

Strength in numbers

Dr Boyko Georgiev discusses his efforts bringing together a local network of laboratories studying wetland ecosystems; work that will build capacity and strengthen research in the field of wetland science

Could you explain how this project has become a reality?

This project is funded under the Research Potential scheme, which is a core element of the Programme Capacities included in the Seventh Framework Programme (FP7). The objective of this funding scheme is to stimulate the realisation of the full research potential of teams whom have already demonstrated success in their fields. This initiative is specifically targeting research establishments in the EU's convergence regions. The outcomes we hope to achieve are that our institute and laboratories will successfully participate in research activities at EU level, as equal and efficient partners. In the case of WETLANET, we have demonstrated our achievements in wetland studies. The project is aiming to enhance the research potential of the Central Laboratory of General Ecology (now transformed into Institute of Biodiversity and Ecosystem Research) at the Bulgarian Academy of Sciences, by strengthening a local laboratory network for studying wetlands ecosystem functioning, restoration and management. This laboratory network includes three field stations, situated at wetlands of major ecological importance in the Lower Danube floodplain and at the Black Sea coastal area, as well as the specialised laboratory units at our headquarters in Sofia.

Can you outline how the funding framework supports your research activities?

The European Commission is the main funder and the Ministry of Education, Youth and Science of Bulgaria is a co-funder, providing equal to 13 per cent of the EC grant. These funds are used for the main objectives of the project: improving the human research potential in wetland studies, reinforcement of the technical capacity of the laboratory network, strengthening integrative connections of our unit in the European Research Area, and wide dissemination and promotion of the activities and results in society with a view to increasing their socioeconomic impact.

Wetlands are complex systems; are there any ambiguities raised by defining these ecosystems?

They are diverse and hydrologically-complex ecosystems which tend to develop within a hydrological gradient ranging from terrestrial to mainly aquatic habitats. Wetlands form a heterogeneous and diverse group: natural or manmade, permanent or temporary, static or flowing. Their water can be fresh, brackish or salt. Nevertheless, they are a distinctive type of ecosystem. Any ambiguity



only occurs at the first glance because the essential character of wetlands is that their functions depend mostly on a permanent or periodic inundation. Many wetlands are important as biodiversity conservation sites. They are managed according to the requirements of the 'Convention on Wetlands of International Importance especially as Waterfowl Habitat' (also known as the 'Ramsar Convention'). The number of Ramsar sites in Europe exceeds 800 and 10 of these are in Bulgaria.



Community of Glassworth at Atanasovsko Lake (**Left**); Studies on the community structure of seaweeds in the coastal zone off Sozopol, Bulgaria Black Sea coast (**Below Left**); The new laboratory unit for wetland studies arranged at the headquarters of the Institute of Biodiversity and Ecosystem Research in Sofia (**Below Right**).



How central is collaboration to the work of WETLANET?

We have collaborated with research teams abroad before the beginning of this project. I am very grateful to Professor Andy Green of the Biological Station of Doñana, Seville. He is an international leading authority in the interspecific interactions in wetlands. Professor Green helped a great deal in clearing the concept of this project and he currently contributes a great deal of useful information as a consultant to the management team. The EC funding allows us to make our international collaborations deeper and wider. For the total period of the project, the exchange programme includes 16 outgoing and 19 incoming visits for joint research. This allows members of our staff to obtain international experience in leading laboratories in The Netherlands, France, Spain, Portugal, Belgium and other countries. We have also been visited by leading international experts.

How do you aim to raise awareness on the need for wetland studies and the importance of wetlands in society?

The dissemination of research excellence and knowledge of wetland science in the wider scientific and non-scientific environment is one of the main objectives of the WETLANET project. Our dissemination programme in Bulgaria was very successful. The new wetland laboratory unit in the institute's headquarters in Sofia was officially opened by the Prime Minister of Bulgaria on the International Day of Wetlands. Reports of the event were broadcast by most of the TV and radio stations and published in many newspapers. I was very happy to see a lot of visitors attending our open days in Sofia, Sozopol and Atanasovsko Lake. The audience varied from students and colleagues from other universities and research organisations to representatives of municipalities and local businesses.

Saving Europe's wetlands

The **WETLANET** team, based at Bulgaria's Academy of Sciences, are rapidly becoming Europe's preeminent wetland research facility; contributing to the restoration and protection of these critical ecosystems

WETLANDS ARE AN incredibly important part of the world's natural environment. Ecologically-speaking, they are extraordinarily diverse and support a wide range of plants and animals. Wetlands also act as a natural filter and recharge water, they slow down the flow of surface water, prevent soil erosion, help to reduce the impact of flooding on surrounding land, and remove and store greenhouse gases from the atmosphere. Additionally, they play a major role in delivering public goods and services, such as supply of freshwater and tourism.

However, wetlands have not been treated particularly well in recent years and a significant amount of the wetlands around the globe have been destroyed, with predictions that, within just the last century, around 50 per cent of the world's wetlands have disappeared completely as a result of pollution, conversion to farmland and drainage. Wetlands are among Europe's most threatened ecosystems and so governments and communities alike are looking at solutions for protection, management and restoration of these important environments.

A group of researchers based at the Bulgarian Academy of Sciences (BAS) are keen on making a major contribution to building knowledge and understanding wetland systems. They hope to become one of Europe's finest institutions on wetland research through a project known as WETLANET.

