



EDP Biodiversity Chair

*Conducting applied ecology research in
collaboration with the industry*

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ALCUE NET - Latin America, Caribbean and European Union workshop

Capacity building and networking towards better coordination of biodiversity and climate change research.

26-28 November, 2014 – Marseille, France

New research group

Developing applied population and community ecology

Solving practical problems in **ecosystem management, conservation biology, impact assessment and mitigation**, and **sustainable use of biological resources**.

Developing and testing general concepts and theories **using human interventions on socio-ecological systems as informative experiments** occurring over a wide range of temporal and spatial scales.

Strengthening the feedback loops between applied and basic ecological research, to the mutual benefit of science and the resolution of pressing societal challenges.

appl ecol
applied population &
community ecology

Biodiversity Conservation, Biological Invasions, Environmental Monitoring, Ecosystem Management, Global Change, Sustainable Agriculture and Forestry, Wildlife Management



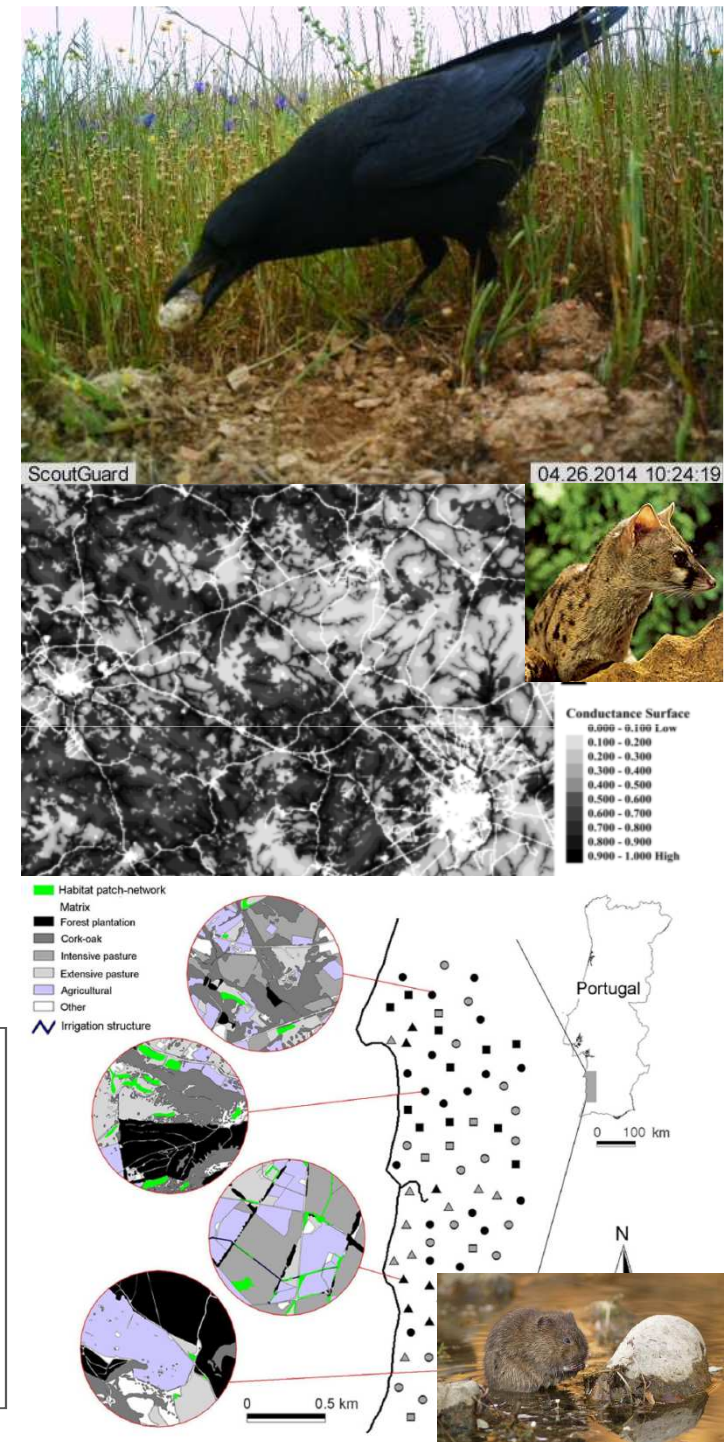
Scientific knowledge to improve management

Population Ecology : Understanding the demographic mechanisms of threatened species

Fragmentation Ecology : Predicting the effects of landscape fragmentation

Long Term Ecological Research : Assessing ecological responses to anthropogenic stressors over long periods of time

