

## Stewardship: A Key Concept for the Environment

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Marine ecosystems are threatened by humans (Salomon et al., 2002), whose exponentially increasing populations and demands have placed pressures unforeseen by traditional approaches to resource management (Arkema *et al.*, 2006). An ecosystem-based management (EBM) approach aimed at reconciling biological diversity, conservation, and socio-economic needs (Crowder and Norse, 2008), is now employed to replace the sectoral-based management system which has not worked well (Babcock and Pikitch, 2004). Linked with EBM is the concept of sustainability, often used interchangeably with sustainable development and defined by the Brundtland Commission (WECD, 1987) as development that meets the needs of the present generation without compromising those of future generations. In the case of resource development such as fisheries, progress towards sustainability goals have become a guiding principle in management (Milman and Short, 2008).

In Canada sustainability is one of three main components, along with integrated management and the precautionary approach, under Canada's Oceans Act and the Oceans Strategy (DFO, 2002). Sustainability is normally assessed using numerous tools and indicators, which fall under three broad themes, i.e., socioeconomic, ecological and governance. Examples of these indicators are the Fishing Subsidy Index, Mariculture Sustainability Index and Precautionary Principle Evaluation. Also highlighted under the Oceans Strategy is the concept of 'stewardship,' (DFO, 2002) which, despite its frequent use, is not clearly defined.

Stewardship is primarily used in the context of public awareness and education (DFO, 2002). There is also mention of conservation and protecting the oceans for future generations.

The most specific definition of stewardship is found in the Department of Fisheries and Oceans Community Outreach and Stewardship Program, which says: “Stewardship of Canadian Waters means that Canadians - including landowners, private companies, voluntary organizations, Aboriginal communities and individual citizens - make conscious decisions every day to act responsibly in conserving, protecting and enhancing Canada's fish habitats and oceans” (DFO, 2007b). The relevance of stewardship is further highlighted by its inclusion in the Canadian Marine Protected Areas (MPA) Framework. One of the non-compulsory objectives under the framework is the promotion of public awareness and stewardship (DFO, 2005). Again stewardship is not defined but is emphasized as needing promotion in the communities.

The ambiguity around the concept of environmental stewardship is prevalent worldwide. International programs such as the International Council for the Exploration of the Sea (ICES), for example, don't define it. The United States Environmental Protection Agency (EPA) on the other hand, defines it as "sense of responsibility and ownership that goes with not only meeting, but exceeding, existing regulatory requirements. Stewards of the environment recycle wastes to the greatest extent possible, minimize or eliminate pollution at its source, conserve natural resources, and use energy efficiently to prevent harm to the environment or human health" (EPA, 2009, p. 4). These examples reiterate the importance of stewardship in the management plans and as part of the mandates of governments and international organizations.

The frequent use of the term stewardship in various policy documents suggests its importance as one of the main goals for environmental management. The broader perspective of the stewardship concept, as can be gleaned from the existing notion, also hints at recognition of a movement toward a more holistic framework of environmental governance (Kooiman *et al.* 2005). We argue here that the lack of a clear definition of what stewardship is, and consequently

the improbability of assessing it, limits our ability to achieve governance goals. Further, we submit that such lack of clarity is an opportunity to involve communities in the process of defining and assessing stewardship in their areas. The objectives of this research are thus to provide a comprehensive definition of stewardship and to offer a systematic framework for a participatory assessment of environmental stewardship. A case study of Eastport Peninsula in Newfoundland will be conducted to illustrate the framework and the assessment process.

We first perform an extensive review of how the term environmental stewardship is used, by whom, and in what specific context. A variety of key documents from governments and non-governmental organizations at local, national and international level, along with scientific literature and reports are compiled and examined. Key words and themes related to how the concept is used are identified from these sources. Next, we derive key attributes from these various uses and categorize them according to the degree of similarity. Based on these, we develop a set of assessment questions that serve as indicators for environmental stewardship. Finally, a participatory process of assessing environmental stewardship is designed.

A total of approximately 250 documents from primary and secondary sources have been reviewed. About 5% of these provide some definition of the term environmental stewardship, while the rest refer to it without offering any specific definition. Key words and themes associated with the stewardship concept cover a wide range of topics including conservation, communication, management, and education. From these, four key attributes of environmental stewardship can be highlighted, i.e., understanding, respect, responsibility and communitarian. Understanding refers to our understanding of both the environment as well as the people around us, and is dependent upon key words such as experience, informal and formal education, and level of empathy. Respect means respecting the environment for its own inherent value rather

than what we get from it. Responsibility is our responsibility to the environment in that it is protected, and also to other community members, recognizing their right to basic human needs. Communitarian refers to social cohesion and relationships within the community, as well as sense of belonging and community spirit.

Twenty-five indicators are derived to assess environmental stewardship according to these attributes. Examples include the presence/absence of NGOs (Responsibility), percentage of the population that attends town meetings (Communitarian), resource access (Respect) and field trip occurrence (Understanding). These indicators are presented as a questionnaire conducted in a group process with community members (as opposed to on an individual basis). In addition to obtaining the information about the ecosystem, such format allows for elaboration and discussion about certain aspects of environmental stewardship in the area, as well as enables sharing of knowledge and ideas about how to improve stewardship. Finally, a ranking exercise is performed to obtain a relative importance of the indicators under each attribute.

The stewardship assessment framework will be tested in the Eastport Peninsula, a narrow peninsula jutting out into the center of Bonavista Bay on the eastern part of Newfoundland (DFO, 2007a). The study site covers an area of approximately 655km<sup>2</sup> (Bull, 1999) and is bordered by the Atlantic Ocean and Terra Nova National Park. There are seven towns on the peninsula, including Sandringham, Eastport, St. Chad's, Happy Adventure, Salvage, Burnside, and Sandy Cove. Historically, a number of these communities have relied upon the fishery for employment and after the moratorium in 1992, many switched from cod to lobster (Davis *et al.*, 2006). The fishers of the Peninsula, however, wanted to avoid the mistakes that happened to the cod fishery (Power and Mercer, 2001), and thus formed a community-based management initiative to protect lobster called the Eastport Peninsula Lobster Protection Committee (EPLPC),

in 1995. The initiative was a success as it resulted in a sustainable lobster fishery for the area. In 2005, DFO in collaboration with the fishers of the peninsula and the EPLPC, designated a small Marine Protected Area (MPA) nearby Round and Duck Islands. The MPA is approximately 2.3km<sup>2</sup> and is considered prime breeding habitat for lobsters (DFO, 2007a). The Eastport Peninsula is an effective case study due to its history of community driven environmental efforts, which, together with other features, would likely suggest a high level of stewardship, according to the proposed indicators.

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