TRIP REPORT

PROJECT MANAGEMENT AND TECHNICAL MISSION

Brazil, Jan 7th – March 3rd, 2004

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Summary - Trip Agenda

Jan 7 – 8: Trip Victoria – São Carlos

Jan 9 – 11: Organize for meetings, Iguassu trip and IARA visit

Jan 12: Meeting UFSCar

Jan 13: Meeting Rio Claro (Petrere) and trip to Iguassu

Jan. 14 – 22: Iguassu radiotelemetry study

Jan. 23: Meeting CEMIG

Jan. 24: Travel Três Marias

Jan. 24 – 27: Petrobras project proposal

Jan 28 – 31: Preparation and realization of Três Marias community meeting

Feb. 1: Community meeting Pontal do Abaete

Feb. 2: Meeting wrap-up and review

Feb. 3: Meeting CODEVASF – proposal for colony seat; travel Pirapora

Feb. 4: Community meetings Barra do Guiaiciu and Itaijai

Feb. 5: Community meeting Pirapora; review session UFSCar and IARA

Feb. 6: Meeting in Belo Horizonte at IBAMA

Feb. 7 & 8: Report and proposal development, Belo Horizonte

Feb. 9: Investigate refrigeration suppliers

Feb. 10: Import requirements for radiotelemetry materials; meeting Centro Nuclear (UFMG); return Três Marias; compare published decreto with proposed revision

Feb. 11 – 13: Work on decreto and proposals for Colônia seat and processing plant (CODEVASF) and forage fish enhancement (SEAP); review IDRC project results with team & continue surveys.

Feb. 14: Meeting with Raimunda in Felixlandia (Federation lawyer); project planning meeting at SEMEIA

Feb. 15 – 18: Assist in UFSCar surveys; investigate fish mortality at dam; arrange Itaipú wrap-up; work on proposals; discuss CAP revitalization

Feb. 19: UFSCar team finished

Feb. 20: Meeting IBAMA, Belo Horizonte

Feb. 21 – 25: CODEVASF proposal development, Três Marias; negotiation for decreto resolution

Feb. 26: Return Belo Horizonte and travel to Funil

Feb. 27 – 28: Visit Funil hydroplant, displaced communities and fishery project

Feb. 29: Mussel research system for CETEC

Mar. 1:CEMIG meeting on Funil; Secretario de Meio Ambiente (José Carlos) -meeting on Fishing Decree

Mar. 2 – 3: Return to Canada

Contextual Summary of Trip Results

Itaipu – radiotelemetry

The Itaipu fish by-pass canal is currently the world's largest fish by-pass structure of any kind, and over 10x the size of any other existing or planned "natural" fish by-pass. Such by-passes generally emulate natural river conditions to various degrees in a structure that directs fish around a dam, and are likely to be the least selective by-pass option for highly diverse fish fauna, such as that of Brazil. The Itaipu canal is actually a mixture of structures, ranging from natural river habitats to broad, rock-clad artificial canals with concrete baffles, to concrete flumes, and includes a number of resting ponds and lakes. Flow conditions can largely be regulated as needed, and most of the canal is readily accessible, so the structure is not only an ambitious and high-profile experiment with fish pass options, it is also an exceptional outdoor laboratory for studying migratory fish behaviour and their potential for by-passing obstacles. This characterisation and monitoring work also still has good corporate support from Itaipu Binacional, though it is clear that this window of opportunity could be short, if studies are not well done and results are too long in coming. On the other hand, if early results are of high quality, they will contribute considerably to the knowledge of tropical fish migration and appropriate by-pass structures, as well as open the door to world-class collaborative research with good corporate support.

Our involvement in the Itaipu fish by-pass channel has come out of earlier WFT collaborations with Itaipu and Nupelia (one of the principal research institutions involved in canal monitoring) on a variety of issues, a radiotelemetry workshop WFT held with LGL in 1999, and the Projeto Peixes Pessoas e Agua's conference session on fish passes in January of 2003. The opportunity for us evolved as it became clear that Itaipu's own telemetry equipment and research funding was delayed to the point where results from the critical first spawning season (2003-4) would be lost.

