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Chapter 5

THE COMMITTEE FOR THE EASTERN CENTRAL  
ATLANTIC FISHERIES (CECAF) AND THE  
MANAGEMENT OF WEST AFRICAN RESOURCES:  
CRITICAL REVIEW AND IMPLICATIONS OF  
EXTENDED JURISDICTION\*

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Eighteen years ago, on September 19, 1967, the Director-General of FAO promulgated the statutes of the Fishery Committee for the Eastern Central Atlantic (CECAF). During the intervening years, numerous events have taken place that have had profound repercussions on the fisheries of West Africa and radically changed their character: the decolonization process has finished; long-distance fishing fleets have been deployed; changes in the Law of the Sea have occurred, intra- and interregional commerce has developed; aspirations for a new international economic order have grown; and, finally, an awareness has emerged of the strategic economic and social importance of fishing for some of the more important countries in the region.

To face these progressive changes and adapt to them within its terms of reference, the Committee gradually equipped itself with the means to achieve its objectives by creating:

This chapter draws largely on an earlier paper prepared for CECAF (Poinard and Garcia, 1984) which has been restructured and updated to meet the requirements of the workshop. It reflects the views of the authors, and not necessarily those of FAO.



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- in March 1969, the Working Party on regulatory measures for demersal stocks;
- in May 1971, the Working Party on resource evaluation and the Sub-Committee for the Implementation of Management Measures;
- in December 1972, the Sub-Committee on Fishery Development and the Sub-Committee on Management of Resources Within the Limits of National Jurisdiction (a major step in the evolution of CECAF, which will be discussed later);
- in December 1979, the Working Party on fishery statistics.

Together with this structural diversification, CECAF has been supported since 1974 by an Inter-regional FAO/UNDP Project for the Development and Management of Resources in the Eastern Central Atlantic, known as the "CECAF Project." As will be seen later, the activities of the CECAF Project have generally been decisive in the fields of collecting statistics, assessing resources, management principles, training, and regional cooperation.

Since its creation, the Committee has undertaken certain actions in connection with the problem of management. Since 1974, it has been able to rely on the Project directly for some of its activities, and throughout the period under consideration (1967-1984) it has benefited from the work carried on in the laboratories of member countries. Table 5.1 shows the sequence of events as they developed chronologically within the framework of the Committee itself.

To evaluate the effectiveness of the CECAF Committee during the shift from the old to the new Law of the Sea, this paper will try to identify the explicit and implicit objectives of the Committee and the changes that occurred as it attempted to cope with the management and development of extended jurisdiction. The achievements will be reviewed and matched against the original objectives and changes needed in order to deal with the new situation created by extended jurisdiction.

#### OBJECTIVES FOR MANAGEMENT AND DEVELOPMENT OF FISHERIES

The CECAF Committee was created to meet the need for international action for developing and using the resources of the region,

a large part of which lay outside the limits of national jurisdiction.<sup>1</sup> The Committee received a mandate from the FAO Council (Appendix 5.1) to advise on how to (a) promote, coordinate, and support research and development with a view to rational exploitation; (b) assist the governments of the member states to define the scientific basis for the management of resources; (c) encourage education and training; (d) contribute to the collection, diffusion, and exchange of statistical data and information in general; (e) assist in the mobilization and orientation of international aid; and (f) encourage regional cooperation.

The management aspect of this mandate was reinforced by the terms of reference of the Sub-Committee on Management of Resources Within the Limits of National Jurisdiction, created in 1972 to (a) study the management measures required, as well as their foreseeable effects; (b) recommend the most effective methods of controlling the application of measures at the national and the regional level; and (c) advise on the coordination of such measures with those in effect outside national limits.

In the domain of fishery development, the terms of reference of the Sub-Committee on Fishery Development, also created in 1972, were (a) to examine constraints and define needs and priorities for fisheries development programs, in all sectors of the fishing industries in the CECAF coastal countries at regional and national levels; (b) to advise on the formulation of development programs, at both regional and national levels, to overcome existing constraints and improve efficiency and ensure economic growth within the fishery; and (c) to coordinate all present and planned fishery development programs in the area and encourage cooperation and assistance for fishery development between all member countries.

The extensive set of terms of reference, established long before the new Law of the Sea agreements, delimits a purely advisory function with the ultimate broad objectives of rationalizing exploitation of marine resources by promoting data collection, resource evaluation, elaboration of scientific advice, training, and regional as well as international collaboration in research, management, and development. Similar objectives and activities can be found for all regional fisheries bodies around the world, but because CECAF is a Committee in a developing tropical region, particular emphasis had to be put on developing national capabilities of coastal countries in research and management; developing a statistical data base (nonexistent in 1967); building up a scientific archive of knowledge on resources, their characteristics, distribution, and potential to promote some sort of equity in the availability of information; and coordinating aid programs.

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1. Resolution 1/48 of the FAO Council, September 1967.

TABLE 5.1 The Growth and Development of CECAF

	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
<b>1. Major sessions</b>																	
Committee		1st		2nd	3rd		4th	5th	6th		7th	8th		9th			
Development subcommittee							1st	2nd	3rd		4th	5th		9th			
Management subcommittee								1st	2nd		3rd	4th	5th				
Working party on resources evaluation				1st	2nd		3rd		4th	5th		6th	7th				
Working party on fishery statistics										1st		2nd	3rd				
<b>2. Important dates in the evolution of the working of the Committee</b>																	
Management and development subcommittees setup				x													
Regional project setup							x										
CECAF statistical bulletins published							1st		2nd		3rd						
Secretariat decentralized												x					
<b>3. Meetings of ad hoc working groups on resources</b>																	
Sardinellas central zone								x			x		x				
Shrimp (northern zone)								x									x
Sardines (northern zone)								x		x		x	x				x



TABLE 5.1 (Continued)

	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
<u>4. (Continued)</u>																	
Technical consultation on control and surveillance														x	x	x	
Joint FAO/CIDA/CECAF meeting on the evolution of the Law of the Sea										x							
Working group on joint ventures																x	
Small-scale fisheries													x	x			
Species identification																	x
<u>5. Training effort</u>																	
Regional/FAO courses for training in fisheries sciences (advanced level)					x				x		xx		x				x
National/FAO courses on fishery statistics (intermediate level)									x			x		x	x	x	
Seminars on fisheries development								x	x							x	
Courses/seminars on technology of conserving fish products (Dakar)										x							
Courses on fishing techniques													x			x	



## ACHIEVEMENTS OF THE COMMITTEE

In the following sections, the achievements of the CECAF Committee will be examined in the field of statistics, resources evaluation, and management. Of course, credit should not be given to CECAF alone for what has been achieved, as it would be very difficult to decide how much was due to the contribution of the Committee, the national laboratories, their bilateral components, the FAO projects, and other actions. The proceedings of the working parties have been coherent and adapted to the realities of the region, but such progress was quite clearly the result of a continuous interaction between the Committee and its various coastal and noncoastal components, and any success should be equally shared. However, attempts will be made, whenever possible, to identify in the following sections the direct role of the Committee.

