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Fish

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Fikret Berkes, Helen Fast and Mina K. Berkes
Fisheries and Oceans

**CO-MANAGEMENT AND PARTNERSHIP ARRANGEMENTS
IN FISHERIES RESOURCE MANAGEMENT AND
IN ABORIGINAL LAND CLAIMS AGREEMENTS**

Literature Review Prepared for the NRTEE Task Force on Oceans

Fikret Berkes, Helen Fast and Mina K. Berkes

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1. THE MANDATE OF THE REVIEW

The mandate of the review was specified as follows:

- The purpose of the literature review is to provide the NRTEE Task Force on Oceans with background information on the subject areas identified. The information obtained in the literature reviews will be used by the Task Force to determine the state of the debate, to identify issues for further analysis and to design the terms of reference for the stakeholder process.
- The literature review will consist of a bibliography of key or significant published material on the subject specified, together with 100-word abstracts for each. The contractor will be required to select key and significant publications based on his/her knowledge of the subject, and to ensure that a broad cross-section of stakeholder positions and views are represented.
- The bibliography will include regional, national and international published materials as appropriate.

To carry out the mandate, we used mainly our own files on co-management in Canada and elsewhere. In the case of Aboriginal Land Claims Agreements, we supplemented the material in our files with some references kindly made available by Drs. J. Mathias and B. Welch, DFO Freshwater Institute, and some were obtained from the University of Manitoba Library. Steps in the research process included:

- (1) Scoping of key and significant publications in the area pertaining to the above topic, chosen on the basis that they will be used by the Task Force to determine the state of the debate, to identify issues for further analysis, and to design the terms of reference for the stakeholder process;
- (2) Researching and obtaining the key publications;
- (3) Preparing abstracts of about 100 words each;
- (4) Reviewing the abstracts for completeness and gaps in subject matter; and
- (5) Preparing a summary/overview evaluation on the state of the debate, identifying issues for further analysis.

2 FISHERIES RESOURCE MANAGEMENT

2.1 EVALUATION OF THE LITERATURE

The Concept of Co-Management

The term co-management is short for cooperative management. In the literature co-management is used interchangeably with two other terms, joint management and collaborative management. Various authors have defined co-management as

- management systems in which fishermen's organizations take active part in designing, implementing and enforcing fishery regulations;
- an arrangement whereby responsibility for resource management is shared between the government and user-groups;
- the sharing of responsibility or authority between the government and local resource users or community to manage a resource;
- the sharing of decision-making between government agencies and community-based stakeholders; and
- the integration of local-level and state-level systems.

The earliest reference we could find in the fishery literature to the term co-management is Kearney (1984). Kearney, in turn, refers to the use of the term in Canadian Federal government circles as early as 1978. The term seems to have entered into common usage after about 1988 with the appearance of papers and books by Osherenko (see 3.1), Jentoft and Pinkerton.

The concept of co-management cannot be defined very precisely because a wide variety of partnership arrangement and a continuum of degrees of responsibility sharing that is possible (Berkes). Some co-management arrangements may merely involve consultation, without the sharing of decision-making power; in other cases, co-management may entail the delegation of full management authority to the local level, as in Japanese coastal fisheries.

There is an overlap among the concepts of co-management, partnership and multi stakeholder processes. Co-management is the more common term used in fisheries and, to most authors, implies

some degree of sharing of decision-making responsibility. Partnership is a general, non-technical term that does not necessarily carry the above connotations. Although some co-management arrangements are definitely of the multi stakeholder type (cases described by Jentoft, Hanna), the latter term is not used to any extent in fisheries. To some, a multi stakeholder process implies a discussion forum, a consultation, or a negotiation/mediation process, rather than the actual sharing of decision-making, as co-management implies.

The State of the Debate: Common Property Theory and Co-Management

The literature on international fishery co-management is relatively well developed and coherent. There is an orderly progression of case studies and concepts, and the major contributors to the literature seem to be well familiar with the related literature. There is not much theory development, but many authors seem to agree that co-management falls in the area of common property theory (Jentoft, McCay, Pinkerton, Berkes, Pomeroy). Co-management arrangements can be analysed in terms of who holds what kind of property-rights over a resource or who controls the fishery.

The dominant paradigm of fishery management in the Western world is that the government, on behalf of its citizens who are the owners of the resource, manages the fishery. To do so, the government mobilizes scientific information (mostly biology and economics) that pertain to the management of the fishery. Centralized control is essential to this process (Rettig et al.).

The alternative vision of fishery management is that communities of fishers, as the owners of the resource, can or should manage the fishery. But are fishers capable of managing the fishery? The condition of the "tragedy of the commons" applies when property rights are not defined and the resource is used under open-access conditions (Berkes 1989; Ostrom 1990). In reality, many fish stocks are used by communities in which institutions (rules-in-use) have evolved for the management of these resources. However, a number of internal factors (e.g. disagreement among fishers) and/or external factors (e.g. incursions of outsiders) may interfere with the ability of users to manage the fishery, and make common-property resource use problematic (Berkes; Ostrom). A number of general conditions under which community-based management can be successful is known from the common

property literature (Ostrom).

As Jentoft (1989) puts it, "how, then, is co-management to be distinguished from other common property management systems, such as government regulation or community-initiated regulation? Co-management takes a middle course. It is a meeting point between overall government concerns for efficient resource utilization and protection, and local concerns for equal opportunities, self-determination and self-control."

The State of the Debate: International Co-management Experience

In the international experience, there are only two well documented cases of long-standing co-management arrangements that work, both of them with a legal basis -- in Norway and in Japan. The Canadian marine fishery experience in co-management is weak. There are few examples, none of them long-standing and none of them particularly successful. Curiously, the success cases of co-management in Canada are related to aboriginal peoples and land claims agreements, not because native groups and governments work together particularly well in co-management, but because land claims agreements provide *legally defined management rights of local resource users* -- a feature missing in all other kinds of co-management arrangements in Canada involving non-aboriginal fishermen

Jentoft's (1985; 1989) work provides a most detailed description of what might be the earliest continuous co-management arrangement in Europe, Norway's Lofoten Islands cod fishery. Co-management principles were introduced in the Lofoten Act of the 1890s, giving the responsibility for regulation of the fishery to fishermen. Different gear group representatives form special district committees, and make such regulations as fishing seasons, type of gear allowed, sea-space allocation for different gear types. There are elected fishermen inspectors and a public agency for enforcement. With a few minor changes in modern times, the system has continued to operate.

In Japan, the roots of fishery co-management go back to feudal times. The prevalent maritime tradition in Japan, unlike the West, never included the idea that the sea is open-access. Ownership of marine commons in coastal waters was, and still is, quite comparable, in Japanese law, to the ownership of the village commons. Until about 1900, the management function was carried out by

village guilds. In 1901, village fishing territories were codified, and with the 1949 Fisheries Law, the management of these sea territories was vested in local Fisheries Cooperative Associations (FCAs) of which there are some 5000 around the coasts of Japan. These FCAs have the authority to regulate fishing rights, exclude non-members, and expel members who do not obey the rules (Ruddle 1987; 1989).

Identifying Issues for Further Analysis

The literature has established fairly well the benefits of co-management as well as the problems of co-management. Regulations can only succeed if fishers follow the rules. If the fishers or their organizations take part in the decision-making process, they are more likely to support the rules, establishing what Jentoft refers to as the legitimacy of regulations. If the decision-making process is perceived as being fair and just, a regulation arrived at by fishers' consensus is likely to be followed by all. With co-management, fishers become partners instead of adversaries of government.

Fishers' organizations can make more equitable regulations than the government, responding to special needs of individuals or groups. For example, if an individual cannot catch his quota due to ill health, he can be compensated the following year. Another benefit is improved information about the resource base; fishers have practical information about the health of fish stocks that can supplement scientific information (Pinkerton 1989). Government bureaucracies are slow to respond to local and seasonal variations in different sectors of the fishery; fishers' organizations can be more flexible and can respond faster and more efficiently.

Problems of co-management include internal conflicts among members of a group, or between groups. A good example is the Bay of Fundy herring fishery. In the mid-1970s, the rights to make fishery regulations, the allocation of the total fleet quota, rights to sell fish to foreign vessels, the responsibility to police vessel quotas, and the right to distribute the surplus quota among the fleet were delegated by the government to the local cooperative. It failed in few years, a victim of conflict between small-scale and large-scale fishers (Kearney 1984).

Conflicting views among members of a group of fishers is probably the rule, rather than the exception. Conflicts are more likely when membership is heterogeneous with regard to boat size,

gear types, capital costs and ownership. Even among relatively homogeneous groups, differences in fishers' skills affect catches and introduce differences among fishers.

Jentoft argues that for co-management to have real effects, the fishers must have a certain amount of autonomy. The greater the number of functions delegated by the government, greater the autonomy will be. If there are many fishers' organizations in an area, fewer functions can be delegated. In theory, if there were only one organization, all of the regulatory functions, including the setting of the TAC, could be delegated to the fishers, the "sole ownership" option. In some cases, fishers' cooperative organizations contain group rivalry, conspiracy, and elite expropriation, making the delegation of management function very problematic. In such cases, the government agency may well be a more democratic institution than the cooperative organization.

Various interest groups (commercial fishers, processors, fish plant workers, environmental groups, sports fishers) may have interests in the management of a fishery. Thus, delegating responsibility for management to one kind of fishers' organization may improve legitimacy among the members of that group but may decrease legitimacy among the other groups and create external opposition to co-management.

Designing Terms of Reference for the Stakeholder Process

One solution to the above dilemma may be to create organizations with broader representation. An example is the regional fisheries management councils in the USA which may consist of fishers, public officials, processors, consumers, recreationists, and environmentalists (Jentoft and McCay). However, such organizations can become very complex and internal conflicts become likely. It is not clear if the FCMA system is a useful model to emulate; perhaps some of the US management councils work better than others (Hanna 1994).

Perhaps the biggest challenge in the designing of terms of reference for a new Canadian fisheries stakeholder process is that there have already been a great many ineffective attempts at consultation. Jentoft and McCay (1995) write: "In the provinces of eastern Canada, the principal approach was consultative: user groups were consulted about their concerns and opinions, but decisions were made by the fisheries ministry. The consultative process, which began modestly in the

mid-1970s with a handful of advisory committees, has exploded into tens of committees covering every sector and major marine resource species. In the Scotia Fundy region alone, there are as many as 28 committees.”

The literature of the international experience, as well as common property theory, argues that successful co-management will need to have a legal basis. If fishery co-management is to be undertaken seriously, the level of fishers' participation need to be more than consultative; legal rights to management will have to be established, as in the Norwegian and Japanese fisheries examples and as in the aboriginal land claims cases.

As can be expected, not all co-management arrangements work well. The long-term effects of introducing co-management systems are often not predictable. Transitional problems and unexpected results are likely. Co-management in small enclaves (as in the Bay of Fundy example) may have different possibilities of success than co-management introduced for the entire coastal fishing sector (the Japanese example). Jentoft argues that when co-management is introduced on a very small-scale, it may have to operate in a hostile environment; thus, one cannot draw conclusions from small experiments for larger co-management systems. There is no single model for implementing co-management. The government is likely to have a continuing role in overall planning, total quota management, solving distributional conflicts among various groups, providing sufficient legal support for the groups, and enforcing regulations.

Appropriate roles for fishers' organizations may include access control (who fishes and who does not) and matters of equity and distribution. Success of co-management depends on whether fishers' organizations function well or not. In some cases, fishers' organizations already exist, in other cases they have to be established first before government could delegate responsibility. In cases of co-management that work well, fishers' organization have the authority to make local regulations, and share the authority to enforce regulations. Examples include Japan where the local cooperatives have ownership rights to coastal fishing grounds, and Norway where they control of type of fishing gear used in a given location. Both have the right to exclude non-members and to sanction violating members.

The following conclusions, adapted mostly from Jentoft (1989), Hanna and Smith (1993) and Pinkerton (1989), provide guidelines for the design of co-management systems.

1. **Strong fishers' organizations.** A strong, well functioning, cohesive cooperative organization is necessary before co-management is possible, or else there needs to be a group that already has a cohesive social system based on kinship and ethnicity, as in a tribal group.

2. **Degree of authority delegated.** The more exclusive the authority given to the organizations, the greater is the chance of success. In Norway and Japan, cooperatives have exclusive rights; in UK they do not. Individual non-members can get quotas from the government which weakens the co-management system.

3. **Scale of organization.** The smaller the fishers' organization, the better the chance of success, as small organizations allow direct, personal participation, stronger group identification, and fewer free riders. When organizations become too big, dissatisfaction, frustration, and internal conflicts become more likely.

4. **Degree of heterogeneity.** The less homogeneous the socioeconomic profile of the membership, the more likely are internal conflicts and more difficult is the decision-making process.

5. **Existence of tradition of cooperation.** If there are traditions of cooperation among fishermen, chances of success are higher, as in the Japanese example.