The Itaipu situation presented our project with these opportunities:

1) To contribute to the structuring of leading-edge research applicable to fish migration and fish passes throughout Brazil in a manner that showcases Canadian expertise and equipment;

2) Access to an exceptional research and training facility;

3) Provision of leverage for corporate support throughout Brazil for other aspects of our project – including the social agenda (Itaipu Binacional is very influential on both the corporate and political stages in Brazil);

4) Building of institutional partnerships and networks for radiotelemetry and migratory fish research, but also for work on fisheries management, aquaculture, invasive species, and environmental remediation applicable to our work in the São Francisco River.

5) Promotion of participatory research with fishermen for the São Francisco River in an institutionally neutral situation.

Considerable time was spent pre-trip in designing the Itaipu training exercise to maximize the returns on all of these opportunities. As a result, we managed to set up the radiotelemetry monitoring stations in record time, but still in a manner that afforded exceptional hands-on training for participants, good exchanges of experiences, and productive networking. This, in turn, led to good meetings with Itaipu management, positive press coverage, subsequent continuing good institutional support of the monitoring work in the canal, and promises of support for other aspects of the CIDA project in whatever manner that is needed.

Participants included researchers from Itaipu Binacional, Nupelia, and UFMG, students from a local agricultural college, a fisherman from Três Marias, and other staff of Itaipu.

Unfortunately, the spawning season was largely over by the time of our work, limiting the kinds of research that could be done relative to the original plan. Some alternate Canadian-built economical equipment that we planned to test in the work also was not ready in time for the study, also compromising the data produced, and an evaluation of the cost of the work of the project resulted in elimination of some aspects. Nevertheless, a refined monitoring and research plan and related PhD thesis were designed for the canal during the study, the results are adequate for a short scientific paper, and the experience contributed to the design of research both in the Uruguai River in Santa Catarina and the Rios Grande and São Francisco in Minas Gerais. Some spin-off contracts for LGL and sales of Canadian-built equipment were also stimulated (see reports by participants and LGL).

Participatory research with fishermen, particularly on technical projects, carries great promise as a tool to engage fishermen in co-management and to build bridges between communities and scientists that can contribute to the technical base of this management. While initial steps were taken in the Itaipu work towards fostering participatory radiotelemetry research on the São Francisco involving fishermen, barriers in communication, receptivity, and expertise were evident, even in the absence of the key researchers from the São Francisco, that need to be worked on. However, the lack of the more economical radiotelemetry equipment suitable for this application, the reduced commitment by our project to radiotelemetry, and lack of time for me to work on the required communication barriers (an activity best done in person) all suggest that this is an area of the project that may not go further without a revised strategy.

Nevertheless, the work has so far been the basis of a number of reports, a scientific paper, several newspaper articles and a story on the Vancouver Aquarium's Aquanet (see other reports) and will no doubt be seminal in the instigation of future high-quality studies of this kind.

Management structure of project

Considerable on-going discussions and meetings were held on management issues with UFSCar partners (Inês, Ana Thé, and others), Barbara and Raimundo, as well as informal discussions with Arley, Hugo, and Vasco. In general, partners are clearly building ownership of the project - UFSCar particularly so through the activities of the IDRC project.

Issues discussed at meetings included:

- Updating of partnership arrangements with institutions listed in the proposal;
- Strategies to engage IEF and IBAMA more in project, maybe including a more formal approach;
- Requirement to map out conflicts and political structure of project;

- Requirement to better characterize sport fishing groups;
- Structure of Consultative Council;
- Interest in filming IDRC project activities;
- Timing for co-management and stock assessment workshops (August preferred);
- Agreement with strategy to develop lateral projects;
- Requirement for local adaptation of co-management strategies;
- Need to look at all aspects and potential applications of education and awareness programs;
- Role of CAP in project.

IARA - UFSCar project

I assisted and observed the initial activities of the IDRC-funded co-lateral project to assist in the initiation of co-management practices. While there were some start-up problems, including some friction between personalities of the project team, the activity was very promising in terms of participation and interest by fishing families (see separate report). In particular, the house-to-house surveys conducted by UFSCar and the employment of local youth from fishing families to assist in the surveys appeared to provide exceptional interest in the project. The challenge will be to fulfill the expectations raised by these activities.

