



AmiBio NEWSLETTER



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LIFE+ NATURE AND BIODIVERSITY

- * *Project objectives*
- * *Actions and means involved*
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LIFE+ NATURE AND BIODIVERSITY

Kick-off meetings for all EU LIFE+ Nature & Biodiversity projects from batch LIFE08

In the first quarter of 2010, kickoff meetings and presentations of the newly starting LIFE+ Nature & Biodiversity projects* (funded under the 2008 campaign) took place all over Europe. With a total of 80 projects in 22 countries and a total budget of 199 million Euros (including 107 million Euros from the EU funds), LIFE+ Nature & Biodiversity projects are probably among the biggest nature and biodiversity preserving funding schemes world-wide. These projects are intended to support environmental and nature conservation actions in NATURA 2000 areas throughout the EU and in certain non-EU countries. Among them is the AmiBio project!

As a transnational project, AmiBio was represented at the LIFE08 kick-off meetings in Athens (17 and 18 February), which brought together fourteen LIFE+ projects from Greece and five from Cyprus, and in Bonn (4 March), which brought together seventeen projects from Germany and three from Austria. These meetings provided for all participants the opportunity to get acquainted with the LIFE+ project administration rules and with the LIFE+ management staff as well as with the national monitoring teams within ASTRALE.

Along with the other represented projects, AmiBio had the chance to communicate the project concept and to highlight the expected outcomes of the project, including its impact on nature and society. Specifically, with its innovative concept of automatic remote monitoring, AmiBio will have a lot to offer for a considerable number of other LIFE+ projects, many of which are in dire need to monitor exactly the effects of their respective actions on biodiversity within the targeted NATURA 2000 sites. An example is the "Network of Life" project ("Netze des Lebens": <http://www.bund.net/biotopvernetzung>), which will create forest corridors of 20,000 km length, connecting important forest habitats for wild cats and other threatened forest species. Here, as in many other cases, acoustic monitoring is an ideal tool for detecting the presence of secretive species by their vocalisations.

Reference

* *Nature & Biodiversity Projects 2008*, Luxembourg: Office for Official Publications of the European Communities, 2009, ISBN:978-92-79-13426-5, DOI:10.2779/82642.

Highlights: CONCEPT OF THE AMIBIO PROJECT



Editorial

AmiBio concept:

The AmiBio project aims to construct and deploy autonomous multi-sensor monitoring stations and to automatically analyze their transmitted measurements for long-term monitoring of biodiversity activity trends in the region of Hymettus, a mountainous area located at the eastern periphery of Athens. The acoustic monitoring stations, which are non-intrusive and cost-effective compared to human expeditions, will assist in systematic seasonal and longitudinal long-term environmental monitoring that will allow the automatic inventory and examination of the biological diversity of the study area.

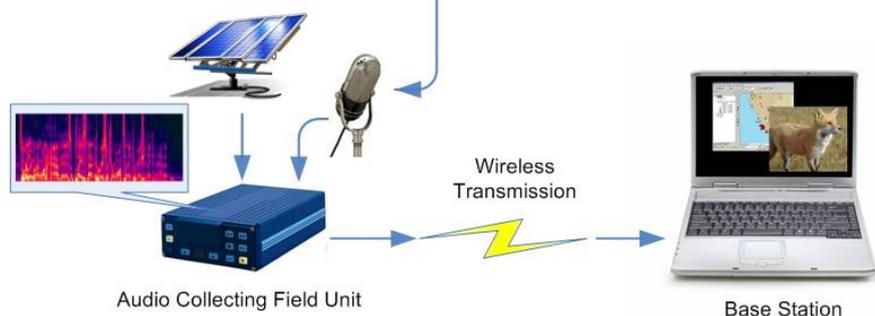
The monitoring stations will record audio signals, temperature, humidity, illumination, wind speed and direction and transmit these data to a central station far away from the monitoring region. Special computer software at the central station, deployed in the premises of the Association for Protection and Development of Hymettus (SPAY) and in the University of Patras, will then perform automatic species identification and statistical analysis, thus contributing to a continuous biodiversity survey of the designated areas. The project team plans to deploy the prototype hardware system in relevant habitats, such as forest, open habitats, and rock cliffs, that will gather and transmit recordings of audio and data on environmental variables to a central station (cf figure below).

Expected outcomes from the project:

- ⇒ Data repository of audio recordings and database management tools in support of research on bioacoustics and animal behaviour.
- ⇒ Software for automatic recognition of species from their sound emissions.
- ⇒ Prototype of an acoustic monitoring system capable of operation in 24/7 mode.
- ⇒ Estimation of the density of sound-emitting animal populations.
- ⇒ Monitoring of rare and threatened species.
- ⇒ Assessment of the conservation status of the monitored sites.
- ⇒ Monitoring and alarming of specific atypical sound events, such as gunshots, off-road motor bikers, etc.
- ⇒ Monitoring for natural calamity and human induced disasters.