6. **Coordinating management goals.** Different groups of fishers have different goals and perceptions of the problem. Thus, it is important to work and communicate with clearly defined goals, especially where cultural differences exist among groups of fishers.

7. **Establishing trust.** Trust depends on past successful experiences, as in the Norwegian example. Trust is also based on the quality of long-term social relations among fishers themselves. This is why community self-management often works well in small-scale inshore fisheries.

Acheson, J.M. 1989. Where have all the exploiters gone? Co-management of the Maine lobster industry. In: *Common Property Resources: Ecology and Community-Based Sustainable Development*. Belhaven, London, pp. 199-217.

The lobster resource is vulnerable to overharvesting, and state management authorities have repeatedly predicted the demise of Maine lobster stocks. Yet the Maine lobster catch has been remarkably stable since 1947. Government of Maine resource managers establish various regulations for the resource but do not limit the number of fishers. In practice, however, the number of fishers is limited through a system of traditional fishing rights. To go lobster fishing at all, a fisher has to be accepted by the community; once accepted, one can only fish in the sea-space of that community. The author argues that the (illegal) limiting of entry by the fishers themselves and the use of legislation to assert their rights, moves Maine lobster fishermen into a *de facto* sharing of management rights and responsibilities with State management agencies.

Berkes, F., George, P. and Preston, R.J. 1991. Co-management. *Alternatives* 18 (2): 12-18.

Berkes, F. 1994. Co-management: Bridging the two solitudes. *Northern Perspectives* 22 (2-3): 18-20.

McCay, B.J. 1995. Common and private concerns. *Advances in Human Ecology* 4: 89-116.

The first two of these papers is about co-management mainly in reference to the Canadian North, and the third is on the theory of property rights and common property resources. All three offer suggestions about ways to conceptualize resource management regimes and forms of user participation based on the classic paper by Arnstein*.

Co-operative management (sometimes collaborative management) or co-management broadly refers to various degrees of integration of local-level and state-level resource management systems. In practice, there is a wide variety of partnership arrangements possible, involving various degrees of participation in research, management decision-making and enforcement, and various degrees of power-sharing. Borrowing from the Arnstein "ladder of citizen participation", McCay (1995) sees five steps in a "ladder of participation": (1) government power; (2) inform; (3) consult; (4) co-management; and (5) fisher power.

Berkes et al. (1991) and Berkes (1994), also borrowing from Arnstein, define seven steps of co-management, from limited amounts of local participation, to the delegation of full management authority to the local level, as shown below:

7	Partnership/Community Control	Partnership of equals; joint decision-making institutionalized; power delegated to community where feasible
6	Management Boards	Community is given opportunity to participate in developing and implementing management plans
5	Advisory Committees	Partnership in decision-making starts; joint action on common objectives
4	Communication	Start of two-way information exchange; local concerns begin to enter management plans
3	Co-operation	Community starts to have input into management, e.g., use of local knowledge, research assistants
2	Consultation	Start of face-to-face contact; community input heard but not necessarily heeded
1	Informing	Community is informed about decisions already made

Figure 1: Levels of Co-management

Source: Adapted from Berkes, George, and Preston, *Alternatives* 18(2):12-18 (1991).

* Arnstein, S. 1969. A ladder of citizen participation. *Journal of American Institute of Planners* 4: 216-224.

Berkes, F., ed. 1989. *Common Property Resources: Ecology and Community-Based Sustainable Development*. Belhaven, London. 302 pp.

The book is about the “tragedy of the commons” and its solution through the use of property rights, especially communal property rights. Common property resources are defined as “a class of resources for which exclusion is difficult and joint use involves subtractability”, and include fish and other marine resources. The condition of the “tragedy of the commons” applies when property rights are not defined and the resource is open-access. Under such conditions, unchecked by social controls and scrambling to maximize individual gains, fishers deplete the resource. In reality, many fish stocks are used by communities which have evolved institutions appropriate for the management of these resources. However, a number of internal factors (e.g. disagreement among fishers) and/or external factors (e.g. incursions of outsiders) may interfere with the ability of users to manage the fishery, and make common-property resource use problematic. Such conditions are not intrinsic to common-property resources; often they occur *in spite of*, not because of, common-property arrangements.

Part 3 of the book provides four aquatic resources case studies, and demonstrates the emergence of the integration of communal-level and state-level systems or co-management. Co-management is seen as an increasingly significant development in the contemporary world in which local-level traditional controls alone tend to be insufficient. But at the same time, in the contemporary world centralized government management has not worked well either, especially in the Third World, but also notably in the former Eastern Block. There is a need, therefore, to combine local-level management with government-level management; and local-level (in some cases traditional) ecological knowledge with scientific and technical knowledge.

State-level management is important in dealing with resources, such as migratory fish, shared by a number of different groups of users. One of the major findings of the common property literature is that the state is also crucially important in providing legal recognition for community-based common property institutions, without which local-level management systems are vulnerable to outside forces.

Berkes, F. And Kislalioglu, M. 1989. A comparative study of yield, investment, and energy use in small-scale fisheries. *Fisheries Research* 7: 207-224.

The paper, based on data collected from 16 different fisheries around the world, searches ways to characterize the scale of a fishery and the appropriate management regimes for fisheries of different scales. The small-scale fishery, definable by the levels of investment, energy use and fish yield, is characterized by using fishing areas which are generally within a day of sailing from a home port. Management regimes for such fisheries need to be different from larger-scale industrial fisheries which have the capability to deplete one area and to move on.

The interplay of potentially viable community-based management regimes for small-scale fisheries and the necessity of government regulation and the use of market mechanisms for the larger-scale fisheries is significant in the context of the 1982 Law of the Sea. The responsibility of governments have expanded within the new 200-mile territorial seas, often without a concomitant increase in management capability. Can governments, especially the governments in the Third World countries in which most of the small-scale fisheries are found, cope with the new responsibility?

Cohen, F. G. 1989. Treaty Indian tribes and Washington State: The evolution of tribal involvement in fisheries management in the U.S. Pacific northwest. In: *Co-Operative Management of Local Fisheries* (E. Pinkerton, ed.) University of British Columbia Press, Vancouver, pp. 37-48.

Cohen, F.G. 1986. *Treaties on Trial*. University of Washington Press, Seattle.

The chapter is brief legal and historical overview of the events that led to the Boldt decision of 1974 which affirmed the off-reservation fishing right of 14 tribes in Washington State. It also summarizes the post-Bold events in the State, leading to the active collaboration between the tribes and the U.S. Federal Government.

Cohen's book provides a comprehensive account of the events around the Boldt decision. It includes a detailed survey of opinions and attitudes of the parties involved in the fish re-allocation controversy following the decision. The strength of the book is in the legal analysis of the decision and the subsequent measures, tracing the transition from a government-dominated system to one which included tribes as co-managers.

See also review in Section 3.2.

Cohen, F.G. and A.J. Hanson, eds. 1989. *Community-Based Resource Management in Canada: An Inventory of Research and Projects*. Canada/MAB, Canadian Commission for UNESCO Report 21: 190 pp.

The report's preface written by Hanson states:

"The unprecedented expansion of state participation in designing, monitoring and enforcing resource management frameworks has perhaps been essential, given the complex circumstances of and threats to sustainable utilization. But the monetary cost is high, and some would argue that the social costs are even higher. Resource scientists, administrators and their political masters are beginning to take these concerns into account. The voices of native peoples and others dependent on resource-based economies are becoming stronger in the dialogue to seek new management arrangements. Traditional knowledge, community-based management and co-management are the terms being introduced into the vocabulary of natural resource and environmental decision-making."

The report is the output of a project that started with a workshop in 1984 and carried out by the Canada/Man and the Biosphere Program of UNESCO, Working Group on the Human Ecology of Coastal Areas. The report contains six sections on six geographic regions of Canada for which there was substantial information on community-based resource management (and an author willing to summarize it): Nova Scotia (by Lamson); Quebec (Breton); James Bay (Feit); Great Lakes (Berkes); British Columbia (Pinkerton); Western Subarctic and Arctic (DeLancey and Andrews). Each section provides an overview of key resource issues, a descriptive inventory of studies and projects, a bibliography, and a list of scholars. A total of 115 studies are listed in the inventory, many of them pertaining to user-group interactions and multi-stakeholder processes but very few referring specifically to co-management.

See also review in Section 3.2.

Dale, N. 1989. Getting to co-management: Social learning in the redesign of fisheries management. In: *Co-Operative Management of Local Fisheries* (E. Pinkerton, ed.) University of British Columbia Press, Vancouver, pp. 49-72.

Also using the example of the Boldt decision and other court cases in Washington and Oregon, Dale's chapter explores the events of the 1970s that led to co-management in the U.S. Pacific Northwest and later on in British Columbia.

The theoretical underpinning of the chapter is "social learning", the idea of learning as a collective experience, or "societal learning: the processes by which society gathers and internalizes knowledge about the changing conditions of both its internal and external environment." The chapter argues that fishermen would need to be organized effectively, demonstrating to the government that they are responsible resource conservationists; this is seen important to secure consent and cooperation of government, but it is also a two-way process. Both fishermen and government agencies need to undergo a social learning process to build mutual trust.

The chapter explains how co-management of the 1980s is different from that of the 1970s, presumably due social learning, building trust and developing working relationships between parties. However, there is also the rise of non-aboriginal fishermen lobbies, and the need for mediation. Dale discusses the possible role of what he calls a "search conference", a procedure that would allow groups of different status and power to search out common grounds without respect to status quo.

See also review in Section 3.2.

Dorcey, A.H.J., ed. 1991. *Perspectives on Sustainable Development in Water Management: Towards Agreement in the Fraser River Basin*. Westwater Research Centre, University of British Columbia, Vancouver. 586 pp.

A large volume with 22 chapters, Dorcey's *Perspectives* is a thorough analysis of a large number of uses and users of water in the Fraser River Basin. The volume is, in effect, an analysis of stakeholder processes, and clearly shows that any distinction between the marine environment of the estuary of the Fraser and the Fraser River Basin is an artificial distinction. The dynamics of water use and users at the estuary is closely linked to the processes that take place upstream; the various uses in the Basin govern the quality and the quantity of water at the mouth of the river. The overall findings of the book underscore the importance of an ecosystem perspective, and the editor's concluding Chapter 22 emphasizes what he perceives as an evolution towards sustainable development.

Particularly relevant to co-management is Chapter 7 by Dale which identifies ten categories of stakeholders, and explores their interactions. Also relevant are Chapter 12 by Fox which addresses the question of institutional design for the management of water in the Fraser; Chapter 13 by Gardner which analyses environmental non-governmental organizations in the overall stakeholder processes; and Chapter 14 by Scott which is an overview of property-rights and governance of water.

Durand, J.R., Lemoalle, J. et Weber, J, eds. 1991. *La Recherche Face a la Peche Artisanale*. Symp. Int. ORSTOM-IFREMER, tome I et II. ORSTOM, Paris.

Berkes, F. and Kislalioglu, M. 1991. Community-based management and sustainable development. In: *La Recherche Face a la Peche Artisanal* (J.R. Durand, J. Lemoalle et J. Weber, eds.) Symp. Int. ORSTOM-IFREMER, ORSTOM, Paris, t. II: 567-574.

The two-volume book is the proceedings of a symposium artisanal or small-scale fisheries, held in Montpellier, France. None of the papers deal explicitly with co-management but many deal with the particular problems of government-fisher community relations and of small vs. large-scale fishery interactions in the international arena.

The paper by Berkes and Kislalioglu is about community-based management systems and territorial use rights (TURFs) in small-scale fisheries. It explores property rights in fisheries and the international conflict between artisanal and industrial fisheries; it includes a literature review of such conflicts in 12 countries.

“Now that much of the productive ocean space has been declared state property under the international ocean management regime of 1982, creative approaches are needed to help resource users share the responsibility for this huge area. The new regime, as an ‘enclosure movement’, effectively converts the commons problem at the international level to one at the national level. The extension of communal fishing rights and responsibilities, and the institution of co-management in general, may help reduce the scope of the management problems to a more manageable level”.

Hanna, S.S. 1992. Interaction between shellfish and groundfish fisheries on the west coast: Implications for system management. *Journal of Shellfish Research* 11: 133-141.

The author explores economic linkages between two or more fisheries, in this case shellfish and groundfish, and points out that the management of fisheries on a biological, single species basis does not work. The author writes:

“This case study of Oregon shellfish and finfish fisheries illustrate two principles which have application to other fisheries with multifishery activity. The first principle is that economic factors, although often not explicitly incorporated into management plans, are often instrumental in creating linkages between fisheries and so affect the efficacy of management plans. The second principle is that when linkages exist, management of fisheries must proceed on a level which recognizes these linkages and accounts for multifishery fishing strategies.”

“The definition of the legitimate ‘players’ comes from the context of the fishery itself. Coordinated planning, to be successful, will have to involve representation of all the commercial fishery constituents; i.e. fishery managers, fishing industry, and consumers. Also necessary is a clear definition of objectives for the fishery system beyond the basic conservation goals. Co-management by managers and industry has taken various forms in the Oregon crab, shrimp and groundfish fisheries.”

