

South American Fish Passage Symposium

Brazil is a major source of hydroelectric power production. Around 85% of Brazil's installed electricity generating capacity is represented by hydroelectric power plants, and it is ranked fourth in the world in hydroelectric capacity (behind China, the United States, and Canada). Overall, Brazil's total installed electricity generating capacity has increased by about 50% in the past decade, and more large dams are under construction or in the planning stages.

These hydroelectric power plants are impacting riverine fishes. The South American fish fauna is the most diverse in the world, with at least 4,500 named species. It has been estimated that 15 to 20% of these species are migratory, and many support important fisheries due to their larger size and abundance. Fish stocks have declined in many South American rivers, in part due to failure of recruitment owing to the interruption of migration by hydroelectric dams.

In order to assess the state of knowledge about fish passage at hydroelectric projects, the International Symposium on Fish Passages in South America was held at the Federal University of Lavras, between July 30 and August 3, 2007 (<http://www.eventos.ufla.br/fishpassages/>). This event was attended by more of 160 persons representing 10 Brazilian states and 7 other countries (Argentina, Chile, France, Italy, Germany, Canada and the United States). Among the Brazilians, there were researchers associated with 15 universities, representatives of nine electric power industry companies, ten consulting companies, and state and federal environmental protection agencies. Glenn Cada was invited to give a keynote address on his research related to the turbine passage survival of downstream-migrating fish and possible mitigative measures.

From this event, 18 presentations were selected for publication in a special volume of the journal *Neotropical Ichthyology* (<http://www.ufrgs.br/ni/contents5-2.htm>). At the conclusion of the symposium, a number of recommendations were made related to the studies needed to preserve migratory fish and the construction and monitoring of fish passage devices at South American dams. Among the many recommendations are an urgent need for baseline biological studies prior to the construction of dams; determination of the critical habitats for each life stage of the various species and the effects of fragmentation of those habitats by dams and impoundments; long-term monitoring to assess the efficacy of fish passage and its relative benefits to biological communities both upstream and downstream of dams; development of technologies for passing bottom-dwelling fish, including large catfish; assessment of passage needs of so-called "non-migratory" fish; development and implementation of downstream passage technologies for eggs, larvae, juveniles, and adults; and a better understanding and characterization of the fish genetics consequences of various management options.