FOCUSING ON RESEARCH

The main aim of the WETLANET project is to improve the capacity of the Central Laboratory

of General Ecology (CLGE) based at the BAS. In particular, the research team hopes to improve the human research potential, the technical research capacity and to strengthen the connections of CLGE-BAS within the European Research Area. Their ultimate goal, according to Dr Boyko Georgiev, who is coordinating the project, is to widely disseminate and promote their activities and results to help increase the opportunity to contribute to policy changes in wetland management.

The CLGE-BAS unit has been the main Bulgarian research institution dealing with the problems of biodiversity conservation for many years, with wetlands featuring among their major research topics. The range of research they are working on includes studies on biotic communities of various aquatic ecosystems and their functional characteristics, development of the bio-indication and bio-monitoring systems of water bodies and associated wetlands, and the development of models for integrated management of water basins, as well as studies on the evaluation of toxic and gene-toxic potential of various pollutants in aquatic ecosystems. In addition, they are deeply involved in applied projects such as the development of a national framework plan for conservation of wetlands, management plans for protected wetlands and development of specific monitoring systems.

There are a number of ways that Georgiev's team intends to achieve the outcomes of WETLANET. Firstly, they plan to improve the human capacity of CLGE-BAS by organising a number of visits by experienced researchers to exchange knowledge and partake in training events. Secondly, they

INTELLIGENCE

WETLANET

ENHANCING RESEARCH POTENTIAL BY STRENGTHENING A LOCAL NETWORK OF LABORATORIES FOR STUDYING WETLAND ECOSYSTEMS FUNCTIONING, RESTORATION AND MANAGEMENT

OBJECTIVES

To enhance the research potential of the Central Laboratory of General Ecology, Bulgarian Academy of Sciences (CLGE-BAS, newly incorporated into the Institute of Biodiversity and Ecosystem Research) in wetland studies.

KEY COLLABORATORS

Biological Station of Doñana Reserve, Department of Wetland Ecology – CSIC, Spain • **Institute of Aquaculture Torre la Sal**, Spain • **Instituto Nacional de Recursos Genéticos**, Portugal • **Informatics Institute, University of Amsterdam**, The Netherlands • **Institute of Ecology**, Vilnius, Lithuania • **National Botanic Garden**, Belgium • **Institute of Biology of the Southern Seas**, National Academy of Sciences of Ukraine, Ukraine • **Museum National d'Histoire Naturelle**, France • **Natural History Museum**, UK

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Dr Andy Green of the Biological Station of Donana, Spain, participates in WETLANET both as a consultant of the management team and as a visiting researcher.

intend to upgrade the technical capacity by developing the IT capacity of the laboratories in the hope that this will allow CLGE-BAS to further improve its scientific potential. Thirdly, to achieve better integration of CLGE-BAS into the European Research Area (ERA) they propose to form a consortium of research staff carrying out high-level wetland research which will deliver both regional and global benefits. Finally, to help increase the visibility of the research being undertaken, the WETLANET team plans to widely disseminate their work by targeting businesses, industry, NGOs and educational establishments.

BUILDING A TOP-CLASS REPUTATION

The laboratory network includes three remote field stations situated at wetlands of major ecological importance and covering various types of wetlands in the Lower Danube floodplain and at the Black Sea coastal area – the Srebarna Lake Biosphere Reserve, Atanasovsko Lake Reserve and Sozopol. In addition, there are specialised laboratory units at the headquarters of CLGE-BAS in Sofia. Georgiev is candid as he explains how the main limitations of these laboratories have been rooted in the dated research equipment and lack of investment in the past and how this has had a major impact on the capacity of the staff. However, he says that with the investment from the European Commission they can focus on mobilising their researchers and building their reputation: “We are happy now to be able to apply our knowledge and experience in Bulgaria and to set up a laboratory network comparable with international standards”.

One of the very tangible benefits of the WETLANET experience has been the ability of the CLGE-BAS to compete in the European market for research funding. According to Georgiev, the increased transfer of expertise, participation in training and workshops, and dissemination of scientific results, has led to the development of strategic partnerships further facilitating the integration of their unit in the ERA: “We are now a partner in four FP7 project proposals connected with wetlands and marine topics”. The project has successfully helped to incubate ideas for joint

studies and new projects which are now being picked up by CLGE-BAS for further research.

An essential component of the project is the employment of researchers with international experience. Georgiev's team has selected candidates that will help expand their research scope in areas of wetland studies – for which they have no existing expertise – from both Bulgarian and international research institutes: “We are glad to have such a wide range of colleagues involved,” he enthuses. “We are totally focused on turning the BAS-Institute of Biodiversity and Ecosystem Research into a respected international research centre and hope that this trend will continue after WETLANET has finished.”

THE CHALLENGE OF LONG-TERM SUSTAINABILITY

There is every potential for this project to have a major impact on global wetland studies as the WETLANET laboratories have the opportunity to become one of Europe's main centres of wetland science. From Georgiev's perspective, because the laboratories are open to collaborations and partnerships, the upgraded network will develop into the core of the numerous joint activities planned for the future. The durability of the WETLANET project into the future is a major challenge for the team and they are focused on finding a practical solution to this. They are hopeful of having several subsequent projects with international funding which will allow them to continue the research that is being undertaken by the laboratories. To facilitate this, it would seem that the collaborative contacts with the national and regional stakeholders developed as a result of WETLANET are essential. Georgiev emphasises how their increased capacity has resulted in the involvement of the CLGE-BAS in several issues of national importance, such as the development of the new national plan for conservation of wetlands, the optimisation of the national network under Natura 2000 and development of new monitoring system for surface waters: “Our contribution to all of these critical issues will allow us to use our increased research potential for the overall benefit of society”.



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