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Recent developments and announcements

Measures for enhancing marine fisheries stock in Southeast Asia

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ABSTRACT

The shared aquatic resources of Southeast Asia are important in terms of nutrition, income and employment, and at the same time, they are unique in terms of species composition and biodiversity. Many economically important fish species are highly migratory and are adversely affected by interference with the migration corridors between spawning and nursery grounds and adult habitats, as well as habitat degradation caused by pollution. In Southeast Asian waters migratory fish pass through overlapping 'exclusive economic zones, (EEZs), often claimed by more than one country. As fish may be dependent on habitats in the contested area or on either side of the zone, there is a need to develop viable fisheries management systems, which in the end may ensure the enhancement of the aquatic resources and their sustainable use for years to come. © 1997 *Elsevier Science Ltd.*

This paper calls for better management of the fishing effort and improved monitoring of external factors which may influence the productivity and growth of the species. It suggests international and national pre-planning of 'exclusive rights zones' which affect fishing boundaries in close proximity to island or archipelago exclusive rights zones. One envisaged solution may be the establishment of 'joint development areas' (JDAs), based on extensive and detailed pre-negotiation preparation.

Knowledge of the transboundary aquatic resources is necessary in order to avoid over-exploitation of the resource and to allow for stock recovery. This paper points out the need for establishing cooperation on fisheries surveys and research between national and international fisheries institutions, especially focusing on the migratory fish species of Southeast Asia.

With improved exchanges of properly recorded and charted data, careful delineation of the zones and/or permitted 'box' fishery areas, the efficient management of fisheries would be enhanced.

Maps of important habitats, migration routes and spawning grounds for selected species, a database coordinated with other fisheries information systems and training opportunities for staff at fisheries research institutions and national fisheries agencies are emphasized. Greater standardization of regulations, methods of record-keeping, and statistical monitoring of catches at sea and landing points are suggested.

1. INTRODUCTION

While the United Nations Convention on the Law of the Sea (UNCLOS) does not provide guidance on the types of management regimes that might be adopted by a high seas fishery, there is at least a clear obligation to establish them.[1] The Food and Agriculture Organization of the United Nations (FAO) has provided a list of precautionary management tools, as well as the Code of Conduct for Responsible Fishing.[2]

However, it must be recognized that there is always uncertainty as regards fisheries information, especially on the state of the fish stock. For this reason various moratoria have been imposed based on concerns that the information existing indicates over-exploitation of the target stock and unacceptable by-catch of non-target species. One example is the 1980s Indonesian ban on trawlers in the Java Sea, as well as the United Nations (UN) Resolutions on Large-scale Pelagic Driftnet Fishing.

Concerning the latter, Resolution 44/225 reverses the normal burden of proof so that it falls on those using driftnets more than 1000 m long, requiring them to show that effective conservation and management measures have been taken to prevent any unacceptable impacts and to ensure conservation of the stocks. The management measures proposed were to be based upon statistically sound analysis jointly made by those countries having an interest in the fishery.[3]

1.1 Status of fisheries resources

The present status of many fishery resources around the world indicates clearly that management practices need to be improved or altered to achieve long-term sustainable yield of these resources and, in particular, high seas fishery resources including straddling stocks and highly migratory fish species.[4]

Some objections have been raised by the international community to

current fishery management structures that have led to over-exploitation, excessive fleet capacity, over-capitalization, the migration of fleets from North to South or from Asia to the Atlantic Ocean for that matter,[5] and the use of destructive fishing technology.

Fish have become an issue of global food security. Concern has also been raised for the rights of fishers. Others have pointed to poor enforcement and compliance measures to protect and conserve the fish stocks. Environmentalists decry degradation of the marine environment and loss of marine biodiversity.

While most would accept the fact that fishing should be practised, many are apprehensive that inappropriate management is undermining the long-term productiveness of these resources. This is one of the underlying factors which has influenced the drastic reductions in catch quotas which the European Union (EU) allocated to its members on 15 April 1997.[6] This paper addresses certain issues raised above, which have special relevance in the light of recent developments in Southeast Asian fisheries.

2. MIGRATORY FISH STOCKS PASSING THROUGH CONTESTED WATERS

In Southeast Asian waters migratory fish pass through overlapping 'exclusive economic zones' (EEZs) often claimed by more than one country. As fish may be dependent on habitats in the contested area or on either side of the zone, there is a need to develop viable fisheries management systems, which in the end may ensure the enhancement of the aquatic resources and their sustainable use for years to come.

