voices have to be heard in a situation when their choices are limited. Unless we know how the community affected is responding to this degradation we will not be in a position to formulate an effective policy for managing such degradation. The paper will try to understand how the community is responding to environmental degradation due to extensive shrimp culture in the coastal region of Bangladesh.

Keywords: Bangladesh, coastal shrimp culture, community, environment.

***Reef Fisheries in Kenya: Fishing Practices, Awareness to Resource Degradation and Traditional Ways of Conservation Among Artisanal Fishermen***

*Tunje, Joseph G.*

This paper is based on the findings of a study carried out in Kilifi/Malindi and Lamu districts of Kenya, focusing on the activities of artisanal fishermen. The fishing methods that the fishermen use, to what extent they contribute to coral reef degradation and subsequent decrease in fish catch was the major study objective. The fishing methods used, factors for their choice, and their perceived impact on coral reefs were investigated. Indigenous environmental conservation efforts and attitudes towards environmental conservation were also studied. The study collected primary data mainly using questionnaires and participant observation methods. In-depth discussions were also held with the fishermen, KMFRI and Department of Fisheries officials.

The study revealed that fishermen mainly use the gear they have experience with and that bring them high catches. Fishermen did not consider the environmental impacts of the gear they used. The results also revealed that there were few signs of indigenous marine conservation in this part of the Kenya coast. Half of the fishermen interviewed observed certain taboos relating to personal safety at work, good hygiene and fish handling. The other half did not. Finally, the paper suggests some environmental management strategies that can be tested as to their applicability in promoting sustainable use of the coral reef fishery resource.

Keywords: coral reef, fishermen, fishing gear, degradation, conservation.

***Co-management and Recreational Fishing***

*Varjopuro, Riku - Pekka Salmi*

This paper reviews the issues and complexities that arise when recreational fishing in marine areas is added to the management mix and the roles played and implications for co-management in these cases. The paper is built mainly upon an analysis of a Finnish case, which is, however, compared to cases from other countries.

The paper starts with a discussion on the concept of co-management. The concept is approached from a perspective of an actor-oriented social theory. The approach acknowledges dynamic nature of social action and decision making concerning natural resources.

Recreational fishing, especially sport fishing, is an urban hobby taking place mostly in rural coastal areas. On the other hand, fishing for household consumption, which is a common type of recreational fishing in Nordic countries, has its roots in rural way of living. Interests of these different types of recreational fishing may be antagonistic in certain local contexts. In addition, there are colliding interest between recreational fishers and other user groups in coastal areas. Decisions affecting recreational fishing are made on several levels: there are local informal rules as well as formal local bylaws, but states have also made national policy decisions that determine fishing rights in recreational fishing.

In case of recreational fishing it is especially important to take into account both local level as well as larger social processes and interactions between actors on different levels. Interactions between different levels set conditions for co-management arrangements in recreational fishing.

Key-words: co-management, recreational fishing, social action, contextual factors

***Conflicting epistemologies and cultures as a challenge in fisheries management: the cases of marine aqua-culture and salmon fishing in Finland***

*Varjopuro, Riku - Timo Peuhkuri*

The paper deals with cognitive disagreements and their implications for environmental management in regional natural resources use conflicts. The topic is examined through two case studies dealing with aquaculture controversy in the Archipelago Sea (SW Finland). There are a lot of gaps, uncertainties and controversies in the knowledge base concerning the examined issues. We ask: (1) how cognitive disagreements of the contested environmental problems and their solutions can be explained, (2) what are the key actors' criteria for feasible and acceptable knowledge, and (3) what kind of factors could enhance a wider usage of different forms of knowledge in environmental management thus mitigating conflicts and supporting a more effective and legitimate environmental and fisheries policy?

The studied cases illustrate how the acceptance of science is bound up with the cultural context in which the scientific knowledge is received and interpreted. Further, factors creating trust or distrust on sources of knowledge are in the background of the cognitive conflicts. The expressed distrust implies a strong spatial element: an experienced outside threat to the local identity, a way of life and traditional user rights of natural resources. The cognitive disagreements do not arise, however, between pure, separate forms of knowledge. Clear distinctions between local/scientific or traditional/modern knowledge systems fail to capture the dynamic nature of local knowledge system. Fish farmers' discursive repertoire has ingredients from several forms of knowledge: traditional and local knowledge as well as knowledge produced in co-operation with scientists or knowledge produced in 'purely' scientific communities. It follows that science is not exclusively a resource which transfers power to non-local actors but upon certain conditions it also can constitute links between local and translocal actors.

Keywords: environmental conflict, knowledge systems, aqua-culture, , Baltic Sea.

***Canadian Aqua-culture and the Principles of Sustainable Development: Gauging the Law and Policy Tides and Charting a Course***

*VanderZwaag, David - Gloria Chao - Mark Covan*

Various international agreements and documents, such as Agenda 21 and the Rio Declaration, urge countries to adopt more "principled" approaches to marine resource management including aquaculture development. Key principles of sustainable development include precaution, pollution prevention, integration, public participation, community-based management, intergenerational equity, polluter pays, indigenous rights and environmental impact assessment.

