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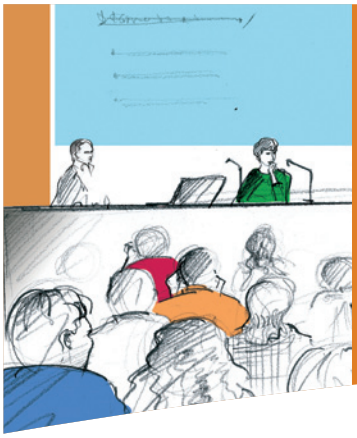


ONEMA
Meetings

Bringing wetland research in line with operational needs

Onema, the National museum of natural history and IOWater, in a partnership with the Ecology ministry and the wetland centres, organised a meeting held on 13 December 2013 in Paris.

The objective of the meeting, based on an analysis of wetland research over the past ten years, was to set guidelines for scientific policy on wetlands better suited to the needs expressed in the field. This document reports on that meeting.

Between 1960 and 1990, over 50% of all wetlands in France disappeared. The report by Prefect Bernard, who presented these alarming results in 1994, led directly to the first national research programme on wetlands (1997-2001), which coordinated the work of over 120 scientific teams. Since then, research efforts have continued, thanks notably to 30 different funding programmes (National research agency, Eaux & Territoires, PNETOX, Liteau, Invabio, etc.) and some 440 research programmes have been launched. What are the actionable results of this research? To what degree do they correspond to the needs of wetland managers? With help from Onema, which has coordinated the national network of wetland centres since 2008, the National museum of natural history (MNHN) looked at the wetland research carried out over the past ten years. The results of this study, directed by Guillaume Gayet, under the guidance of Geneviève Barnaud, will be published in 2014 as a set of four reports. The results were presented for the first time at the beginning of the December meeting on wetlands to the participants, over 110 scientists, wetland managers and representatives from environmental-protection groups.

A limited number of actionable scientific results

The inventory by MNHN listed the wetland topics studied since 2001. A vast majority (93%) fell under the heading of the natural sciences with the remaining 7% in the field of the human sciences. A total of 9% were multi-disciplinary. Analysis of the topics showed that littoral wetlands were by far the most frequently studied (57%), followed by alluvial wetlands (14%) and artificial wetlands (15%). Over half of the projects focussed on the habitat functions of wetlands, followed by the biochemical and hydrological functions (see Table 1, page 2). The twelve topics most often studied were identified, they range from carbon flows to plant communities and from population genetics to parasitology.

Monitoring of Chytridiomycosis in agile frogs (Rana dalmatina)

The MNHN team listed the research projects that announced actionable results in the documents submitted to the call for projects. Only 80 projects (18%) targeted such results. More in-depth analysis revealed that almost one-third of the 80 projects did not produce any actionable deliverables and another third produced results that were said to be actionable, but had not been scientifically validated or were intended for highly specialised experts. On the other hand, some 30 projects produced tools and methods (some still undergoing validation) worthy of being widely transferred to wetland managers.

Jean-Louis Simonnot,
Rhône-Méditérranée-Corse water agency:
"Work on the functions to be preserved or restored!"

At the Water agency, we have for years used the definition of wetlands found in the Environmental code, whereas a larger number of other projects in France focus exclusively on biodiversity. As a result, we have a more extensive view of wetlands and the area they represent. Consequently, we have also noted that the wetland functions commonly mentioned in debates, e.g. natural habitats of course, but also flood retention, protection of water intended for drinking, contribution to the good status of water bodies, etc., are not all present in all wetlands. Practically speaking, this means that different types of agriculture can exist in wetlands (crops, meadows, vegetable growing, etc.). The new RBMP will target active policies and will recommend the formulation of strategic management plans for wetlands in each river basin. These short plans will provide a general and collaborative concept for the action required to preserve and restore the functions of wetlands. To that end, we are now developing a set of tools to facilitate pinpointing the position of wetlands in each ecoregion of the river basin, in order to enhance the existing inventories, assist in selecting policy measures and acquire monitoring indicators. On the scientific side, we need additional tools and methods to help in preparing compensatory measures if the destruction of certain wetlands cannot be avoided.