With an increasing world population demanding access to finite fisheries resources, disputes are an inevitable result of emerging pressures. These are not confined to the Atlantic or Pacific Oceans, or even the Gulf of Thailand, for that matter. This latter area was the subject of an insightful Southeast Asian Programme in Ocean Law Policy and Mangement (SEAPOL) Workshop held in Kuala Lumpur in July 1993, but many basic issues remain unresolved.[7]

Indications of other potential areas of strife are evidenced from reports of fishing nationals detained for alleged infringements in Southeast Asian waters; for example, Indonesia, Thailand and Vietnam, and other areas.[8]

If similar incidents occurred in the future with involvement from even larger Asian fishing interests, e.g. Japan and the Republic of Korea, there might be a possibility of more 'gunboat diplomacy' in the region, similar to incidents which have prevailed in the north-west Atlantic (such as the conflict between Canada and Spain in March 1995 and the dispute between the UK and Spain in July–August 1996).[9]

3. EXCLUSIVE RIGHTS ZONES

To prevent disputes over fishing rights from becoming more intense, positive marine policies for fisheries throughout Southeast Asia need to be determined. Key suggestions, from amongst a number of positive programme proposals for serious and urgent consideration and international implementation, are mentioned below. These include efficient management of the fishing effort and monitoring external factors which may influence the productivity of the aquatic resources. International and national pre-planning of 'exclusive rights zones' which affect fishing boundaries in close proximity to island or archipelago exclusive rights zones should be followed. Examples include Cambodia, Indonesia, Malaysia and Thailand.

4. JOINT DEVELOPMENT AREAS

Based on extensive and detailed pre-negotiation preparation, one envisaged solution may be the establishment of 'joint development areas' (JDAs).

For example, located offshore on the continental shelf in the Gulf of Thailand is an area of approximately 7250 km^2 of overlapping claims made by Malaysia and Thailand. The JDA lies in the northern part of the Malay Basin, where thick sediments of Tertiary sandstone, siltstones and shales are a source of oil and gas.

The two countries agreed in February 1979 to exploit the resources of the seabed in the overlapping area. Such activities are being carried out through mutual cooperation at the present time. The concepts of the Joint Authority and the Joint Development Area emerged and pioneered a new kind of international cooperation. The Memorandum of Understanding (MOU) signed in 1979 will be in force for 50 years.

It became a reality after more than 10 years of negotiations. Even after the ratification, the legal details had to be ironed out between the two countries. Thailand traditionally applied a concession system, while Malaysia adopted a production sharing contract arrangement. Finally, in July 1989 it was agreed that a new fiscal regime, actually a compromise between the two systems, be applied to the JDA.

On 30 May 1990 both Governments signed the Treaty referred to as the 'Agreement between the Government of the Kingdom of Thailand and the Government of Malaysia on the Constitution and Other Matters Relating to the Establishment of the Malaysia–Thailand Joint Authority' (MTJA Agreement). The implementing domestic legislation was passed

by both Parliaments in June–July 1990. On 21 January 1991, the MTJA Agreement was ratified in Bangkok and the implementing legislation came into force simultaneously in Malaysia and Thailand the following day, thereby officially establishing the MTJA.

In December 1991 the Governments endorsed the organizational structure of MTJA and members were appointed in February 1992. The MTJA is empowered to award contracts for the exploration and exploitation of resources, including fisheries, in the JDA. In January 1994 the MTJA Board endorsed the draft Production Sharing Contracts to be awarded to the contractors. Although the JDA initially concerned hydrocarbon resources, the general principle has been applied to fisheries in the same location. The official MTJA office was opened on 21 April 1994 in Kuala Lumpur.

The MTJA's Contractors have carried out petroleum operations in their respective contract areas. The latest exploration results indicate a strong possibility of large gas reserves within the JDA. Wells drilled to a total depth of 2400 m (7878 ft) encountered several formations of gas- and oil-bearing sands with potential in the geological structure formerly known as the Pilong structure. Experimental testing suggests about 58 million cubic feet day^{-1}, with condensate and oil yields of about 945 barrels day^{-1}. With sustained activities on exploration and development, gas production from the JDA can be made possible before the end of the 20th century. Fisheries resources are affected by all these exploratory activities, which tend to disturb the habitat and life-style of the fish.[10]

The concepts of the Malaysia–Thailand Joint Authority and the Joint Development Area represent a pragmatic approach in overcoming boundary disputes and arriving at mutually beneficial solutions to share the resources. Here is a historic example of how members of the Association of South East Asian Nations (ASEAN) family can coordinate their exploratory activities to boost regional cooperation, in particular the Indonesia–Malaysia–Thailand Growth Triangle project.