Fishing Decreto revision

The fishing decreto discussed and revised by the fishermen in a project-assisted meeting in August of 2003 was published in early January of 2004. Unfortunately, the key element of the use of nets by professional fishermen (as well as some other aspects) was changed in the published version – relative to the version revised by the fishermen. This was not properly recognised until early February, shortly before the end of the closed fishing season. Nevertheless, we managed, with the assistance of the Military Police, to have a Portaria published at the last minute that permitted the use of nets, and I accompanied Raimundo, Manuel, and Votim (of the Federation and Três Marias fishing colony), Raimunda (the Federation's lawyer), and Barbara in the evolution of a strategy to lobby the state's Environment Minister to revoke the published decreto. This was accomplished in a meeting on May 3rd, initiated by Barbara, with the participation of a variety of both state and federal MLAs, municipal councillors, the Secretary of Human Rights, the Fishing Federation, Três Marias, Pirapora, and Formiga Colony representation, Barbara, and Arley (Military Police), together with the head of the IEF (Humberto Cavalcanti) and the Secretary of the Environment (Jose Carlos).

At the meeting, Jose Carlos promised a review of the published decreto and a return to the version agreed to with the fishermen earlier. However, he also alerted us to the existence of other lobby groups that may have an effect on the outcome of this process.

Raimundo and Raimunda propose to wait a short period of time for the promised revision, but also to plan a legal challenge of the published decreto within the permitted time period (180 days

after publication). Arley promised to pursue the appropriate revision of the decreto as much as possible.

Institution Building and Proposals

While community interest and participation in the co-management initiative of the IDRC project is great and has contributed to the institutional strengthening of the UFSCar team, it has not yet spilled over into other areas of the CIDA project. The role and/or capacity of the community partners in the project has also not been well clarified, particularly as the planned Brazilian counterpart funding of supporting activities relies on the promised money of the MMA (which has not materialised). I thus assisted both the Municipal Secretariat of Environment (SEMEIA) and the Fishing Federation in the preparation of proposals for work in the areas of environmental remediation, value-added processing of fisheries products and aquaculture of native fish - all with a focus on community participation and participative research and meant to contribute to institution building through their formulation. While the activity appears to have contributed to institutional strengthening particularly for SEMEIA, unfortunately I was not able to finish the proposals being prepared with the Fishing Association during my stay, and the window of opportunity for their submission was lost.

This is an area that profits greatly from a long-term presence in the community, something that is not adequately addressed by the current structure of the project implementation. As it appears to be an area of particular interest and need, we should see how this can be better addressed.

CEMIG: Invasive Mussels, Fish mortality, Community development and New contact

Invasive mussels

Activities during my trip in 2003 contributed to the revision of industry and governmental policy and strategies with regards to invasive mussels. Maria Edith, of CEMIG, has since managed to pursue the issue aggressively - including continuing interaction with our Canadian consultant (Renata Claudi). A joint government-industry committee has been set up with Maria Edith's participation, to address the question. She is now presenting courses through this committee on slowing the spread of the golden mussel (a key question in terms of avoiding the mussel's entry into the Sao Francisco watershed) and getting Renata's book on mussel control translated into Portuguese. She will participate in the next aquatic invasive species conference in Ireland to report on her work.

Research capacity for work on invasive mussels has also been stimulated by the CIDA project and continues to have spin-offs. We funded the participation of EMPRAPA's Pantanal office's participation in the Aquatic Invasive Species Conference when it was in Canada (2003), and Renata reviewed CETEC's research program in Belo Horizonte while she was there (CETEC has been contracted by CEMIG to carry out mussel research). We stimulated a partnership between these two entities, which has since received funding to investigate factors that regulate the spread of the mussels. On the current trip, I set up a trial re-circulating research aquarium system for CETEC to facilitate mussel research (designed during the previous trip). The CETEC researchers requested support for participation in the coming Invasive Species Conference in Ireland. We decided to reject the request, as it consists of travel outside of the Canada-Brazil axis and as mussels are probably not as high a priority anymore for direct project investment.

Fish mortalities

I made several visits to CEMIG to continue to foster their relationship with the project. This relationship continues to profit from the investment we made in the mussel question, though some questions that we had made some progress on earlier – such as the security zone below the dam at Três Marias – have clearly hit a snag. We had some discussions on a more open treatment of investigations of fish mortalities when they occur at dams, with fisherman's participation (such a mortality occurred at Três Marias while I was there), and participated in the investigation of a major fish mortality at the Funil dam – including contributing to a plan for mitigative measures and review of a fish pass of the elevator type that is installed at this location.