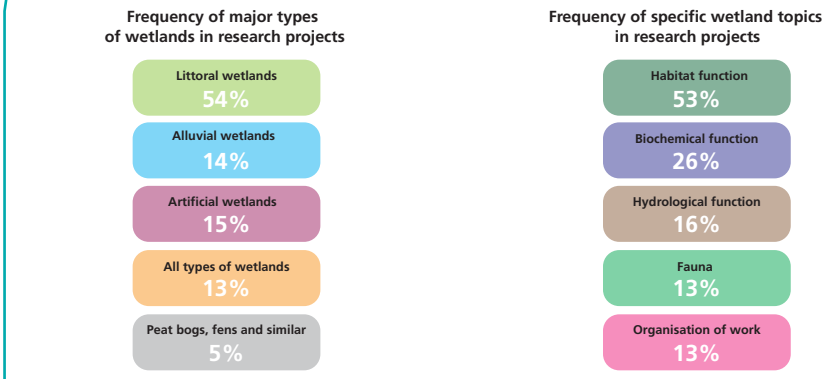


Table 1. Frequency of major types of wetlands and of the topics addressed in research projects between 2001 and 2011. Source: G. Gayet and G. Barnaud, MNHN.

Monitoring the nests of Eurasian bittern in reed ponds

That is the case of the software programme Butorstar (Mathevet *et al.*, 2007), a role game used to simulate the impact of decisions concerning the conservation of reed ponds and of the Eurasian bittern. Other examples include characterisation indices on wetland retention functions for floods and nitrates, developed using the database on river corridors in the Seine-Normandie district (Abdou Dagga *et al.* 2006), a method to assess the ecological status of lakes in the Aquitaine region, based on primary producers, developed by the University of Bordeaux 1 (Cellamare, 2009), and a decision-aid tool to assist in setting restoration objectives, designed at the University of Lyon 3 (Cottet-Tronchère, 2010) to encourage multi-disciplinary collaboration between the natural and human sciences.

A survey to learn what stakeholders need

The MNHN team also ran a survey to determine the needs of the people in the field, namely environmental-protection

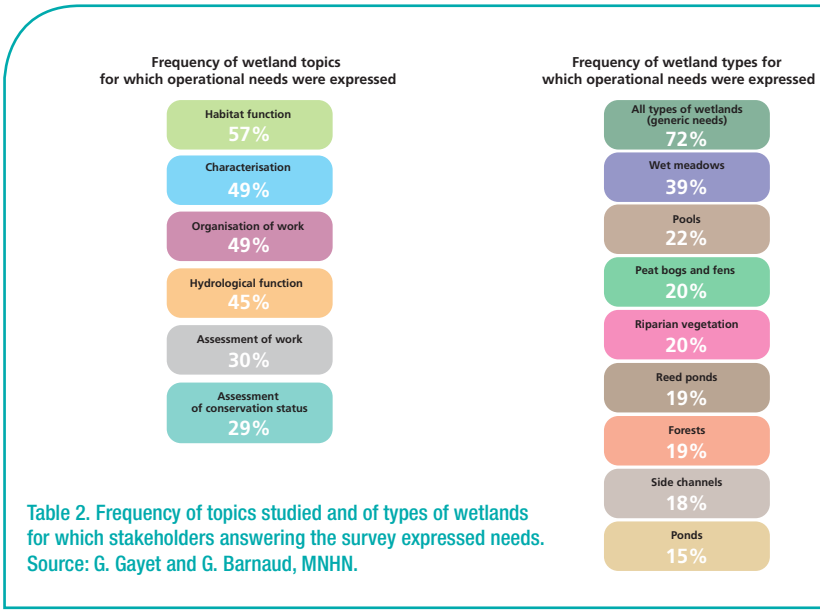


Table 2. Frequency of topics studied and of types of wetlands for which stakeholders answering the survey expressed needs. Source: G. Gayet and G. Barnaud, MNHN.

