Assessing Governability of Fisheries Using the Interactive Governance Approach: Preliminary Examples from the Caribbean

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Abstract: *The Interactive Governance Approach provides a holistic framework for exploring and addressing the many dimensions of fisheries governance. The concept of governability relates to the fit between the features of the fishery system and those of the governance system. The applicability of governability is explored for fisheries in the Wider Caribbean viewed as a large marine ecosystem (LME). The fit varies widely from fishery to fishery. The examples of fisheries for reef fish fishes and large pelagic fishes and conch are contrasted to illustrate the key issues. Lack of fit and thus inadequate interaction is found to be often scale-related, but also in some cases due to inappropriate images or instruments or weak capacity for action.*

Key words: Governance, governability, Caribbean, pelagics, conch, reef fishes, fisheries, transboundary, indicators

1. The Interactive Governance Approach

The Interactive Governance (IG) Approach provides a holistic framework for exploring and addressing the many dimensions of governance of fisheries (Kooiman *et al.* 2005, Bavinck *et al.* 2005). It takes as its starting point the diversity (Div), complexity (Com) and dynamics (Dyn) of the fish chain. These are typical features of man-in-nature systems and the uncertainty and unpredictability that typify them. At each point in the fish chain there are upward and downward interactions at several scales. Lateral interactions within the fish chain and interactions with external factors also contribute to this uncertainty and unpredictability.

The IG approach takes a broad view of governance as "…the whole of public as well as private interactions that are initiated to solve societal problems and create societal opportunities. It includes the formulation and application of principles guiding those interactions and care for institutions that enable them" (Kooiman *et al.* 2005). It takes the perspective that governance is multifaceted, involving several dimensions including:

- Governance elements comprising -- Image formation, instrument development and action;
- Governance orders comprising -- Metagovernance (concepts, principles and values), institutions, and problem solving; and
- Governance modes comprising -- Hierarchical, collaborative or independent or self governance among actors.
- These are explained more fully in Bavinck *et al.* (2005) and Kooiman *et al.* (this volume) and a elaborated upon briefly below.

With regard to the elements of interactive governance, *images* constitute the guiding lights as to the how and why of governance and come in many types: visions, knowledge, facts, judgments, presuppositions, hypotheses, convictions, ends and goals. They not only relate to the specific issue at hand but also contain assumptions on fundamental matters such as the relationships between society and nature, the essence of humankind, and the role of government. *Instruments* link images to action. The range of instruments available to influence societal interactions is extremely wide. Instruments may be 'soft'; e.g., information, bribes or peer pressure. The last element of interactive governance is *action*; i.e., putting instruments into effect. This includes the implementation of policies according to set guidelines, which is a routine affair. However, action may also consist of mobilizing other actors in new and uncharted directions.

The Interactive Governance Approach also recognises orders of governance. First-order governance takes place wherever people, and their organizations, interact in order to solve societal problems and create new opportunities. *Second order governance* focuses on the institutional arrangements within which first order governing takes place. Here, the term 'institution' denotes, for example, the agreements, rules, rights, laws, norms, beliefs, roles, procedures and organizations that are applied by first-order governors to make decisions. *Meta-, or third order governance*, feeds, binds, and evaluates the entire governing exercise. Many principles govern activities in relation to natural resources. For example, the principles of sustainability and responsibility are recognized almost universally.

At the level of governance interactions the three modes roughly correspond to participation and self-governance; collaboration and co-governance and management or policy interactions and the hierarchical or interventionist governance mode. All societies demonstrate, and require, mixes of these three governance modes or styles, and in capture fisheries all three modes contribute in specific ways to governability.

Governability is defined as: "the overall capacity for governance of any societal entity or system" (Kooiman, et al., this volume). Assessing governability is a process that involves several stages. The first stage is the evaluation of the characteristics of the SG from the perspective of its Div, Com, Dyn, mentioned above, and its scale (Sca) characteristics. The next stage is the evaluation of the GS to determine whether there is a match between it and the system characteristics regarding the IG dimensions described above. This evaluation would involve aspects of appropriateness, completeness and effectiveness. The challenge is then to develop a system or framework to assess the governability of a fishery (Mahon *et al.* 2005). Kooiman and Chuenpagdee (2005) and Chuenpagdee *et al.* (this volume) propose a scheme that would score the overall fisheries system based on the four governance qualities:

- Prevalence of Features – Div, Com, Dyn, and Sca
- Responsiveness of Modes – Self (independent), collaborative, hierarchical
- Fit of Elements – Images, instruments and action (problem/solving, institutions, principles and value)
- Quality of Orders – First, second, meta-

In this paper I take a preliminary look at the types of issues and considerations that are likely to be encountered in pursuing a full scale governability assessment for the fisheries of a region using the Wider Caribbean Region as an example. This is done fully recognizing that no methodology has been developed for governability assessment. The assessment therefore proceeds in a discursive mode within the framework provided by the Interactive Governance Approach. The Wider Caribbean Region as defined in the Regional Seas Programme of the United Nations Environmental Programme (UNEP) is the area considered and the evaluation is done from a Large Marine Ecosystem perspective which demands that the system be examined as a whole. The emphasis will be on the 15 Member States of the Caribbean Community and Common Market (CARICOM) which are primarily the former British colonies in the Caribbean (Figure 1). The very low level of integration between the Spanish and English speaking countries regarding living marine resource management makes it difficult to treat the region as a whole. Current initiatives are expected to address this deficiency (Mahon *et al.* in press).
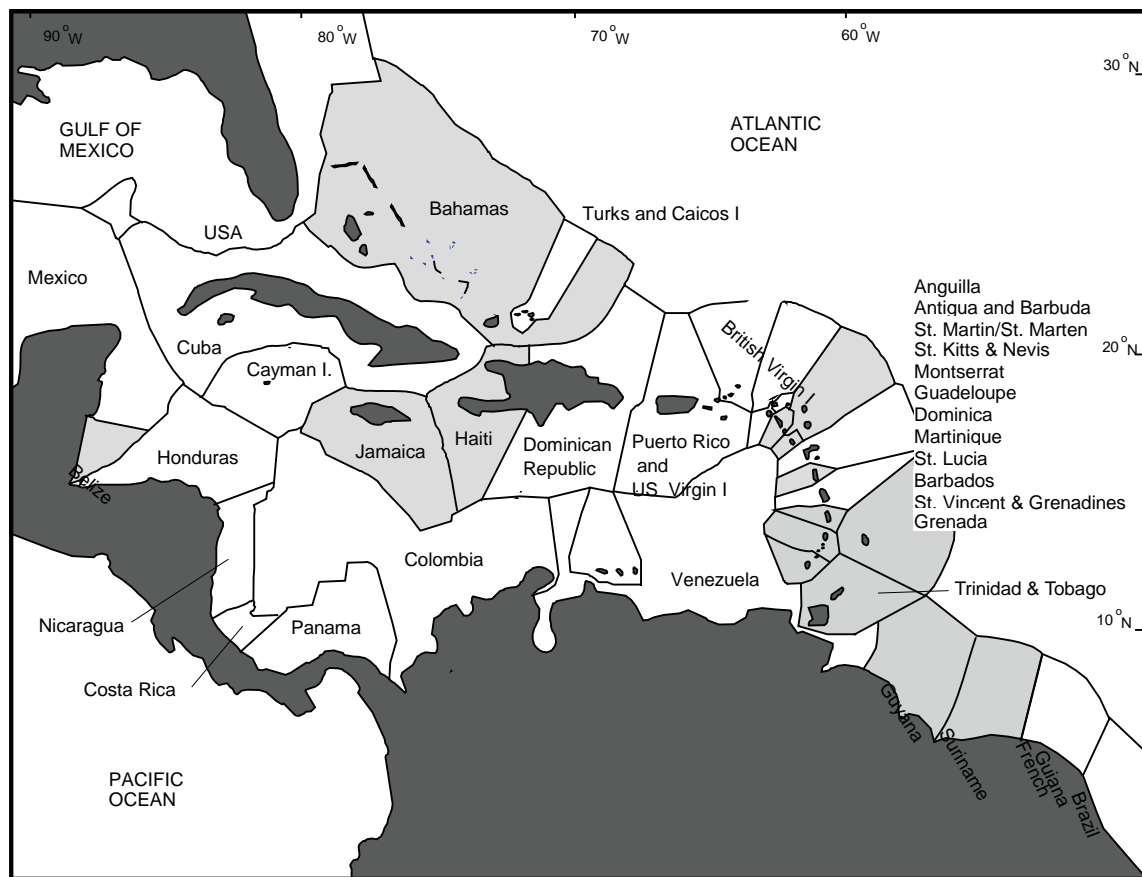
Figure 1. *The Wider Caribbean Region with hypothetical EEZs of CARICOM countries shaded in gray.*

