AR/05

# COBAFISH

## Congo Basin: From Carbon to Fishes

DURATION OF THE PROJECT
01/12/2010 – 01/09/2015

BUDGET
460.812 €

KEYWORDS
Congo River, ecosystem functioning, biogeochemistry, biodiversity, food web

### CONTEXT

The COBAFISH proposal concerns oriented basic research and addresses several priorities of the “Africa and African Heritage” research axis of Call for proposals 6 of “Science for a Sustainable Development” (SSD) Research programme: ‘a better understanding and appreciation of the natural heritage of tropical Africa (Central Africa in particular), with a view to the preservation and sustainable use of resources.’
This project proposes to study the ecosystem functioning in the Congo River, the worlds' second tropical river in terms of drainage area and water discharge. The project will not only provide the first comprehensive and interdisciplinary dataset on the aquatic biogeochemistry and ecology for any part of this aquatic ecosystem, it will also provide important data to address the underlying fundamental ecological questions needed for the management of the main goods and services provided by the River.

### PROJECT DESCRIPTION

#### Objectives

The COBAFISH project proposes a study of biodiversity and ecosystem dynamics of the Congo River basin and its tributaries based on a multidisciplinary approach gathering past and new relevant data series from biology, ecology and biogeochemistry. The project aims at resulting in a better understanding of interactions between (botanical and zoological) biodiversity and the functioning of the Congo River ecosystem, which are the basis for future studies on ecosystem services in the context of environmental and climate change. The results of this proposal will yield valuable baseline data that will enable future studies on the impact of human-induced changes (including climate changes) on loss of biodiversity. Finally, the proposal explicitly builds on local scientific expertise to carry out the proposed research project.

#### Methodology

We will study two catchments of the Congo River: (1) The Lubilu, which is covered by primary tropical humid forests, and represents a near-pristine condition, and that will serve as a reference baseline for comparison with (2) the Lower Lomami that is characterized by a distinct set of land-use patterns and vegetation, which enable stream water characteristics to be linked to features of the surrounding land. Contrasting conditions between the Lubilu and Lomami basins (and between Lomami sub-catchments) will offer us the opportunity to generate a unique dataset with a large range of biogeochemical, physico-chemical and ecological conditions allowing to test conceptual models of tropical river functioning and to answer the project key questions. We will also exploit the historical fish database for the Lubilu river and the more recent data on the Lomami river during the Congo 2009 and 2010 expeditions. Supplementary data on biogeochemistry, hydrobiology and nutrient (including Si) cycles will be acquired in both basins during both seasonal campaigns and routine monitoring. Primary producers (algae), aquatic macrofauna and fish biodiversity will be investigated in several stations in (one of) these basins; gut contents and various isotopic trophic markers will be studied, including the origin of the organic matter fueling the upper levels of the food web.

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### INTERACTION BETWEEN THE DIFFERENT PARTNERS

All partners involved share an interest in African tropical water ecology and nature conservation. The included partners have complementary research areas covering the broad range of research aspects in this project. The data will be gathered jointly, what will facilitate the joint analysis (and interpretation) of the results obtained for the various work packages.

### EXPECTED RESULTS AND/OR PRODUCTS

All deliverables are built on a data-set that will be synthesized progressively at different levels (internal reporting, publications), disseminated at different levels (internal workshops, international symposia, publications), made public when published and contribute to data banks. Data and metadata will be made available through a data portal situated in the Congo Biodiversity Initiative website ( www.congobiodiv.org/en/) and will be made public as soon as published.
Combination of analyzed data and synthesis of the obtained results will be progressively achieved through annual reports, and published in international peer-reviewed journals.
The dissemination of results will be also achieved by presentations at annual workshops (within project, whenever possible with partners of the COBIMFO project in case of approval of funding) and at international symposia (wider scientific community).
All deliverables have the scientific community as the main audience. Some research topics, however, are equally relevant for other audiences such as local policy makers and decision makers, that will be reached through workshops in Kisangani.

### PARTNERS

#### Activities

*We distinguish two 'teams' with specific tasks:*

The “biogeochemistry" team will be coordinated by Steven Bouillon, and includes Alberto Borges, François Darchambeau, Luc André and Jean-Pierre Descy that will be responsible for the coordination of all activities related to performing limnological and aquatic ecology parameter measurements and analyses, including planning the sampling strategy with the “biodiversity” team.

The "biodiversity" team will be coordinated by Jos Snoeks, and include Koen Martens, Christine Cocquyt, Erik Verheyen and their respective collaborators. The role of this team is to organise the fieldwork, to valorize of available data from previous fieldtrips, plan the biological sampling strategy with the “biogeochemistry”, carry out the biodiversity monitoring activities and the transformation of these data needed by the "biogeochemistry" team (e.g. gut content analyses). Both teams will collaborate to jointly organise the field campaigns for carbon en biodiversity monitoring that are carried out by the scientific staff hired on the project and the Congolese partners that are included as sub-contracts.

### CONTACT INFORMATION

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#### Follow-up Committee

For the complete and most up-to-date composition of the Follow-up Committee, please consult our Federal Research Actions Database (FEDRA) by visiting http://www.belspo.be/fedra

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