

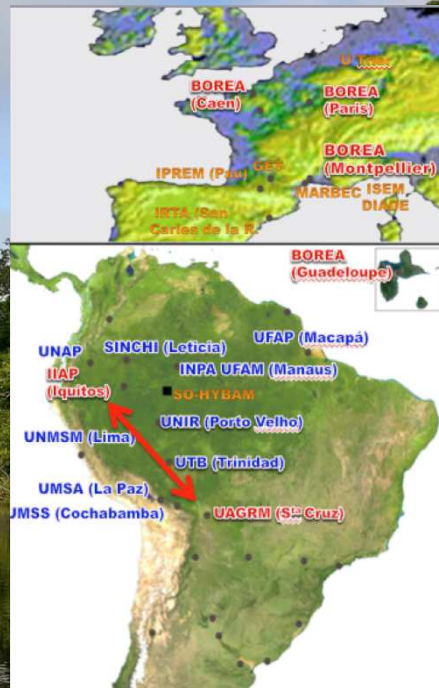
EDIA

Evolution and Domestication of the Amazonian Ichthyofauna

Founding Partners

IIAP, Instituto de Investigaciones de la Amazonia Peruana, Pérou

UAGRM, Universidad Autónoma Gabriel René Moreno, Bolivie



Map: in red, the three institutions (IIAP, UAGRM, BOREA) partners of the LMI EDIA in its second phase (2016- 2020); in blue, main external collaborators of the LMI and members of the RIIA network; and in orange, others essential collaborations. The double red arrow shows the South-South alliance within the LMI EDIA.

UMR BOREA, IRD, French National Research Institute for Sustainable Development, France

Formation

The LMI-EDIA participates to the development of the Master in: "Biological basis for sustainable fisheries and aquaculture" from the UAGRM (Santa Cruz, Bolivia). The LMI-EDIA is involved, through the UMR-BOREA, in supervising students from the Doctoral school MNHN/UPMC ED 227 "Sciences de la nature et de l'homme: Evolution et écologie" (Paris-France).

LMI's Co- Directors

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The International Mixed Laboratory-EDIA is committed to studying the Evolution and the Domestication of the Amazonian Ichthyofauna.

The **core partnership** of the LMI EDIA is now centered on a **North-South-South cooperation axis** between the **IIAP in Peru**, the **UAGRM in Bolivia**, and the **IRD - UMR BOREA in France** (www.borea.mnhn.fr). The LMI-EDIA also participates to the **RIIA network** activities, which foster multiple collaborations in all the scientific areas required for the development of the LMI's research axis.



The **main applied outcomes** of the LMI-EDIA will be **the prediction of global change effects on fish species and communities** at the scale of the hydrographical sub-basin (loss of richness and functionality, genetic erosion) and the elaboration of the biological basis **for sustainable fisheries management and aquaculture development.**



Objectives of the LMI-EDIA:

- 1) a better understanding of the evolutionary (speciation, dispersal, extinction, and adaptation) and ecological (life history traits, environmental variations) processes involved in the exceptional diversity of Amazonian fish species
- 2) to provide the biological basis for improving fisheries management and conservation
- 3) to contribute to sustainable aquaculture development of native fish species
- 4) to develop a predictive approach about the impacts of global changes (natural and anthropogenic causes) on the diversity of Amazonian fish species

Using an approach of integrative biology, **the scientific project** develops a synergy between **three research axis:**

- AXIS 1:** Past, present and future dynamic of biodiversity
- AXIS 2:** Variability of life history strategies between species and their populations
- AXIS 3:** Biological basis and socio-economical approach for a sustainable aquaculture

EDIA's scientific actions for the period between 2016 - 2020

✦ Improving the comprehension of evolutionary and ecological processes (speciation, dispersal, extinction and life history strategies) of Amazonian fish diversity

✦ Study of colonization dynamics and adaptive capabilities to adapt to new habitats in invasive species: *Arapaima gigas* (paiche) as a model

✦ Influence of the environmental variations and perturbations on the recruitment of fish early life history stages (larvae and juveniles) : the metabarcoding approach (NGS)

✦ Understanding the reproductive mechanisms in the paiche, *Arapaima gigas*, and its African sister species *Heterotis niloticus*

✦ Replacement of fishmeal by local alternative protein sources

✦ Mastering the life cycle of the doncella, *Pseudoplatystoma punctifer*, in a recirculation circuit with the finality to increase the number of reproductions per season

✦ Effects of the allopatric fragmentation during the Holocene on speciation using *Apistogramma* as a biological model

✦ Effects of anthropogenic impacts such as hydroelectric dams, on life history strategies of highly migratory species (*Brachyplatystoma*) and species using the floodplain (*Arapaima*)

✦ Interdisciplinary study of population genetics, life history strategies and the biological basis for the aquaculture of an omnivorous species, the mota / blanquillo, *Calophysus macropterus*



✦ Digestive physiology and nutritional necessities of the LMI's flag species in aquaculture: *Pseudoplatystoma punctifer*, *Osteoglossum bicirrhosum*, *Arapaima gigas*, *Calophysus macropterus* y *Colossoma macropomum*

✦ Test of the adaptive capacities of fish in face of environmental changes (temperature, oxygen, etc.)

✦ Socio-economic analysis of the aquaculture sector of Peru and Bolivia