2. The Wider Caribbean Region

The Wider Caribbean Region is an excellent region in which to explore fisheries governability as the fisheries there exhibit the full range of Div, Com, Dyn and Sca- related issues in both natural and human systems. The region extends from the mouth of the Amazon River, Brazil, in the south, through the insular Caribbean, Central America, the Gulf of Mexico and north along the east coast of North America to Cape Hatteras. The region includes 26 countries and 19 dependent territories of 4 other countries. These countries range from among the largest (e.g. Brazil, USA) to among the smallest (e.g. Barbados, St. Kitts and Nevis) in the world, and from the most developed to the least developed. Consequently, there is an extremely wide range in their capacities for living marine resource management. Throughout the region, the majority of the population inhabits the coastal zone, and there is a very high dependence on marine resources for livelihoods from fishing and tourism, particularly among the small island developing states (SIDS), of which there are 16 (Mahon *et al.* in press). In addition 18 of

the 19 dependent territories are SIDS. Much of the following description is based on Mahon (2002).

The Exclusive Economic Zones (EEZs) of the Caribbean region form a mosaic that essentially includes the entire region (Figure 1). Consequently, there is a high incidence of transboundary resource management issues, even at relatively small spatial scales (Mahon 1987, FAO 1998). The region is characterized by a diversity of national and regional governance and institution arrangements, stemming primarily from the governance structures established by the countries that colonized the region (Chakalall *et al.* 1998, 2007). This area also corresponds to the region covered by the FAO Western Central Atlantic Fishery Commission (WECAFC). Within this area there are three Large Marine Ecosystems (LMEs): The Gulf of Mexico LME, the Caribbean Sea LME, and the North Brazil Current LME. These ecosystems are closely linked, particularly the latter two, as the oceanography of the Caribbean Sea is strongly influenced by the highly productive upstream North Brazil Current LME.

The oceanography of the Caribbean region is highly variable both spatially and temporally. The North Coast of South America is dominated by the effects of two of the largest river systems in the world, the Amazon and the Orinoco, as well as numerous other large rivers. The North Brazil Current entrains some of this water and enriches the southern Caribbean. However, most Caribbean islands are more influenced by the nutrient-poor North Equatorial Current which enters the Caribbean Sea through the passages between the Lesser Antilles. Those islands with appreciable shelf area exhibit significant coral reef development. From Isla Margarita west to Mexico, the continental shelf is also extensively occupied by coral reefs at shallow depths. Seagrass beds and mangroves are also common coastal habitats. The Wider Caribbean Region is a biogeographically distinct area of coral reef development within which the majority of corals and coral reef associated species are endemic. Thus, as a whole, the region is of considerable global biodiversity significance. The Meso-American Barrier Reef is the second longest barrier reef system in the world.

There is considerable spatial and seasonal heterogeneity in productivity throughout the region. Areas of high productivity include the plumes of continental rivers, localized upwelling areas and near shore habitats (e.g., reefs, mangrove stands and seagrass beds). The trophic connection between these productive areas and other, less productive systems (e.g., offshore planktonic or pelagic systems), is poorly understood for this region. Likewise, food chain linkages between resources with differing scales of distribution and migration, such as flyingfish and large pelagics, both of which are exploited, are not considered in management, but may be critical to preventing the stock depletion that has occurred in many other systems where the requirements and or impacts of predators have not been considered in the exploitation of prey species.

3. Fisheries and Governance in the Wider Caribbean Region

The fisheries of the Caribbean Region are based upon a diverse array of resources (Mahon 2002). Of greatest importance are fisheries for offshore pelagics, reef fishes, lobster, conch, shrimps, continental shelf demersal fishes, deep slope and bank fishes and coastal pelagics. There is also a variety of less

important fisheries such as for marine mammals, sea turtles, sea urchins, and seaweeds. These fishery types vary widely in state of exploitation and approach to their development and management. However, most coastal resources are considered to be overexploited and most large pelagic species are considered to be fully or over exploited (FAO 1998, Mahon and McConney 2004a).