Another example is the JDA under negotiation between Cambodia and Thailand. This was the subject of an Expert Consultation organized by SEAPOL in January 1997.[11]

5. DEVELOPMENT THROUGH COOPERATION: INFORMATION EXCHANGE

Southeast Asia is developing an improved programme of inter-state collaboration for impartial marine stock evaluations and total allowable catch (TAC) assessment and enhancement. Knowledge of the transboundary aquatic resources is necessary in order to avoid over-exploitation of

the resource and to allow for stock recovery. Cooperation on fisheries surveys and research between national and international fisheries institutions, especially focusing on the migratory fish species of Southeast Asia, is being established. Coordinated tagging and recovery efforts are important since fish do not recognize international boundaries or borders. With improved exchanges of properly recorded and charted data, the efficient management of fisheries will be realized.

Clearly no one could even attempt to make adequate stock estimates to be applied in say 1998/1999, before the end of 1997. Close monitoring of the broodstock and other species often requires data collection over at least 4 years. Such time-scales have normally prevailed in other world fisheries to allow the scientific work and the reports (general rating) to be well evaluated and fully disseminated at national state levels. Yet at the same time although the states recognize the problem of overfishing in their waters, they may be under pressure from politically powerful fishing lobbies to maintain the large fleets which fish too much. Therefore, social considerations, such as the livelihood of fishers and their managers, may take undue precedence over the obvious scientific evidence against continuing such short-sighted practices.[12]

6. MANAGEMENT TOOLS FOR STOCK ENHANCEMENT

Southeast Asia is preparing detailed maps of important habitats, migration routes and spawning grounds for selected species. A database coordinated with other fisheries information systems, including Internet linkages should be considered. Moreover, training opportunities for staff at fisheries research institutions and national fisheries agencies in Southeast Asia are emphasized in various programmes—these need to be continued using updated information. Greater standardization of regulations, methods of record-keeping, and statistical monitoring of catches at sea and landing points are suggested. Data exchange between states in Southeast Asia is increasing, with greater accuracy ensured.

At the same time, there is a plan to introduce satellite surveillance of large fishing 'factories' working in Southeast Asian waters. The move to introduce a 'spy in the sky' comes against a background of mounting alarm that several species face extinction in a matter of years.

7. QUOTA ALLOCATIONS

In addition to the encouraging possibilities of marine ranching, reference should be made to quota allocations, time (seasonal) limitations, application of licensing systems for vessel control, and enforcement of

equipment and gear allowed, etc. Such measures to manage the pressure put on capture fisheries may enhance the marine fisheries stocks in Southeast Asian waters, as well as take into account the impact of fishing on the marine environment.

Over the years the concepts of 'maximum sustainable yield' (MSY) and 'optimum yield' (OY) have lost favour as management reference points, especially in high seas fisheries where there is usually much uncertainty about the actual state of the stocks. Trying to obtain the MSY may result in a highly variable level of yield with high costs of fishing effort and an increased risk of collapse of the fishery. Dependence by the fishery on the result of a short time-frame can reflect wide variations from year to year and possible ecological damage caused through by-catch or habitat disturbance following the high fishing effort required to catch the yield. Lower catch per unit of effort (CPUE) indicates the decline in stocks and results in higher costs (in terms of both monetary and energy resources).

MSY reference points often take little account of the actions of the fishers themselves, including misrepresentation of actual onboard catch[13] and 'quota hopping' when fishers buy up licenses for quotas awarded to other nations.[14]

8. FUTURE POLICY

The pattern of new allocations could well provide some 'model agreements', which may prove suitable for adaptation and possible adoption for certain areas in Southeast Asia where there are conflicting user-interests requiring quota controls in adjacent States' waters.

Taking into account the uncertainty in the type and quality of fisheries information now available, those who formulate fisheries management approaches tend to be rather conservative when setting up management objectives (such as catch limits). Some environmentalists have argued that fishing should be undertaken in such a way that the overall ecosystem remains close to its unexploited state.[15]

Others argue that 'permitted levels of catch' should be set conservatively. There may be a situation where there are closures or catch restrictions which will not be lifted unless scientific data have been presented which clearly indicate that exploited stocks have indeed recovered. However, an institutional limitation to this policy may prevail. Some conservation measures are only applied for 1 year and so the status quo is that the fishery remains open. The 'no data—no fishing' policy works only where the status quo is closure in the first place!

