

**“Power over fishes”: Lessons of an action research to develop fishery co-management in the São Francisco River, Minas Gerais State, Brazil.**

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This article describes the action-research project entitled “Rumo à Co-Gestão da Pesca no Vale do São Francisco” (Towards Co-management of the São Francisco Valley Fishery), carried out in 2004 and 2005 by the Instituto Amazônico de Manejo de Recursos Ambientais (IARA) and the Universidade Federal de São Carlos (UFSCar), with financial support from the International Development Research Centre (IDRC), Canada; and in collaboration with other partners in the Brazil-Canada Bilateral Cooperative Project “Peixes, Pessoas e Águas” (Fish, People and Waters) and also developed until today by the State University of Montes Claros (UNIMONTES), throughout the Project “Challenges and Opportunities of Fishery Co-Management in the São Francisco River, Minas Gerais State”<sup>3</sup>.

We emphasize the concept of action-research of Michel Thiollent (1985), to better understand the scope of this study. According to Thiollent, “participatory research, or action-research, is a kind of empirically based social research that is conceived and carried out in close association with an action or with the resolution of a collective problem, and in which the researchers and participants representative of the situation or of the problem are involved in a cooperative or participative manner” (Thiollent, 1985, pg. 14).

The problem addressed by the project was an inefficiency of the current management model for fishery resources in the State of Minas Gerais. Management is centralized in governmental agencies, in this case, IBAMA<sup>4</sup> and IEF<sup>5</sup>-MG for standardization and supervision of the fishery, and the Environmental Military Police, which under the terms of a cooperative agreement with these agencies, is the principal enforcement agency for the fishery in the Minas Gerais portion of the São Francisco River. Centralized management has been ineffective in resolving various conflicts related to the management and use of the fishery resources in this region. For example:

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- conflicts between the communities and the State arising from distrust between the two parties and the low estimation and even prohibition of traditional fishing and local management practices, which are denominated “predatory”;
- conflicts between governmental institutions, principally between IBAMA and IEF, including the elaboration of conflicting regulations. These are difficult for the community to comply with, increasing conflicts with the regulators; and
- conflicts among different users of the fisheries and water resources of the São Francisco, including professional traditional fishermen, sport fishermen, ranchers, and mining industries, among others.

This situation places us within the possibility of a "Tragedy of the Commons," the theory proposed by Hardin (1968), which considers that, in the case of common resources, the logic of the individual supersedes the collective in the practice of obtaining resources. The majority of natural resources can be classified as common resources. According to Ostrom et al. (1994), common resources are natural or anthropogenic stocks that permit flows of usable units over time. The "common resources" share two characteristics: 1) it is costly to develop institutions that exclude people who might benefit from the potential of these resources – the problem of exclusion; 2) the unit of the resource obtained from this common stock by a particular user will no longer be available to other users – the problem of subtractability (Ostrom et al. 1994; Berkes et al., 2001).

Therefore, in order to resolve the problems of exclusion and subtractability in the management of common natural resources such as fisheries, it is necessary to answer the questions of how to control access to the resource and how to provide incentives for complying with the rules, in order to reduce the impact of one user upon others. Controlling access and resolving the problem of subtractability of fishery resources have challenged many management programs worldwide (Berkes et alii, 2001; Seixas and Berkes, 2003; Pomeroy et al., 1998; Freeman, 1992; Holling and Meffe, 1996; Ludwig, 2001). In most cases, defining the size of the user group, how many boats and how much gear there are, and which are the different user groups are complicated questions (Berkes et al., 2001). In many cases, as in the present study, the populations are very fluid: the participants in fishing change constantly, alternate fishing with other economic activities, or alternate fishing grounds, as in the case of the Três Marias Reservoir, where many fishermen come and go among reservoirs in search of more-easily available resources (Thé, 1999). In other cases, federal legislation defines aquatic resources as “open-access.” Brazilian rivers, for example, because they belong to the Union, belong to all citizens by right, and because of this the exclusion of users "from away" (inhabitants of other regions) by government regulations, fishing agreements, or rules, is legally

questionable. In all of these cases, studies have indicated that if access to a resource is not controlled in some manner, sooner or later the resource will be subject to a "tragedy of the commons" (Berkes et al., 2001).