The majority of fisheries are primarily artisanal, or small-scale, using open, outboard powered vessels 5-12 m in length. The most notable exceptions are the shrimp and groundfish fisheries of the Brazil-Guianas shelf where trawlers in the 20-30 m size range are used, and the tuna fishery of Venezuela which uses large (>20 m) longliners and purse seiners. In many countries there has been a recent trend towards more modern mid-size vessels in the 12-15 m range, particularly for large pelagics, deep-slope fishes and lobster and conch on offshore banks.

The large pelagic species that are assessed and managed by the International Commission for the Conservation of Atlantic Tunas (ICCAT) are the most 'high-profile' tuna species with ocean-wide distribution sustaining the largest catches, often by distant water fleets. Few countries of the region presently participate in ICCAT's activities, but CARICOM countries have been exploring the most appropriate mode for this participation. A main problem is that many countries of the Caribbean, often SIDS, presently take only a small proportion of the catch of species managed by ICCAT. These countries may, by virtue of the size and productivity of their EEZs, be entitled to a larger share, but lack the technical capacity or the financial resources to participate in ICCAT where their case would be made. The need to develop a strategic approach through which these countries, particularly SIDS, can take part effectively individually or collectively in ICCAT has been emphasized by several authors (Chakalall *et al.* 1998, Singh-Renton *et al.* 2003, Mahon and McConney 2004a).

Numerous other large migratory pelagic species that are not managed by ICCAT are also important to the fisheries of Caribbean countries, e.g. dolphin-fish, blackfin tuna, cero and king mackerels, wahoo and bullet tunas. These are referred to as regional large pelagics as their distribution is largely within the Wider Caribbean Region. The information

base for management of these species is virtually non-existent. These are species for which a regional effort at management is urgently needed (Mahon and McConney 2004a, Haughton *et al.* 2004). This effort must include the appropriate institutional arrangement for cooperative management as required by the UN Fish Stocks Agreement.

Recreational fishing, an important but unknown contributor to tourism economies, is an important link between shared resource management and tourism, as the preferred species are mainly predatory migratory pelagics (e.g. billfishes, tunas, wahoo, dolphinfish). This aspect of shared resource management has received minimal attention in most Caribbean countries (Mahon and McConney 2004a).

Whereas, there is the tendency to think primarily of migratory large pelagic fishes as shared resources, it is important to note that reef organisms, lobster, conch and small coastal pelagics are also likely to be shared resources by virtue of planktonic larval dispersal. In many species, larval dispersal lasts for many weeks (e.g., conch) or many months (e.g., lobster) and will result in transport across EEZ boundaries. Therefore, even these coastal resources have an important transboundary component to their management. They are the resources that have been most heavily exploited by Caribbean countries and are severely depleted in most areas. Their status has been discussed and documented by FAO and WECAFC for several decades. These early stages are impacted by habitat destruction and pollution as well as overfishing of the spawning stock and both improved knowledge and institutional arrangements are required to implement management.

Living marine resource governance in the Wider Caribbean is weak. There is a variety of organisations with different mandates and interests that have taken up aspects of this responsibility but few have been developed expressly to deal with this (Chakalall *et al.* 1998, 2007). A Regional Fisheries Organization has been proposed by some countries as an appropriate way to approach fisheries, but countries have been reluctant to commit to such an organization. Recently the Association of Caribbean States (ACS) Caribbean Sea Initiative has proposed at the UN General Assembly that the Caribbean be declared a Special Area under the United Nations Convention on the Law of the Sea and there

is support for adopting this proposal. In preparing to take up the responsibility for managing such a special area, the ACS established the Caribbean Sea Commission (CSC) in 2007. It remains to be seen how this new entity will take up the intended responsibility. In support of this the Caribbean Large Marine Ecosystem Project has a focus on multi level living marine resource governance aimed at supporting the ACS Caribbean Sea Initiative and other regional efforts at living marine resource governance through application of the Large Marine Ecosystem Governance Framework (Fanning *et al.* 2007, Mahon *et al.* in press). Thus, it is clear that living marine resource governance at the regional level in the Wider Caribbean is emerging and evolving rapidly.