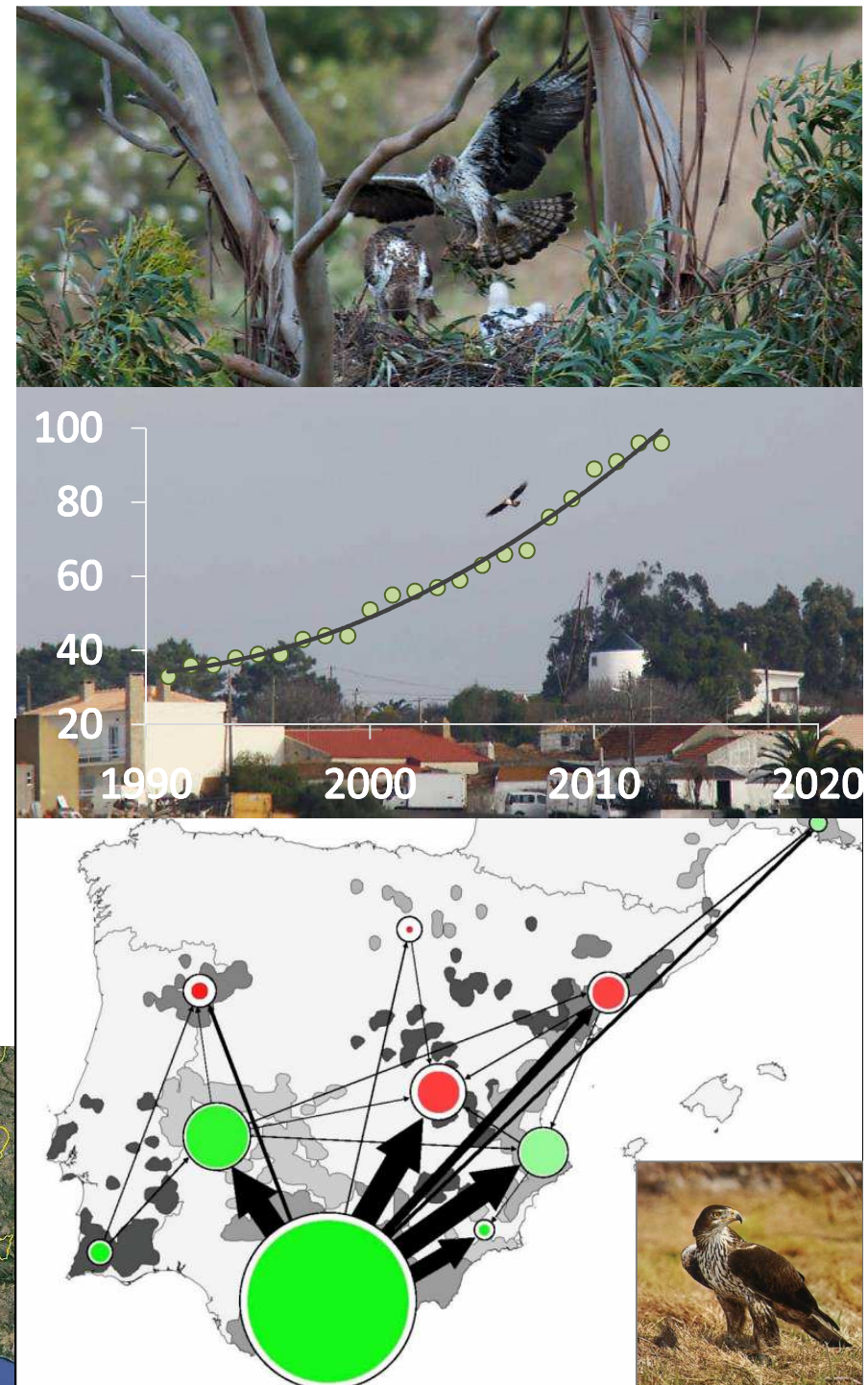
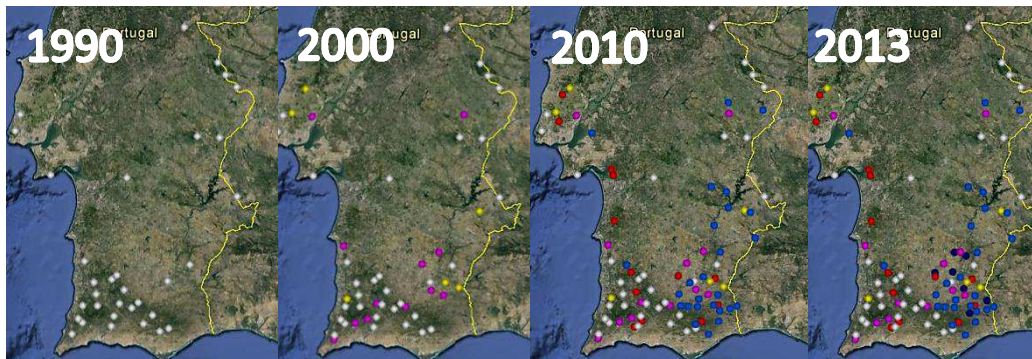
Impact Assessment, Mitigation and Monitoring : Developing new cost-effective tools