Community development

I was also afforded the opportunity to visit and study the relocation project associated with the Funil dam. The project included the formation of a fisherman's cooperative, fishing equipment, a processing plant, and marketing facilities. The president of the fisherman's association that negotiated these terms is very approachable and keen to collaborate with any needs of our project. The person who helped design and set up the cooperative is also very keen to collaborate, and comes highly recommended by everyone, but would need to get paid. At the time of my visit, the equipment had just all been purchased, and the fishermen were preparing for their first fishing season. Prior to the dam, the Funil rapids were the site of a very productive, though illegal, fishery (similar to the fishery in the Buritizeiro rapids). These fishermen are now in the newly formed association and cooperative. I received a copy of the architectural plan for the processing plant, and Thiago Torquato (architect in Belo Horizonte) is currently working on modifying it for potential application in Três Marias and other locations.

Other components of the resettlement project were also explained and evaluated during the visit. Three communities were relocated or impacted by the reservoir and included in the project. All three involved components of new housing, community services, incentives and infrastructure for livelihoods, and a component to foster tourism. Livelihood options to be developed and other components of the project were decided on in a "participatory" fashion, but clearly still were controversial and have so far led to differential success in the different communities. Important components of the process that I noticed:

1) Success (considered as satisfaction amongst community members and active livelihoods) was highly dependent on the presence of a project person in the community – someone from outside that spent a lot of time in the community, developed respect and confidence, and was perceived by community members as a useful confidant and a fair but effective representative of the community interests in the industry boardroom. The best of these was a psychologist by training, who spent 3-4 days of every week in the target community. In the more successful communities, this position is gradually being reduced;

2) The least effective resettlement was of people that had previously lived in rural environments along the riverbanks. These were re-settled in new, more urban housing, but are not adapting very well to the new livestyle. It is clear that the value of personal space, free fuel, a backyard garden, and (often) free electricity from the farmer had been under-assessed. As examples, a controversy at the time of my visit was that propane for the new stoves was unaffordable, and people wanted to set up wood and charcoal barbecues – which were considered a fire hazard. Many families have also broken up in this community, and a drug problem is developing amongst the youth.

3) Training of women and some men to make bamboo-based and cotton artesanal products is starting to have some good marketing success, though only a few of the original co-op members are still active. Training and co-op structure were developed by a woman from Belo Horizonte, who has done the same with considerable success in other communities.

4) A cooperative for growing passion-fruit was set up in the one community, including land and infrastructure. The first crop was almost ready during my visit. The original co-op structure set up for this activity had broken down because of inter-personal conflicts, and the activity is now being pursued through smaller collaborative groups, each with their allocation of land.

5) The fisherman's cooperative and association appear to be quite stable so far, including many concepts of co-management, participation, and environmental stewardship. Reasons appear to include the fairly small size of the group, strong leadership, and a focus on technical elements as a conduit to resolve social questions.

Lessons pertinent to our project, I think, are that:

6) an "impartial" person from the project at least partially resident in the community is invaluable for a social project's implementation,

7) existing social structures are prime determinants on the success of project of social change – the best success comes from good assessment of these structures and builds on them; and

8) hard technology is very valuable as a tool to implement social change (perhaps primarily for men?).

New contact

Vasco Torquato, our prime contact in CEMIG, is likely to retire in the near future. He has proposed Newton Jose Schmidt Prado as our new prime contact, and I spent some time with him. He has recently moved into CEMIG headquarters from southern Minas. A particular interest and expertise of his is vegetation of the draw-down zone, also an issue raised in Três Marias as a way to increase fish productivity in the fish reservoir. Newton appears keen to collaborate with our project, but it remains to be seen if he has the same level of commitment that Vasco had.

Acknowledgements

As in all of my trips, activities in Três Marias and environs received full logistic support of SEMEIA, the Três Marias city hall, the Fishing Federation, and the Fishing Colonia. Activities elsewhere were supported by CEMIG, UFSCar, and Itaipu Binacional. LGL also contributed substantial in-kind services and materials to the radiotelemetry work. Many people contributed unselfishly of their personal time.