4. Assessment of Governability

As indicated above, assessment of governability starts with an analysis of the system to be governed in terms of sources of Div, Com and Dyn, as well as scale issues. It proceeds with assessment of the governing system, regarding the fit of 'elements' (principles and values, institutions, and actions), responsiveness of modes and performance of orders. Finally it addresses the interactions between the fisheries and governance systems. As also indicated above, no methodology or process for a governability assessment has been developed. The assessment therefore proceeds within the framework provided by the Interactive Governance Approach in the form of a discussion.

A preliminary assessment for the major fisheries of the Caribbean region might appear as shown in Table 1. Ideally, this evaluation would proceed on the basis of a well defined methodology with a comprehensive set of questions and issues to be considered, possibly using a suite of indicators. The table would be considerably longer with the indicators listed in each category. For a full picture, there would also need to be some way of assessing combinations of fisheries within which there are strong linkages, and also of determining what those subsets should be. The preliminary assessments in Table 1 are based on the experience of a single individual. These are explored in greater detail below for the three fisheries for which scores are shown. These assessments are not intended to be comprehensive. Their purpose is to illustrate how approaching a fishery assessment from a governability perspective using the Interactive Governance Approach is likely to

Table 1. *Preliminary assessment of Caribbean fisheries in CARICOM countries and their governance systems*

Fishery/Governance system	Reef fishes	Conch	Lobster	Flying-fish	Deep demersal	Regional pelagics	Oceanic pelagics
For the system to be governed (GS)): Representation of governance features							
Div/ Com/Dyn (natural, harvest, market systems)	H	M				H	
Sca (local, national, regional, international)	M	M				H	
For the governing system (GS)							
Goodness of fits of governance elements: images, instruments and action potential	L	H				VL	
Responsiveness of governance modes: self-, hierarchical, co-	L	M				L	
Performance of governance orders: first, second, meta-	L	M				L	
For the governance interactions (GI) between an SG and its GS							
Presence of governance interactions	VL	M				VL	
Overall	L	M				L	

Note: H = high, M = medium, L = low, VL = very low.

raise a set of questions that is fuller than those usually encountered in conventional fishery assessment.

4.1 Reef Fishes

For reef fishes harvesting and marketing are virtually exclusively at the local scale. In a few instances, larger vessels harvest on offshore banks. Most management must take place at the national to local level. Therefore, institutional arrangements at those levels are of primary importance. There are some transboundary reef systems which require collaboration at higher than national levels. Notable among these is the MesoAmerican Barrier Reef system of Central America, however, where islands share the same platform, reef systems may also lie across international boundaries, e.g. the Grenadines Islands of Grenada and St. Vincent and the Grenadines, and those of the US and British Virgin Islands. Despite the primarily national local focus for reef resources there is still the need at the regional level to collaborate on three fronts: harmonization of regulations, technical exchange of approaches and regional level planning for protected areas. However, if there is strong governance at the local and national levels, then overall governance is likely to be adequate in most cases.

In most cases, reef fishery governance is based on top-down regulations. This has generally been ineffectual owing to the virtual impossibility of enforcement of such widely dispersed, rural fisheries. Recent attempts at co-management have met with limited success owing to inadequacies both in government fisheries departments and in fisher organizations, or even lack of such organizations.

With regard to reef fishes, there is a poor match of images (the vision of how management should be structured) and instruments to the local level diversity and complexity. The predominant active mode is self-governance but this does not meet the needs of the system according to principles and values articulated at the national level and levels above. The information and institutional needs for hierarchical governance to be effective will probably never be achievable. Those for co-governance may be achievable, but will take considerable time to establish. These reef fisheries are probably the best examples of fisheries that would benefit most from an enabling approach that promoted self-organization (Mahon *et al.* 2008). Table 2 summarizes the considerations relating to reef fish fisheries within the interactive governance framework.

Table 2. Preliminary assessment of reef fish fisheries in CARICOM countries and their governance systems.