Long-term population dynamics of tree-nesting Bonelli's Eagles

A long term demographic and genetic study suggests that a behavioral shift is promoting adaptation to human-dominated landscapes and range expansion in an endangered species

Metapopulation modelling shows that the tree-nesting population is one of the few population sources in Western Europe



Advanced training

Nurturing a new generation of researchers

Providing **funding opportunities** to develop PhD and MSc projects in applied ecology

Directing students to develop effective **problem-oriented research** for biodiversity conservation and sustainable use.

Training young researchers to address **priority societal challenges** (*sustainable agriculture and forestry, climate action, environment*)

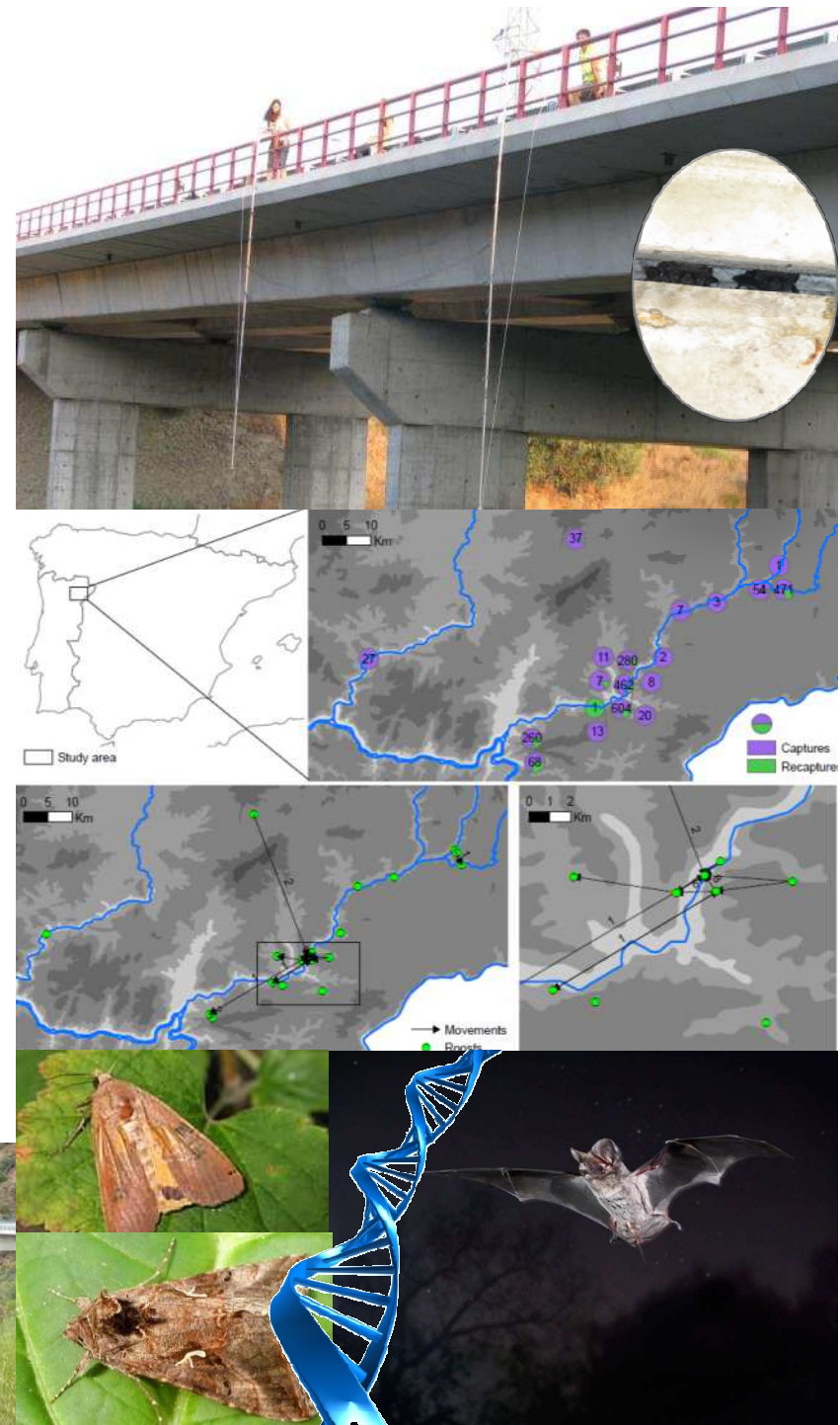
Enabling **feedback loops** between applied and more basic research