Hanna, S. S. 1994. Co-management. In *Limited Access Management: A Guidebook to Conservation*.
World Wildlife Fund and Center for Marine Conservation, Washington D.C.

The author writes about co-management as a process of joint management involving resource users and government. The author argues that co-management is characterized by two important properties: the sharing of decision making power, and a focus on management process.

Co-management involves different degrees of power-sharing between stakeholders and government, from formal power-sharing to "active consultation". The Maine soft-shell clam fishery is an example of power-sharing: "Decisions are made about resource conservation at both the state and local levels. The states retains authority to license commercial harvesters, set minimum size limits, regulate gear, close areas for health reasons, and approve shellfish conservation programs developed by individual towns. Coastal towns with approved shellfish conservation programs are authorized to design and implement management plans which set harvest limits, establish open and closed areas, establish rules for access, and enforce regulations."

"Active consultations are arrangements in which fishery decision makers allocate a portion of their decision making responsibility to users through soliciting advice, with an explicit intent to follow the advice given. An example of active consultation... is the Pacific Fishery Management Council (PFMC)."

"A second important property of co-management is that it is a process, rather than a tool, of management. The co-management process defines stakeholders and incorporates them through their representation into various levels of fishery management decisions."

Hanna, S.S. and Smith, C.L. 1993. Resolving allocation conflicts in fishery management. *Society and Natural Resources* 6: 55-69.

According to the authors' view of the U.S. fisheries, the relative importance of fisheries management decisions change as fisheries develop through different stages, creating different degrees of conflict as they mature. In the first phase of fishery development, the management decisions are aimed at sustainable yields. The next phase of management are when the rules for fishery operation are set in place. In these two phases, management decisions tend to generate little conflict. But in the allocation phase, decisions concerned with dividing a limited fish stock among competing user-groups create much conflict. As conservation needs become more important, tighter regulations are required, and a smaller allowable catch (TAC) is divided among the users, increasing allocation conflicts further.

The authors present four cases of Pacific U.S. fishery allocation conflicts among (1) commercial-recreational users (salmon fishery of Cape Falcon, Oregon), (2) treaty- nontreaty fishermen (Puget Sound salmon fishery), (3) fixed gear-trawl gear groups (West coast sable fish fishery, Oregon), and (4) multi-users of Pacific halibut fishery.

The paper examines mechanisms employed for the resolution of these conflicts. The authors identify the main causes of conflicts in these case studies as (a) increases in the size and effectiveness of the fishers, (b) stabilization or decline in the resource base, (c) misunderstandings and cultural differences among user-groups, and (d) lack of clearly defined goals.

The authors deduce that, in general, there are two approaches to the resolution of conflict: the authoritative approach that imposes a solution on user-groups -- which historically has been the approach employed in U.S. fisheries, and the participatory approach which involves the sharing of decision-making by the user-groups. A successful example of the latter approach is illustrated by the first case study.

The future direction of fishery conflicts is projected to be expansion of fishery-specific conflicts into

more general resource system conflicts. Such multifaceted conflicts, the authors argue, cannot be worked out authoritatively but require a participatory process. Fisheries management will have to be viewed in the broader context of relationships of diverse uses of aquatic resources.

Jentoft, S. 1985. Models of fishery development. The cooperative approach. *Marine Policy* 9: 322-331.

The author writes: "Cooperative organization has rarely been regarded as a general remedy to management problems and 'market failures' of the fishing industry. Instead, the cooperative alternative has most often been introduced *ad hoc*, in times of crises, and as a solution of last resort."

"The most important cod fishery, the Lofoten fishery (which takes place from early January until late April and which always has been small-scale fishermen's main income source), has been regulated by the fishermen themselves for decades, ever since the Lofoten Act was introduced in the 1890s. Before every season, the fishermen elect their representatives to the committees responsible for updating the regulations and for policing their enforcement. This has been so successful that there has not been even a suggestion that the state should take over this role."

Lofoten Islands in NW Norway supported a major cod fishery since ancient times because of cod migration routes. The high numbers of fishermen attracted to the area caused crowding problems and conflict among fishermen, especially among those using different kinds of gear. During the 19th century, various kinds of regulatory systems were tried, but none could solve the problems of the fishery until co-management principles were introduced in 1890s. Under co-management, the Norwegian government gave the responsibility for regulation of the fishery to the fishermen. Different gear group representatives formed special district committees, and made rules for allowable fishing times, type of gear allowed, amount of space allocated for the different gear types. There were elected fishermen inspectors and a public agency for enforcement. The author explains that with a few modern changes, the system still operates.

Jentoft, S. 1989. Fisheries co-management. *Marine Policy* 13: 137-154.

The paper deals with the role of fisheries cooperatives in co-management, to the exclusion of any other kind of organization. Drawing on the international experience with co-management (Norway, Canada, Turkey, USA, Japan, UK), the author explores the extent to which fishermen's organizations are capable of handling regulatory functions, and the conditions under which they are successful. Problems of co-management include internal conflicts among fishermen, especially when gear types are diverse. The degree to which authority is delegated is important; if there are many organizations, fewer functions can be delegated. Creating organizations with broader representation can become very complex, making internal conflict likely and enforcement difficult.

The paper also provides some details of fishery co-management in the UK, not readily available elsewhere. Co-management applications are found in both inshore and offshore fisheries, and regulations are made through quota applications. Until 1984, fisheries regulations were government responsibility. Starting in 1984, sectorial quota allocations were given to producers' organizations. These organizations were initially formed to organize fish sales and to administer the EEC price support scheme. In 1984, they became responsible for the distribution of quotas among members, formulating rules for fishing operations, and the enforcement of quotas. These organizations do not, however, hold sole power. Membership is voluntary, and non-members can get individual quotas from the government. In 1984, 65% of UK quota was allocated by producers' organizations.

The author writes, "What conclusions can be drawn for the potential success of introducing co-management arrangements? Is co-management to be recommended? The answer is conditional. While some co-management systems have persisted, others have failed. . . The most important contribution one can realistically hope for is that co-management will imbue the regulatory process with legitimacy. This will tend to make management both more effective and less costly compared with government control. . . The government has a role in overall planning, total quota management, in solving distributional conflicts among various cooperative organizations, in providing sufficient legal support for the cooperatives, as well as in enforcing the regulatory decisions."

Jentoft, S. and McCay, B.J. 1995. User participation in fisheries management. Lessons drawn from international experiences. *Marine Policy* 19: 227-246.

This paper summarizes the findings of two partly overlapping international projects, one of them by the Nordic Council of Ministers and covering seven countries, and the other, a set of independently prepared case studies (USA, Canada, Spain, France and New Zealand) that were delivered at a workshop in the World Fisheries Congress in 1992.

The authors find that "institutions of government-industry cooperation are commonplace within fisheries nations of the Western hemisphere, and that user participation is an integral part of a country's fisheries management regime. . . Few countries represented in our studies employ just one single model consistently for all fisheries, sectors and regions. Rather, they have a mixture of institutions with a varying degree of user involvement and responsibility."

The authors describe the FCMA system in the United States: "Also noteworthy is the regional fisheries management council system for the marine fisheries that was instituted with the Magnusson Fishery Conservation and Management Act in 1977. Beyond mandated participation by representatives of state and federal agencies, the councils can contain people as diverse as commercial and recreational fishermen, environmentalists, consumers, seafood processors, or just interested members of the public. The system is one in which members are appointed as individuals, not as formal representatives of organized groups, through a highly politicized process involving state governors and the federal administration. . . Plans must be sanctioned by the federal government before implementation. Throughout the planning process the councils hold public hearings to provide input and support from the public at large. The open, public nature of the process is mandated by law, reflecting a larger institutional change in the USA during the early 1970s."

Regarding Canada, the authors summarize the situation thus: "In recent years the Canadian government has tried to open up the fisheries policy process as well. In the provinces of eastern Canada, the principal approach was consultative: user groups were consulted about their concerns

and opinions, but decisions were made by the fisheries ministry. The consultative process, which began modestly in the mid-1970s with a handful of advisory committees, has exploded into tens of committees covering every sector and major marine resource species. In the Scotia Fundy region alone, there are as many as 28 committees. A problem, however, pertains to representation. Small-scale fishermen are poorly organized, and therefore it is hard to either locate or create representative voices for this sector.”

Kearney, J.F. 1989. Co-management or co-optation? The ambiguities of lobster fishery management in southwest Nova Scotia. In: *Co-Operative Management of Local Fisheries* (E. Pinkerton, ed.) University of British Columbia Press, Vancouver, pp. 85-102.

This chapter examines co-management in terms of its dependence on the development of a social movement, and uses the case study of the southwest Nova Scotia inshore lobster fishery, one of the most important lobster fisheries of Atlantic Canada in terms of the total quantity of catches. The analysis focuses on obstacles to the development to co-management, specifically, differences in the conceptions of lobster resource management between fishermen and government officials and the different understandings that exist among fishermen concerning the fishing labour process. In this case study, there are only two principal groups involved in the management process, government officials and inshore fishermen, and it is argued that attempts by the government to initiate co-management cannot succeed in the absence of a cooperative social movement among fishermen.

In 1982, trap limits were introduced by the government, initially to reduce the cost of fishing, to ensure equitable access to the resource, and also, as a conservation measure. Biologists determined that optimal level of fishing effort was at or below the legal trap limit of 375. Fishers in general agreed that a trap limit was an important conservation measure, but differed from one subregion to another in the number of traps considered necessary. Within the lobster fishing district, there were a number of different groups and movements representing different subregions, characterized by differences in the size of the boats used, the depth of the water fished, the distance from land, the number of traps used, and the setting and hauling pattern of traps. Consequently, there were great variations in the conception of the optimal number of traps to be used.

Kearney argues that, "it is necessary for the fishermen first to form co-operative social movements that strengthen existing solidarities and extend that solidarity to inshore fishermen throughout the region. . . In this sense, co-management can be viewed as the second stage of a cooperative project in which fishermen begin to translate social solidarity into a demand for increased responsibility in the management of the fisheries."

Lamson, C. and Hanson, A.J., editors, 1984. *Atlantic Fisheries and Coastal Communities: Fisheries Decision-Making Case Studies*. Dalhousie Ocean Studies Programme, Halifax. 252 pp.

Kearney, J. F. 1984. The transformation of the Bay of Fundy herring fisheries 1976-1978: An experiment in fishermen-government co-management. In: *Atlantic Fisheries and Coastal Communities: Fisheries Decision-Making Case Studies* (C. Lamson and A.J. Hanson, eds.) Dalhousie Ocean Studies Programme, Halifax, pp. 165-203.

The book edited by Lamson and Hanson is one of the earliest substantive works on fisheries decision-making and communities of fishers. It contains perhaps the earliest published reference to fisheries co-management (in the chapter by Kearney), and also has a number of chapters that analyse multi-stakeholder processes in Atlantic Canada. Kearney argues that the involvement of fishers in decision-making can be traced to a Canadian government policy in 1976. But in the years that followed, an "advisory model" of decision-making became dominant, one in which fishermen and other stakeholders generated advice for the decision-makers but did not participate in decision-making.

"Since 1976, the alternative, self-determination model of decision making, has, nevertheless, found germinal expression in a concept known as 'co-management.' This concept was first put forward as an element of government policy in a 1978 speech of Roméo LeBlanc, then Minister of Fisheries and Environment. LeBlanc offered fishermen the opportunity to co-manage the fisheries 'so they could take over their fishery, own their boats, run their business, negotiate prices and working conditions, and become partners fully equal with those who buy, process, and market fish'.

"The principles of co-management were later described in more detail in the government's 1981 discussion paper, *Policy for Canada's Atlantic Fisheries in the 1980's*. Co-management was proposed both as a way to delegate certain responsibilities to fisherman, such as arbitrating and policing, and as a mechanism to tailor resource management according to local needs. But the paper was ambiguous. It was not clear whether co-management involved the delegation of substantive areas of decision making to fishermen or was simply a decentralized form of the advisory model."

McCay, B.J. 1989. Co-management of a clam revitalization project: The New Jersey "spawner sanctuary" program. In: *Co-Operative Management of Local Fisheries* (E. Pinkerton, ed.) University of British Columbia Press, Vancouver, pp. 103-124.

This chapter describes first two years of an experiment where ad hoc co-operation between the state, shellfishermen, scientists of different institutions, and bureaucrats was achieved through grassroots activism and voluntary participation. The development of public commitment, applied research took place through the initiation of a clam spawner sanctuary project, in which clams were to be transplanted to a protected area to serve as a brooding stock. The sanctuary project was mobilized by a dedicated clammer, who first gained the support of one university scientist, and their joint efforts led to the gradual involvement of other clammers, academics, public and government officials. Initial lack of scientific data on this low-value species did not hinder the start of the project and the concerted effort of involved parties greatly contributed to the available scientific data as the project progressed. The project had a very low monetary cost due to voluntary efforts of people and to the involvement of a university (Rutgers) and its resources.

