

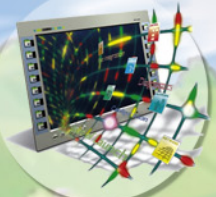
# A BIODIVERSITY PROFILE AT THE SCALE OF THE ILE-DE-FRANCE REGION, AS A COMPONENT OF THE MANAGEMENT OF RISKS FOR BIODIVERSITY AT THE EUROPEAN SCALE

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## MULTIMEDIA

Creation and maintenance of multimedia resources for biodiversity research, policy evaluation, performance monitoring and information sharing (including on-line interactive tools and the distribution of information and educational resources through the web).



## STEERING



## STATE OF THE ART

A record of the main sources of information and existing inventories of biodiversity in Ile-de-France and experiences of the exploitation of information by territorial actors. The analysis will be made of documents, and completed by interviews.

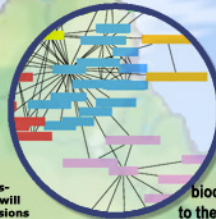
## DISSEMINATION

Dissemination activities targeted at all stakeholders including the public at large, aimed at sharing biodiversity information (e.g., making data, indicators and biodiversity collections available to the scientific community as well as to public and private partners) and at building capacities to work with and interpret information.



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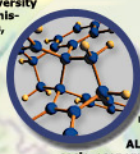


### Biological Invasions Module

The aim of this module is to develop and test comprehensive, systematic protocols to help preventing the introduction and spread of invasive species to European ecosystems. In several risk analyses, we will look at (i) the pathways of invasions (where do the species come from, how were they introduced and what is the importance of the pathways), (ii) the invasibility of European ecosystems, i. e. identifying habitat susceptibility thereby producing a European risk map, (iii) characteristics (traits) of successful invaders, (iv) environmental drivers of invasion related to climate, land cover and population density, and (v) the testing and integration of the elements named above where traditionally, these factors have been assessed separately.

### Environmental Chemicals Module

Methods to assess the influence of environmental chemicals on biodiversity will be tested for atmospheric emissions, surface runoff, rivers, lakes, and soil. By employing several modelling techniques, it will be possible to derive indicators from diversity change in natural communities and to develop European risk indicators to couple these results to large-scale environmental pressures.



### Socio-Economics Module

Socio-economic research has a dual purpose within ALARM. First, there are socio-economic partners within each of the previous modules. Second, within the respective natural science modules, socio-economic partners are responsible for providing relevant socio-economic information and for recasting the results of the natural science research to incorporate within their own analyses. Thus, the socio-economic team plays a crucial role in integrating the results and promoting cross-cutting research.



### Pollinator Loss Module

The objectives for the Pollinator Module are to (i) quantify distribution shifts in key pollinator groups across Europe, (ii) measure the biodiversity and economic risks associated with the loss of pollination services in agricultural and natural systems through the development of standardised tools and protocols, (iii) determine the relative individual and combined importance of drivers of pollinator loss (land use, climate change, environmental chemicals, invasives and socio-economic factors) and (iv) to develop predictive models for pollinator loss and consequent risks.



### Climate Change Module

The climate change module covers the effects not only of shifts in temperature and precipitation patterns (means, variability and seasonality), but also of land use changes and nitrogen deposition. Within this module there are three working groups: (i) scenarios, (ii) biodiversity and (iii) ecosystems. The impact on biodiversity will be analysed by tracing fingerprints of climate change and by modelling possible ranges of habitats, species and species assemblages.



## TERRITORIAL STRATEGY

Elaboration of methodological recommendations able to contribute, through the territorial planning document and other instruments, to a strategy in accord with the Regional Chart for Biodiversity.



## PRACTICES

Case studies exploring principles and practices at the industrial level for integration of biodiversity protection within company and sector practices, e.g., (a) environmental services such as water, wastes, sanitation, transportation networks, energy use; and (b) agricultural practices.



## BIO-INDICATORS and BIO-COLLECTORS

Perspectives will be tested for using insects as model species and bio-indicators of environmental quality and changes. The domestic honeybee gathers nectar and pollen from flowers and brings them to the hive. That allows the experimenter to collect these products and perform their chemical analysis, in order to identify the presence of different pollutants (pesticides, heavy metals, radioactive components).



## MOLECULAR AND MORPHOLOGICAL DIVERSITY

The (genotypic) and morphologic (phenotypic) diversity of insect populations will be used as biodiversity index. This module will consist in developing molecular, morphometric and comportamental markers and proposing a methodology for the characterisation and the estimation of the diversity of these model species.

## PROTOCOLS

Elaboration of biodiversity management protocols (ex.: conservation, integration in the regional planning document)



## METHODOLOGY (stakeholder dialogues)

Demonstration of stakeholder concertation, performance evaluation and policy assessment procedures, based on multi-criteria and multi-stakeholder deliberation around governance issues and options for managing biodiversity at a territorial scale, bridging the gaps between scientific knowledge, territorial administration and private sector planning and reporting needs.



## EDUCATION

Educational activities and the creation of educational resources (CD-rom, Internet with paper complements), adapted to a wide spectrum of school, university, professional and continuing education.



## THESIS OBJECTIVES IN THE FRAMEWORK OF ALARM:

Based on the methodology to be developed in the European project Alarm, this thesis targets the construction of a set of indicators adequate for the analysis of risks in the Ile-de-France region. One first step of the work intends to answer the question: how could the integration of pressures be envisaged in a pragmatic approach of biodiversity management? The concept of the environmental function will be used for underlining the manner in which changes in biodiversity influence relationships between economic sectors engendering the pressures and those suffering the effects. The integration of different levels of pertinence of biodiversity is meant for regional and local policies, regarding specific economic sectors. The scientific knowledge obtained through the European project Alarm will be structured, with the help of tools such as the Indicator Dialogue Box and Deliberation Matrix. Using indicators is both necessary for "organizing the complexity" inherent to ecologic and socio-economic systems, and useful in order to offer easy to understand information. Starting from indicators chosen for each governance issue, scenarios of different future policy options will be constructed.

## RESEARCH FRAMEWORKS :

The composite character of the "Biodiversity Ile de France" object comes, on one side, from the necessity of integration of different pressures and levels at which effects become manifest and, on the other, from the understanding of that biodiversity offers not only direct services (such as wastes degradation by microorganisms or the generation of fertile soils) but also less "tangible" (such as the aesthetic ones). This constitutes one of the main reasons for which the deliberation is the appropriate multi-criteria evaluation method chosen for the apprehension of this problematic.

The ongoing Fragile project, that gathers research, university and institutional partners representative for the territory, and Alarm project – one of the largest ever for biodiversity at the European scale, are represent an ideal framework for the apprehension of the change of scale problematic.



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