For further details about the AmiBio project please visit our web-site:

<http://www.AmiBio-project.eu/>



AMI BIO KICK-OFF MEETING AND RECENT ACTIVITIES



The AmiBio project kick-off meeting took place on February 17 and 18, 2010 in the premises of Associated Beneficiary SPAY (Association for Protection and Development of Hymettus), Athens, Greece. During the meeting the consortium presented and discussed the objectives, targeted outcomes, techno-

logical framework, and conceptual design of the AmiBio project. A strategy for the project implementation was outlined and the distribution of tasks amongst the beneficiaries for all ongoing Actions was agreed on. On the second day of the kick-off meeting we visited the project area in the Hymettus

mountains, including potential sites for equipment deployment.

Since February the AmiBio consortium made a significant progress in the implementation of the project Actions. An overall Project Management Plan, which specifies activities, tasks, and responsibilities within the project Actions, was prepared. A number of field surveys were carried in the Hymettus area for investigation of the geology, flora, and fauna. Multiple data collection campaigns were implemented at different micro-sites for the assessment of the area's biodiversity, particularly insects, amphibians, reptiles, birds, and mammals. In total, more than 500 hours of audio recordings were collected. Furthermore, several species were photographed and some insects had to be collected for identification. The successful completion of the biodiversity study prepared the ground for the start of technology development Actions. Presently the consortium is working on the blueprint of the AmiBio technological framework. The actual implementation of technology will start in January 2011.





AUTOMATED BIODIVERSITY MONITORING AT HYMETTUS – GATHERING THE BASELINE INFORMATION

by O. Jahn, K. Riede, G. Lehmann, U. Marckmann, K.-L. Schuchmann, A. Weller, and S. Ntalampiras

Automated acoustic monitoring of wild animal species at Hymettus would not be possible without a good knowledge of the biodiversity present there. Species have to be inventoried and recordings of their vocalizations have to be gathered, identified, tagged, and archived in order to calibrate the sound identification software. These tasks are the main responsibilities of the Zoological Research Museum A. Koenig (ZFMK). Founded as a private research and exhibition institute by Alexander Koenig (1858-1940), it is one of the major natural history research museums in the Federal Republic of Germany and a member of the Leibniz-Gemeinschaft (WGL). Its scientific collections comprise an estimated 350,000 specimens of vertebrates (80,000 mammals, 136,700 birds, 40,000 fishes, and more than 77,000 reptiles and amphibians) and several million specimens of insects.

In March 2010 we started with intense biological inventories of sound-producing animals, such as grasshoppers, cicadas, birds, and mammals. Insects were collected, observed, and photographed in the field. Birds are much better known than insects, thus, only audiovisual survey methods were used for this group. In addition, manual and automated sound recordings were made, using digital recorders. As of July, the total number of field visits carried out was two for insects, three for birds, and one for bats. Up to now, we identified a total of 22 orthopteroid insects (grasshoppers, crickets, and locusts), as well as 3 cicada, 1 toad, 66 bird, and 6 bat species. In the case of birds, 42 additional species are known to frequent the area (Pulmedi & Valis 2006) but have not yet been found in our field surveys. Most of them are long-distance migrants and non-breeding visitors that are not always present in the study area. Two

threatened and two near-threatened bird species were recorded at Hymettus, but only one of these, *Falco naumanni* – the red-listed (Vulnerable) Lesser Kestrel, also seems to breed there, the others representing migrants, which occur only seasonally on passage. An International Action Plan is available for the Lesser Kestrel (Biber 1996) but data on current distribution, population numbers and trends need to be updated. Therefore, continuous monitoring of Lesser Kestrel could be a valuable contribution of the AmiBio-project supporting on-going national conservation efforts.

Sound-generating activities in animals are strongly influenced by season and weather. In general sound production is highest during the onset of the reproductive period in the first half of the year. But differences among species and taxonomic groups are very pronounced. For example, some resident bird species start singing very early in the year but some others arrive on their breeding grounds not before early May. The



Fig. Deployment of audio equipment at Hymettus by Olaf Jahn (ZFMK) and Stavros Ntalampiras (UOP).

stridulating sounds of male grasshoppers are usually not heard before May. Activity of some species might cease as early as by mid-June when grasses have dried out by the sun. Thus the period when stridulating males are being active is often very short. In consequence, we collected larvae during spring time and recorded their sounds under controlled laboratory conditions as soon as soon as they had grown up. This work was done in collaboration with Karl-Heinz Frommolt, who manages the Animal Sound Archive at the Natural History Museum Berlin (<http://www.tierstimmenarchiv.de/>), where first identified recordings were deposited.

In contrast, cicadas are the most prominent sound-producing insects during the hottest months of the year from June through September, and are particularly active during the mid-day heat of the Mediterranean summer. Most prominent during June was *Cicada orni* (Cicadidae), which is one of the most abundant and common cicadas throughout the Mediterranean region, well-known for its intense song. Interestingly, populations from Greece differ in most acoustic variables (Pinto-Juma *et al.* 2005), so that there is a need to create an extensive database of sounds even for this common species. Specimens from this taxon and other insects of controversial taxonomic status have been conserved and prepared for future barcoding of DNA.

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