McDaniels, T. L., Healey, M., and Paisley, R. K., 1994. Cooperative fisheries management involving First Nations in British Columbia: an adaptive approach to strategy design. *Canadian Journal of Fisheries and Aquatic Sciences* 51: 2115-2125.

The authors state in the abstract: "In 1991, a substantial program of cooperative salmon fishery management, involving First Nations was initiated in British Columbia. This paper considers how ongoing cooperative management initiatives in the fishery could be designed and implemented. The process discussed in the paper could be viewed as an adaptive management experiment in institutional design for cooperative management. First, sets of fundamental objectives for cooperative management and strategies for achieving these objectives are developed. The methods for structuring objectives and developing strategies are drawn from decision analysis practice. Then the actual experience in implementing a version of one of the strategies during the 1992 Fraser river sockeye salmon First Nations fishery is discussed. The highly publicized and controversial events of the 1992 season are instructive about how cooperative management should be implemented in other contexts."

The paper explores the largely inconclusive and sometimes contradictory results of some 150 cooperative salmon fishery contracts between BC First Nations and the government (DFO) in 1991. Observing that many forms of co-management are possible, from contracting First Nations people to undertake routine monitoring to full partnership in decision-making, authors view the contracts as a way in which the DFO can gain experience by learning to design strategies for involving First nations in fishery management in the longer-term. The paper criticizes "in hindsight" the 1992 decision to permit sales of fish by First Nations, but does not address the question of the involvement of other stakeholders in such decisions. More specifically, experiences in 1991 and 1992 "can be viewed as one experiment in an adaptive process for design of salmon fisheries cooperative management initiatives. The process of clarifying objectives and constructing strategies provided a framework for thinking about how cooperative management could best be conducted after the 1991 season", using feedback from the experience for adaptive improvement.

Ostrom, E. 1990. *Governing the Commons. The Evolution of Institutions for Collective Action*. Cambridge University Press, Cambridge.

The major text on the theory of common property, Ostrom's book discusses of local-level or micro-institutions for resource management, resource management regimes, and the evolution of collective action among groups of resource users. Using a number of international cases, some of them on fisheries, Ostrom explores the conditions under which community-based resource management may fail or may succeed. Often cited are Ostrom's design principles for common-property resource use:

Table 3.1. *Design principles illustrated by long-enduring CPR institutions*

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1. **Clearly defined boundaries**
Individuals or households who have rights to withdraw resource units from the CPR must be clearly defined, as must the boundaries of the CPR itself.
 2. **Congruence between appropriation and provision rules and local conditions**
Appropriation rules restricting time, place, technology, and/or quantity of resource units are related to local conditions and to provision rules requiring labor, material, and/or money.
 3. **Collective-choice arrangements**
Most individuals affected by the operational rules can participate in modifying the operational rules.
 4. **Monitoring**
Monitors, who actively audit CPR conditions and appropriator behavior, are accountable to the appropriators or are the appropriators.
 5. **Graduated sanctions**
Appropriators who violate operational rules are likely to be assessed graduated sanctions (depending on the seriousness and context of the offense) by other appropriators, by officials accountable to these appropriators, or by both.
 6. **Conflict-resolution mechanisms**
Appropriators and their officials have rapid access to low-cost local arenas to resolve conflicts among appropriators or between appropriators and officials.
 7. **Minimal recognition of rights to organize**
The rights of appropriators to devise their own institutions are not challenged by external governmental authorities.
- For CPRs that are parts of larger systems:*
8. **Nested enterprises**
Appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organized in multiple layers of nested enterprises.
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Pinkerton, E. 1989. Introduction: Attaining better fisheries management through co-management. In: *Co-Operative Management of Local Fisheries* (E. Pinkerton, ed.) University of British Columbia Press, Vancouver, pp. 3-33.

This chapter gives an overview of a wide range of co-management efforts, legal and informal arrangements negotiated between governments and fishermen groups in the USA and Canada in the 1970s and the 1980s. The author argues that such arrangements have potential to promote resource conservation, equitable harvest distribution, data collection, conflict management, community development, and to prevent over-investment in fisheries. While the primary goal of co-management is the efficient and equitable management of fisheries, other important benefits such as reduced costs of conflict management among user-groups and community development may arise in the process.

Several potential functions of co-management are identified: 1) logistics of harvesting decisions, 2) fair and equitable distribution of harvest, 3) enforcement of regulations, 4) improved data collection and analysis, 5) resource enhancement and habitat protection, and 6) long-term planning and broad policy decision-making. Examples cover cases of resource conservation through cultural practices, and cases in which fishermen's self-initiated improvement and protection gained support of the other users of the resource, led to improved relationships between governments and users, and eventually, to legally mandated co-management. Active participation of fishing groups in planning and regulation secures the trust and support of fishermen and leads to more efficient management of the resource.

In the North American experience, co-management arrangements have generally developed from resource management crises. Co-management becomes likely when fishermen express willingness to protect a resource protection. It is likely to start with the management of one function, later expanding to others. Co-management systems work best when they are formal, multiyear arrangements, when fishermen's committees are not too large to prevent effective communication, and when the management area is not too large. If the fishermen's group has an existing social system with clear membership, co-management arrangements become easier. It operates most successfully when local communities are able to perceive the actual benefits of co-management.

Pinkerton, E. 1992. Translating legal rights into management practice: Overcoming barriers to the exercise of co-management. *Human Organization* 51: 330-341.

“Co-management can be generally defined as power-sharing in the exercise of resource management between a government agency and a community or organization of stakeholders. . . Co-management arrangements are not confined to aboriginal groups with special management rights, although they may occur more frequently among such groups, especially where management rights have been clearly delineated in court decisions.”

The author explains that co-management agreements may cover one or more aspects of management activity. In the case of the Boldt decision, between 1974 and 1980, co-management covered shared data collection and analysis, allocation, and shared planning of the salmon harvest between treaty tribes and the Washington Department of Fisheries. In the second phase of the Boldt decision, that is after 1980, co-management was more complex and covered habitat protection for fish and wildlife, and included (in addition to the tribes and environmental groups), the Washington Departments of Fisheries, Wildlife, Ecology, and Natural Resources, and the logging industry's Washington Forest Protection Association.

The author proposes that co-management arrangements develop through five stages: (1) adopting a negotiating posture, (2) conducting negotiations, (3) producing an agreement, (4) fully implementing the agreement, and (5) institutionalizing procedures. The paper discusses how groups overcome barriers to co-management when their rights are protected in the law but resisted politically. The paper examines a range of strategies that may be used by environmental groups and aboriginal groups with rights to participate in fish habitat protection. The basic strategy was first to procure co-management agreements, and then to have these agreements implemented -- perhaps a general approach for co-management cases in which multiple agencies and parties are involved.

Pinkerton, E. 1994. Economic and management benefits from the coordination of capture and culture fisheries: The case of Prince William Sound pink salmon. *North American Journal of Fisheries Management* 14: 262-277.

In this paper, Pinkerton poses two questions. The first is related to the hypothesis that co-management can improve the bargaining position for the fishers, resulting in higher prices for their catch. Based on almost 20 years of experience in enhancement of pink salmon in Prince William Sound, Alaska, through the Prince William Sound Aquaculture Corporation (PWSAC), Pinkerton found that co-management resulted in a better bargaining position for fishers. This was related to four factors that lowered risks for fish buyers: high quality, large volume, predictability of supply, and the possibility of dealing with one seller. Gross benefits to Prince William Sound seiners attributable to PWSAC-produced fish were about \$18 million or an average of \$71,000 per seiner. By contrast, a seiner paid an average of only about \$3,000 as a 2% landings tax to support enhancement.

The second question posed by Pinkerton was, "to what extent has a co-management approach to enhancement succeeded in integrating the traditional capture fisheries with the new culture fisheries?" Alaska's hatchery-attributable production of pink salmon was 30% of total production in 1989 and 45% in 1990. PWSAC was the largest single producer of pink salmon in Alaska. The co-management of pink salmon hatchery production not only improved the incomes of all pink salmon seiners, but also helped coordinate traditional capture fisheries and culture fisheries by reducing the conflict over the allocation of enhanced stocks and wild stocks.

Pomeroy, R.S. and Williams, M.J. 1994. Fisheries Co-Management and Small-Scale Fisheries: A Policy Brief. International Center for Living Aquatic Resources Management (ICLARM), Manila. 15 pp.

Pomeroy, R.S. editor, 1994. *Community Management and Common Property of Coastal Fisheries in Asia and the Pacific: Concepts, Methods and Experiences*. ICLARM, Manila. 189 pp.

Both of these documents are related to a major international collaborative research project on coastal fisheries co-management based at ICLARM, Manila. The first is a policy statement about the project; the second is the proceedings of a conference at ICLARM that helped set the theoretical background for the project.

The executive summary of the policy document in part states: "The advantages of co-management, versus a centralized, top-down approach, could include lower management and enforcement costs, improved data reliability, a higher degree of acceptability and compliance with management measures, greater participation of fishers in management, and improved social cohesion and community development. Co-management is not, however, a panacea for fisheries management. The development of co-management systems is not automatic or simple; it can be costly to establish, require a long-term effort and have limited guarantee of success. Government administrative arrangements and fisheries laws and policies will generally require restructuring to support co-management."

The conference document includes a range of papers, some of them conceptual and some based on Philippines and international case studies on small-scale fisheries and community-based resource management. None of the papers explicitly develops the concept of co-management, but many touch upon resource management conflicts and multi-stakeholder processes in the coastal environment.

Pomeroy, R.S. and Pido, M. 1995. Initiatives towards fisheries co-management in the Philippines: The case of San Miguel Bay. *Marine Policy* 19: 213-226.

The authors write, "The future success of fisheries management in the Philippines may lie in a form of co-management involving a partnership whereby authority and responsibility for fisheries management is shared between various levels of government and the local fishing community. This paper examines initiatives towards such an arrangement by using the case of San Miguel Bay, a key fishing ground which has been well studied over the past 15 years."

San Miguel Bay is indeed well known as a small, heavily used, overfished shallow bay in which various user groups (trawlers, small-scale fishermen, aquaculturalists, and others) have been in perpetual conflict over many years. In 1991, the government of Philippines recognized the need to increase user participation in fishery management, and to devolve control over management to local levels through policy and institutional reforms. Among these reforms was the decentralization of nearshore fisheries management to municipalities and local fishing communities under the Local Government Code of 1991.

In San Miguel Bay, fishery activities were coordinated and restructured through the formation of San Miguel Bay Management Council, which resulted in the improved participation of fishers in management. The SMBMC was expected to harmonize the competing interests of the various stakeholders towards co-management. The fact that overfishing was threatening economic returns of all the parties, facilitated participation in the Council. Used as an interdisciplinary case study site, the San Miguel Bay fishery in 1993 showed a more equitable distribution of fishery profits across fishing gear types than it did in the early 1980s. The proportion of profits earned by the trawlers was reduced from 85% to 27% in 1993, with the rest accruing to artisanal (small scale) fishers. The authors abstain from concluding that the re-distribution of benefits to the small-scale fishers (presumably more numerous than the trawler fishers) was directly a result of increased fisher participation in management. That may have been so, but there may have been many other, uncontrolled factors as well.

Rettig, B., Berkes, F. And Pinkerton, E. 1989. The future of fisheries co-management: A multi-disciplinary assessment. In: *Co-Operative Management of Local Fisheries* (E. Pinkerton, ed.) University of British Columbia Press, Vancouver, pp. 273-289.

The authors see co-management as logical step in a historical progression in fisheries management in which objectives have proceeded from the purely biological (maximum sustained yield), to the economic (maximum economic yield), to multiple objectives, including the biological, the economic and the social. Such "optimum yield" or multiple resource planning objectives, which explicitly include social objectives for fisheries, have a history that only goes back to the 1970s. In Canada, policy started to shift in 1976 with a Federal Government policy paper which declared, "Fishing has been regulated in the interest of the fish. In the future it is to be regulated in the interest of people who depend on the fishing industry."

The authors point out, "Until relatively few years ago, self-managing resource communities were dealt with as anthropological curiosities. A minor explosion in this field recently has provided a treasure chest of successful case studies. . . Many of these stories of community-based local-level resource management systems can be seen as examples of informal co-management, that is, local-level management working in a complementary relationship with government rules. . . Forms of co-management have taken a place in natural resources management that is unlikely to decline in the future."

Ruddle, K. 1987. Administration and conflict management in Japanese coastal fisheries. FAO Fisheries Technical Paper No. 273.

Ruddle, K. 1989. Solving the common-property dilemma: Village fisheries rights in Japanese coastal waters. In: *Common Property Resources* (F. Berkes, ed.) Belhaven Press, London, pp. 168-184.

In Japan, co-management is carried out through the Fisheries Cooperative Associations (FCA). Until about 1900 the management function was carried out by village guilds. With the implementation of the 1901 Fisheries Law, village sea territories established during the feudal era were mapped, codified and registered. The 1949 Fisheries Law gave fishery rights and licenses to working fishermen only, and placed fishery management in their hands through the local FCAs.