### Fishery Statistics

When CECAF was set up, fishery statistics were totally inadequate. The available data were mostly incomplete (with regard to both noncoastal fleets and coastal artisanal fisheries); and their breakdown by geographic areas, species, and groups of species was, in general, not suitable for assessing resources and estimating levels of exploitation. The work of CECAF consisted of disseminating the STATLANT questionnaire, improving its use (theoretical training courses, on-the-job training, etc.), and exerting indirect pressure on the noncoastal countries to break down the data correctly. The first statistical bulletin was published in 1976 and updated approximately every two years thereafter. By 1977 their data were sufficient to make approximate assessments by larger statistical divisions for CECAF as a whole. To allow for a more thorough examination of the problems involved, the Working Group on fishery statistics held its first meeting in 1979. The Committee asked it to revise the statistical grid by establishing more detailed divisions (corresponding as closely as possible to the Exclusive Economic Zones without, however, interfering with the process of delimitation of maritime boundaries) in order to render compatible the groupings of statistics according to the two distinct concepts of natural (stock limits) and economic boundaries.

In short, by 1980 it was possible to consider the statistics on catches collected by the STATLANT 34A form to be more or less satisfactory with regard to their availability, coverage, and breakdown. On the other hand, the data on effort collected through the STATLANT 34B forms proved totally unsuitable for the assessment of resources, particularly with regard to coastal pelagic stocks. A new form, specifically for CECAF, to record catches by unit of effort was drawn up to overcome this difficulty.



By 1980 the problems with catch statistics in CECAF were less those of availability and breakdown by large divisions than those of quality, trustworthiness, and breakdown by Exclusive Economic Zones. This was a logical development in view of the changes that had taken place as regards the Law of the Sea, but the problem of reliability concerned data derived from both foreign and coastal fleets, particularly for small-scale fisheries. This question had to be dealt with at two levels by CECAF:

- For the local fleets, support to national structures for collection, to the extent of the means available.
- For the nonlocal fleets, organization of activities on the "principles of control and surveillance" of the fisheries, logbooks, on-board observers, aerial surveillance, etc.

The collection of statistics, therefore, entered a second phase in 1980, which will eventually lead to reshaping the system. The improvement to be expected will depend greatly on the *control* that the coastal countries are able to exert on statistical sources, whether these be national or foreign.

Under the impetus of the CECAF Project and a small number of laboratories in the region, a start was made in collecting socioeconomic statistics. It is worth noting here that, although up to now only biologists have used them, catch and effort statistics are basic economic data that characterize in a certain sense the inputs and the outputs of the fishery system.

#### Biological Data and Resources Evaluation

Table 5.1 summarizes the series of important meetings (assessment and training) organized within the framework of CECAF as well as events relating to management that took place elsewhere in the world. A considerable growth in activity can be noted after 1976, mainly as a result of the CECAF Project. Tables 5.2 and 5.3 give a detailed chronological report of assessments by species or groups of species for the northern region of CECAF (where there are large monospecific fish concentrations) and by country for the southern region (Gulf of Guinea), where the multispecies nature of the exploitations makes it difficult to take a monospecific approach. Insofar as possible, all assessments carried out in the region have been taken into account whatever their origin (FAO, CECAF, coastal laboratory, foreign laboratory, bilateral cooperation activities, etc.), with particular attention being paid to those conclusions considered useful for management.

TABLE 5.2 Assessments Carried Out For Stocks in Northern Regions of CEEAF (Gulf of Guinea)\*

Stock/ Sector	Assessments and Conclusions
Hake (34.1.1/ 34.3.1)	<p>Studied in 1968-73, 75, 76, 78, 80, 82, and 84. Declared intensively fished (1968), fully exploited (1969), fishes with a too small mesh size (1970), overexploited (1970). Proposal for 70 mm mesh (stretch, 1972), first estimate of potential (1973) revised in 1976 and 1980. Possible occurrence of long-term fluctuations suggested (1980). Combined analysis for shrimps and hake (1982 and 1984). First evaluation of fishing mortalities by size group and by gear type (1984).</p> <p><i>Conclusions:</i> Reduce fishing effort and increase mesh-size. Consider interactions between shrimp and hake. Progress being made.</p>
Sparids (34.1.1/ 34.3.1)	<p>Studied in 1968-72, 75, 76, 78, and 84. Declared heavily exploited in 1968, overfished with too small mesh size and proposal for a 90 mm mesh 90 mm mesh (stretch, 1969) not enforced. Multispecies analysis in 1984.</p> <p><i>Conclusions:</i> Stock considered as seriously damaged. Partly replaced by cephalopods (?). Reduce fishing effort, open mesh size, and analyze interactions between sparid and cephalopod exploitation. Some recent progress.</p>
Other demersal percomorphs (34.1.1/ 34.1.1)	<p>Studied in 1971, 74, 77, 79, 80, and 84. Potentials grossly assessed from biomass estimates. Not enough data for a better approach (1971), too small mesh size (1971) for nearly all species such as sciaenids, serranids, sparids. Potential available for <i>Brachydeuterus</i> (1971).</p> <p><i>Conclusions:</i> Overfished in terms of yield per recruit north of Cape Verde. Present level of exploitation not known south of Cape Verde. Travel surveys to be intensified.</p>

TABLE 5.2 (Continued)

Stock/ Sector	Assessments and Conclusions
Cephalopods (34.1.3/ 34.3.1)	<p>Studied in 1969, 71, 73, 76, 78-80 and 82. Octopus declared intensively fished (1971), fullyfished (1973), overfished (1976); stocks of Cape Bojador-Cape Barbos separated from stock of Cape Blanc (1980). Cuttlefish fully exploited (1971) overfished (1973). Sparids intensively fished (1970), declared overfished 1978; insufficient data to confirm this.</p> <p><i>Conclusions:</i> To manage identified stocks separately. To reduce the overall level of effort. To continue the presently satisfactory regional collaboration.</p>
Lobsters (34.1.3/ 34.3.1)	<p>Studied in 1968 for the first time. Detailed analysis (1979), revised (1980). Gross overfishing for <i>Palinurus mauritanicus</i> (1979), recovering (1980), full exploitation for <i>P. regius</i> (1979).</p> <p><i>Conclusions:</i> Analyze interactions with cephalopods. Carefully monitor recovering of the resource.</p>
Shrimps ( <i>P. notialis</i> )	<p>Studied in 1971, 77, 79, 80, 82, and 84. Areas concerned: Senegal, Guinea Bissau, and Sherbno Division — small resource in Mauritania — first estimates in Mauritania — first estimates in Senegal and G. Bissau (1971), revised (1977, 78, 79); stocks intensively to fully exploited. Combined bioeconomic analysis of artisanal and industrial fishing interaction in Sierra Leone (1984).</p> <p><i>Conclusions:</i> Control effort levels. Take into account interactions between artisanal and industrial fishing.</p>
Sardines (34.1.1/ 34.1.3)	<p>Studied in 1972, 74-78, 79, 80, 82, and 84. First estimates in Sector A from Gibraltar to south of Agadir (1974); sector declared fully exploited to overexploited since</p>

TABLE 5.2 (Continued)

Stock/ Sector	Assessments and Conclusions
Sardines (continued)	<p>1972. First estimates of biomass in 1975. Sector C, from Cape Bojador to Cape Barbos declared fully exploited in 1978. Whole area fully exploited in 1978. Routine estimates of biomass made since 1975; active regional collaboration. Effect of long-term climatic oscillations assessed (1984).</p> <p><i>Conclusions:</i> Limit effort in Sector C. Monitor the resources carefully. Risks of instability.</p>
Small coastal pelagics (34.1.3/ 34.3.1)	<p>Studied in 1971, 72, 77-80, 82, and 84. <u>Sardinellas</u>: Need for controlling fishing effort underlined since 1971. First estimates of the potential (1972), declared intensively to fully fished (1972). Moderately exploited (1978), fully exploited again (1980). Recent estimates of biomass by acoustic surveys but no updated analysis of the state of stock and potential. Senegalese stock affected by long-term oscillation linked with the upwelling (1982). Stock considered globally underfished but locally overfished (1984). <u>Mackerel</u>: Fully exploited (1971), overfished (1979). No new assessments. Gross overfishing or climatic changes? <u>Horse mackerel</u>: Declared overfished in 1972. Fully fished in 1979. Intensively to fully fished since 1980.</p> <p><i>Conclusions:</i> Assess long-term stability. Analyze interactions between artisanal and industrial fishery. Monitor effort levels. Control and monitor transfers of effort between target species (and between fisheries). Continue routine evaluation of biomass by echo surveys.</p>
Trumpet fish (34.1.1)	<p>Studied in 1974, 79, and 81. Potential estimated to be 400,000 tons (1979). Fishable concentrations disappeared (1981).</p>

\* Conclusions are valid as of 1982.

