

Introduction

Putting fishers' knowledge to work

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THE FISHERS' KNOWLEDGE CONFERENCE

THIS book grew out of a 2001 conference inspired by the late Bob Johannes, called 'Putting Fishers' Knowledge to Work'. Over 200 people from twenty-four countries and thirty-four aboriginal and indigenous organizations came to present results and discuss situations, problems and solutions (Haggan et al. 2003).

Johannes' strong opinion, and he was not one for timid views, was that we had heard more than enough of the 'conflicting dogmas of the omniscience of science and fishers' knowledge' (Stanley and Rice, this volume). He felt there had been enough reporting of the frustration of indigenous, artisanal and industrial fishers that their information was ignored. There had also been enough acknowledgements by scientists that there is indeed valuable information in their knowledge, but not in a form they can readily use.

Bob Johannes believed that the conference and this book should focus on where and how fishers' knowledge is *already* being used in collaboration with scientists and government managers, by indigenous peoples and artisanal fishers in their own unique contexts, and by large and small-scale commercial fishers. To this end, this book presents practical examples of how fishers' knowledge is being applied in fisheries science and management. In practice, as many chapters attest, either co-management, customary tenure or both are essential preconditions for the successful application of fishers' knowledge. Fishers rely on their knowledge for their livelihood, so it has always been 'put to work' in the most practical sense. Fishers' knowledge is not just of academic interest. It is a way of life that evolves continuously to address changes in fisheries and fishers. It is attracting increasing interest from non-fishers with an interest in fisheries.

DEVELOPMENT OF THE BOOK

THE editors are trained in the social and natural sciences and have a history of involvement in interdisciplinary research. Two have considerable experience working with indigenous peoples. Social scientists have done a great deal of work

on issues related to different knowledge systems but, with the notable exception of Bob Johannes and a few like-minded individuals, the topic has received less serious attention by natural scientists, although this is certainly changing. Fair and effective recognition of fishers' knowledge in fisheries science and management requires more collaboration and increased mutual understanding between fishers and natural and social scientists. For this reason, we chose to have most of the chapters peer reviewed by one natural and one social scientist. This made for some interesting comments, pointing to important gaps between social and natural scientists with regard to issues of knowledge creation, the value of local knowledge, and how local knowledge can be best and most appropriately used by fishers and outsiders alike. Our hope is that this book helps to narrow these gaps and broaden the scope for future dialogue and collaboration.

Contributions were selected on the basis of the strength of the research and in order to capture a broad range of situations and practical examples. We sought a balance between indigenous and artisanal, freshwater and marine, as well as small-scale and industrial commercial fisheries and broad, international representation. We do not suggest that one or two chapters can do justice to a particular country, never mind a continent. We know the collection provides a more comprehensive set of examples from Canadian and Australian fisheries than from most other parts of the world. We hope, however, that it will encourage the development of future collaboration between fishers, social and natural scientists, and managers, and will lead to further collections.

The term 'fishers' knowledge' (FK) was deliberately chosen as inclusive of the men and women who 'fish' in the broadest possible sense: those who depend on marine and freshwater species and ecosystems for their physical and cultural survival. The chapters contain a rich variety of terms for FK, including *fishers' knowledge* (Johannes and Neis, this volume) *indigenous technical knowledge* (Nsiku, this volume), *traditional ecological knowledge* (five authors), *local ecological knowledge* (eight authors) and ****-knowledge* (Stanley and Rice, this volume). We left these terms as the authors wanted to present them. We have, however, used the term 'fisher' throughout as inclusive of the women and men whose contributions are described. We know that this will not please everybody. Most men involved in Canada's west coast fishery dislike the term intensely, and quite a few women in the fishery describe themselves as 'fishermen', as they believe it confers not just equality, but group membership. While some raise a concern that using 'fishers' to describe exclusively male groups actually masks the gender of those involved in fishing, we note that people fish from communities where the involvement of both sexes is crucial to the success of the fishing enterprise, regardless of who does the actual catching.