Population ecology of free-tailed bats *Tadarida teniotis* colonizing bridges

Ecological and genetic tools are shedding light on bat demographic rates, movements, and responses to droughts and anthropogenic stressors

Fecal metagenomics is uncovering heavy predation on agricultural arthropod pests, highlighting an unexpected link between bridges and pest-control ecosystem services



Monitoring

Enhancing cost-effectiveness and relevance

Designing biodiversity monitoring programs :

Enhancing cost-effectiveness through improved sampling design and data analysis

Data management : Organizing and providing online access to monitoring data

Technological development : Developing novel monitoring methods based on DNA retrieved from environmental samples - metagenomics

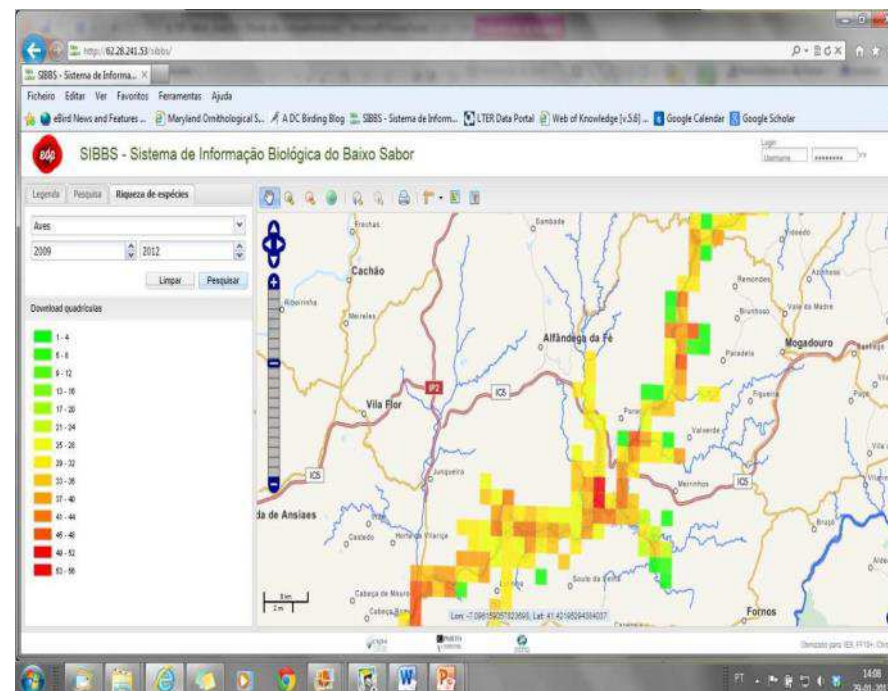
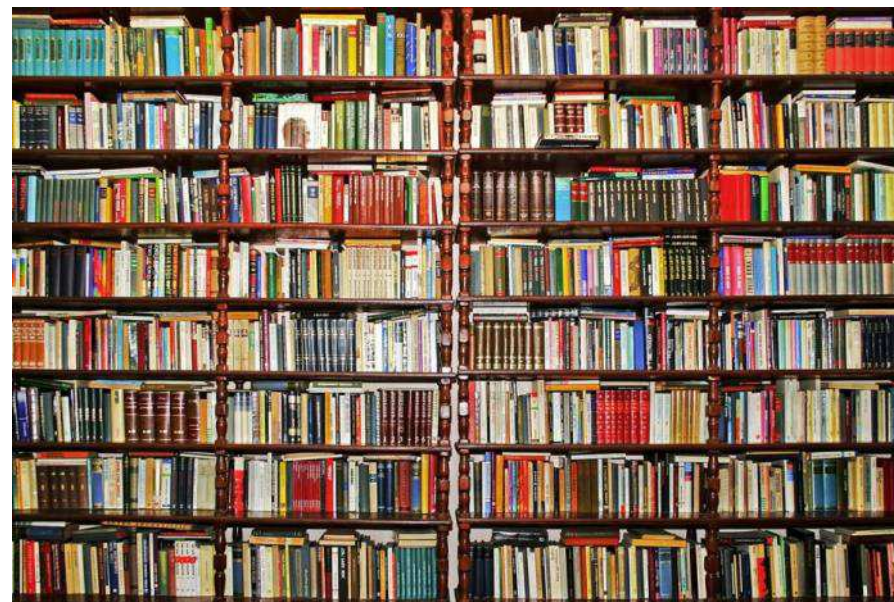
Combining monitoring and research : using monitoring programs as Long Term Ecological Research opportunities