TABLE 5.3 Assessments Carried Out in the Southern Region of CECAF (Gulf of Guinea)\*

Country	Results
Sierra Leone	<p>Stocks studied in 1971, 77-80, and 82. Demersal species declared overfished since 1962 in the 0-40 m sector. Overexploitation of croakers confirmed in 1971. Shrimp potential estimated in 1977. Fish potential estimated in 1978, 79, and 80. Prospecting by trawler carried out in 1976, 77, and 80.</p> <p><u>Pelagic Species:</u> First assessment of stocks in 1983. Not enough data. Stocks probably overfished by foreign fleets.</p> <p>• <u>Conclusions:</u> Shrimp intensely to fully exploited. Demersal resources in general: <i>status unknown</i>.</p>
Liberia	<p>Stock studied in 1977-79, and 81.</p> <p><u>Demersal Species:</u> First rough estimates on potential in 1979. Prospecting by trawler in 1981. General status of resources unknown. Status of stocks of shrimp and their potential studied together with those of Sierra Leone (Sherbro Division).</p> <p><u>Pelagic Species:</u> No estimates.</p>
Ivory Coast	<p><u>Demersal Species:</u> Stocks studied in 1970-74, 76, 78-82.</p> <p>First estimates on potential made in 1970, revised in 1971, 76, 78 and 82.</p> <p>Stocks declared fully exploited in 1970, overexploited in 1973, fully to intensely exploited in 1976. Recent drop in potential possibly due to increase in abundance of trigger fish (1982).</p> <p>First estimates of shrimp stocks in 1970. Stocks fully exploited in 1975. Conflict due to the uncontrolled development of the artisanal fishery. Economic collapse of the industrial fleet in 1978-79.</p>

TABLE 5.3 (Continued)

Country	Results
Ivory Coast (continued)	<p><u>Pelagic Species:</u> Studied in 1971, 73, 74, 76, 78-80. First estimates of the <i>Sardinella eba</i> resources in 1971. Stock declared overfished in 1971, fully exploited in 1974 and 78. First estimates of <i>Sardinella aurita</i> resources in 1974. Stock declared fully exploited in 1974 (potential 30,000 tons). New analysis in 1976, declared the stock seriously overfished since 1972. Collapse. Partial recuperation of stock Table 5.3 in 1978. Insufficient data in 1982 for a new analysis. Collapse of <i>bonga</i> lagoon stocks in 1971; recovery in 1984-85. Changes in fresh water discharges probably involved in the collapse.</p> <p>First estimates of <i>Brachydeuterus</i>: 10,000 tons (1973).</p> <p>First estimates of mackerel: 40-50,000 tons (1974).</p> <p>First estimates of anchovy: 40,000 tons (1974) in Ivory Coast/Ghana.</p> <p><u>Conclusions:</u> Need to analyze the problems raised by the management of unstable pelagic resources exploited by artisanal and industrial fisheries.</p>
Ghana	<p><u>Demersal species:</u> Analyses in 1970, 72, 76, 79 and 80.</p> <p>First estimates of shrimp potential (400 tons) in 1970 (stock vanished).</p> <p>First estimates of demersal potential (10,000 tons) in 1972, stock moderately to fully exploited (1972).</p> <p>Communities of sea bream and coastal communities overfished (1976). Potential of biomass estimated by trawl survey 1980 (40,000 tons): = 11-19,000 tons.</p> <p><u>Pelagic Species:</u> Common resources of Ivory Coast, Ghana, and Togo. See Ivory Coast.</p>

TABLE 5.3 (Continued)

Country	Results
Togo	<p><u>Demersal species:</u> Potential roughly estimated in 1974 (1,250 tons), revision carried out in 1978 (300 tons). Scientific trawl survey 1984 — estimated minimum biomass of 2,600 tons (probably greatly underestimated); stocks still underfished.</p> <p><u>Pelagic resources:</u> See Ivory Coast.</p>
Gulf of Guinea (west)	<p>First estimates of subregional potential (52-63,000 tons) in 1971, revised in 1973.</p> <p>Disappearance of the mackerel stock in 1971 (potential 50,000 tons).</p>
Ivory Coast to Benin (inclusive)	<p>Collapse of the sardinellas in 1972. Resources potential oscillating with upwelling and river outflow. Difficult to control fishing effort in artisanal fisheries.</p>
Nigeria	<p><u>Demersal species:</u> First estimates made in 1965, followed by analyses in 1969, 70, 79-81, and 83.</p> <p>Overexploitation of areas traditionally exploited (1969) confirmed in 1970. Revision of potential 1978, 79, and 80. Fully exploited in 1980. Landings official statistics probably overestimated. Littoral resources heavily fished.</p> <p><u>Shrimp:</u> First estimates in 1969, revised in 1979 and 80.</p> <p><u>Pelagic species:</u> Limited abundance on the plateau. No data. Delta resources not known.</p>

TABLE 5.3 (Continued)

Country	Results
Cameroon Equatorial Guinea and Gulf of Guinea (center)	Superficial analyses in 1978 (first estimate of demersal stock) and 1980 (signs of overexploitation of the coastal communities). Acoustic surveys of pelagic species in 1981.
Gabon	<u>Demersal species:</u> First estimates of shrimp potential in 1972, revised in 1977 and 80 (900 tons, probably underestimated). The demersal stock was estimated in 1978 and 80. It appears to be moderately exploited (potential: 8-9,000 tons on trawlable grounds and 5,000 tons on nontrawlable ones). <u>Pelagic species:</u> Stock of sardinellas estimated at 10-20,000 tons, underexploited (1980).
Congo	Assessment work carried out in 1971, 73, 74, 78, 80, and 81. <u>Demersal species:</u> First analyses made in 1971. Overexploitation of the croakers. Complete analysis of problems connected to mesh-size (1974). First estimates of overall potential in 1978, revised in 1980 and 81. Stock declared overexploited in 1978-79. <u>Conclusions:</u> Overexploitation brought about by the progressive reduction of accessible zones (new Law of the Sea) and overconcentration of the available ships (1982) on the restricted grounds. <u>Pelagic Species:</u> Big potential available. Potential of sardinellas assessed at 15-20,000 tons (1980). To be managed in cooperation with Angola.

\* Conclusions are valid as of 1982.