Each FCA has exclusive ownership to the area outside their port. FCAs apply to government for licenses which they distribute among their members. Non-members can not fish. Members who do not obey the rules are expelled. FCAs also carry out marketing, processing, leasing fish equipment, purchasing supplies, and education functions.

The prevalent maritime tradition in Japan, unlike the West, never included the idea that the sea is (or should be) open-access. Instead, a complex system of locally varied marine tenure developed over many generations. Ownership of marine commons in coastal waters is quite comparable, in Japanese law, to the ownership of village commons. As Ruddle (1989) puts it, "Japanese fishermen have legally guaranteed equitable access to and 'ownership' of the living aquatic resources in their tenured waters."

Wells, P.G. and Ricketts, P.J., eds. 1994. *Cooperation in the Coastal Zone. Coastal Zone Canada '94. Conference Proceedings*. 5 volumes. Coastal Zone Canada Association, Dartmouth, NS

These proceedings represent "a milestone in global progress towards coastal zone management. The papers and abstracts contained in these proceedings represent an international, multidisciplinary, and multi-sectoral contribution to our understanding of coastal management issues, problems and solutions. The papers present a wide array of experiences and perspectives from a broad range of stakeholders and practitioners, and do just service to the conference theme, cooperating in the coastal zone."

Of particular relevance to co-management are sections focusing on policy issues and decision making- including water resources management and land use planning in Canada's Arctic coastal zone- management of coastal zones- including international perspectives- community-based management and aboriginal community involvement.

See also review in Section 3.2.

3 ABORIGINAL LAND CLAIMS AGREEMENTS

3.1 EVALUATION OF THE LITERATURE

State of the Debate

The material reviewed here for co-management in land claims agreements starts in the 1970s with the James Bay and Northern Quebec Agreement and the Boldt Decision in the US. This is not to say that the concept of the sharing of resource management mandate did not exist before that. Indeed, some authors regard the sharing of beaver management authority between the Hudson Bay Company and hunting chiefs in the fur trade era as a kind of co-management.

The James Bay and Northern Quebec Agreement of 1975 is significant because it is the first of the modern comprehensive land claims agreements in Canada. It has an entire chapter (Section 24, as well as parts of other chapters) on the sharing of jurisdictions for fisheries and wildlife management, and an established institutional structure to achieve this, through a co-management committee called the *comite conjoint* (the term co-management is not used). Many of the subsequent agreements, including the Inuvialuit, Nunavut and Gwich'in agreements, establish management boards with structures and functions similar to the *comite conjoint*.

The Boldt Decision of 1974 is significant because it re-established Indian fishing rights in Washington State, and a long-term process of allocation conflict-resolution through a Fisheries Advisory Board in 1975. The Boldt Decision set the precedent for the management of the salmon resource not only in the US Pacific Northwest but also in British Columbia, as may be seen from the contents of the 1989 book edited by Pinkerton, in chapters by Cohen, Dale and others. Not having seen the Nishga'a agreement, we cannot say if British Columbia will be using a co-management arrangement more similar to that of the James Bay and Northern Quebec Agreement or the Boldt Decision.

The literature on co-management and land claims is not a coherent body of knowledge and does not build on the cases and concepts of the earlier studies. Much of it is in the "grey literature", and many papers and reports are "borderline" in terms of relevance for co-management. For example,

quite a few additional references abstracted in the AINA bibliography by Howard and Goodwin may in fact be relevant. But, by and large, many of the papers and reports are merely descriptive, without an attempt to look beyond the particulars of the case in hand.

Identifying Issues for Further Analysis

In general, the literature on co-management and land claims is characterized by a lack of synthesis, systematic analysis, and theory. Very few papers and reports have tried to make sense of co-management in land claims, and very few have attempted to develop the necessary analytical tools to examine systematically co-management structures, successes and failures. Exceptions include the report and paper by Osherenko which establish a common analytical framework to examine cases, the book by Pinkerton which focuses on a set of common elements in co-management, the chapter by Dale which applies the theory of "social learning" to analyse the process of co-management, the paper by McDaniels and colleagues which uses "adaptive management" theory, and papers by Berkes and colleagues which analyse co-management in terms of the *degree* of management power sharing.

There are no clear prescriptions in the literature regarding conditions for success, but the delegation of real management authority to resource users and the building of trust among the parties are two of the necessary conditions. In this regard, the analysis by Freeman of the reasons for the effectiveness of the International Agreement on the Conservation of Polar Bears is relevant: "(1) involvement of resource users in research and management, (2) management decisions based upon the best research-based information, (3) a willingness among parties to the treaty to negotiate in good faith."

Identifying the "best practice" is not easy, in part because an agreement may be considered a "success" by some parties and not by others, and in part because an agreement working well one year may not in the next. It is difficult to get the views of all of the major stakeholders in a given case. For example, the analysis of the polar bear case begs the question of whether all parties would consider it a success. Or is it a success only in comparison to the failures of the International Whaling Commission (Young and colleagues)?

The lack of a "track record" is a problem. For example, the Alaska Regional Aquaculture

Association case is judged to be a success by Amend. But given the variability in stock-recruitment parameters of salmon stocks, and the exclusion of sport fishermen from co-management, one can guess that in some years and according to some stakeholders, Amend's assessment may not hold. The situation is particularly acute with limited-area co-management agreements such as that for salmon on the Restigouche River. There seems to be no co-management papers in the literature in this area, but one knows from reports in the media that such co-management agreements are very fragile, and the year-to-year success or failures are subject to the turn of events and the interactions of personalities.

In other cases, the success of co-management may be difficult to gauge even with a firm legal base and a long track record. Some observers may assess co-management under the James Bay and Northern Quebec Agreement to be a "mixed success" (Berkes), but others (perhaps some Cree leadership) may consider it an utter failure because of the lack of delivery of promises and the generally poor relations between the government and the aboriginal group. The sustainability of the resource base may be one objective criterion to use as a measure of success (Drolet et al. and Berkes et al.), but in large areas with great many stocks of many species, it is almost impossible to attribute the sustainability of a stock specifically to the success or failure of co-management.

One basic issue is that most co-management related to land claims agreements have been of the two-party type, involving aboriginal parties and government parties. However, many of the Pacific coast (and a fewer number of the Atlantic coast) fishery management cases involve more than two groups of players and will require a multi stakeholder approach. Canadian experience in this area is limited. The model to examine will be the multi-party co-management cases that followed the Boldt Decision in the US. A note of caution about these cases is that they appear to have taken over ten years before working relationships among the parties could be established.

Another basic issue, and potentially a major political problem, is that some government circles and some native groups have been moving away from the concept of co-management. Their argument is that co-management represents a compromise of their basic positions. To the extent that aboriginal and government positions may harden in the coming years, co-management may become progressively more difficult to design and carry out. Or conversely, co-management may become a major tool to improve the dialogue and work out compromises in difficult resource management

situations.

A small conference called, *Building Bridges: The Process of Co-Management*, at the University of Calgary in February 1995, brought together academics, aboriginal representatives, some government officials and some industry officials. Our impression is that many parties are willing to work through co-management despite the recognition that the objectives of each of the parties is going to be ultimately different. A case in point was some BC forestry cases in which both aboriginal and forestry representatives characterized co-management as a kind of "marriage of convenience" that enables each party to meet its business objectives. Whether such an analysis may be applicable to marine fisheries management is yet to be determined.

Designing Terms of Reference for the Stakeholder Process

Assuming that the NRTEE Task Force on Oceans would be concentrating on fish and marine mammals, the largest part of the task would concern two groups of marine resources in three geographic regions of the country: (1) the issue of salmon management on the Pacific and Atlantic coasts, and (2) the issue of marine mammal management on the arctic coasts. There are other resources (e.g. halibut in BC and char in the NWT) which will also create allocation problems in certain areas.

In the various geographic regions, establishing stakeholder processes related to aboriginal land claims will not be easy. The list of stakeholders will be different for different areas, the legal status of the stakeholders may vary, and the size of the area and the scope of resources to be considered may also be very different. Designing a stakeholder process will have to consider several different situations.

Areas covered under modern land claims agreements. The aboriginal and government actors will already be legally represented as signatories to co-management agreements. In these areas, the real issue will be the stakeholders which are left out of the co-management mechanism. In many cases, unrepresented parties may be the non-aboriginal residents, sport fishing groups and naturalist or conservationist groups, as in the case of the James Bay and Northern Quebec Agreement. But also

in some cases, the actors left out may be other aboriginal groups; examples include the Manitoba Dene who claim use rights in areas north of 60° reserved for the Inuit under the Nunavut Agreement.

Areas of overlap between modern land claims agreements. There are cases in which two adjacent agreements may create conflicts for the lack of allocation mechanisms for interjurisdictional species. The case in point is the hunting of walrus in Hudson Bay by the Inuit of Quebec, in areas that now fall under the Nunavut Agreement (the case is not in the published literature). Treble has analysed the broad whitefish resource of the lower Mackenzie River and delta, and points out that this critical subsistence resource (the single most important fish species) now falls under and migrates through three separate co-management jurisdictions: the Inuvialuit, Sahtu and Gwich'in land claims areas. A regional management plan will be needed, as the boundary of the resource does not fit with any one co-management agreement. Similar problems may come up on the British Columbia and Labrador coasts as various agreements are finalized.

Areas not covered under modern land claims agreements. Large parts of Atlantic and Pacific coasts are not covered under modern agreements, and in the case of BC, under no agreements at all (Coolican) until the recent Nishga'a claim. Setting up a stakeholder process in such areas is fraught with dangers; for one thing, aboriginal groups in recent years have been consistently holding the position that they are not merely another "stakeholder" group. Thus, the definition of stakeholders or actors will be one problem, defining the co-management area will be another. An alternative may be to define the scope of co-management not geographically but ecologically as the range of a stock.

Co-management of international scope. The International Agreement on the Conservation of Polar Bears may be worth studying further as a model that works (Freeman). Some authors have pointed out that no matter how successful a co-management or multi stakeholder process may be, that may still be insufficient for sustainability (Clarke). Arctic Ocean pollution largely due to long-range atmospheric transport of pollutants (Pfirman et al.) requires integrated resource management approaches and an ecosystem perspective, in addition to successful co-management (Clarke).

Amend, D.F., 1989. Alaska's regional aquaculture associations co-management of salmon in Southern Southeast Alaska. In: E. Pinkerton (ed.), *Co-operative Management of Local Fisheries: New Directions for Improved Management & Community Development*. University of British Columbia Press, Vancouver. pp. 125-134.

This chapter reviews the development of the Southern Southeast Regional Aquaculture Association (SSRAA), a non-profit corporation funded by and comprised of commercial fishermen "whose goal is to increase the abundance of salmon for the economic benefit of all people in Southeast Alaska". This program "has changed the traditional roles played by the fishermen and the state's Department of Fish and Game (DFG) in the management of the salmon resource". Though marked at first by a lack of co-operation from the state, a free exchange of information has developed. Through a Regional Planning Team, which has Association representation, fishermen are consulted on issues of habitat protection and are represented in public hearings. A management plan was developed in 1985 which allowed each gear group to have an equal opportunity to harvest returning fish.

As a result of the SSRAA's work, fishermen now have a role in decision-making in fisheries management decisions, and access to technical expertise available from the state. The state in turn, has gained an appreciation for fishermen's understanding of resource management issues. Problems which continue include rivalry among various gear groups, the "equitable" distribution of resources, the fact that sport fishermen benefit from but do not pay taxes to support the SSRAA.

Anon., 1976. *The James Bay and Northern Québec Agreement*. Éditeur officiel du Québec. 456 pp.

Section 22

establishes a James Bay Advisory Committee on the Environment and describes its responsibilities and powers of authority

Section 23.3

establishes the Environmental Quality Commission (EQC) to be responsible for “participation in the administration and supervision of the environmental and social impact assessment process in the Region with respect to matters and to development projects within provincial jurisdiction”.

Section 23.4

establishes a Screening Committee for developments in the Region subject to federal jurisdiction

Section 23.5

establishes an Environmental Advisory Committee

Section 24.4

establishes a Hunting, Fishing and Trapping Coordinating Committee, and a secretariat to be responsible to and under the direction and control of the Coordinating Committee, funded by Québec

Section 24.5

specifies the powers of native authorities and governments

Section 24.14

extends the Hunting, Fishing and Trapping Regime to migratory birds and marine mammals

Berkes, F., P. George & R. J. Preston, 1991. Co-management: The evolution in theory and practice of the joint administration of living resources. *Alternatives* 18 (2): 12-18.

In this article the authors "explore the idea that co-management and self-management are not merely matters of wildlife use. Indeed, self-management is at the core of the social and economic health of many native communities, and is tied to larger questions of self-government." The role of native groups in managing the resources they use is considered, and characteristics of state- and local-level management systems are discussed in order to develop an understanding of co-management. Conditions for sustainable resource use are reviewed, particularly in relation to land use and management practices of the Cree of Western and Eastern James Bay. The renewal of traditional leadership roles in these Cree communities is seen as an important aspect of successful co-management in these regions.