Fishery/Governance system		Reef fish fisheries
For the system to be governed (GS)): Representation of governance features		
Div/Com/Dyn (natural, harvest, market systems)	H	• Complex ecosystem • Multispecies harvest • Highly rural and decentralized • Simple market chain • Many localized environment linkages • Tourism linkages and conflicts in land and sea use
Sca (local, national, regional, international)	M	• Few transboundary issues • Mainly local-national scale
For the governing system (GS)		
Goodness of fits of governance elements	L	• Predominant image is control, emerging is co-management • Instruments predominantly legislative/regulatory • Prescribed action not implementable • Fishery stakeholder groups weak • Non-fishery groups strong • Small government departments modeled on top-down approach, cannot implement emerging collaborative approach
Responsiveness of governance modes	L	• Current hierarchical and self-governance by fishers in conflict • Emerging collaborative ill-equipped to respond
Performance of governance orders	L	• Static situation with regard to problem solving and opportunity creation • Institutions for hierarchy there but no will or capacity for action • Stewardship principles and values underdeveloped in users, no traditional management • Global principles not inculcated in users
Presence of governance interactions	VL	• Primarily stakeholder conflicts • Interactions largely negative • Minimal uptake at community level regarding co-management
Overall		• Current governance framework unworkable • Emerging framework internally inconsistent • Consider approach oriented towards enabling self-organization for equitable interaction, including restructuring of fisheries departments to facilitate enabling

Note: The column with H, M, L and VL are as per Table 1. The bullet points provide the basis for the assessment.

4.2 Regional Pelagics

For regional large pelagics harvesting and marketing are also primarily at the local scale. There is a trend over the past two decades to larger vessels with longlines, but these are still small relative to those found in offshore commercial fisheries. Most catch is sold within country but some is exported regionally and outside the region. To be effective management arrangements and decisions must be coordinated at regional/international levels but implemented at the national and local levels. Institutional arrangements that transcend those levels are of primary importance. At the regional level there is the need to determine the appropriate arrangements for collaboration in management whether this is through a regional organization or the International Commission for the Conservation of Atlantic Tunas (ICCAT) (Haughton *et al.* 2004, Mahon and McConney 2004a). When the appropriate transboundary management arrangement is operational, translation of regional decisions to the national and local levels will be the major challenge.

In light of these challenges, there is currently essentially no management for regional large pelagics as no entity has jurisdiction and each country takes only a small portion of the yield making independent national regulations useless. Here as before, there is a poor match of instruments to the scale issues even though they are well appreciated (i.e. supported by appropriate images). The predominant active mode is again self-governance but this does not meet the needs of the system according to principles and values articulated at the national level and levels above. The mix of information and institutional needs for

governance to be effective will take considerable time. The considerations relating to regional large pelagic fisheries within the interactive governance framework are summarized in table 3.

4.3 Conch
Conchs are sedentary and occur largely in predictable locations that are usually easily accessed by divers. Although much of the conch harvest in the region is by small-scale fishers, in some deeper areas such as offshore banks, larger vessels are required for effective harvesting, e.g. Pedro Bank, Jamaica (Aiken *et al.* 1999). Whereas harvesting is often small to medium-scale, most conch is exported being a high value commodity in the USA. The accessibility of the resource and its high value for export has lead to widespread depletion in most countries (CITES 2003).

The vulnerability of conch to overexploitation and its depletion was recognized several decades ago and led to regulations in most countries. These included closed seasons, size limits and prohibition of taking immature conch. Some countries prohibited export, reserving conch for local use, primarily the tourism market. Others monitored exports through permitting systems. In spite of these conventional top-down fisheries management attempts, depletion reached a point where in 1992 conch was listed on Appendix 2 under the Convention on International Trade in Endangered Species of Animals and Plants (CITES). This meant that conch could only be exported with a CITES permit, and that permits would only be issued in situations where effective management could be demonstrated to be in place.

Table 3. *Preliminary assessment of regional large pelagic fisheries in CARICOM countries and their governance systems.*