At the Symposium on the Oceanography and Fishery Resources of the Tropical Atlantic, Abidjan, October 1966, organized by *Unesco*, FAO, and OUA, knowledge of the region was reviewed particularly as a result of the international programs of ICITA (*International Cooperative Investigation of the Tropical Atlantic*, FAO) and the GTS (*Guinean Trawling Survey*). Progress was noticed in the understanding of production mechanisms and in the description of environment. Following the GTS, Longhurst (1969) presented his classification of fish communities, and the first population dynamics studies on Sciaenidae carried out at Pointe Noire, Congo, and Nigeria were reported. Nevertheless, although certain fisheries were described, no assessment of resources was presented. The state of the stocks was generally unknown in 1966 except for an assessment of the resources of Nigeria made by Longhurst (1965) and reports of overexploitation of the hake in Morocco by Furnestin (1952) and of Sciaenidae in Sierra Leone by Watts (1962).

The FAO/ICES Symposium on the Living Resources of the African Atlantic Continental Shelf from the Strait of Gibraltar to Cape Verde in 1968 (Letaconnoux and Went, 1970) provided considerable documentation on the resources of the region, their distribution, biology, and exploitation, but offered no new element regarding the assessment of stocks and their level of exploitation.

In these conditions, and in the absence of adequate statistics, the ACMRR/ICES Working Group on the resources of the Central and South-east Atlantic that met in 1968 and 1969 could arrive only at some provisional conclusions regarding overexploitation of hake and Sparidae in the northern CECAF region, and, considered as a whole, the spiny lobster resources of Mauritania and Sciaenidae of the continental shelf of the Gulf of Guinea. These reports were subsequently reviewed on a fairly regular basis. In 1970, the first estimates were made of demersal stock for the Ivory Coast and the shrimp stocks for the Ivory coast and Ghana.

From 1971, assessment work increased in Senegal (on shrimp and Pomadasidae), in the Congo (on Sciaenidae and the trawl fishery in general), and in all the Gulf of Guinea on small pelagic species (especially sardinellas). In 1972, important results were obtained regarding sardines in Morocco and sardinellas, horse mackerel, and mackerel in the Cape Blanc Cape Roxo sector. From 1974 to 1977, an increasing number of papers were published by the more active national laboratories in the region and by FAO projects (in the Gambia, Guinea, and Morocco). The techniques of acoustic surveying, in use since 1975 in Morocco, became a practice in the entire northern region of CECAF and occasionally in the Gulf of Guinea. From 1977 onwards, this resulted in a substantial growth in knowledge on the distribution of migratory stocks and their biomass (the accuracy of the absolute values of biomass, however, have not yet been assessed).

From then on, the CEECAF Project organized an intensive series of special working groups (see Table 5.1), during which the information was inventoried, regrouped, and refined and the conclusions on stocks eventually extrapolated to similar regions. The mass of information placed at the disposal of the region was finally used, from 1978, in a series of syntheses promoted by FAO on coastal pelagic species (Boely and Freon, 1980), demersal species (Domain, 1980), shrimp (Garcia and Lhomme, 1980), and the resources of the northern zone of CEECAF (Belveze and Bravo de Laguna, 1980). A series of syntheses is now being prepared by country and will be a major source document for the directors of fisheries in the developing countries, as well as development banks.

By 1984, almost all the information accumulated had been processed to provide for a better assessment of the resources (Poinsard and Garcia, 1984). Further progress can only come from work currently under way, but it must be stressed that producing scientific information and updating assessments are the responsibility of the coastal country. The updating of the assessments is slowing down quite noticeably, a trend that concerned the Management Sub-Committee at its fourth session held in Dakar in June 1982. A major concern was that a premature cessation of funding of the CEECAF Project would certainly interrupt this continuous flow of information and regular updating of assessments, leading to serious problems in the Committee and loss of knowledge by coastal countries.

## MANAGEMENT

In 1967, under the old regime of free access to resources outside territorial waters, FAO set up the CEECAF Committee in order to allow the countries fishing in the region to meet to discuss possible conservation measures. Such a decision had become necessary because (as a result of the rapid development of the activities of the long-distance fleets) the rates of exploitation were rising rapidly and some resources were about to become overexploited. This was confirmed for sea bream and hake at the first meeting of the ACMRR/ICES Working Party on the resources of the Southeast and Eastern Central Atlantic (ACMRR FAO, 1968).

At that time, the coastal countries had only embryonic fishery and research services, if any, and thus they had little information on these resources, little expertise, and little influence on the results of the debates in those first meetings. Early work was concerned mainly with hake and sea bream, the stocks being heavily exploited by the long-distance fleets. Studies showed that no regulation on effort was necessary for the hake, but that it was necessary to stop and then reduce the effort being used on the

sea bream. These decisions, taken with great prudence on the basis of incomplete data, were later generally confirmed.

Two main issues were considered by CECAF: the regulation of mesh size and the regulation of effort, with particular emphasis on shared stocks and artisanal fisheries.

#### Control of Mesh Size

By 1970 it was becoming clear that the mesh sizes used on the above stocks, as well as on the coastal populations of croakers in the Gulf of Guinea, were too small and had to be increased considerably. In fact, a Working Party on regulatory measures for demersal stocks, at its first meeting in April 1970, recommended (FAO, 1970) that the mesh size (in the trawl cod-end) have an opening of 70 mm when trawling on bottoms of less than 100 m, and 90 mm in deeper waters, mainly to protect stocks of sea bream on the continental shelf and hake on the continental slope. At subsequent sessions, the countries in the region made known their decision to include this regulation in their laws. In actual fact, however, these laws continued to be inadequately enforced because of the obvious complications regarding enforcement measures. Complementary studies carried out in Senegal, Ivory Coast, Congo, and Nigeria had confirmed the need to increase the authorized mesh size; and, faced with the need to find a viable compromise between the optimum mesh size for a multispecific fishery and the difficulties of control, the member countries of CECAF agreed at the Sixth Session (at Agadir, 1979) to recommend a minimum mesh size of 60 mm for the exploitation of all demersal species in the CECAF zone (excluding special exceptions supported by scientific evidence).

This ultimate recommendation, which is more realistic and more enforceable than the first, is now being introduced into the legislation of many countries in the region and it has been adopted at the Sub-Regional Conference of Ministers for the Preservation, the Conservation and the Exploitation of Marine Resources, and attended by the ministers of Mauritania, Senegal, the Gambia, Cape Verde, and Guinea Bissau. The rigorous enforcement of this mesh size is, however, still far from being realized even in the regions where it is clear that the mesh size of 60 mm (stretched) is still smaller than that which would give the best long-term results. In certain cases, its application poses a tricky problem for multi-species fishing with catches of different value (e.g., hake and shrimp) exploited by heterogeneous and competing fisheries (e.g., Moroccan and Spanish fleets). This problem is now being studied, but progress will be slow because of the far-reaching political and economic consequences of any decision.

Despite the fact that most of the resources are fully fished or even slightly overfished, CEECAF did not orient its advisory activities towards the problem of regulating the overall level of fishing effort. Why it did not is a question that will be examined in the following section.

## REGULATIONS OF FISHING EFFORT

### Under the Old Law of the Sea

By 1968 for lobster, 1969 for sea bream, 1970 for hake, and 1971 for cephalopods and small coastal pelagic species (divisions 34.1.3-34.3.1), and by 1975-76 for the sardines of Morocco, the working parties indicated that the fishing effort had reached or surpassed the level corresponding to average maximum production; i.e., the stocks had reached biological overexploitation. Measures to regulate fishing effort were suggested at the beginning of CEECAF's activities (ACMRR/FAO, 1968), and were "strongly recommended" in 1971 during the second session of the CEECAF Working Party on regulatory measures for demersal stocks (FAO, 1971). Discussions on this point should be placed in their international context.