9. MANAGEMENT STRATEGY BASED ON RECENT DEVELOPMENTS

As a corollary to the pattern of development over the past few years, it is important to encourage a policy which ensures that the sustainability of the fishing management strategy involves the following criteria:

1. *long-term yields*—average short-term catches should not exceed expected long-term average catch levels;
2. *low risk*—an acceptably low risk of serious depletion of the resource;
3. *restoration*—stocks already depleted by previous overfishing should be allowed to recover; and
4. subject to the above requirements, a reasonably *constant level of yield* (to the extent to that this is possible, given the nature of the resource).

Uncertain stock levels cannot be fished below their range of natural variation in abundance. Instead, their average biomass should remain at a level that is high in proportion to the average biomass that would exist if fishing had not taken place. Where stocks have already been depressed substantially below their natural range, they should be allowed to recover.

The 'appropriate level' may vary from species to species, depending on the biological characteristics; as a general rule, the objective of management should be to maintain stock levels of approximately 80% of the average biomass prior to fishing. Advantages of this policy can include:

1. habitat would be less disturbed;
2. species more abundant and the interactions among species less prone to severe changes, resulting in more long-term certainty for fishers;
3. catch rates would be higher, and less effort and capacity would be required, leading to higher levels of profitability; and
4. species size of individual fish would be larger, with easier processing and higher prices.

In reappraisal and consideration of additional and/or alternative methods of conservation and control, several important features may be mentioned in contributing to more effective marine fisheries management. They all have topicality in the context of difficulties in finding decisive solutions concerning the deployment of effort within the available resources, and, not forgetting, very important considerations in regard to

environmental factors. It is suggested that these conditions or recommendations should be carefully considered by the Southeast Asian fishery administrators and policy-makers. These include:

1. time (seasonal) limitation—definition of seasonal harvesting of specific species, for example, to prevent the disturbance of spawning and growth of juvenile fisheries;
2. wider application of the licensing system for vessel control by length, tonnage, power capacity, permitted crew, etc., also in stricter definition of equipment and gear allowed. In some cases, a combination of all these aspects may be appropriate; and
3. using 'licences' or 'permits' to effectively regulate the number of 'permitted fishers' (fishing effort), especially in selected coastal zones. This is particularly apposite for vulnerable localities with endangered stocks.

This aspect is well illustrated in the attempts of the Republic of Indonesia to 'contain' the vast growth in fishing operations in north central Java ports. Here, during the 1980s fishing skippers ('heads of households'—each representing over four dependents) rose from 58 000 to around 74 000 in only 3 years. The unquantified pressure on already limited coastal resources and potentially valuable breeding stock can well be imagined. One originally proposed Indonesian solution was to grant licences to only true residential operators within given ports or 'kecamatan' areas.

10. EXPLORATORY FISHING

Concerning new or exploratory fisheries, catch and effort limits need to be established as soon as possible and remain in force until sufficient data exist to allow assessment of the impact of the fishery on the long-term sustainability of the stocks.

FAO has accepted the role of experimental fisheries by encouraging decision-makers to:

> ... experiment with management strategies and development projects with the support of research. When a risk to the resources is foreseen, the response to possible management strategies and the impact of development projects should be tested on a pilot scale and environmental impact assessment should be conducted.[16]

Data from exploratory fisheries should be verified independently in order for states to share the best scientific information available.

In addition to setting a conservative target level for fish stocks in the high seas where information is sparse and uncertainty great, management systems should be established to ensure that the objectives set for sustainable catches from the fishery will be achieved. The basis of precautionary fisheries management is that all stocks be subject to a scientifically based and tested management system.

Data need to be collected and analyzed by both the fishery and independent surveys. Assessment of the status of the fish stocks and management measures, such as total allowable catch (TAC) limits, should become established and routine.

However, it is not enough to simply design such a system and assume it will work under all conditions. The system must be evaluated through the use of simulation studies under a wide range of possible scenarios, including fluctuations in ecological conditions, fish recruitment and interactions among species.

Usually several management procedures for a fishery will be evaluated, in order to select the one indicating the best overall performance.

Account should also be taken of the extent to which the proposed management measures are enforceable, and the results of non-compliance with the measures.

Several modern fishery management systems determine the theoretical production of the stock, calculate the corresponding level of fishing effort (in parallel with the determination of the TAC), recommend ways in which this can be achieved and assess the effects of fishing. In traditional systems the burden of proof rests with the management system. In the new system, scientists have to demonstrate that harm is being done to the stocks before conservation measures can be imposed on the fishing industry.

