



## APPEL À PROJETS CESAB 2011

### LISTE DES PROJETS RETENUS POUR FINANCEMENT PAR LA FRB (par ordre alphabétique)

#### **AfroBioDrivers : AFRICAN BIODIVERSITY DYNAMICS: interactions between ecological processes and conservation actions**

Porteur : H. FRITZ; UMR CNRS 5558 – LBBE - "Biométrie et Biologie évolutive", UCB Lyon 1

L'efficience des aires protégées est une préoccupation majeure en Afrique, continent qui accueille la plus grande diversité de grands mammifères sur la Terre. Des approches macroécologiques ont été utilisées pour documenter les patrons et les processus impliqués dans les variations spatiales et temporelles de leur biodiversité ; mais les données sont dispersées, et la plupart non publiées.

Ce projet vise d'abord l'Afrique francophone ; ses objectifs sont doubles. Tout d'abord, rassembler les données sur les populations de grands mammifères, afin d'améliorer leur disponibilité et interopérabilité, et les analyser afin de décrire les tendances (au niveau régional et l'échelle du continent). Deuxièmement, la combinaison de ces ensembles de données à long terme avec d'autres ensembles (climat, utilisation des terres...) permettra d'identifier les principaux facteurs de changement, écologique et en termes d'activités humaines. Une attention particulière sera accordée à l'intégration des facteurs de confondants. La rigueur statistique est au cœur de ce projet, qui vise à expliquer le succès de certains secteurs, et éventuellement les processus les plus susceptibles d'être affectés par les changements de la biodiversité, et donc les services écosystémiques. Les méta-données seront disponibles pour la modélisation/scénarisation, pour d'autres recherches et pour les évaluations futures (UICN, GeoBon, IPBES etc.).

ecological processes and conservation actions

#### **ISLAND : Community Assembly on Remote Islands: Does the Equilibrium Theory Apply?**

Porteur : C. THEBAUD ; Laboratoire Evolution & Diversité Biologique, UMR 5174 CNRS-Université Paul Sabatier, Toulouse

The Equilibrium Theory of Island Biogeography has served as a cornerstone for ideas focusing on community assembly, playing a critical role in both fundamental and applied biodiversity research. Under this model, a positive relationship between an island's area and its species diversity arises from a dynamic balance between immigration and extinction. Recent studies suggest that speciation

may play a role analogous to immigration in adding species to communities. But, given the different time scales involved and the very different processes, it is unclear how and to what extent the analogy can be extended to the Equilibrium Theory or other theories, e.g. the Neutral Theory.

The ISLANDS group will bring together scientists who work on community dynamics focusing on different lineages of organisms and on different archipelagoes with scientists with interest in modeling relevant variables within such systems (nonequilibrium dynamics, diversification, geodynamics, trophic interactions,...). We aim to synthesize existing data on patterns of species accumulation in communities with such low immigration rates that niche-filling occurs mostly through adaptation and speciation (e.g. remote archipelagoes and mountaintops). We will then compare them with predictions from new biogeographic models, in order to provide key insights in understanding how communities build up over time.

**PELAGIC : Prioritizing ecologically significant and globally important areas for marine mammal conservation: synthesizing the best available knowledge to inform management and policy**

Porteur : David Kaplan ; IRD

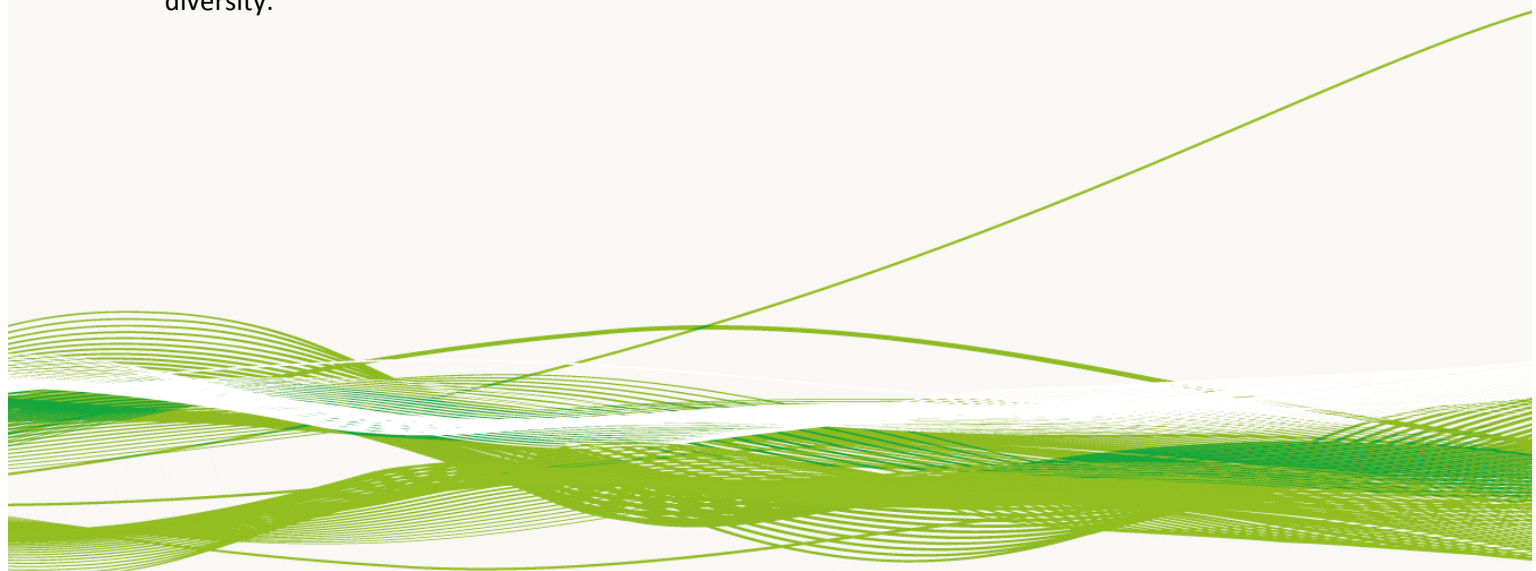
Co-porteur : Ana Rodrigues ; CNRS-CEFE, Montpellier