Fostering access to monitoring data

Impact assessment and monitoring programs generate vast amounts of data that are usually lost in inaccessible unpublished reports

CIBIO and EDP created a online WebSig for organizing and making monitoring data from the Baixo Sabor and Foz Tua Hydroelectric Infrastructures generally available over the internet.



<http://62.28.241.53/sibbs/>

Impact mitigation

Finding new solutions and supporting best-practice

Assessment : Improving the identification and quantification of ecologically relevant impacts

Ecosystem services : Incorporating ecosystem services in impact assessment and mitigation

Integration : combining mitigation programs with spatial planning and landscape management initiatives

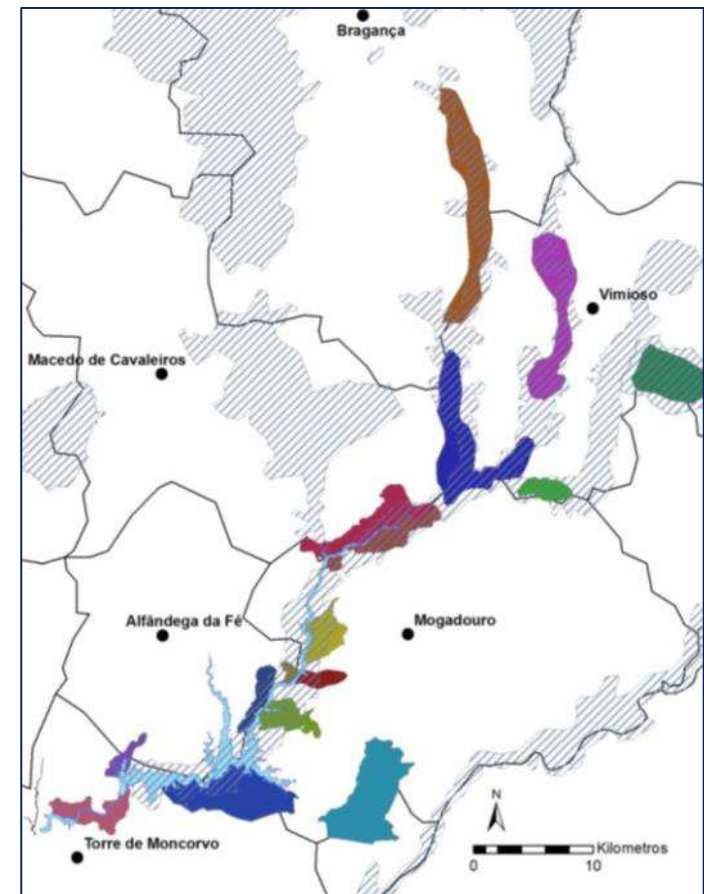
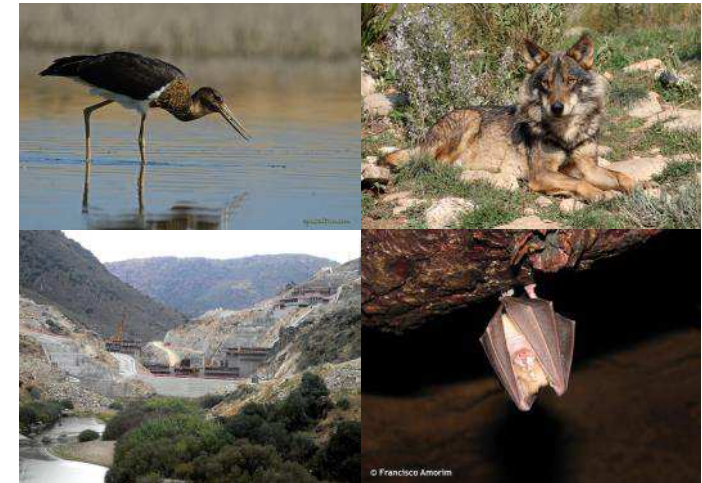
Cost-effectiveness : Maximising the biodiversity return of each Euro spent on impact compensation



