IRBAS

INTERMITTENT RIVER BIODIVERSITY ANALYSIS AND SYNTHESIS

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CESAB
CENTRE DE SYNTHÈSE ET D'ANALYSE SUR LA BIODIVERSITÉ

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A large proportion of the global hydrological network is composed of intermittent rivers (IRs), which are rivers that regularly dry out and cease to flow. IRs are characterized by dynamic shifts between terrestrial and aquatic habitats over time and space*. These dynamic habitats generate a particular biodiversity that includes aquatic, amphibian and terrestrial species organized in meta-communities that are in constant re-organization. IRs also provide significant ecosystem services, such as the buffering of floods and the use of water for irrigation.

However, the abundance and distribution of IRs and the severity of the dry periods are currently strongly altered by climatic changes and increasing needs for water for human societies. In addition, many rivers that used to be permanent are progressively becoming intermittent. It is currently difficult to assess the ecological consequences and the responses of biological communities to these new trends. Historically, IRs have been poorly studied, and our knowledge concerning their biodiversity is fragmentary and sparse, while their management, preservation, and protection are often inadequate or nonexistent. The IRBAS project aims to better understand the functioning of the biological communities in these particular ecosystems and to predict their responses to the major changes that they are currently undergoing.

IRBAS gathers highly influential and knowledgeable scientists in IR ecology. Expected outcomes of the project pertain not only to advances in the basic knowledge of how biodiversity is organized in IRs, but also to the development of efficient tools for management of IRs.



CESAB'S ADVANCES

- CESAB will facilitate the sharing and standardization of primary data relating to IR biodiversity, and will link these data to those pertaining to hydrology and climate.
- CESAB bi-annual working sessions will allow us to explore and analyze in depth these databases, resulting in new knowledge about river ecology.
- IRBAS will make these databases more accessible, via GBIF and BioFresh's portals in particular.

STEPS

- Assembly of databases on IRs biodiversity in open access
- Large scale mapping of IRs around the world
- Analysis of hydrological and biodiversity trends of the IRs
- Development and testing of models of the relationships between dry downs, habitats and biodiversity
- Recommendations for the management of flow characteristics in IRs
- Diffusion of information to stakeholders and managers for the preservation and restoration of IRs.

Focus

*Intermittent Rivers (IRs): coupled terrestrial and aquatic ecosystems

In IRs, drying first leads to the fragmentation of the river channel into a succession of isolated pools. Surface water subsequently disappears completely leaving the entire riverbed dry. Hence, IRs constitute a mosaic of terrestrial and aquatic habitats whose composition, organization and connectivity constantly evolve depending on the variation in surface discharge and groundwater levels. Terrestrial, amphibian, and aquatic biological communities (i.e. arthropods, fishes, mammals, birds, plants) living there are in permanent reorganization. These multifaceted aspects of IRs make them exceptional ecosystems for conducting studies that combine approaches traditionally used in terrestrial and aquatic ecology. It also constitutes a real challenge for IR management, preservation and restoration because existing methods, indicators, and traditional tools usually pertain only to the aquatic facet of these complex systems.

FRB
FONDATION POUR LA RECHERCHE SUR LA BIODIVERSITÉ

The FRB was launched in 2008 at the initiative of the ministry of research and the ministry for the environment of France, and was founded by 8 public research institutions (BRGM, CIRAD, CNRS, IFREMER, INRA, IRD, IRSTEA, MNHN). The FRB is a science-society platform and it supports and promotes scientific projects and expertise on biodiversity.

The CESAB is a centre for the synthesis and analysis of biodiversity created and developed by the FRB to foster knowledge on biodiversity through data and theoretical synthesis activities. CESAB provides researchers with the means to conduct these activities in a dedicated place over sustained periods of time.

ONEMA
Office national de l'eau et des milieux aquatiques

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