The diverse fisheries situations, knowledge and belief systems and geographic scope of the chapters almost defy organization. Where do indigenous fisheries end and artisanal and industrial fisheries begin? Some indigenous authors and co-authors describe indigenous fisheries in the developed world (Australia, Canada and the US/

Hawaii). Others describe indigenous fisheries in post-colonial contexts (Hickey, this volume) or after major political change (Satria, this volume). Still others identify the scope of indigenous knowledge in the non-industrialized world (Nsiku, this volume).

Chapter 1, 'The value of anecdote' sets the stage for exploration of the full scope of FK by beginning with what 'classic' fisheries science and management perceive as its weakest point. The chapter draws on the August 2001 conference keynote address by Bob Johannes. Before his untimely death in 2003, Bob asked Barb Neis to contribute to his chapter for this book. In his original draft, Bob described fishers' knowledge as anecdotal information that can be gathered by the astute scientist in order to inform scientific work. Barb thinks of fishers' knowledge and science as different knowledge systems, both of which need to be scrutinized for their underlying assumptions.

INDIGENOUS PRACTITIONERS AND RESEARCHERS

THE main body of the book is divided between *Indigenous and Artisanal fisheries* and *Commercial fisheries*, imperfect as such a classification system may be. We begin the first section with works by indigenous people with practical experiences based on their own knowledge systems. In Chapters 2–6, indigenous knowledge holders and researchers take us on a journey that starts on the west coast of Canada with thoughts from a hereditary chief of the Hesquiaht Nation on the antiquity, scope and continuing capacity of traditional ecological knowledge (TEK) to expand and link concepts of biodiversity and environment (Lucas, this volume). Still in British Columbia (BC), on the Fraser River, we get an aboriginal perspective on the importance of fine-scale knowledge in the struggle to protect wild salmon and how this knowledge is passed down the generations (Narcisse, this volume). From there, we travel halfway around the world to explore the rich indigenous knowledge of fish species and behaviour, and the enormous range of ethno-botanical knowledge used in the manufacture of fishing gear and boats in Malawi (Nsiku, this volume). We return to Haida Gwaii on the west coast of Canada to explore how traditional knowledge of the Haida Nation could be used to improve the management of industrial herring fisheries (Jones, this volume). Heading west, we stop in mid-Pacific, where native Hawaiians have successfully applied traditional management principles to restore fish stocks to higher levels than surrounding areas (Poepoe et al., this volume).

INDIGENOUS AND ARTISANAL FISHERIES

IN Chapters 7 to 17, researchers working with indigenous and artisanal fishing communities guide us on a journey that starts in the Pacific with the Republic of

Vanuatu. Since gaining independence in 1980, the islanders are rediscovering the resource management value of traditional beliefs and practices suppressed by colonial government and missionaries (Hickey, this volume). From there, it is a relatively short distance to the Aboriginal community of Injinoo in Northern Australia, where tribal leaders concerned about the depletion of an important foodfish species, were successful in negotiating a two-year closure supported by government and commercial and sport fishers (Phelan, this volume). Due North of Injinoo, on the Torres Strait Islands, indigenous people are struggling with government and industry to re-establish a seasonal, multi-species fishery that would sustain access to resources essential for their cultural and physical survival (Mulrennan, this volume).

Traditional management in North Lombok, Indonesia, was suppressed under the 'New Order' regime of ex-President Suharto. Empowered by decentralization since 1998, villagers in North Lombok are re-establishing their traditional integrated management system with benefits to fisheries resources, lifestyle and identity. Satria's account makes an interesting contrast to examples where indigenous people have been unable to achieve legislated management authority and access to more than a very modest amount of local resources (see also Hickey, Mulrennan, Poepoe and others, this volume).

From Indonesia, we travel north to the Philippines where researchers from Project Seahorse conducted surveys and workshops with fishers to explore the extent of resource depletion, identify the primary causes and develop workable solutions to conserve and rebuild resources, as well as exploring alternative livelihood options (Meeuwig et al., this volume). Continuing north, we come to the landlocked country of Laos, where local fishers' knowledge has been validated and incorporated into the management of local and migratory resources in the face of substantial scepticism from outside 'experts'. Unlike Lombok, where success is largely attributable to bottom-up efforts with no outside help, a small, flexible non-government organization (NGO) was of assistance to Lao fishers in facilitating a government-recognized but village-centred process for establishing socially and ecologically sound management regulations (Baird, this volume).