The problem of subtractability manifests itself through conflicts between fishermen or other users and government institutions, because of a lack of compliance with the legislation. Therefore, questioning the effectiveness of the laws in force or consideration of noncompliance with them, and also consideration of the divergences between the "thought" and "action" of the institutions that make and enforce the laws (scientific knowledge, or sometimes political lobby groups) and the "thought" and "action" of the fishing communities (ecological knowledge and local management of the use of natural resources developed through the empirical experience of the community in its local environment over many generations) point to another observation on the use of common resources in the subtractability question: a management program will only function to the extent that the users agree to comply with it (Berkes et al., 2001). Proceeding from these theoretical assumptions, the overall objective of this action-research project was to support the sustainability of the fishery and fishery resources in the stretch of the São Francisco River in Minas Gerais, through the development of a shared fishery management process, i.e., co-management. Until mid-2003, no movement to structure a participative management model for the region had been effectively carried out, either by the Colônias or the Federation of Fishermen, which were disorganized and lacked the confidence of the local people; or by the government agencies, which lacked experience in participative processes. Up to that time, only some consultative meetings had occurred between local leaders and the responsible agencies arranged by the IEF-MG and IBAMA; these meetings were purely informational, and government representatives were the only speakers.

The action-research activities of this project focused, therefore, on local meetings, workshops, and forums, to develop the capacity of professional fishermen, local, municipal, and federal governmental institutions, and other stakeholders in natural resources to engage in participative management, in six municipalities in northern Minas Gerais: Três Marias, São Gonçalo do Abaeté, Pirapora, Buritizeiro, Várzea da Palma, and Ibiaí. The professional artisanal fishermen who live in the urban and rural areas of these municipalities are presently organized in four Colônias (Fishers Unions). Approximately 450 families took part in the study.

According to Berkes et al. (2001), several levels of community participation in processes are all termed co-management around the world: from the simple provision of information and communication to stakeholders that is often done by government

regulatory agencies, to total community self-management of natural resources in which all the steps, from the devising of regulations governing access to and use of the resources, enforcement, monitoring, assessment, and application of sanctions, are carried out by the communities, which is often known as community-based management.

Berkes et al. (2001) also presented what they considered to be the ideal definition of a co-management process: “a process of resource management, dynamic over time, involving aspects of democratization, social empowerment, equality of power, and decentralization”. In this project, co-management is understood as the process of dividing responsibility, duty, and authority between the government and the users in the management of natural resources. It means to share decision-making power between the government and local institutions and the different categories of users of the natural resources.

The methodology applied to develop fishery co-management in this context was the exploratory and participative introduction of a set of activities for community capacity building, culminating in “Fisheries Accords” in the mould of the criteria established by IBAMA (Legal article no. 29). Simultaneous research was proposed to characterize the population of the area of interest, focussed on gender, race/skin colour, and other indicators of social inequity (described more fully in a separate publication). Fifteen workshops were delivered: Community Statistics Census – CEC; Sensitizing and Training for Participatory Management; First Workshop for Community Reporters; Regional Fisheries Forum ; Audiovisual reporting; Devolution of Results to the community; Review and Evaluation of the Project Rumos; Second Workshop for Community Reporters; powerful Communication and Community Leadership; Workshop for organization of São Francisco Fishery Work Group - GTPESCA.

Community empowerment, favorable conditions for a new institutional arrangement that permits a decentralization of governance of fisheries management, and the insertion of practices and local ecological knowledge for more sustainable use are the desired results of this work. Examples of indicators of such results:

- Unification of the fisheries closures by IEF and IBAMA, a direct result of the 1<sup>st</sup> Regional Forum on Fisheries in Três Marias (June, 2004).
- Creation of legal instruments for participative management at the state level – “Decreto de Lei Estadual 43.713/2004”.
- Creation of the Ibiaí and Buritizeiro Colônias – these were organized during the project from pre-existing associations. The motivation to graduate themselves to Colônias was not a result of the project, but the decision to do so was assisted by

information on syndicate rights presented in the 1<sup>st</sup> Leadership Workshop in April of 2004.