In fact, in the temperate zone, the more "developed" fishery commissions, such as ICNAF, had scarcely touched on the problem of regulating fishing effort in 1967, when CEECAF was established. Only in 1968 was it clearly recognized within ICNAF that the regulation of mesh size on its own was insufficient and that regulation of the intensity of fishing was also necessary.

Research then turned toward the indirect regulation of fishing effort through the use of total allowable catches (TACs) and quotas. After numerous technical discussions, the first quotas were fixed in 1971. The first difficulties of applying them appeared in 1973 (particularly for multi-species fisheries) but the process was generalized by 1974. The principles of calculating quotas on the basis of maximum sustainable yield was being questioned in 1975. The problems involved were never totally solved by the time the Law of the Sea was changed, and the question of regulating fishing effort in an international context has not yet been satisfactorily answered.

With these developments in mind, it becomes clear that, in the context of CEECAF, characterized originally by a lack of reliable statistics, insufficient trained scientific personnel, and a nonexistent tradition in stock assessment, it was too much to hope to set up a mechanism as "sophisticated" as effort regulation by quotas. We should remember that

this has proved to be difficult to implement even in better-equipped regions. Difficult in temperate seas, this regulation would have been almost impossible to implement in tropical zones because of the basically multispecies nature of the resources and the weaknesses of the coastal countries' surveillance systems.

The Working Party on regulatory measures for demersal stocks analyzed the problem in detail during its second session in 1971, with a very slight delay as compared with ICNAF. It pointed out that, judging from the experience gained in other regions where scientific research facilities were much more highly developed than they were likely to be in the near future in the CECAF area, it would be difficult to obtain precise estimates on "potential" yield. This difficulty arose because the information available was not sufficiently accurate to permit the setting of catch allocations, especially since a large part of the catch taken was not landed in the region.

When discussing this question at its second session, in May 1971, the Committee also considered it premature to set up such a regulation, and underlined the risk that a quota system, based as in similar cases elsewhere on historical rights, would only serve to perpetuate the current inequalities between coastal and noncoastal countries. This argument influenced the choice of the Committee as regards management, when it decided immediately to recommend control over mesh size and to postpone to a later date the regulation of fish effort.

To accelerate the acquisition of knowledge, and above all to transfer this knowhow from foreign laboratories to those in the region, and finally to permit regulation of fishing effort on the most appropriate basis, the Committee set up, at its third session in December 1972, a Working Party on resource evaluation dealing with statistics and the state of the stocks.

It is clear, therefore, that up to 1974 the problem of regulating effort was posed without any solution in sight. The limiting factors were the relative "scientific underdevelopment" of many states in the area, the reluctance of some foreign countries to share data, and the unfavorable consequences of the old Law of the Sea for coastal countries as far as sharing resources was concerned.

Looking back at the concrete results achieved (or, rather, not achieved) by other commissions (ICNAF, ICSEAF, etc.) in applying a system of catch quotas under the old Law of the Sea, one is led to the conclusion that this "underdevelopment" probably avoided the premature creation of expensive and cumbersome management techniques inherited from temperate seas and more developed countries. The efficiency of those techniques is now being questioned even in the areas where they were first implemented; in the CECAF context, their success would have been even more doubtful.

### Under the New Law of the Sea

Before the opening of the Third Conference on the Law of the Sea in the early seventies, some African countries unilaterally extended their jurisdiction over coastal waters. The report of the third session of CEEAF, December 1972, for the first time differentiated between coastal and non-coastal countries, and the representatives of the former insisted that the Committee take responsibility for implementing the management measures that had been analyzed and proposed within the framework of CEEAF.

By creating the Sub-Committee for the Management of Resources Within the Limits of National Jurisdiction, the composition of which was limited to coastal countries, CEEAF, at its third session, confirmed this *de facto* responsibility. The Sub-Committee met for the first time in Lome in 1977 and acknowledged that the new Law of the Sea then being drawn up would facilitate the implementation of management measures.

The problem of regulating fishing effort was posed after this date in quite different terms. Each country was responsible for the level of effort it had authorized on the resources belonging to it, and the limitation of fishing effort had to be carried out "within the framework of national management and development plans" (first session of the Sub-Committee on Management, 1977) in terms of objectives defined by each coastal state. The efforts of the Committee in the management sector were, therefore, mainly concerned with problems related to the development of national capacities as regards management and the coordination of management plans between countries sharing the same resource. It was in this spirit that Resolution MR/1/2 was to be adopted by the first session of the Sub-Committee on Management in 1977. It stated that:

- National development plans should take into account the results of scientific assessments and the limitations of the resource.
- The countries sharing a resource should cooperate on its periodic assessment and its management.

Stimulated by this Sub-Committee, CEEAF organized from 1977 to 1980 an impressive series of 24 special working groups on various important aspects of the resources of the region which led to the building up of a recognized information base at the regional level. FAO financed the preparation of syntheses on CEEAF resources on the basis of these results (Troadee and Garcia, 1980; Belveze and Bravo de Laguna, 1980). Follow-up meetings are still being organized.

Taken as a whole, the reports showed a considerable improvement in quality and quantity with regard to both the actual results and the geo-

graphic coverage. It was confirmed that a large majority of the stocks were intensively to fully exploited (sometimes overexploited in the northern sector of CECAF) at the time the syntheses were prepared. The order of magnitude of the resources and their appropriate levels of exploitation were approximately determined, and it became urgent to decide on their rational utilization at the national and subregional level (in the case of shared stocks). The problem of limiting the effort arose mainly in terms of allocation inside the Exclusive Economic Zones in response to conflicts between various segments of national fisheries, between these and the authorized foreign fleets, and between neighboring states exploiting in common a resource subject to important migration patterns. Once the problem had been understood in these terms, the socioeconomic elements and the unsolved question of collecting these data became important.

To serve as examples, the CECAF Project carried out a small number of pilot studies on cephalopods and the main demersal resources of the northern sector of CECAF and on the shrimp fisheries (where there is a powerful interaction between industrial and small-scale fisheries). Similar work was set up at the national level in various coastal countries such as Senegal for the sardinella fishery and Ivory Coast for the lagoon fishery. This work, outlining the problem on social and economic grounds, translated the question of regulation and allocation of fishing effort into objective terms. The possibility of considerably increasing the returns from heavily exploited fisheries (not necessarily overexploited in the biological sense of the term) by an appropriate reduction in effort was demonstrated, as was the need to identify the precise objectives of management and resolve possible contradictions between them, facing up to the basic problem: the definition of management and development strategies by the national authorities.

At that time, the Committee organized a technical consultation on stock management in the CECAF statistical division in Sahara and Cape Verde divisions, to tackle the problem of regulating the effort on migratory stocks that were commonly exploited. During this meeting at Dakar in June 1979, the participants examined the procedures to determine the overall optimum effort on an economic basis, the positive financial consequences of regulation, and the basis for calculating the sharing of common resources.

The coastal countries of CECAF have generally recognized at national<sup>2</sup> and subregional levels<sup>3</sup> the need to control effort. They have,

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2. In Senegal, for example, it has been agreed since 1978-79 that the development of traditional and modern artisanal fisheries for the small pelagic species will be made at the expense of the effort of foreign fleets, whose effort must gradually be reduced proportionally.

however, stressed that the negotiations that this type of management entailed should involve national experts exclusively. The shortage or lack of expertise, research facilities, and appropriate structures in certain countries has been the chief limiting factor in implementing the regulation of fishing effort. It was also agreed that more knowledge was needed on the stock migrations and that, therefore, exchanges of resources between Exclusive Economic Zones were necessary.<sup>4</sup>

Finally, at its eighth session (Lome, 1982), the Committee recommended to its Sub-Committee on Management that it "devote attention to the question of regulation of effort and also to management techniques such as quotas and total allowable catches (TAC)" in the case of shared stocks. A workshop on the regulation of fishing effort was organized during the fifth session of this Sub-Committee, in September 1983. The Sub-Committee concluded that CEECAF should be involved in calculating TACs as well as quota allocation schemes. A conclusion expressly confirmed by the Committee at its ninth session (in Banjul, October 1984).