The authors conclude that "local-level resource management and co-management may be seen as promoting ecologically sustainable use of the environment, social health and cultural sustainability for the local population, and their economic well-being." In closing the authors review barriers inhibiting progress toward joint management.

Berkes, F., 1989. Co-management and the James Bay Agreement. In: E. Pinkerton (ed.), *Co-operative Management of Local Fisheries: New Directions for Improved Management & Community Development*. University of British Columbia Press, Vancouver. pp. 189-208.

"This chapter is concerned with fisheries co-management and practice under the James Bay Agreement". It begins with a summary of pertinent provisions of the Agreement, and evaluates how successful it has been "with respect to greater local participation in management, preferential and exclusive rights, and deregulation of Native fishing rights subject to a conservation principle." A review of the co-management experience is concludes the chapter.

The Hunting, Fishing and Trapping Coordinating Committee "is described as the key co-management institution" in the Agreement. A major problem with this institution is that it is a white man's institution and participation is limited to those who are comfortable in this setting. The Agreement "has promoted greater local participation in living resources management...and the deregulation of Native fishing (and hunting) rights except where government intervention is deemed necessary for conservation reasons".

Unresolved are issues such as "interpretation of the 'Native right of first refusal' for outfitting operations, and the "lack of reliable scientific information ". As a result of imprecision in the Agreement, existing government policies sometimes conflict with the Agreement. Other problems are created by the great distances separating committee members, and the number of languages represented at these meetings. Committee size and participation costs have also been problematic. The results have reduced committee effectiveness and six years after the Agreement was signed, guaranteed harvest levels had not been finalized. The author concludes by identifying two fundamental problems with co-management under this Agreement: (1) "the problem of consulting and accommodating diverse user groups", which include groups not party to the agreement, and (2) the issue of whether Native groups "can be entrusted to manage their resources".

Berkes, F., 1994. Co-management: Bridging the two solitudes. *Northern Perspectives* 22 (2-3).

The James Bay and Northern Québec Agreement (1975) marked a transition from predominantly government-run resource management systems to a time when the legal right of native groups to participate in resource management decisions began to be recognized. This paper uses a continuum to describe various co-management arrangements. Traditional knowledge and management systems are seen as complementary to scientific management systems, and the lack of integration of these two systems is discussed.

The author provides evidence that the devolution of management authority to local groups has not been very successful, and that most co-management agreements have not been well designed or monitored. Greater user participation in management, however, "is likely to lead to a stronger commitment to sustainable use, a higher degree of acceptability and compliance, and lower enforcement costs....From the native point of view, co-management makes it possible to articulate community concerns, protect the traditional economy, and safeguard rights against threats to the land resource base."

The willingness of these two groups to work together in a spirit of mutual respect is key to successful co-management, with state involvement particularly important for "providing legal recognition for the communal-property rights of aboriginal groups".

Clarke, R.McV., 1993. An overview of Canada's Arctic marine fisheries and their management with emphasis on the Northwest Territories. In: L.S. Parsons & W.H. Lear (eds.), *Perspectives on Canadian Marine Fisheries Management*. Canadian Bulletin of Fisheries and Aquatic Science 226: 211-241.

This paper provides an extensive review of the management of Canada's Arctic marine fisheries. Despite a growing demand for fishery development, potential growth is constrained by limited biological productivity, non-existent knowledge of population sizes, a limited economic potential for developing new commercial fisheries and the lack of an infrastructure for such development. Growth could occur in inter-settlement trade of certain products, the possible increase in economic returns from existing fisheries and expansion of recreational fisheries.

The extent of cooperative management in the Arctic is examined and formal cooperative management structures which have been established under land claims settlements are reviewed, with advantages and shortcomings discussed. The author points out that "even cooperative management, better information and sound fishery management planning cannot ensure the conservation and sustainable utilization of Arctic fishery resources. Integrated resource planning and management is required to ensure that activities, such as hydrocarbon development, mining and shipping, in Arctic seas or along the Arctic coast occur without adverse effects on fishery resources. A greater challenge is to manage developments, especially waste discharges and hydroelectric power developments, in the Arctic and Hudson Bay drainage basins so that Arctic marine fishery resources and their habitats are not affected. However, the greatest challenge is to achieve international cooperation to stop the long-range transport of contaminants to the Arctic and to reverse or halt the trend to global warming, either on [sic] both of which could result in the elimination of today's Arctic marine fisheries."

Cohen, F.G., 1989. Treaty Indian Tribes and Washington State: the evolution of tribal involvement in fisheries management in the U.S. Pacific Northwest. In: E. Pinkerton (ed.), *Co-operative Management of Local Fisheries: New Directions for Improved Management & Community Development*. University of British Columbia Press, Vancouver. pp. 37-48.

Fishing rights guaranteed to Washington Indian tribes of the U.S. Pacific Northwest by treaty have been severely eroded by the growth of non-native commercial and sports fishing, state-imposed restrictions of Indian fishing and environmental degradation of habitat. This chapter reviews traditional tribal fishing practices and the present tribal role in fisheries management in western Washington. It considers Judge Boldt's affirmation of the treaty rights of off-reservation fishing for fourteen plaintiff tribes in Phase I of *U.S. v. Washington*, a decision which changed significantly the relationship between tribal fishermen and state fisheries management. Judge Boldt took steps to establish a long-term process of conflict-resolution which included the establishment of the Fisheries Advisory Board (FAB) in 1975. In 1980 the U.S. Congress passed the Salmon and Steelhead Conservation and Enhancement Act which established "a program for improving co-ordination among tribal, state, and federal managers."

Problems faced by tribes include overcrowding, managing inter-tribal fishing, developing and enforcing fishing regulations. However, there is today a willingness to resolve problems through negotiation rather than litigation, and "tribal fisheries management...is now part of a highly complex system moving towards co-ordinated tribal, state, federal, and international fisheries management".

Cohen, F.G. & Hanson, A.J., 1989. *Community-based Resource Management in Canada - an Inventory of research and projects*. International Co-ordinating Council of the Program on Man and the Biosphere [Sponsor]. UNESCO Canada/MAB Working Group on the Human Ecology of Coastal Areas Report 21. Ottawa: UNESCO Canada/MAB. 190 pp.

A survey of current community-based resource management regimes in six coastal areas of Canada: Nova Scotia, Coastal Quebec, James Bay, Great Lakes/Ontario, Coastal British Columbia, and Denendeh (Western Arctic). "Community-based regimes involve local communities in resource decision-making either as autonomous managers or in a variety of relationships for shared responsibility with state agencies. In coastal regions, local-level decision-making may involve a wide range of management issues, including regional development planning, enhancement and conservation, resource allocation, and the environmental and socio-economic assessment of development projects".

Addressed are the following: "(1) an overview of key resource issues; (2) a descriptive inventory of studies and projects; (3) a bibliography; and (4) a list of scholars, institutes, organizations and periodicals" for two regions in which there have been aboriginal claims: West James Bay and in Denendeh (Western Arctic).

Coolican, M., 1985. *Living Treaties: Lasting Agreements: Report of the Task Force to Review Comprehensive Claims Policy*. Department of Indian Affairs and Northern Development, Ottawa. 132 pp.

This Task Force was set up to review the federal government's policy on comprehensive claims and to establish a better policy for the negotiation of claim settlements with Canada's aboriginal peoples. The Report reviews aboriginal claims agreements in Canadian and examines the link between claims negotiations and other processes which aboriginal people are attempting to use to establish a new relationship with Canada. It presents a detailed framework for future claims negotiations, settlements and processes.

A key impediment to resolution of land claims is identified as the failure to give aboriginal people an active role in the management of resources in their traditional lands. Future government landclaim policies should be flexible, allow for growth, and meet the changing needs of both aboriginal and non-aboriginal societies in Canada. They should also accommodate differences in regional economies, resources, governments and lifestyles. Policy directions for the management of inland waters, subsurface resources, offshore and sea claims are reviewed.

Dale, J., 1989. Getting to co-management: social learning in the redesign of fisheries management. In: E. Pinkerton (ed.), *Co-operative Management of Local Fisheries: New Directions for Improved Management & Community Development*. University of British Columbia Press, Vancouver. pp. 49-72.

This chapter reviews the processes that led to co-management in local fisheries in the U.S. Pacific Northwest in order to discover mechanisms and procedures useful for resolving the conflict over salmon use and management in British Columbia. The author examines the role of "social learning", i.e., the idea of learning as a collective experience, in settling long term conflicts. The resolution of complex policy controversies requires a "frame-shift" in which policy makers reconstruct their understanding of the problem situation "so that new, previously unseen actions become visible". Such a "frame-shift" occurred over a period of years in the U.S. Pacific Northwest following a very unpopular court decision which guaranteed a share of up to 50 per cent of the fishery to treaty tribes. The same judge recognized the complexities of fisheries management, and set up the Fisheries Advisory Board (FAB) under which competing parties were required to negotiate the settlement of differences, thereby diverting many cases from litigation.

The author concludes that for co-management to succeed people in leadership must be committed to it. Other requirements are a better understanding of "the institutional factors that keep significant actors from engaging in the learning process", and the "Vision and talents to seize the moment, recognize crisis, and forge inter-organizational co-operation."

Doubleday, Nancy C., 1989. Co-management provisions of the Inuvialuit Final Agreement. In: E. Pinkerton (ed.), *Co-operative Management of Local Fisheries: New Directions for Improved Management & Community Development..* University of British Columbia Press, Vancouver. pp. 209-227.

This paper reviews and assesses the viability of co-management provisions in the Inuvialuit Final Agreement (1985). The author concludes that this Agreement has the following important co-management characteristics: the Inuvialuit are given preferential and/or exclusive rights to wildlife; they have control of access; participate in management processes and their traditional knowledge is used to shape these processes. Final decisions, however, are made by government, and Native fishing, hunting and trapping rights have not been de-regulated. Inuvialuit goals have not been prioritized or reconciled, and the institutions set up under this Agreement are those of the larger society.

“One of the most important issues in what is comprehended and achieved within the Agreement is the role of expression in management of the rights to self-government of aboriginal peoples. This involves in particular the perpetuation of their knowledge, values and traditions, upon which any meaningful aboriginal self-government must rest. This chapter reviews the principles and the specific provisions for co-management of fisheries and wildlife of the Inuvialuit Final Agreement in light of its potential for balancing the jurisdictional authority of government with the rights and traditions of the Inuvialuit and of balancing conservation, wise use and conflicting economic activities....”

Drolet, C.A., A. Reed, M. Breton & F. Berkes, 1987. Sharing wildlife management responsibilities with native groups: case histories in northern Quebec. In: R.E. McCabe (ed.), *Transactions of the 52nd North American Wildlife and Natural Resources Conference*. pp. 389-398.

Reviews the accomplishments and shortcomings of "the Coordinating Committee established to implement the hunting, fishing and trapping regime of the James Bay and Northern Quebec Agreement" and presents examples of successful collaborative projects under the Agreement with Inuit and eiders, Inuit and beluga, and Cree Indians and caribou.

Some problems identified were that the Committee had not yet established broad wildlife management principles for the region and had not developed a high profile with Native communities. These problems were traced back to: 1) imprecise wording of the original clauses in the agreement; 2) the Committee structure favored rigid party positions rather than collegiality; 3) lack of support for the terms of the Agreement; 4) lack of continuity in Committee membership; and 5) the lack of a common working language.

The authors conclude that locally created and implemented controls will result in greater voluntary compliance, but that the implementation of cooperatively prepared management plans still require some form of external presence and follow up.

Fenge, T. National parks in the Canadian Arctic: The case of the Nunavut Land Claim Agreement. *Environments* 22(1): 21-36.

This paper reviews how the "proposed national parks and existing national park reserves in Nunavut, the central and eastern Arctic of the Northwest Territories (NWT), have been dealt with in negotiation of the Inuit comprehensive land claim." Ten of Canada's 39 terrestrial natural regions occur in Nunavut, three exclusively. In 1971 Parks Canada produced a long term plan to locate a national park in each of these regions. In 1976 the Inuit Tapirisat of Canada (ITC) complained that the government's "expropriation" of parklands meant the Inuit were not being compensated for the loss of their traditional lands. The federal government agreed to designate proposed park areas as "national park reserves" until such time as outstanding comprehensive land claims could be settled.

DIAND agreed to the concept of joint management, but in terms of consultation rather than decision-making authority. Other difficulties have arisen because the government is not prepared to confirm its intention to establish specified parks in the Nunavut Settlement Region, but Inuit are not prepared to leave these areas out of their land claim settlements, unless a national park is going to be established in these areas.

Fenge, T., 1992. Political development and environmental management in Northern Canada: The case of the Nunavut Agreement. *Études/Inuit/Studies* 16 (1-2): 115-14.