- Greater closeness amongst members of the fishing class – “we are more united” – and opportunities for exchange of experiences in various activities, allowing for equal learning amongst them.
- Appearance of new leadership through the training, primarily of women. Three of the four Colônias of fishermen have women in their new directorships.
- Approximation of the different stakeholders and the artesanal professional fishing class of the São Francisco river, after the 1st Regional Fisheries Forum, for joint discussion of means to resolve conflicts related to the use of natural resources common to these different users, including governmental institutions, state companies, private companies, small and medium-sized land owners, schools, universities, etc.
- Organization of the Fisheries Working Group (GTPesca) of the São Francisco in November of 2005 with the objective of being a privileged space for inter-institutional discussion and formation of new arrangements that facilitate a shared management of the natural resources. However, after nine meetings until the end of 2009, the governmental participation in this group is still fragile and needs to be strengthened through increased sensitivity of the importance of the community participation in management e technical training on the co-management of fisheries resources.

These opportunities valued by or created by the activities of this experience are fundamental for the progress of a participative management of the natural resources of the region, but there are still great challenges to be overcome, as the lack of engagement by governmental technicians and representatives in the effective construction of participative management and the unjust policing of the use of natural resources by the policing agents, with much greater focus on the artesanal fishery than on other environmental crimes committed by industrial activities (mining and steel factories), agriculture, and local public administration with respect to garbage and sewage. Nevertheless, considerable progress has been made in the strengthening of the community organizations and their expression and improved relationships between the fishermen and the state representatives – whose relationship earlier was overt conflict and now is still conflicting but includes greater mutual respect. Greater development is still needed of autonomous instruments for community participation and representation that guarantee greater legitimacy of joint decisions taken with the state and thus permitting adhesion of the users to the new regulations of fisheries resource management that were

developed during the process of co-management. Finally, the process of re-organizing the Colônias and the disposition of the government organs to exercise fisheries management through co-management point out the possibility of adaptive changes within the current economic, ecological, and social context of the artesanal fishery of Sao Francisco River. However, the guarantee for sustainability of the natural resources and the fishery activity in the region depends directly on the inclusion and engagement by all users and the state in the resolution of conflicts and challenges, both during the execution of projects of action research and during the time in office of political groups in government institutions and in the representation for local communities.

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#### References

- BERKES, F., MAHON, R., MCCONNEY, P., POLLNAC, R. AND POMERO, R. 2001. Managing Small-scale Fisheries. Alternative Directions and Methods. Ed. IDRC, Ottawa, CA.
- HARDIN, G. 1968. The tragedy of the commons. *Science* 162: 1243-1248.
- HOLLING C. S. e MEFFE, G. K. 1996. Command and Control and the Pathology of Natural Resource Management. *Conservation Biology*, Vol. 10, No. 2: 328.
- POMEROY, R.S., KATON, B.M. & HARKES, I. 1998. Fisheries co-management: Key conditions and principles drawn from Asian experiences. Presented at The Seventh Biannual Conference of the International Association for the Study of Common Property, "Crossing Boundaries". Vancouver, June 10-14.
- JENTOFT, S. 2000. The community: a missing link of fisheries management. *Marine Policy*, 24, 53-59.
- LUDWIG, D. 2001. The era of management is over. *Ecosystems* (2001) 4: 758-764.
- OSTROM, E. GARDNER, R., E WALKER, J.M. 1994. Rules, Games and Common-Pool Resources. University of Michigan Press, Ann Arbor.
- SEIXAS, C. & BERKES, F. 2003. Dynamics of social-ecological changes in a lagoon fishery in southern Brazil. In "Navigating social-ecological systems: Building resilience for complexity and change. Ed. Berkes, F., Colding, J. & Folke, C.

Cambridge University Press. pp. 271-296.

THIOLLENT, M. 1985. Metodologia da Pesquisa Ação. São Paulo; Ed. Cortez.

THÉ, A.P.G. 1999. Etnoecologia e Produção Pesqueira na Represa de Tres Marias, MG. Dissertação de Mestrado, PPG-ERN, UFSCar, São Carlos, SP.

THÉ, A.P.G. 2003. “Conhecimento Ecológico, Regras de Uso e Manejo Local dos Recursos Naturais na Pesca do Alto-Médio São Francisco, MG”. Tese de Doutorado, PPG-ERN, UFSCar, São Carlos, SP.