This decision of the Committee appears to contradict the earlier statement that advice on resource sharing should be a purely national responsibility. It seems to arise from the fact that, faced with a situation of conspicuous inequality in availability of data and knowledge on resources as well as in national expertise, there is a strong need for external impartial advice on an agreed basis for discussion and negotiation. The coastal countries stressed very clearly that the guidance provided by CEECAF on TACs, but above all, on country allocation schemes (alternative schemes would be elaborated) was purely advisory and that the final decisions belong to the countries concerned.

#### CRITICAL EVALUATION OF THE ACHIEVEMENTS

On examining, with a minimum of objectivity, the results that have been achieved through this work in less than ten years, and comparing them with the progress achieved in other comparable sectors of the developing world, one can only conclude that the work has been generally positive

3. At the third session of the Sub-Regional Conference in Nouakchott, 1980, attended by Senegal, Cape Verde, Mauritania, the Gambia, and Guinea Bissau, agreement was reached on the concept of resource limitation and on the need to share the potential available.
4. To satisfy this requirement, the Fishery Resources and Environmental Division of FAO, with the support of the CEECAF Project, made a series of synoptic charts on the distribution, reproduction and migration of the major resources of the northern region of CEECAF which were submitted at Lagos in September 1982 (Garcia, 1982).



(even if the present situation is not yet satisfactory) when considering the new responsibilities now incumbent on the coastal countries.

As regards the regional development of knowledge, the establishment of basic principles of management, and the diffusion of information and coordination, the evidence presented should be sufficient to demonstrate that the CECAF bodies concerned with management, supported by the CECAF Project since 1974, and with the help of the more developed coastal laboratories, have worked toward the assigned objectives with indubitable success. They have greatly contributed to an awareness of the problems raised by the old and the new regime of the oceans. Quite rightly, the new Law of the Sea has gradually been reflected in their thinking over the years. It is clear, however, that in CECAF the problems of management are far from being settled and that important questions remain unanswered, particularly at the level of implementing regulations and acquiring adequate structures and trained personnel.

It is also necessary to note, only a part of the actions undertaken by the coastal countries are discussed at the regional level and thus come within the domain of CECAF. Many, and sometimes most, of the actions undertaken occur outside the regional mechanisms within a purely national context, very often with an international or bilateral component. It is significant in this connection that the CECAF coastal countries have rarely informed the Committee of the results of identification and evaluation missions (such as those of the World Bank) or even of support missions for planning development (executed within the framework of the Exclusive Economic Zone Programme of FAO). There seems to be a limit to the problems that coastal countries agree to deal with in an international forum, thus making an assessment of the impact of CECAF even more difficult. It is also necessary to stress that the achievements have to be considered keeping in mind the difficult economic situation of West African countries, the virtual absence up to now of defined maritime boundaries, and the drastic effects of the Sahelian drought on priorities in African economies.

In the following sections the achievements of CECAF in data collection, resource evaluation, management, and development will be critically evaluated. The achievements in training will not be elaborated, as they are not essential to the problem of extended jurisdiction. It should be noted, however, that CECAF and its project delivered 690 individual training sessions in ten years in all fields related to fisheries, significantly improving the quality of the local expertise.

#### Data Collection and Resource Evaluation

The work of the Committee has resulted in a marked improvement in the availability of statistics, their breakdown by species and statistical

divisions, and in the regular preparation of detailed regional bulletins. The changes in the Law of the Sea have initiated revision of the statistical grid of CECAF to bring it closer to a format based on sub-division by EEZ (the chief constraint on the latter activity being the frequent absence of any formal demarcation of the maritime areas now coming under national jurisdictions).

The problem of the availability of statistics having been generally solved, the Sub-Committee has been looking at the problem of their quality (reliability), and this has led it to consider problems of surveillance and control of foreign fisheries as well as the problem of collecting data from local fisheries. To do this, it has organized technical consultancies, *ad hoc* working groups, training courses, and practical demonstrations. The Committee has recommended vigorous action in statistics collection within the framework of fishing agreements. It would seem to have exhausted the resources at its disposal in this domain; sometimes working to the very limits of its terms of reference, which lay down an exclusively advisory role for it.

In the area of assessment of resources, the work of the Committee has been directed along the following general lines:

- Collection of biological data to analyze the effects in the change of mesh sizes;
- Analysis of the distribution and migration of stocks;
- Assessment of potentials (at levels of effort corresponding to  $F_{MSY}$  or  $F_{0.1}$ );
- Promotion and coordination of acoustic surveys;
- Coordination of assessments on shared stocks.

In this task it has been fully supported by the CECAF Project, which has mobilized the necessary funds for the growth of this activity.

However, over-optimism should be avoided because, throughout this report on progress achieved in basic information, it is noted that the statistics have become useful (at the level of statistical divisions) only since about 1977-78, by which time assessments had made considerable progress while still being insufficient in many cases. At working group meetings these basic statistics have sometimes been "interpreted" in an attempt to arrive at assessments by unit stock (or unit fishery), but this is far from being the general case. As things now stand, the limiting factors as regards management-oriented information are as follows:

- The results available on the rate of exploitation of stocks in many countries are not always accurate enough to motivate the national authorities to change their approaches to management. The degree of resolution of the analyses done at the regional level, owing to the unavailability of data, is sometimes limited, and a national fisheries directorate is not likely to make difficult management decisions solely on the basis of a regional document indicating that the relevant statistical division as a whole seems overexploited by all the countries concerned. Efforts are being made to produce resources reports by country, but socioeconomic data are seriously lacking.
- The available results may refer to a limited number of species in the area while, in fact, there is a much larger number of species of commercial interest. Some generalizations to species groups or multi-species stocks have been made, but here again the uncertainty of the conclusions does not encourage the authorities to take far-reaching actions. The assessment of resources on a stock-by-stock basis should now be changed to assessment of all resources in one area or country.
- New data are acquired too slowly in some areas of CECAF, and assessments are not updated frequently enough for short-lived species with large interannual variations in abundance. This judgment, however, should not be generalized since there are sectors or stocks for which the knowledge is regularly updated (e.g., the sardines of Morocco, cephalopods in the northern region of CECAF, fisheries of Senegal and Ivory Coast, and demersal fisheries of Nigeria). External funding at national and regional levels will still be necessary for many years in order to keep the assessment process going, but the permanent drain of trained staff away from fisheries research and administration is an even more serious problem that can be solved only if the appropriate structures and statutes are made available to render the jobs more attractive.

The results achieved show that there are two "speeds" of development in the CECAF region that should be recognized if hasty conclusions are to be avoided. Two groups of coastal countries have to be distinguished. The first group consists of those countries with considerable fishery resources, where there are more or less well organized laboratories, with a national expertise that is constantly growing and where fishing and fishery agreements play a major role in the economy. These countries progress fairly rapidly (at least in their approach to industrial fishing) in view of the constraints they have to overcome and the time schedules they have to meet.