This paper assesses the adequacy of Canadian laws and policies for supporting sustainable aqua-culture with a focus on four principles. Federal and provincial challenges in implementing the precautionary approach, public participation, environmental assessment and integrated planning are discussed.

The paper concludes with recommendations for strengthening Canada's law and policy framework for aqua-culture including: more explicit recognition of the precautionary approach; ensuring public participation at all stages of aqua-culture development from siting to monitoring; and clarifying the application of environmental impact assessment laws to aqua-culture proposals.

Keywords: aqua-culture, environmental assessment, integration, precaution, sustainable development.

***Introduction to 'Slipping through the meshes'***

*Vlaming, Gerrit-Jan*

This article is based on 'Tussen de mazen van de wet (Between the darn of the law)' written by Mr. G.J. Vlaming on behalf of his final thesis of the law faculty in Groningen under the supervision of Drs. E. Barends. The case study, which has been conducted, is about the way Dutch fishermen deal with the regulations regarding catch restrictions of the Dutch and European legislation from 1970 until 1999. The case study has been conducted on the Dutch island Texel, which has a fleet of 20 'North Sea cutters'.

There was no legislation regarding catch restriction in the Netherlands before 1970. The Biologist and the fisherman saw that fish stock of the North Sea decreased. On basis of these signals the Dutch government introduced in 1974 a quota system. This quota system means that each cutter received a certain quantity of fish they were allowed to catch every year. These measures of the Dutch government were against the wishes of the fishermen. They preferred restrictions on the power of the engines and the cutters - which would maximise the amount of fish to be caught.

In the years after the introduction of the quota system control of the rules considering the catch restrictions were not very strict. As result the fishermen caught more fish than they were allowed to. This lack of control changed in 1983 when the Dutch government, under pressure of the European Economic Community (EEG), had to keep a better control on the measures regarding catch restrictions. The Dutch fishermen were not used of to the control conducted by the 'General Inspection Service (in Dutch Algemene Inspectie Dienst, AID)' and resisted intensively to these controls. In the eighties a situation had arisen where there was a lot of tension between the government and the fishermen. Both parties wanted this situation to change, but they were unable to. Former Minister of Agriculture and Fishery Biesheuvel was asked, by wish of both parties to find a satisfying way to deal with the catch regulations. He proposed the installation of a control group, which was called a Biesheuvel. Every fleet of each harbour established a 'Biesheuvel', which stood on top of the fleet and was responsible for the fish quota of the whole fleet instead of the responsibility of laying by each individual cutter.

Although the rules concerning the catch restrictions have not been changed the involved parties are satisfied with the installation of the Biesheuvel groups and the wild- west situation of the eighties ended. The implementation of the Biesheuvel groups gave the fishermen the idea that they have the rules more in there own hands. This gave back a sense of freedom they had lost. The arrangements the fishermen agreed on between themselves to control their catches are more acceptable than the rules and the arrangements, which were made by the Dutch government and the EEG. The Biesheuvel group is a good example of a Semi Autonomy Social Field from Sally Moore (1979) in the Dutch legal reality

### ***Economic and Political Change in a South Indian Fishing village***

*Weber, Eberhard*

Conflicts between traditional and modern fisheries in India are well documented. They are arising due to the competition between different actors wanting to make use of the same resource in the same fishing grounds, mainly high quality marine fisheries products achieving high prices in the international market.

Besides this there is however also a slow, but fundamental change occurring in the so-called traditional fishing sector itself. Technological innovations like the introduction of synthetic gillnets and outboard engines changed the work organisation in South Indian artisanal fisheries entirely.

With these changes there was also a shift in the social and political structure of the fishing hamlets. The means of production like fishing boats (catamaran) and gear were important assets to determine social and also political status.

The paper explores these changes and takes a detailed look into the consequences for the fishermen's livelihood security. It analyses the day to day conflicts in a fishing settlement in Chennai, South India and connects the life of fishermen and their families to events taking place outside their sphere of influence, like party politics and structural adjustment programmes of the Indian Government.

Keywords: modernisation, socio-political change, India, livelihood security.

### ***Developing an interdisciplinary participatory research methodology to further community-based resource management***

*Wiber, Melanie G.*

Many fishers have some experience working in the natural sciences, usually as field assistants for government or academic scientists, where they have little control over research topics or methods. More recently, Rosemary Ommer's interdisciplinary team researching sustainability in Newfoundland, has reported that a broader-base collaboration between fishers and natural scientists can significantly shift

natural science core assumptions, especially when fisher's perceptions are treated as important sources of information. In the spring of this year, five fishermen's organizations from Nova Scotia and New Brunswick agreed to collaborate with four social scientists from three different disciplines (anthropology, economics and human ecology) to explore question generation, research design and field research options in the area of community-based resource management. This paper will report on preliminary findings, particularly in the ways that fishers and social scientists differ in the research questions they identify as significant and relevant to community viability and resource sustainability.