This paper examines "key portions of the Nunavut Agreement". Particularly relevant to co-management are sections on land and resource management and on wildlife management which review the establishment of management institutions, and the delegation of powers. In addition, the processes of negotiation which led to drafting the Agreement are reviewed and analyzed. It is observed that "the most difficult issue to resolve in negotiating the resource management arrangements was the division of authority between ministers and the new institutions". The Agreement ultimately reflected a shared commitment toward the "co-operative management of natural resources" and now "it is the shared intent of government and Inuit that resource management institutions operate upon co-operative and consensual principles as much as possible, and mesh the very different experiences, expertise, and epistemologies of Inuit and government."

Freeman, M.M.R., 1989. The Alaska Eskimo Whaling Commission: successful co-management under extreme conditions. In: E. Pinkerton (ed.), *Co-operative Management of Local Fisheries: New Directions for Improved Management & Community Development*. University of British Columbia Press, Vancouver. pp. 137-153.

This paper reviews the nature of co-management arrangements between scientific managers and the Alaskan North Slope Inupiat and the Bering Sea Yupik whalers to resolve different positions on the harvesting of bowhead whales.

In 1977 the International Whaling Commission placed a moratorium on bowhead harvesting for subsistence, due to a perceived sudden decline in bowhead populations without consulting the whaling communities which would be affected. The whaling community responded by arguing that the moratorium threatened Inuit cultural continuity and was unnecessary. In the following months it provided substantial evidence for its population numbers, formed the Alaskan Eskimo Whaling Commission (AEWC) and adopted a management plan to protect the bowhead population. In exchange for the adoption of a quota, the AEWC demanded that a co-management agreement be established on the basis of its management plan and that the AEWC become a full member of the US delegation to IWC meetings. It also established a research program and developed educational materials concerning bowhead whales.

Positive outcomes of the arrangement include a much better assessment of the bowhead whale population; the establishment of a commitment to research for this species; and delegation of authority to local users to allocate allowable harvests determine harvest quotas. Both the government and the AEWC consider arrangement successful.

Freeman, M.M.R., 1994. *Marine mammals and improved coastal zone management*. Paper presented at the workshop: The Basic Scientific Requirements for Coastal Zone Management, Coastal Zone Canada '94, Halifax, N.S.

This paper examines "the management and use of certain marine mammals in the coastal zone or nearshore areas in the northern regions, where... traditional use and commercial trade of marine mammals has sustained the health and vitality of both aboriginal and non-aboriginal communities and their distinctive cultures". Despite a history of successful management and conservation programs, conflicts have arisen of late between user groups and non-local stakeholders. Two intergovernmental marine mammal management regimes are reviewed and their outcomes contrasted. The first, marked with conflict, is the International Whaling Commission (IWC). The second, which operates effectively between governments and user groups, is the International Agreement on the Conservation of Polar Bears (PBA).

Conclusions reached concerning reasons for the effectiveness and cost efficiency of the PBA are "(1) involvement of resource users in research and management activities, (2) management decisions based upon the best research-based information, (3) a willingness among parties to the treaty to negotiate in good faith". These management principles are not reflected of the IWC.

Canada Indian and Northern Affairs, 1992. *Gwich'in Comprehensive Land Claim Agreement*
Vols. I and II. Indian and Northern Affairs Canada, Ottawa.

Chapter 12 Wildlife harvesting and management:

establishes the principles which are to guide the management of wildlife and wildlife habitat, and elaborates on the management responsibilities of the Renewable Resources Board (the main instrument of wildlife management in the settlement area), and of Renewable Resources Councils (community organizations intended "to encourage and promote local involvement in conservation, harvesting studies, research and wildlife management") in respect to harvesting. Paragraph 12.6 elaborates on the responsibilities for the management of migratory species.

Chapter 13 Forestry

assigns management responsibilities for forestry and forestry management

Chapter 15 National Parks

requires the establishment of National Park Management Committees and specifies responsibilities, rights and powers for park planning and management

Chapter 16 Protected Areas

specifies planning and management relationships for protected areas such as parks

Chapter 19 Water Rights and Management

specifies planning and management relations of water resources including interjurisdictional issues

Chapter 26 Surface Rights Board

establishes a Surface Rights Board with "jurisdiction over matters relating to surface entry and compensation"

Howard, L., R. Goodwin, & L. Howard. 1994. *Indigenous Knowledge in Northern Canada: An Annotated Bibliography. Draft*. Prepared for The Canadian Polar Commission by The Arctic Science and Technology Information System, The Arctic Institute of North America, The University of Calgary.

This document contains 609 citations of bibliographic information of indigenous knowledge. This includes works containing indigenous knowledge, and works that discuss its importance, usefulness or practical application. The bibliography contains a subject index, a geographic index, a title index, and a serial index. The geographic scope of the bibliography is northern Canada, including Yukon, N.W.T. and the northern parts of the provinces. Its chronological scope is not restricted. Publications cited include books, reports, theses, journal papers, conference papers, magazine articles, significant newsletter articles, maps, audio and video tapes.

Abstracts are included for the following papers and reports which seem relevant for co-management but which were not available for full review:

Albert, T.F., 1993. Estimating size of the population of bowhead whales passing Point Barrow, Alaska, based upon an experimental design heavily influenced by Eskimo hunters. *44th Arctic Science Conference, Program and Proceedings*, Whitehorse, Yukon, pp. 16-17.

Breton, M., T.G. Smith, B. Kemp & F. Cartier, 1984. Studying and managing arctic seals and whales. Quebec City, Department of Fisheries and Oceans of Canada

Caulfield, R.A., 1988. The role of subsistence resource commissions in managing Alaska's new national parks. In: M.M.R. Freeman & L.N. Carbyn (eds.), *Traditional knowledge and renewable resource management in northern regions*. Occasional publication — Boreal Institute for Northern Studies. University of Alberta, 23 pp. 55-64.

Fleming, M.M., 1992. Reindeer management in Canada's Belcher Islands: Documenting and using traditional environmental knowledge. In M. Johnson (ed.), *Lore: Capturing Traditional Environmental Knowledge*. Dene Cultural Institute; Ottawa; International Development Centre

Gallagher, R.J. 1988. Native participation in land management planning in Alaska. *Arctic* v. 41 (2): 91-98.

Lloyd, K., 1986. Cooperative management of polar bears on northeast Baffin Island. *Native Peo-*

ple and Renewable resource management: The 1986 Symposium of the Alberta Society of Professional Biologists, Edmonton, Alberta pp. 108-116.

Richard, P.R. & D.B. Pike, 1993. Small whale co-management in the eastern Canadian Arctic: a case history and analysis. *Arctic* 48 (2): 138-143.

Wildlife Management Advisory Council (N.W.T.) & Fisheries Joint Management Committee, 1988. Inuvialuit renewable resource conservation and management plan. Department of Renewable Resources, Yellowknife.

Wildlife Management Advisory Council (N.W.T.), Fisheries Joint Management Committee. Canadian Parks Service. Canadian Wildlife Service. Canada. Dept. of Fisheries and Oceans. Inuvialuit Land Administration. Mackenzie Delta/Beaufort Sea Land Use Planning Commission. Northwest Territories. Dept. of Renewable Resources. Paulatuk, Northwest Territories, 1990. Paulatuk conservation plan: A plan for the conservation and management of renewable resources and lands around Paulatuk, Northwest Territories. Inuvik, N.W.T., distributed by Wildlife Management Advisory Council. (NWT), 1990.

Winn, S.N., 1991. Co-management under the Inuvialuit Final Agreement: bridging the gap between indigenous self-regulation and state-based resource management in the western Arctic? Thesis (M.A.) Carlton University, Department of Geography, Ottawa.

Canada Indian & Northern Affairs, 1984. *The Western Arctic Claim: The Inuvialuit Final Agreement*. Indian and Northern Affairs, Ottawa. pp. 115.

Section 7. Inuvialuit and Crown Land

paragraphs 82, 83 and 84

specify the composition and establishment of coordinating land use bodies for areas within the Inuvialuit Settlement Region

Paragraphs 85-92

specify bodies with primary responsibility for water management

Section 12 deals with Yukon North Slope

Paragraph 9

describes the management role to be performed by the Wildlife Management Advisory Council (North Slope) (established and described in paragraphs 46-56) in the National Park

Paragraph 41

describes the respective jurisdictions and responsibilities of governments for determining harvestable quotas for wildlife species

Section 14 Wildlife Harvesting and Management

Paragraphs 36-44

address the management processes to be followed for wildlife species

Paragraphs 45-60

establish the Wildlife Management Advisory Council (NWT) and specify the respective jurisdictions and responsibilities of governments

Paragraphs 61-72

establish the Fisheries Joint Management Committee

Paragraphs 73-74

establish the Inuvialuit Game Council

Paragraphs 75-79

establish the Inuvialuit Hunters and Trappers Committees

Paragraphs 80-87

establish the Research Advisory Council

Langdon, Steve J., 1989. Prospects for co-management of marine mammals in Alaska. In: E. Pinkerton (ed.), *Co-operative Management of Local Fisheries: New Directions for Improved Management & Community Development*. University of British Columbia Press, Vancouver. pp. 154-169.

This paper describes the nature and degree of co-management between the federal government, the state government and Alaska Natives in the management of marine mammals which include cetaceans seals, sea lions, walrus, sea otters, and polar bears.

The chapter reviews the reasons for and effects of legislation pertaining to the management of marine mammals, including the 1971 Alaska Native Claims Settlement Act (ANCSA); the 1972 Marine Mammal Protection Act and its subsequent amendment. Objectives and activities resulting from the establishment in 1978 of the Eskimo Walrus Commission (EWC) are reviewed, including establishment of the Walrus Technical Committee in 1980. The resulting management process did not provide for self-regulation, monitoring and enforcement of harvesting practices. There did exist, however, a growing willingness to develop a more co-operative management approach—born out of a shared desire ensure the long term survival of the marine mammals.

MacLachlan, L., 1994. Co-Management of wildlife in northern aboriginal comprehensive land-claims agreements'. *Northern Perspectives*, 22/2-3:21-27.

Comprehensive land claim agreements have introduced co-management regimes, and thereby altered "the Crown's relationship with northern aboriginal peoples". Traditionally used lands are defined as settlement regions within which title is given to specific parcels of land, and wildlife management responsibilities for the entire settlement region are shared with the aboriginal claimant group. These responsibilities are granted to regional boards, and range from being advisory only to being the major decision-maker for the management of wildlife and wildlife habitat throughout the region. Government managers in turn, are required to meet the principles, goals, objectives and criteria of these regional boards. The jurisdiction of these boards "to regulate and manage wildlife extends to all lands and waters, including national and territorial parks, within the settlement region". The two principles underlying this form of shared management are that: 1) "subsistence wildlife harvesting by aboriginal peoples may be limited only for valid conservation purposes" and 2) "aboriginal peoples can harvest wildlife anywhere in their settlement region, even within a national park"

McDaniels, T.L., M. Healey & R.K. Paisley, 1994. Cooperative fisheries management involving first nations in British Columbia: An adaptive approach to strategy design. *Canadian Journal of Fisheries & Aquatic Sciences* 51.

This paper "considers the design of alternative strategies for comanagement and the conflicts that arose in implementing comanagement [of salmon in British Columbia] during 1992." "The 1991 projects, which involved over \$11 million in funding and some 150 contracts with First Nations, represent one level in a trilevel approach linking fisheries management to land claims negotiations."

Organizational concerns important to the Canadian Department of Fisheries and Oceans (DFO) in designing co-management initiatives are identified, and the "policy levers available to DFO", as well as the constraints inhibiting their use, are examined. The continuum of administrative options for implementing co-management projects are also reviewed, in order "to represent the strategic trade-offs available to DFO among possible approaches for comanagement after 1991."

Problems identified in relation to the 1991/92 initiatives included a perceived lack of commitment to change by DFO officials; piecemeal negotiation of agreements; inequitable distribution of benefits; poorly planned agreements; lack of adequate communication about expectations, regulation, and conservation, and a lack of trust.

Morrison, J., 1993. Protected areas and aboriginal interests in Canada. Discussion Paper, World Wildlife Fund Canada, Ottawa. 37 pp.

This paper begins by reviewing the status of native interests and management participation in parks in Alaska, Australia, and in Canadian parks as set out in the Inuvialuit, Yukon and Inuit Settlement Claims. It also reviews the status of specific claims in Banff National Park, Riding Mountain National Park, Pukaskwa National Park, Bruce Peninsula National Park and Point Pelee National Park, and arrangements under comprehensive claims for Mingan Archipelago, Torngat and Mealey Mountains, and Gwaii Haanas/South Morseby. The relations between provincial governments in British Columbia and Ontario and native people seeking land claim settlements are also considered.

Nakashima, D., 1993. Astute observers on the sea ice edge: Inuit knowledge as a basis for arctic co-management, pp. 99-110. In: J. T. Inglis (ed.), *Traditional Ecological Knowledge: Concepts and Cases*. Canadian Museum of Nature/International Development Research Centre, Ottawa.