On the other hand, a group of countries also exists whose fishery resources are limited and in which the economic role of fisheries is secondary to that of agriculture or large mineral (oil) resources. These countries are generally short of expertise in the field of fisheries, and they are usually more interested in small-scale fisheries (in lagoons or at sea), which are difficult to analyze. As a consequence, the critical mass cannot be reached and the progress of understanding is slow.

This distinction means that two levels may also exist in CECAF as regards requirements and implementation of management. Superficially, these two levels could be associated respectively with the northern and southern CECAF regions (Gulf of Guinea) were it not for the fact that within these two sectors there are important exceptions.

#### Management

In the CECAF region over the past eighteen years there has been no major collapse with drastic consequences to the economies of the coastal countries, as has often been the case in numerous other resource-rich regions of the world, e.g., Peru, California, and southwest Africa. Most pelagic stocks are considered to be intensively, and often fully, exploited. The deep-water demersal resources of the Gulf of Guinea are underexploited. The first signs of overexploitation of coastal demersal stocks in the Gulf of Guinea were localized within restricted areas. The abundance of sea bream in the northern CECAF region declined considerably, and it is likely that the intensive fishing during the seventies was at least partly responsible, but the apparent replacement of this resource by cephalopods of great commercial value has reduced the importance of the issue. Mackerel stocks have been declared to be overexploited, but this is a fishery that is not well known in the coastal countries. Since this is an unstable resource, the availability of which can vary greatly, the diagnosis of overexploitation should be cautiously made. Hake have also been reported as being overexploited (since 1952 for white hake) if only the biological criteria are considered; they certainly seem to be caught too young with too small a mesh. When socioeconomic criteria are taken into account, however, the problem becomes more complex and can be overcome only very gradually.

The only notable collapse has been sardinellas in the Ivory Coast/Ghana/Togo region. It is now admitted that this is a resource subject to great natural variations, and the problem is that of controlling the fishing effort of an efficient small-scale fishery on a fluctuating resource. At present there is no suitable technique that can be easily applied to regulate this type of exploitation.

Finally, the state of the lagoon stocks is not well known, and decreases in production have been attributed to modifications in the environment (in Benin) or to overexploitation developing either spontaneously (Ebric Lagoon, Ivory Coast) or as a result of a development program (Aby Lagoon, Ivory Coast). In this latter case, however, the effect of a tenfold decrease of river outflow in four years in relation to the Sahelian drought was certainly far from negligible.

While the absence of very serious management problems in CECAF might be the result of the positive impact of CECAF activities, it might also be the result of a generally low economic profitability. However, two deficiencies can be mentioned: mesh size and effort regulations, the two main management issues contemplated by CECAF.

#### Regulation of Mesh Size

The coastal countries have readily agreed to regulate the mesh size of foreign fleets, but on the whole they have been reluctant to apply this measure to national fleets (and to the small-scale fisheries) in spite of a unanimous agreement to accept a specific recommendation which took into account all the available results and the difficulties of enforcement. The result is that the coastal countries have had difficulties in implementing a management technique even though they recognize its utility. The difficulties are of two types:

1. In the case of foreign fleets. The main difficulty lies in control, whether on land or at sea, of the mesh size being used. The single mesh size of 60 mm was aimed, in part, at reducing these difficulties of control. It seems that at the present time some countries are in a position to carry out some control while others appear to have difficulty in exercising their authority in this matter. At the Third Session of the Committee in 1972, the coastal countries reaffirmed their responsibility to apply management measures in the waters under their jurisdiction, and stressed that the extension of their jurisdiction would greatly increase their control over the resources. Starting from this date the problem of implementing mesh size regulations was considered only from the point of view of the responsibility of the coastal countries and their ability to exercise it.

2. In the case of national fleets. Prior to the work of CECAF, laws that had been inherited from the past were more, often than not, established on the basis of limited biological evidence. The problem of control here is theoretically easier since it is possible to carry out control on land, especially if only a single mesh size is authorized. Again, however, the practical results from the point of view of implementation have, on the whole, been negligible. In some countries where competent laboratories exist, attempts have been made to refine the regulation by authorizing

several different mesh sizes on multispecies fisheries, making control difficult and costly, if not impossible in practical terms. In countries where the personnel have little competence on the subject and are overburdened with administrative work, the authorities do not know how to deal with the inevitable recriminations (and pressures) of the fishermen. No experimental trawl survey for demonstrative purposes has been undertaken, no information campaigns have been carried out, and, in order to avoid a major conflict as well as because of a lack of conviction or argumentation (as the subject is not yet mastered), the implementation of the regulation is inefficient or even nonexistent.

In all cases the problem of implementing regulations on mesh size depends on the national capacity for effective control, and thus on the ability of the coastal country to exert its authority. The limiting factors are:

- The failure to understanding that the use of a too small mesh size was very often the *consequence* of overfishing by excessive effort and not a direct primary cause. Addressing the problem of mesh size in heavily overfished fisheries without addressing the problem of excessive effort is doomed to failure.
- The lack or insufficiency of laboratories and competent personnel.
- The inability of such personnel, where they exist, to foresee the difficulties in the application of regulations.
- The lack of determination at the upper levels of administration, which may largely be a consequence of the three previously stated factors, and sometimes a lack of efficient liaison between the national laboratories, the authorities, and the fishermen.

#### Regulating the Fishing Effort

For many countries in the Gulf of Guinea with sufficient expertise, the existing information on the state of marine resources is not accurate enough either to induce an awareness of the need for regulating fishing effort or to suggest that the problem is urgent. The recent rise in the price of fuel has often resulted in a reduction of the fishing effort to a point where some sectors seem underexploited. On the other hand, serious problems exist in some lagoons (in the Ivory Coast), and a system of regulation of the fishing effort by licensing is contemplated for the small-scale fishery.

More obvious problems exist in the northern CECAF region, where enormous resources are sought and where the risk of already identified major accidents exists. In this sector, three basic aspects have to be taken

into consideration: definition of national objectives, the control of access to foreign fleets in the Exclusive Economic Zone (licenses), and the interaction between these fleets and the national fleets including small-scale fishing.

Although this is a recent development for CECAF, results are by no means negligible. As regards the first point, the planning policies of many countries in the region recognize the limit of the resources and the need to expand profitability by cutting the fishing effort and by shifting the activities of the foreign fisheries toward national fisheries or joint ventures. There are policies on licensing and there are some kinds of quota system. In some cases the quotas or licenses are discussed every year on the basis of reports from the *ad hoc* CECAF working groups, which are considered as objective working documents. The main difficulties lie in controlling the quality of the data furnished to the coastal countries (surveillance) and in the shortage of national personnel (problems of training, recruitment, statutes for the scientists, budgets, etc.).

In the case of shared stocks, a subregional grouping independent of CECAF (but maintaining relations with it) has been set up in the north of the CECAF region: the Interministerial Sub-Regional Conference, linking Cape Verde, the Gambia, Guinea Bissau, Mauritania, and Senegal. This Conference recognized at its third meeting, at Nouakchott in 1980, the principle of limiting catches and of negotiated shared resources between countries in the region, which may be considered as a very positive result. The problems posed are difficult to resolve and have only been partly, and only recently, solved in the very developed countries which have administrative and research capacities. In the CECAF region the process still has to progress toward the practical application of this concept. The main difficulties lie, once again, in checking the quality of the data (monitoring and surveillance), increasing the number and competence of available national personnel (training, recruitment), improving the operational capabilities of the subregional bodies at the technical level (lack of infrastructures, expertise, available means, etc.), and finding ways of addressing the strong inequalities, incompetence, and lack of knowledge of relevant issues between negotiating parties.

