European biodiversity research for a sustainable Europe:

Research contributing to the implementation of the EU Biodiversity Strategy

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Centre for Ecology & Hydrology
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Front cover: "Scottish landscape" by Lady Catherine Young.

Session II: European biodiversity research and the global perspective

will be used. Where rural communities are the de facto managers of an area, as in many parts of the developing world, traditional monitoring may be less appropriate than participatory approaches which inform and motivate management interventions locally (Danielsen et al., 2005; Danielsen, 2003).

The future of monitoring?

Advances in remote sensing technology provide an increasingly fine resolution view of landscapes, sometimes allowing the identification of individual trees (Turner et al. 2003; Asner et al., 2005). However it is still difficult to get information on the extent and intensity of non-structural habitat disturbances (Peres, 2006). Conservation monitoring needs to occur at all scales; from fine-scale monitoring of a locally rare species, to global analyses of land-use change. We mustn't fall into the trap, however, of believing that any monitoring is inherently useful (Yoccoz, 2001). Limited conservation resources should be invested in targeted monitoring that allows us to judge the success of our past actions and to plan for the future.

Re: Monitoring of biotic resources

Allan Watt, Centre for Ecology and Hydrology, Banchory, UK

Julia Jones provides some important warnings about monitoring and indicators, as do others (e.g. Watt 1998; Sharman, this e-conference).

In relation to "powerful monitoring", Julia Jones highlights the issue of statistical detection of change. Inherent in this argument is the need to detect long-term change. Perhaps this needs to be made more explicit because of the enormous amount of natural variation in abundance of species and in the composition of communities.

A high priority for research is therefore to understand the natural dynamics of species and ecosystems in order to be able to detect long-term anthropogenic change in biodiversity. Of course we cannot afford to study all species and ecosystems no more than we can afford to monitor them all but intensive research on selected species and ecosystems will provide the basis for more informative monitoring and more effective interventions.

Re: Monitoring of biotic resources

Vladimir Vershinin, Institute of Plant and Animal Ecology of the Russian Academy of Sciences

From the outset I want to voice my point of view on the topic of modern biodiversity and biodiversity conservation. At no time has biodiversity been absolutely unchanging. It's quite obvious that the biodiversity we have now in Europe and everywhere is not "virgin". It is strongly transformed and there is no way of going back (unfortunately), unless maybe if disappeared from the planet. But anyway - let's try to stop biodiversity loss!

The problems connected with the inadequacy of some methods and results can be reduced by complexity of monitoring - usage of different systematic groups of organisms in our evaluations and long term monitoring of parameters on different levels of organisation - cytologic, organisms, populations, communities. Comparative

analysis of the same parameters in enough taxonomic distant species can also protect us from misconception and show main or specific trends in biodiversity dynamics. So we need to make observations not only of rare species, but also species that determine (or strongly affect) community dynamics.

I also want to point out one other problem of monitoring: adaptive changes in populations under the effects of environmental transformation. Due to "sinurbization" (Andrzejewski et al., 1978; Gliwich, 1980; Fedorov, 1979) - adaptation to urban conditions - populations can became less sensitive to pollution or other anthropogenic impacts. That's why we need to use complexity and long term observations in ecological monitoring practice. It's impossible to find an "absolute" method for monitoring, but a combination of those we have is a good start. It is also impossible to control and protect some species without knowledge on its biological specificity. Our experience (Vershinin et al, 2006) showed that the way mentioned above (complex and multilevel approach) is not so expensive.

Re: Monitoring of biotic resources

Klaus Henle, Helmholtz Centre for Environmental Research UFZ, Leipzig, Germany

The need for monitoring, or more precisely, the need for better monitoring and integration of existing monitoring schemes have been called for by several contributions of this e-conference and also was acknowledged by the recent meeting of the environmental ministers (Potsdam Initiative).

There is a huge amount of monitoring going on. The EuMon (www.eumon.ckff.si) project has collected information over 500 monitoring schemes even though for many European countries information is still inadequate. EuMon also develops criteria for assessing the strength and weaknesses of monitoring schemes and for setting (national) priorities. The EuMon results are in line with most arguments of Jan Jansen. However, we should not ignore that monitoring schemes have been set up for a huge range of different reasons, have their own goals, and forms of organisation. So monitoring schemes that may be entirely inappropriate for assessing European trends in biodiversity nevertheless may have their value for the goals they have been set-up for.

In my opinion what is mainly lacking, and the EuMon database clearly shows it is that coordinated monitoring schemes exist only for few taxa and there is almost no (at least no direct) funding of monitoring schemes from European sources. So we are left with a large number of research projects that contribute scientific advances to monitoring, that may produce highly valuable datasets but the achievements die away after their termination. A first step would be that the EU decides about a system on how the information and the databases generated through research projects could be maintained in the longer run and be updated at least from time to time.

Life Watch may be an option if it comes to life but we need to think also along other lines, such as European institutions that take up the responsibility to maintain and update at least core databases for monitoring biodiversity. While this is not a research issue, it is an issue of science policy interface - and once the commitment has been made, then IT-technological and methodological research is asked for again.