11. CONSERVATION OF VULNERABLE SPECIES

Most fishing gear catches species that are not targeted by the fishers and are often thrown away. The dangerous gears should be phased out and/or modified to reduce by-catch to minimal levels. FAO has accepted the use of selective fishing gear and practices that minimize waste of target catch and by-catch of non-target species.

For example, the Southeast Asian Fisheries Development Center (SEAFDEC) has recently designed a special 'turtle excluder device' (TED) for shrimp trawl nets in Thailand. The TED allows endangered turtles to escape the fishers. Research was aimed at determining a suitable type of TED attached to the body of a shrimp trawl to avoid inflicting

harm on marine turtles. Seven types of the TEDs were tested: three were brought from the US, namely the Anthony Weedless, the Super Shooter and the Bent Pipe; and two from Mexico, namely the Georgia Jumper and the Mexican. Two were designed by Kasetsart University (KU) and SEADFEC (Training Department) in Thailand, namely the Thai-KU and Thai Turtle Free Device (TTFD), respectively. No turtles were caught in any of the areas off Chumporn and Songkhla during a total of 120 hauls. The escape rate by weight of the Super Shooter and TTFD were found to be 2.67% and 1.80% for daytime operation, and 1.91% and 1.04% during the night, respectively. This indicated that they were the most efficient TED. The fuel consumption for all TEDs showed little difference. In terms of convenience in operation, the TTFD was found to be the best and the most suitable TED for Thai fishermen.[17] During March–April 1997 SEAFDEC demonstated the use of TEDs in other member countries including Brunei Darussalam, Malaysia, the Philippines, Singapore and Vietnam.

TEDs will have a considerable impact on the shrimp fisheries of Southeast Asia. This is because the US had refused to buy shrimps from Thailand and neighboring countries because too many turtles were being caught unnecessarily.[18]

Moreover, it is understood that steps need to be taken to achieve strict regulatory control, especially in hatching and rearing areas where considerable exploitation is known to be illegally undertaken.

Some gears damage marine habitat, such as the capture or destruction of various benthic species by bottom trawlers and continued 'ghost fishing' by lost traps and gillnets.

Before new fishing methods are employed on a commercial scale, experimental fishing should be conducted to determine the impact on the marine environment. SEAFDEC is one of the primary organizations doing this on behalf of its members in Southeast Asia (Brunei Darussalem, Malaysia, the Philippines, Singapore, Thailand and Vietnam).

12. BOXES, 'MEDIAN LINES' AND CLOSED ZONES

The demarcation of fisheries has to be better defined, despite the fact that fish do not carry an international passport. Fishers need to be aware of the clear delineation of zones and/or permitted 'box' fishery areas.

With improved exchanges of properly recorded and chartered data for all concerned, the efficient management of fisheries would be greatly enhanced and many potential conflict situations could be avoided.

Likewise, there should be 'median-line' policies. This means the

establishment, where necessary, of new 'median-line' procedures in Southeast Asian Fisheries Agreements. It is very important to ensure that participating states and all their producer fleet operators know the clear definition under such agreed policies.

Where any fishing method involves substantial disturbance to habitat, certain representative sub-areas should be closed to fishing so as to conserve part of the habitat in its natural state. The concept of marine reserves has been employed in order to maintain at least part of the habitat in its pristine condition. Closed zones covering 50% of the fishing grounds are recommended to permit recovery of part of the stock, especially severely depleted stocks. If the stock is maintained at a high level, the quota can easily be obtained with much less fishing effort on only part of the fishing grounds.[19]

13. SUMMARY

One must recognize the uncertainty in all aspects of fisheries science and information in Southeast Asia and the need to place the burden of proof on fishers and their supporters (i.e. business managers). Owing to lack of reliable data, any management strategy must be very conservative in its setting of management objectives (such as catch limits) in order to be able to observe these objectives.

Catch limits must take into account the impact of fishing on non-target as well as target species and the marine environment in general. Increasingly powerful (and potentially more destructive) fishing gear applied to fishing in the high seas establish a situation where there tends to be threats of serious or irreversible damage.

What will be the effects of the precautionary system to multi-species fisheries such as those in the tropical waters of Southeast Asia? In the final analysis primary objectives inevitably depend on whether compromise positions can satisfy states in maintaining adequate supply stocks for secured vital food-fish production. This especially applies to the protein diet enrichment of dependent communities in coastal zones in several parts of Southeast Asia.