Fishery/Governance system		Regional large pelagic fisheries
For the system to be governed (GS)): Representation of governance features		
Div/Com/Dyn (natural, harvest, market systems)	H	• Mix of small commercial/rural and decentralized • Complex market chain including export • Tourism linkages in marketplace
Sca (local, national, regional, international)	M	• High transboundary component • Local, national, regional international linkages
For the governing system (GS)		
Goodness of fits of governance elements	L	• Image of international institution and mandate (ICCAT) • Instruments predominantly international consensus and national regulation, with international coercion • Caribbean cannot participate due to cost and capacity • Emerging image of regional/national collaboration without mandate or institution • Poorly reflected nationally in enabling legislation • Not translated locally • Small national departments cannot handle data and analysis requirement of collaborative approach
Responsiveness of governance modes	L	• International collaboration mode (ICCAT) gives low priority to regional stocks • Regional collaborative mode not equipped to respond
Performance of governance orders	L	• Global principles of collaboration paid lip-service only by Caribbean • Compromised by sovereignty issues for both decision-making and technical cooperation • Perception of value of resource and of what may be lost is weak
Presence of governing interactions	VL	• Primarily attempts to gather information for stock assessment in hope of results persuading managers of need for action • Discussion of need for regional arrangements
Overall		• Governance effort not proportional to value • Current image entirely mismatched with reality and internally inconsistent • Emerging image requires national/regional interaction to achieve technical capacity and representation at regional level

Note: The column with H, M, L and VL are as per Table 1. The bullet points provide the basis for the assessment.

This extreme measure by CITES led to a flurry of activity throughout the Caribbean regarding assessment and management of conch as exporting countries sought to put acceptable management in place (Smith *et al.* in press). Regional organizations have responded to the CITES measures by intensifying stock assessment and other fishery science analyses aimed at providing the technical basis for convincing CITES that fisheries are sustainable. Much of this work has been supported by external funding. Non-exporting countries with conch have benefited from the information generated. Several have sought to improve management in order to be removed from the list of countries that are not permitted to export conch, even though they have not been exporters in the past. The CITES permitting system has been relatively effective in controlling exploitation in most of the 12 exporting countries. Of the remaining 20 countries/states with local fish-ing only, stocks generally remain depleted. Four of these states have banned harvesting (CITES 2003). Considerations relating to conch fisheries within the interactive governance framework are summarized in Table 4.

5. Conclusions

5.1 System characteristics
Dynamics, complexity and diversity feature strongly in Caribbean fisheries, with scale emerging as a major consideration. There are two primary reasons for this.

- The large number and proximity of countries result in many transboundary issues resulting in the need for institutions at all levels and the upward and downward linkages that exist or have been

Table 4. Preliminary assessment of conch fisheries in CARICOM countries and their governance systems.

Fishery/Governance system		Conch fisheries
For the system to be governed (GS)): Representation of governance properties		
Div/Com/Dyn (natural, harvest, market systems)	M	• Single species with complex life-history • Mix of centralized commercial and decentralized rural harvesting • Simple market chains via exporters • Direct sales from fishers to restaurants often for tourism
Sca (local, national, regional, international)	M	• Low transboundary component • Regional and international linkages primarily relating to export
For the governing system (GS)		
Goodness of fits of governance elements	M	• Predominant image has been/is control • Instruments predominantly legislative/regulatory • Prescribed national action appropriate due to value of resource but failed due to lack of commitment • Overriding international control of exporting countries through CITES has controlled exploitation levels and forced commitment
Responsiveness of governance modes	M	• Considerable recent regional collaboration in science and fishery assessment to meet CITES demands • National response has been strong where conch is significant export
Performance of governance orders	M	• Global principles of sustainability and conservation have been externally imposed on most of the Caribbean • Some countries with sustainable fisheries but without capacity to demonstrate this, disadvantaged. • Governance effort not proportional to value
Presence of governance interactions	M	• Extreme externally imposed measures have addressed depletion of major stocks • National managers have engaged at the regional level to obtain benefits • Downward linkages to small-scale fishers remain weak
Overall	M	• Extreme externally imposed measures have addressed depletion of major stocks but stocks harvested for local consumption still threatened

Note: The column with H, M, L and VL are as per Table 1. The bullet points provide the basis for the assessment.

created in an attempt to get them to function as an effective unit (Fanning *et al.* 2007).

- The fact that many of the countries are SIDS (particularly in CARICOM). Therefore, fisheries departments are small, creating structural problems (Mahon and McConney 2004b), as well as tensions regarding appropriate division of roles and responsibilities between national and regional organizations.