From Laos we travel to Bangladesh and another freshwater fisheries environment where local people depend on freshwater resources and demand often exceeds supply. In an interesting parallel with the Lao fishers, local people have established conservation zones in deep-water areas where fish can survive seasonal droughts and high temperatures. In partial contrast to the Lao example, success in developing local ecological knowledge (LEK)-based management is threatened by insecurity of tenure and the absence of a legal framework (Sultana and Thompson, this volume).

From Bangladesh, we go halfway round the world to the estuary of Patos Lagoon in Brazil, where small-scale fishers are collaborating to protect the environment and resources they depend on from overfishing by the industrial sector. Some success has been achieved inside the lagoon, but outside fisheries continue to threaten stocks

and livelihoods, pointing to the need for a systemic approach that links LEK to large-scale fisheries management and legal recognition (Kalikoski and Vasconcellos, this volume). From Brazil, we travel north-west across the equator to Mexico, where researchers and artisanal fishers are developing a sea turtle monitoring programme with the objective of providing year-round coverage while respecting the harvest of turtles as an important cultural practice (Küyük et al., this volume).

In a different kind of study, the knowledge of long-dead fishers, perpetuated in the names of Swedish lakes, was used to identify lakes that had once supported populations of brown trout (*Salmo trutta*). A map-based survey identifying lake names with the root *Rö* (an archaic term for brown trout) was ground-truthed in a sub-sample, indicating that the technique could identify in two months what it would have taken two people with gillnets five years to accomplish. The research also indicated the presence of a fish-classification system around 1,900 years old (Spens, this volume).

COMMERCIAL FISHERIES

THE knowledge of commercial fishers has been used to map the seabed in the United States of America and Australia. Decades of overfishing in the Gulf of Maine had extirpated stocks of cod (*Gadus morhua*) and haddock (*Melanogrammus aeglefinus*). Ted Ames, a fisher and marine biologist, applied the knowledge of retired commercial fishers to identify spawning grounds for these stocks, with a view to using it for the purposes of restocking. The maps created were later validated using sidescan sonar. The project generated very useful guidelines for collecting such knowledge, for example that fishers had to be convinced it would be not be used to threaten their livelihood, but would be put to what they considered to be ‘good use’ – in this case, restocking (Ames, this volume).

In an Australian case, Williams and Bax (this volume) provide a concrete example of the point made by Johannes and Neis in Chapter 1: that there will never be enough time, money or trained people. The knowledge of commercial fishers is used to create detailed seabed maps at a scale that is useful to fishers.

Another example from the same area in Southeast Australia explores the usefulness of FK in three very different management situations. Excluding fishers from decisions such as establishing a marine protected area can pose severe problems for management and enforcement (Baelde, this volume). In British Columbia, Canada, collaboration between commercial fishers and government scientists in stock assessment for rockfish (*Sebastes* spp.) – from hypothesis formulation, through survey design, implementation and data analysis – added to the sum total of knowledge on both sides. The ‘Swapping’ of vessels and gear was also found to be an innovative and productive element (Stanley and Rice, this volume).

Chapter 21 presents a synthesis of some of the important ideas presented in the book, assesses progress made towards Johannes' goals, and renews his challenge to establish an international facility for the ethical collection, preservation, dissemination and application of FK (Haggan and Neis, this volume). The book ends with a chapter, appropriately named 'The last anecdote' (Baird, Chapter 22 this volume), which shows that even the most experienced and diligent researchers sometimes fail to get it right. There's hope for us all!

REFERENCES

HAGGAN N.; BRIGNALL, C.; WOOD, L. (eds.). 2003. *Putting fishers' knowledge to work*. UBC Vancouver, Fisheries Centre Research Reports, Vol. 11, No. 1, 504 pp.