The related problem of the allocation of the recommended level of effort (and available resources) between the various sectors of the national fisheries, and particularly between small-scale and industrial fisheries in the majority of countries, has up to now been seen merely as a conflict between fishing gears. The solution to this problem, which has not yet become acute, depends on a change in mentality and habits and a further understanding of new concepts (even if these very often exist in the traditional regulations) for the acquisition and administration of a sound socioeconomic data base.

Here again the countries involved can only progress slowly in a field where external advice is only rarely useful (positive experience in this field is scarce everywhere) and where the potential political consequences can be serious. At the purely technical level, the capability to regulate the overall fishing effort in the region varies according to the country concerned and the chosen regulatory procedures (licenses or catch quotas, regulation on a yearly basis or for a longer period).

The deficiencies that have been noted are essentially at the level of the implementation of CEECAF recommendations and advice. Until recently, implementation has been hindered by the unfavorable situation of the coastal countries under the old Law of the Sea, but these countries now have an opportunity to progress more rapidly.

The limiting factors on this progress are diverse, and they vary according to the management problem involved. In reality, whether they are derived from the lack of control over foreign fleets, the scarcity of national expertise or pertinent data, or the apparent lack of a desire to enforce the regulations at a national level, they all reflect, in most cases, the inadequacy of the available means at the national level in coastal developing countries to exert the authority necessary for implementing management measures elaborated at both regional and national levels. It is evident that more working groups, seminars, and training courses would be useful, but these would not solve the basic problem that has emerged: suitable structures must be created at the national level to handle the responsibilities arising from the new Law of the Sea.

It is no surprise to anyone who has followed the debates in CEECAF that from the very first sessions the coastal countries were careful to stress their exclusive prerogatives as regards the implementation of management measures in the waters under their jurisdiction, thus underlining the purely consultative role of the Committee, and this in spite of the understandable weakness of some national structures.

At the regional level, the reinforcement of national capabilities was foreseen in the project to set up a regional fisheries research institute, the creation of a computerized regional data center accessible to all the states, and the setting up of a particular "CEECAF Sub-Project" for the Gulf of Guinea; but for various reasons, mostly financial, they were not implemented.

At the national level, this reinforcement has taken place quickly in certain countries such as Senegal, Nigeria, Ivory Coast, and Morocco; it is developing in other countries such as Mauritania; and it is still not sufficient for most of the other countries which is why we have referred earlier to the two-speed development of CEECAF. However, one must make a distinction between the countries where the available fish resource seems to justify the development of an important national structure (Morocco,



Mauritania, Senegal, Guinea Bissau, Sierra Leone, Guinea) and those countries whose marine resources which justify only with difficulty such a development (e.g., Benin, Togo, Zaire).

In addition, it appears that in some CECAF coastal countries those personnel in charge of the fisheries administration change very often and, in any case, lack the necessary authority to deal effectively with fisheries problems, decisions often being taken "from above" on the basis of wider socio-economic considerations that largely outweigh the strict point of view of fisheries.

Many participants in the seventh session of CECAF at Lagos touched on this problem and regretted the failure to take concrete action at the national level on certain CECAF recommendations. They expressed regret that the CECAF organisms did not provide them with the means of acting in their own countries to arrive at basic decisions (concerning recruitment and statutes for personnel, research structures) which would have enabled them to increase their operational capacities in assessment, monitoring, and control.

#### Considerations on Possible Improvements

The efficiency of a regional fisheries body depends heavily on the level of development of the research and administration in its member countries. In the developing world, the role of the fisheries bodies is even more essential than it is elsewhere. Improvements can be looked for from two complementary directions: (a) more direct involvement in management implementation; and (b) greater efficiency in developing national capabilities.

Remember that management involves both advisory and decision-making functions. The *advisory* function concerns:

- Knowledge of resources and state of exploitation,
- Knowledge of the economic sector involved,
- Identification of management problems and solutions,
- Elaboration of management advice following the objectives given at the decisional level.

The *decision-making* function concerns:

- Identification of objectives for management,
- Adoption of management measures proposed at the advisory level,
- Implementation of the measures,
- Control and surveillance.

The Committee has dealt with the advisory function and is requested by member countries to go as far as calculating TACs and propose rational allocation schemes for quotas in the case of shared stocks. As to decision making, it has stressed the need for a clear identification and establishment of priorities among objectives, recommended (and the recommendation accepted) that management measures be inserted in the laws, and advised on ways and means to implement these measures particularly in control and surveillance.

In doing so, the Committee has fulfilled its advisory mandate reasonably well and at relatively low cost. The weaknesses of the system can be identified at two levels: (1) lack of development of national and regional self-sufficiency in assessment of fisheries and elaboration of advice; and (2) weak functional link between the advisory (the Committee) and the decision level (the coastal countries).

#### Development of Local Advisory Capabilities

Advisory capabilities need to be developed at national and regional levels. The Committee has done its best to train but has never had the means really to assist in developing new laboratories or research units of fisheries departments. Fisheries research has often been a low priority at the national level, and the Committee has not always succeeded in changing this situation. To reach the necessary "critical mass," some regionalization of the available means is needed. The first step would be for the CECAF countries directly to finance a technical support unit for the Committee to replace the present CECAF Project. Its existence is threatened by the lack of funding from foreign donors whose own objectives and time scales are not always appropriate to the situation. External assistance will still be needed at the regional level for some time, and donors should understand that institution building is a long process, especially in developing countries.

Much more assistance is also needed at the national level. It is time that a small percentage of the huge amount of money wasted in fisheries development failures be devoted by the relevant financing agencies to promote better understanding of the context and constraints of fishery development.

#### Reinforcement of the Link between Advisory and Decision Levels

Advising and decision making have to be done at both national and regional levels. At the national level, the role of research in investment planning, management, elaboration of fishing agreements, etc., must be developed. The case of Morocco is a good example of the sort of

arrangement needed. It is moving rapidly towards effort regulations based on periodic "plans for optimal exploitation" established by law and elaborated by the research institute in collaboration with other authorities and with the fishermen's association.

At the regional level, the Committee could provide technical advice to the local non-FAO subregional groupings. These groupings, established at an intergovernmental level, have potentially the "decision-making" power lacking in CECAF, but they do not have the technical support available to CECAF through FAO and through the regional project. Better coordination would certainly improve the overall efficiency of the system.

In the CECAF Committee itself, some flexibility is needed to increase efficiency in the Sub-Committee on Management of Resources Within the Limits of National Jurisdiction (limited to coastal countries). It would be useful here to restrict meetings to only those coastal countries sharing a particular resource or a particular problem.

Some refocusing of assessment activities is also necessary to improve the rate of use of the scientific advice produced. Two important directions can be identified:

1. Concentrating on the assessment of resources by countries instead of by stock. All the resources of a single country should be assessed together in order to elaborate a synoptic document that can be used by the fisheries department as a basis for planning development and management. In the case of highly dynamic subregions with high rates of migration, the same principle applies and synoptic documents covering all the resources of a subregion are to be elaborated. This is particularly necessary because of the multispecies nature of the fisheries, their instability, and the need for flexibility in transferring effort from one species or species groups to another when abundance fluctuates.
2. Developing socioeconomic research. This important field is largely underdeveloped. Although CECAF has moved in this direction more rapidly than most of the other regional FAO or non-FAO fisheries bodies, including some of the most developed ones, intensive efforts are needed in training, collection of relevant data, and analysis in order to express the assessments and management/development options in terms that national fishery authorities can understand easily.

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