**FONDATION  
TOTAL**

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Despite their charismatic nature and key role in shaping ecosystems, marine mammals are still poorly known and at high risk of extinction: one in three species is considered “Data Deficient”, another third “Threatened”. With many species completing their life cycles across international boundaries and into areas beyond national jurisdiction, marine mammal conservation clearly requires a global vision. Global targets for the expansion of existing marine protected areas (e.g., creating a network covering 10% of sea area by 2020) offer a policy opportunity for the implementation of such vision, but this relies on the accurate identification of so-called Ecologically and Biologically Significant Areas for marine mammal conservation.

This project will synthesize data on species’ distribution, abundance, ecology, migration, threats and conservation efforts in order to propose a globally-coherent strategy for marine mammal conservation. It will do so by bringing together a network of leading experts in spatial conservation planning and in marine mammal monitoring and conservation. Particular emphasis will be given to synthesizing spatially-explicit data on species abundances (from different types of monitoring techniques such as line-transects, photo-id, acoustics, and satellite tags), and migratory movements, to inform the location of globally irreplaceable sites for the long-term persistence of marine mammal diversity.



## **LISTE DES PROJETS SUR LISTE COMPLEMENTAIRE (par ordre alphabétique)**

### **BIODIS : Disentangling the linkages between biodiversity and emerging infectious diseases**

Porteur: J.-F. GUEGAN; UMR MIVEGEC IRD-CNRS-Universités de Montpellier 1 et 2, Montpellier

75% of emerging diseases are zoonotic. Intuitively, the greatest number of zoonotic pathogens should exist in areas with greatest biodiversity; nevertheless, emergence frequently is associated with biodiversity loss, often anthropogenic in origin. Several hypotheses have been proposed, including the dilution effect hypothesis and selection for opportunistic species. Yet, much of the science remains theoretical and data available are spread among unrelated groups of investigators. The best chance for understanding the relationships between biodiversity and infectious diseases lies in multi-institutional and multidisciplinary collaboration.

We propose to bring together ecologists, public health scientists, veterinarians, modellers and parasitologists from four countries, working in different regions of the world. During face-to-face meetings and electronic communications, two major questions will be addressed: (1) the study of life-history characteristics that may confer to hosts better capacity to be "good vessels", and to parasites the capacity to cross species boundaries; and (2) the analysis of the role of biodiversity in emergence of infectious diseases in a spatial context, with the exploration of beta diversity on pathogen spread.

Deliverables include databases and disease modelling, reviews and exploratory articles, actionable public health policy information shared with health-protection agencies and medias, and training of young scientists in this emerging field of research.

### **LOLA\_BMS : How Local-scale processes build up the Large-scale response of Butterflies to global changes: Integrative analysis across Monitoring Schemes**

Porteur: R. Julliard, CRBPO MNHN, Paris

Butterflies are a key bioindicator of environmental status and changes. Butterfly Monitoring Schemes (BMS) provide an extensive data source on population trends and distributions in a growing number of countries. Analyses of BMS data have revealed dramatic changes in biodiversity, but have not considered relationships across spatial scales. Thus, the full potential of multiple BMS to identify trends and drivers of biodiversity change and predict future impacts at multiple scales has yet to be realised.

This project will scale up from local monitoring of butterflies to large scale assessments of patterns and drivers of change in biodiversity. To this end, we will assemble a broad consortium of experts and analyse extensive monitoring data from Europe, North America and Israel, coupled with newly available data on environmental drivers and species' traits. We will integrate local-scale (within-scheme) efforts for data collation and analysis by applying standardized workflows and novel analytical tools across programs. In doing so, we will overcome current barriers to data sharing and the technical challenges of combining multiple datasets. The project will boost the establishment and worldwide expansion of BMS, strengthen the network to facilitate future analyses, and ensure the effective dissemination of scientific knowledge to stakeholders.