Enhancing cost-effectiveness through improved design

Cost-effectiveness of mitigation programs is often low because they frequently involve a collection of disparate actions scattered over a large area and aiming at benefiting a wide range of species

CIBIO worked with EDP to re-design a large mitigation program of the Baixo Sabor Hydroelectric Infrastructure, increasing cost-effectiveness through spatial integration and development of synergies among biodiversity conservation measures



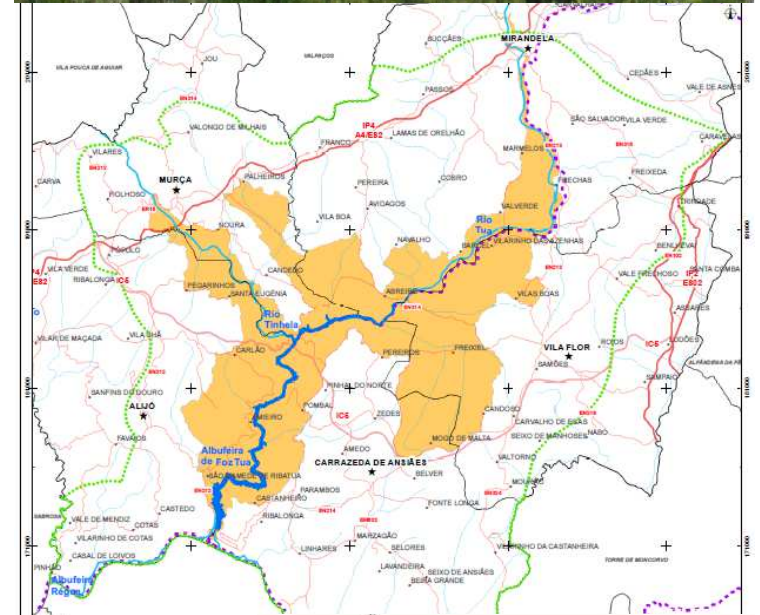
Conservation

Promoting the application of applied research

Population recovery : Conservation of threatened species through intensive population management

Protected areas : Creation of new regional protected areas in association with infrastructure development

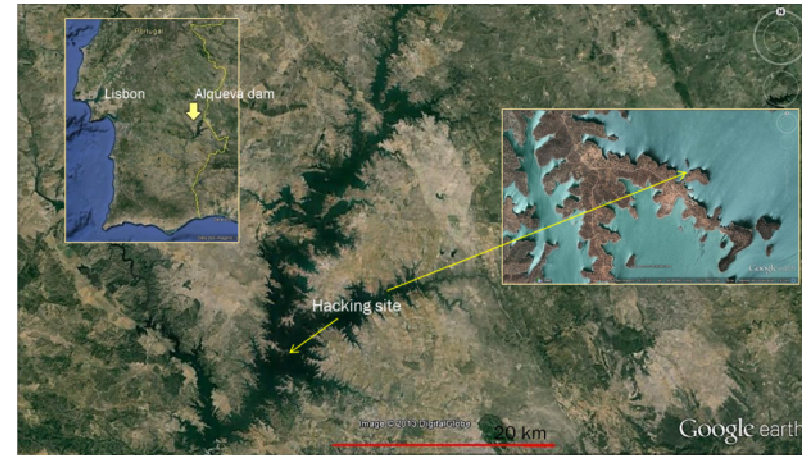
Ecosystem management : planning and implementation of conservation management initiatives to restore landscape multifunctionality under land abandonment (LIFE Program)



Recovery of a threatened species in a novel ecosystem

Following the decline and extinction of ospreys in Portugal during the 20th century, a reintroduction project with the support of EDP is underway

Since 2010, we released 40 juvenile ospreys obtained from Sweden and Finland, aiming to establish a breeding population in the artificial lake of Alqueva and beyond



Concluding Remarks

Understanding opportunities and pitfalls

Collaboration with industry **provides win-win opportunities** to develop high-level applied ecological research

But!.....

Ecology researchers and industry professionals **live in different worlds, speak different languages**, and often **have different values, goals and priorities**

Requiring!.....

A permanent effort of **mutual communication, compromising**, and the need to keep in mind that **the goal of applied research is to be applied** in the real world





Thanks!

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