

TRIP REPORT

PIRACEMA CANAL TECHNICAL VISIT

Itaipu Dam, Brazil, January 14th – 19th, 2004

Luiz da Silva
UFMG

Translation: Cathy Carolsfeld

**FEDERAL UNIVERSITY OF MINAS GERAIS
INSTITUTE OF BIOLOGICAL SCIENCES
CENTER FOR FISH PASSAGES**

Report on Activities on the “Piracema Canal” – Itaipu

Luiz Gustavo Martins da Silva, Biologist

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PRESENTATION

This report describes radiotelemetry activities carried out in the “Evaluation of Fish Migration” Project on the “Piracema Canal” of Itaipu’s dam. These activities took place from January 14 - 19, 2004, at the Itaipu dam in Foz do Iguaçu – PR, in partnership with technicians from WFT, LGL, UEM and Itaipu-Binacional.

ACTIVITIES

The activities described below were developed in cooperation with responsible parties from the institutions involved within the objectives outlined by the project.

1) Prior installation of fixed tagging stations along the length of the canal

Three fixed tagging stations were installed along the length of the Piracema Canal. These stations have the capacity to record uninterrupted data, 24 hours a day. The equipment used in the fixed stations consists of Lotek SRX_400 receptors; two 3-element Yagi antennae; antennae cables; batteries as an energy source for the receptors; and switch boxes for the antennae.

I helped installation of the stations by mounting the antennae and the structures used to fix them in place. In addition, I observed the configuration of receptors used to fit the technical design dictated by the work.

2) Capture of fish for tagging

The capture of fish used in this work was done by a professional fisherman, using different mesh-size cast nets. [Our] participation during the capture involved assisting the fisherman with collecting the fish from the cast net and carrying the captured fish to the *Transfish* transport tank. Once this was done, the fish were taken to Itaipu’s fish laboratory, where they were held in tanks for tagging at a later time.

3) Implantation of radiotransmitters in the fish

In order to implant radiotransmitters, two different techniques were used: surgical and gastric implantation. For surgical implantation two different methods were used to immobilize the fish: anaesthetic and electronarcosis.

I demonstrated the use of electronarcosis to perform surgery on the fish. We used 60V for approximately five minutes to immobilize the armado (*Peterodoras granulosus*), [followed by] 40V throughout the entire surgical procedure. The fish with scales that were tagged were immobilized with 30V and 18-20V during surgery.

Besides this, training was provided in the utilization of anaesthetics for surgery and the implantation of intra-gastric transmitters. The anaesthetic used was clove oil, in a dilution of one ml per 40 L of water.

4) Manual tracking

Another activity carried out during this period was manual tracking of tagged fish along the Piracema Canal. This tracking was done by walking or driving along the margins of the canal with a Yagi 3 antenna and Lotek SRX_400 receptor.

VALUE AND APPLICATION OF TECHNIQUES

The activities carried out in Itaipu allowed me to exchange experiences with other people involved in work that uses radiotelemetry techniques, and this, without any doubt, allowed for the incorporation and sharing of this new information with our group at the Center for Fish Passages. The main points of this visit were:

1. The exchange of technical information with other groups involved in radiotelemetry work. In this regard, it was possible to discuss solutions to problems encountered during the execution of projects, as much by our group as the Nupelia group. [This was] particularly relevant with respect to the function of automated tagging stations and manual tracking.
2. Training in the use of new techniques for immobilization [of fish] and implantation of radiotransmitters in fish.
3. Becoming acquainted with programs used for the analysis of data obtained by the receptors at fixed tagging stations and analyzing how the receptor functions during the data collection period.
4. The opportunity to discuss results of our project with experts in radiotelemetry.

All of the new information and understanding/knowledge that we acquired through this opportunity was passed on to technicians involved in radiotelemetry work carried out by the Center for Fish Passages.

One practical example of the application of knowledge obtained during the activities that were developed in Itaipu, was the use of anaesthetics for surgery for fish tagging work I did in the field, in Rio Grande. Our electronarcosis equipment burned [out] and it was necessary to use anaesthetics in order to perform surgery. Without the training received in Itaipu, this probably would not have been possible.

SUGGESTIONS FOR FUTURE [WORK]

Within the framework of what was observed during this trip to Itaipu, we would suggest:

- Evaluate the possibility of training technicians at the Center for Fish Passages to use the LGL software for the analysis of data obtained from the projects both for work that is already being developed and that which will be initiated;
- Evaluate the possibility of providing technical visits from LGL technicians to the locations where radiotelemetry work is being developed by the Center for Fish Passages; and
- Provide periodic [opportunities for] exchange of information with research groups involved in radiotelemetry work.

Our group currently has three projects involving the use of radiotelemetry: 1) The study of Surubim and Curimba migration in the São Francisco River; 2) The study of migration of Curimba and Mandi-Amarelo in Rio Grande, between the Volta Grande and Igarapava reservoirs; and 3) The study of the behaviour of Jaú in the Funil Reservoir, in the Rio Grande. Besides these, we are in the process of implementing a study of Surubim and Curimba in the Jequitinhonha River in the region of Irapé hydroelectric utility.

By providing such opportunities to the technicians responsible for performing this work, it allows us to improve our techniques and the quality of our work, increasing confidence in the results obtained. In this way, we can demonstrate the efficiency of techniques to funding agencies and increase partnerships for work that allows the collection of information, especially on the migratory behaviour of fish species, which is practically non-existent for Brazilian ichthyofauna.