*Melanie G. Wiber, Department of Anthropology, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., E3B 5A3*

### ***Biology and Community: Science and an Evolving Vision of Local Action***

*Wilson, Doug*

Democratic participation in policy creation in technically complex arenas is a central tension in modern society. Science and citizen participation have much in common. Science is a collaborative enterprise, and good science, like good citizen participation, requires that all arguments be considered and that information be openly shared. Yet, science and citizen participation have a tense relationship within the policy process. Following Robert Merton, the other imperatives of effective science are disinterestedness, impersonal universalism, and organized scepticism. Environmental stakeholders are interested by definition, often take truth claims very personally, and reserve much more scepticism for the motivations of other stakeholders than for the inferences they draw from their own observations. The present paper examines the community development movement from the 1950s to present day attempts at fisheries co-management. It probes the role that science and technical expertise has played as approaches to local action have evolved. It looks for the lessons that been learned over the years about how science and community can work together.

*Wilson, Doug - Institute for Fisheries Management, North Sea Center, Willemoesvej 2 Box 104 DK-9850 Hirtshals, Denmark.*

### ***Developing Policies for Genuinely Sustainable Marine Ecotourism; Experiences from the EU Atlantic Area***

*Wilson, Julie C. - Brian Garrod - David M. Bruce*

Marine ecotourism is nature-based tourism that interprets marine wildlife, environments and local marine / coastal culture and heritage, providing a quality experience for tourists while minimising the impact of tourism on the marine environment. Additionally it should foster appreciation of the marine environment and raise the overall conservation ethic, while providing appropriate benefits to the local community.

For the most part, structures for the planning and sustainable management of marine ecotourism are either non-existent or are adopted at a rudimentary level in the EU Atlantic Area. It is, however, fundamental that policies for the planning and management of marine wildlife, tourism, resources and coastal zone management are integrated, if marine ecotourism is to be genuinely sustainable. Also necessary is a precautionary approach to the active promotion of marine ecotourism.

This paper introduces 'Marine Ecotourism for the Atlantic Area'<sup>1</sup> (META-), a transnational research project which addresses the development of planning and management policies and structures for marine ecotourism in the EU Atlantic periphery.

Focusing on policy development issues, the paper illustrates how appropriate planning and management frameworks can promote more sustainable (or less unsustainable) practice of marine ecotourism, particularly through the involvement of stakeholders, constituting a process of local co-management. Experiences from META- project case studies (Torbay; UK, West Clare; Ireland and Gran Canaria, Spain) are elaborated.

In a wider context, the paper also reflects upon current international, EU and national policies relating to marine ecotourism and proposes an agenda for the development of specific policy frameworks in this respect.



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*Julie Wilson, Bristol Group for Tourism Research, University of the West of England, Bristol, Frenchay Campus Room 3Q29, Coldharbour Lane, Bristol BS16 1QY United Kingdom - Dr Brian Garrod, David M. Bruce, University of the West of England, Bristol*

*'Turning the green tide of aquatic foods'*

*Young, James A. - Andrew P. Smith*

Food scares in an ever-expanding range of markets have led to increased consumer concerns with modern food production systems. Within these markets, dominated by products from land-based agricultural systems, quite clear patterns of consumer response are beginning to emerge. These range from acquired aversion to certain categories of food through to modified diets and generally much greater concern with the provenance and labelling of food products consumed. Hitherto fish has not figured prominently in these scares, although there is arguably need to improve understanding of how aquatic food products might fare in this greener food market. This paper fuses two aspects of the aquatic food product – drawn from both aqua-culture and traditional wild capture fisheries. The paper is based upon an EU-funded research programme centred on the production and consumption of organic salmon which also raised wider issues about the standing of such products in emergent greener markets for other fish products, including those from wild capture fisheries.

As the volume of global aqua-culture production has increased dramatically over the past decade, some producers have attempted to differentiate their products by developing organic production systems.

The concept and consumers' understanding of organic fish has found to harbour some potential problems which may yet limit the viability of this route for wider adoption within aquatic foods. Elsewhere, attempts to differentiate products are being based upon other green credentials of the product and the ability to certify their environmental friendly-status, notably those endorsed by the Marine Stewardship Council. However, in many geographical areas producing such products is fraught with difficulty for a range of endemic reasons, yet the existence of such schemes elsewhere may undermine many indigenous marketing chains upon which local communities are critically dependent. The paper suggests that whilst emergent greener products may create some competitive advantages within the markets for foods their gains are unlikely to be without little publicised consequences elsewhere too. We conclude this to suggest the desirability for a more holistic perspective in determining a greener aquatic food policy.

*Prof. James A. Young, Professor of Applied Marketing, Department of Marketing, University of Stirling, Scotland FK94LA - Dr Andrew A. Smith, Lecturer in Marketing, Department of Marketing, University of Stirling, Scotland FK94LA*