5.2 Goodness of Fits of Governance Elements and Responsiveness of Governance Modes

The value of some resources such as lobster, conch and deepwater snapper/grouper makes it more likely that hierarchical governance systems will be appropriate, although in most places they have not been effective to date. The technical demands of such systems are more likely to be met owing to the value of the resources and the fact that there is expertise in certain regional centers that can support the hierarchical management systems. For these resources, which are, relatively valuable and primarily exported, the images and instruments may be appropriate inasmuch as export licenses and other conventional measures could provide reasonably effective control on a large part of the fish chain. However, the action element is largely lacking due to lack of political will and the resultant lack of enforcement capacity. For these resources there are also parts of the fish chain that serve local consumption needs, especially in tourism industries. For these the observations relating to reef fishes below are more applicable.

The current institutional frameworks for collaboration at the national through regional to international levels for resources that are primarily transboundary lack the commitment to be responsive. At best they serve to facilitate exchange of information. The essential structural component of delegation by national members of authority to regional or subregional body to act on their behalf is weak, as is members' capacity to act themselves. Importantly, the institutional arrangement for decision-making at the regional level is often lacking or ineffective. Thus although the images may be well formed, the instruments lack critical components needed to make them effective.

For resources that are small stocks harvested by small-scale fisheries, primarily reef fishes, and coastal pelagics, the current modes are predominantly hierarchical, by government, and self-governing, by

fishers, but these are currently operating against each other. For these fisheries, the images are inappropriate, consequently the instruments do not fit the reality and what limited action is possible is largely ineffective. Emerging images of protected areas and collaborative management are not well supported by existing institutions.

5.3 Performance of Governance Orders

There is a lack of indigenous institutions for resource conservation similar to those that may have been present on other SIDS with high dependence on natural resources (Johannes 1992). This is not to say that there is not a considerable amount of indigenous traditional and local ecological knowledge (TEK/LEK), but institutions for conservation are rare. This carries through into a general paucity of cooperation at the local stakeholder level, where effective user organizations are few.

At the regional/international level, meta-governance has proceeded along typical international lines with countries signing on to a variety of multilateral environmental agreements that espouse global principles and values. The difficulty here has been scale-related as few countries have adequately translated these commitments into national legislation, far less promoted their uptake at the level of the community or individual resource user.

Second order governance arrangements are primarily conventional hierarchical ones inherited from colonial times and are incapable of coping with emerging governance perspectives on participation (Mahon and McConney 2004b). The conventional institutions are hampered by the failure to appreciate the full social and economic value of the fishery resources and thus to provide the investment in management resources required to adequately address problem solving.

5.4 Governance Interactions

With regard to transboundary resources such as large pelagic fishes, and transboundary issues for largely national resources such as reef fishes and conch, there has been minimal interaction owing to the lack of forums with a mandate to generate advice at that level or to make decisions; even non-binding ones. Most interaction at the international/regional level has been exchange of technical information with a small component of joint analysis. The pressure brought to bear by

CITES in the case of conch has significantly increased the degree of interaction at the regional level.

At the national level, interaction among stakeholders for collaboration in development has been much stronger than interaction for conservation and management of resources. In most cases the realization that the top-down approach is not feasible for small-scale coastal resources, has led to a do-nothing approach while reflecting at length upon the feasibility of alternatives such as co-management. Co-management of coastal resources is a relatively new and emerging approach for the Caribbean and there is much to be done to build capacity for interactions that are effective, representative and transparent (McConney *et al.* 2003, Pomeroy *et al.* 2004).

5.5 Future Directions

A comprehensive governability assessment would take a systematic and holistic approach to what has been attempted in this paper in a preliminary fashion for purposes of illustrating how looking at fisheries from an Interactive Governance Approach perspective can provide insights that may not emerge in conventional fishery assessments. This preliminary effort has not touched areas such as interactions among fisheries. Similarly, scale features and governance dimensions at the level of the entire large marine ecosystem remain to be explored and assessed. Clearly a comprehensive governability assessment for the Caribbean is a bigger job than can be done by one individual, as was the case here. It would also require a much more defined methodology and process than is currently available. The development of this methodology is the major challenge for proponents of the governability concept and could take a variety of directions. These may range from the mechanistic development of a system of indicators to an 'expert judgment' system that would pursue a consensual, discursive approach similar to that used above, but working with a group of knowledgeable individuals. Both would require considerable resources. However, from this preliminary exercise, it is apparent that an Interactive Governance Approach, governability perspective can provide a useful framework within which to assess fishery systems and to obtain insight into key issues and processes.

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