As areas for nurturing aquatic resources rapidly diminish in size, the stocks will continue to be a vulnerable and finite resource. The climate for disputes over zonal access and fishing rights will remain potentially explosive. At the end of the day all parties need to have the political will to compromise in order to 'give and take' on an equitable basis (especially through JDAs) to enhance the now dwindling fish stocks.

Moreover, the long-term management plans of Southeast Asia should

certainly include human resources development (HRD) and capacity-building opportunities. Without human involvement, the best laid plans cannot be implemented successfully.

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8. BBC World Service, 14 May 1995 verbal report. Local newspapers report on incidents where fishers stray into waters of neighboring countries; for example, the *Bangkok Post* of 31 August 1995, 5 September 1995, 14 November 1995, 17 January 1996 and 9 September 1996; and the *Nation* of 30 August 1995, 15 and 25 November 1995, 29 December 1995, 12 January 1996 and 29 September 1996, *et passim*. Pirate attacks in the region are up 84% according to the *Nation*, 15 March 1996.
9. Such incidents are well known abroad in the international media (radio, television and Internet). For instance, the reputable BBC World Service reported that a US vessel in the Pacific Ocean stopped two Japanese vessels for alleged 'illegal fishing', 51 km inside its EEZ near the northern Maraina Island on 13 May 1995. The Japanese vessels were ceremonially towed to

Guam and protests filed. Moreover, the very next day (14 May 1995) Russian coastguard vessels fired on three of five Japanese trawlers near Russian territorial waters off the southern Kuril Islands. These cases serve as examples of the prevalence of such 'fisheries incidences' which command international attention.

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11. SEAPOL Workshop on Hydrocarbon Joint Development, 8–9 January 1997, Phnom Penh, Cambodia. Competing, and often conflicting uses of the coastal and offshore waters need to be managed through a sub-regional regime based on reliable scientific data and consistent with the emerging principles of integrated coastal management. SEAPOL is organizing annual workshops for officials and experts from the littoral states of the Gulf of Thailand (Cambodia, Malaysia, Thailand and Vietnam) to work cooperatively toward the negotiation of effective and equitable arrangements to manage the resources of the Gulf of Thailand. SEAPOL has placed great importance on its capacity-building programme in Cambodia. Special workshops on current maritime practices and development in the region, such as those in fishery and hydrocarbon exploration, have been undertaken. See Matics, K. I., Summaries of presentations of the Cambodian Workshop on Offshore Hydrocarbon Joint Development in the Gulf of Thailand, 8–9 January 1997, Phnom Penh. *SEAPOL Newsletter*, 1997, No. **23**, 2–5.
12. Compare the outcome of EU fisheries talks in the *Bangkok Post*, 16 October and 24 November 1996, and 15 April 1997. The EU fisheries issues dominated the UK news during the eve of the Elections 1 May 1997. The proposed 30% cutback in quota effort was vetoed by the UK and France in mid-April 1997, because the EU did not introduce cutbacks of quota hopping. This phrase spells the practice of other states buying nationals' allocations of fishing quotas in certain waters (i.e. the Netherlands and Spain mainly 'buying out' impoverished British operators in selected species) then taking that quota from inside the limits normally used by the coastal preference fishers, who cutback and may go out of business as a result. One interviewee on the BBC World Service of 15 April 1997 said that 30% of all British fisheries are already subject to this practice and the interviewee viewed that with great concern—hence, fishers were 'on the backs' of politicians for them to make a tough deal. However, in the UK an artificial hype of most issues occurred due to electioneering, so the actual future policy of the 'new' government would have to be assessed before the real situation can be understood.
13. It may be recalled that the Spanish vessel M.V. *Estai* involved in the March 1995 incident with Canada was reported to have two sets of catch records. Other examples may be found in alleged 'massaging' of catch tonnage figures, etc. Sometimes direct falsifying of catch statistics may be made by nationals wanting to 'fiddle the figures' to ensure under-evaluation of fishing effort by many metric tonnes on an economically valuable species. de Yturriaga, J. A.

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14. The European Court of Justice ruled in 1996 that quota hopping is legal. Nonetheless, British and Spanish ministers at the EU have different points of view. See The *Bangkok Post*, 16 October 1996. As this paper is in preparation, further urgent modifications of the EU's marine conservation measures signed in mid-April 1997 invoked changes in quota allocations between Member States, especially in still controversial fisheries of certain 'boxes' in western waters off the Irish coast. See also details in reference 12 above.
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