Equal partnership in the co-management of resources requires equal consideration for two systems of knowledge: that of aboriginal harvesters and that of scientists. To date indigenous knowledge has been marginalized. The author examines one aspect of the problem, namely the lack of information about TEK. To demonstrate the "sophistication and exacting nature of TEK and... its evident and immediate applicability in wildlife management" he describes the knowledge of the Inuit of southeastern Hudson Bay concerning the winter ecology of the Hudson Bay eider. The author concludes that this knowledge could be used to identify precise data on the time and location of animal population distribution and for monitoring eider populations sizes.

Canada Fisheries & Oceans, Indian & Northern Affairs & Environment, 1985. *The Northern Quebec Agreements Government of Canada Involvement*. 16 pp.

This document describes the responsibilities of federal government departments under regimes set up in the James Bay and Northern Quebec Agreement (1975) and the Northeastern Quebec Agreement (1978). Three Departments are involved: Indian and Northern Affairs, Environment, and Fisheries and Oceans.

Indian and Northern Affairs has "overall federal responsibility for coordinating the implementation of the Agreements by all federal government departments". In 1981 this Department transferred most of its responsibilities in Inuit territory to Quebec and to the communities. It continues to have major funding responsibilities to all territories. Environment Canada is responsible for implementing sections 22 and 23 of the JBNQA which deal with the environment and future development, and participates in the Hunting, Fishing and Trapping Regime (section 24). "Fisheries and Oceans has responsibility for managing a vast range of programs connected with the aquatic environment and its halieutic resources". It is also involved in implementing the Hunting, Fishing and Trapping Regime as it pertains to the management of marine mammals and anadromous and catadromous fish in the coastal waters. This department also assists in the development of northern fisheries.

Canada Indian & Northern Affairs, 1993. *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty in Right of Canada*. Minister of Indian Affairs and Northern Development and the Tungavik.

This Agreement details the establishment of five land and resource management institutions.

Article 5

Part I

sets out definitions, principles, and objectives of wildlife management

Part II

establishes the Nunavut Wildlife Management Board (NWMB) and specifies membership, meetings, by-laws, powers, duties, functions, responsibilities

Part III

deals with legal aspects of decisions of the NWMB and its relations to other governments

Parts IV and V

direct that a Wildlife Harvest Study and an Inuit Bowhead Knowledge Study be undertaken

Part VI

specifies harvesting levels

Part VII

addresses special features of Inuit harvesting

Part VIII

expands on the rights of first refusal and use of government land

Part IX

sets out responsibilities for international and domestic interjurisdictional agreements

Articles 8.3.4 and 8.3.9

describe the involvement of Inuit in the management of parks

Articles 8.4.11 through 8.4.14

describe a joint Inuit/Government parks planning and management committee, its respon-

sibilities, and direct the establishment of park management plans

Article 9

Part 3

deals with shared conservation and management responsibilities.

Article 11

establishes the Nunavut Planning Commission (NPC) and assigns it responsibility for the preparation of a Nunavut land use plan, subject to approval by the Minister

Article 12

establishes the Nunavut Impact Review Board (NIRB) and specifies its mandate, responsibilities and reporting responsibility to the Minister.

Article 13

establishes the Nunavut Water Board (NWB), and specifies its responsibilities and powers over the regulation, use and management of water

Article 21

Part 8

gives DIOs the right to require Government to establish and maintain an independent Surface Rights Tribunal (SRT) and specifies the authority to be given these tribunals.

Osherenko, G., 1988. Sharing power with native users - co-management regimes for Arctic wildlife. CARC Policy Paper 5, Canadian Arctic Resources Committee, Ottawa.

Osherenko, G., 1988. Wildlife management in the North American Arctic: the case for co-management. In: M.M.R. Freeman and L.N. Carbyn (eds.), *Traditional knowledge and renewable resource management in northern regions*. Occasional publication — Boreal Institute for Northern Studies, University of Alberta pp. 92-104.

Osherenko, G., 1988. Can comanagement save Arctic Wildlife? *Environment* 30 (6): 7-34.

“Two models of wildlife management operate throughout the North American Arctic, an indigenous system and a state system, but the former has limited application and the latter has never worked well. [These articles identify] the problems associated with this dualism and [argue] that co-management arrangements involving public authorities and indigenous user groups offer the best approach for solving these problems in an ecologically sound, efficient, equitable, and enduring way. Examining three of the seven wildlife co-management arrangements now operating in Alaska and the Canadian North, the Beverly-Kaminuriak Caribou Management Plan in the central Canadian Arctic, the Northern Quebec Beluga Management Plan, and the Yukon-Kuskokwim Delta Goose Management Plan in Alaska, the paper[s] [seek] to determine the key ingredients of successful co-management.”

Key ingredients identified include: 1) a strong link to and support from the villages; 2) user participation in the decision-making processes, and in the design and conduct of research; 3) adequate funding; and 4) the removal of cultural and linguistic barriers.

Pfirman, S, K. Crane & P. DeFur, 1993-94. Arctic contaminant distribution. *Northern Perspectives* 21 (4): 8-15.

This paper presents preliminary study findings concerning the extent of air, water, and ecosystem contamination in the Arctic, using data from the central Arctic collected in the 1980s and 1990s. Concentrations of carbon, sulfur dioxide, sulfate and heavy metals are reviewed, as is the redistribution of pollutants by sea ice, and the transport of contaminants in water. Concentrations of PCBs are known for areas near the Canadian Arctic Islands, but not for the central Arctic Ocean. Concentrations of DDT in water have been measured to some extent, while organochlorines have been measured extensively. Data on cadmium and lead in estuaries and sea water, contaminants in fauna, dichlorodiphenyltrichloroethane (DDT) in beluga, and polychlorinated biphenyls (PCBs) in polar bears are also reviewed.

The arctic food chain has been contaminated by pollution occurring inside and outside the region. Significant gaps in monitoring data exist. Expanded national and international monitoring programmes are needed to "produce [a] state-of-the-Arctic environment assessment useful to policy makers".

Polar Bear Management in the Southern Beaufort Sea: An Agreement between Inuvialuit Game Council Inuvik, N.W.T., Canada and North Slope Borough Fish and Game Management Committee Barrow, Alaska, U.S.A. January 1988.

A single polar bear population of approximately 2,000 animals occupies the southern Beaufort Sea from about Icy Cape in Alaska, U.S.A to Baille Islands in the Northwest Territories, Canada. Both the two local user groups, the North Slope Borough Fish and Game Management Committee (F&GMC) and the Inuvialuit Game Council (IGC) sought to develop a coordinated management approach. A draft Memorandum of Understanding (MOU) was signed on September 17, 1986. It specified the formation of a Joint Commission and Technical Committee and directed the Commission to develop a Management Plan for polar bears in the Beaufort Sea. The MOU was ratified on March 3, 1987. The Plan is intended to provide protection for the habitat and polar bear resource, and to ensure equitable user opportunities for both groups, while recognizing the legal precedence of existing legislation in both countries. The final agreement was signed on January 29, 1988.

Richardson M. & B. Green, 1989. The fisheries co-management initiative in Haida Gwaii. In: E. Pinkerton (ed.), *Co-operative Management of Local Fisheries: New Directions for Improved Management & Community Development..* University of British Columbia Press, Vancouver. pp. 249-261.

This chapter reviews a co-management proposal described as “an experimental, co-operative approach to solving some of the problems in management of the marine resources of Haida Gwaii”, “a group of islands and adjacent waters in the northeast Pacific Ocean”, and a territory in dispute with the federal government. This proposal represented the Haida people’s attempt to address their concerns about increasing alienation and powerlessness resulting from the “depletion, mismanagement and alienation of fishery resources”.

The objectives of the proposal were to improve the management of and yield from stocks, to develop technical and other management skills for effective fishery management; to create additional wealth and employment opportunities; and to experiment with co-operative fisheries management processes. Means for achieving these objectives were specified, as were the species recommended for inclusion under the proposed agreement, and the assignment of responsibilities to various institutional bodies. The Council of the Haida Nation viewed the government’s response to this proposal inadequate, and withdrew it.

The Haida people contend that their relationship to fishery resources “cannot be managed by governments of another culture, with a different set of values....Management of fisheries resources by one culture results in the almost complete loss of the ability of the resources to provide for the values of another culture”.

Community of Sachs Harbour, 1992. Sachs Harbour Community Conservation Plan: A plan for the conservation and management of renewable resources and lands in the vicinity of Banksland, Northwest Territories. 99 pp.

This document summarizes the status of management plans/agreements in the region for muskox, caribou, polar bear, ringed seals, bearded seals, bowhead and beluga whales, Arctic charr, lake trout, other fish, crabs, shrimp, clams, scallops and numerous other species. It also identifies research priorities and recommends conservation measures for each.

Treble, M., 1996. Broad Whitefish (*Coregonous nasus*) of the Lower Mackenzie River: Biological Characteristics, Commercial and Subsistence Harvest Trends, and Management Issues. Practicum, Natural Resources Institute, University of Manitoba.

This practicum examines aspects of broad whitefish management in the lower Mackenzie River region. Three comprehensive land claim agreements cover the Lower Mackenzie River region: the Inuvialuit Final Agreement (IFA) of 1984; the Gwich'in Comprehensive Land Claim Agreement of 1992; and the Sahtu Dene and Metis Comprehensive Land Claim Agreement of 1993. "Management of this resource is the responsibility of the Department of Fisheries and Oceans in partnership with the Inuvialuit Fisheries Joint Management committee and the Gwich'in and Sahtu Renewable Resources Boards." The practicum reviews the role, functioning, responsibilities and relations of the resource management bodies established under the three agreements.

After ten years, the Inuvialuit were found to be well satisfied with their co-management arrangements, but expressed concern about the loss of traditional information in the larger centres. The Gwich'in and Sahtu communities have not enjoyed the same opportunity to influence fisheries management, and they were eager to have local institutions established in order to gain control over their resources. Monitoring harvesting was seen as an important issue in order to observe changes over time and to determine the viability of commercial harvesting.

Truscott, S.J. & M. Dunn, 1994. The evolution of coastal and marine areas management policy in Pacific Canada. Coastal Zone Canada '94, *Cooperation in the Coastal Zone: Conference Proceedings*. 5 vols. Coastal Zone Canada Association, Dartmouth.

"Previous efforts initiated by government staff to develop a province wide Coastal Zone Management Program in British Columbia have failed. However, B.C. has recently been experiencing a resurgence of interest in the development of strategic policy for Coastal and Marine areas". This paper reviews a selection of these previous efforts and considers the evolution to "recent processes unfolding in this province."

These recent initiatives are characterized by a "shift from issue-specific ways of solving problems to using an integrated management approach". Reasons for this paradigm shift are discussed. They include the provincial ombudsman's review of aquaculture in 1988, the Strategic Planning for Applied Research and Knowledge Program (SPARK) Oceans Study of West Coast opportunities in 1992, the Coastal Resources Strategy Study, the work of the Commission on Resources and Environment (CORE) appointed in 1992, and various other government planning initiatives developed since 1991.

The authors conclude that there has been a strong move toward integrated management and planning for both land and coastal resources in British Columbia over the past five years. The change is attributed to a recognition that sectoral approaches were no longer adequate.

Wells, P.G. & P.J.Ricketts (eds.), 1994. *Coastal Zone Canada '94, Cooperation in the Coastal Zone: Conference Proceedings*. 5 vols. Coastal Zone Canada Association, Dartmouth.

These proceedings have a section on aboriginal co-management in one of the volumes. See the earlier review for more details.

Young, O.R., M.M.R. Freeman, G. Osherenko, R. R. Anderson, R.A. Caulfield, R.L. Friedheim, S.J. Landgon, M. Ris & P. J. Usher, 1994. Commentary: Subsistence, sustainability, and sea mammals: reconstructing the international whaling regime. *Ocean & Coastal Management* 23: 117-127.

“A group of social scientists with extensive experience in whaling issues and international resource management” were brought together to consider factors inhibiting movement toward resolution of a developing crisis in the international whaling regime—“a set of rules, principles, and decision-making procedures governing the interaction of whaling nations”.

This working group determined that resolution of differences in the IWC required that body to “turn its attention to redefining what is permissible as opposed to impermissible whaling in a way that meets the tests of sustainability and equity.” (Large-scale industrial whaling was not considered.)

Next the group identified five tests which would have to be met for small-scale whaling to be accepted as permissible on these grounds, and three categories of small-scale whaling which would most often pass these tests.

Canada Indian and Northern Affairs, 1989. *Comprehensive Land Claim Agreement in Principle between the Government of Canada, the Council for Yukon Indians and the Government of the Yukon*. Indian and Northern Affairs, Ottawa. 140 pp.

Sub-Agreement on Fish and Wildlife Conservation and Use

Part 3

“defines the responsibilities for the management of Fish and Wildlife and their habitats”

Part 4

directs the establishment of a Fish and Wildlife Management Board, provides direction on composition, powers and responsibilities and administrative procedures

Part 5

directs the establishment of Renewable Resource Councils, provides direction on composition, powers and responsibilities and administrative procedures

Sub-Agreement on Forestry in the Yukon

Part 2

outlines required management practices for forestry resources