CMR (capture-mark-recapture) operation on the index site of the recruitment and escapement survey at the Soustons lakes

groups, local governments, administrations and private companies working on behalf of wetlands.
A detailed questionnaire was widely disseminated throughout the country via approximately 30 "network leaders". Of the 156 questionnaires that came back (return rate of approximately 33%), 51 were sent in by environmental-protection groups, 51 by local governments or similar organisations, 48 by public organisations and 6 by private companies or other entities. On the basis of the answers, it was possible to draw up a hierarchy of the topics and types of wetlands for which the stakeholders expressed needs. Some of the results are summarised in Table 2 (see above).

A number of "generic" needs (for all types of wetlands) are frequently mentioned, e.g.:
> acquire knowledge on the roles of wetlands in hydrological functions (notably their links with groundwater);
> quantify the services rendered by wetlands to society;
> measure the success of management and restoration operations and their benefits for society.

Stakeholders also need standardised indicators and tools, for use throughout the country to inventory and delimit wetlands, as well as assess their status. The survey also revealed a number of specific needs expressed for certain types of wetlands, e.g. for wet meadows. In general, the survey results made clear the discrepancy between the topics addressed by research over the past ten years and the needs of stakeholders. One example is the types of wetlands studied. Over half of all research projects address littoral wetlands, but the latter are not of particular interest to stakeholders who need tools for wet meadows, side channels, reed ponds, pools and peaty environments, all of which are fairly infrequent research topics.

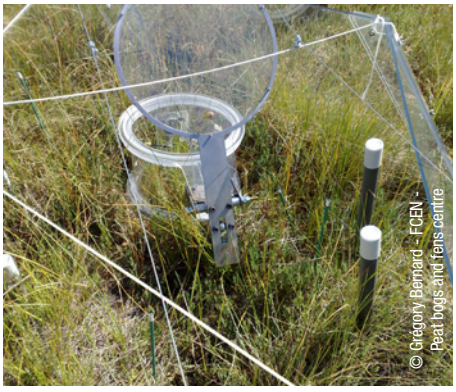
Luc Barbier,
French nature reserves, "Compensation as a last resort"

So do wetlands constitute a reference state or are they evolving entities? It is difficult to provide simple answers to questions on wetlands due to their great diversity. But in a context of disappearing wetlands, compensation should be seen as a last resort. The "avoid, mitigate, compensate" approach consists above all of avoiding and mitigating the damage done to wetlands. Climate change will probably accelerate awareness on the need to preserve wetlands. For me, the efforts to create that awareness must first restore the physical link between the public and nature, by making available walking paths, organising topical excursions, etc.

Closer ties between scientists and stakeholders

The third part of the MNHN study compared the inventory of actionable scientific results with the needs expressed by the people in the field to identify existing knowledge that should be transmitted and the most useful research topics for the future. The complete analysis is currently being drafted.

Following the outline of the MNHN study, the remainder of the morning session was devoted to a series of topical presentations. Jean-Louis Simmonot (Rhône-Méditerranée-Corse Water agency) discussed the approach adopted by the agency and the corresponding operational needs. Next up was Francis Muller (Peat bogs and fens centre, FCEN), who provided information on the situation in peat bogs and fens, before pointing out a number of promising paths for scientific policy in the field. Florent Arthaud (University of Savoy) continued with a presentation on wetlands subject to river dynamics and human management, highlighting their value as "full scale" experimental systems. Christian Lévêque (IRD) then questioned the notion of a "reference state" for evolving environments such as wetlands and Gabrielle Bouleau (Irstea) discussed the potential contributions of the human and social sciences to research on wetlands.



The Peatwarm project monitors the impact of climate change on peat bogs and fens

The presentations and the contributions from the audience outlined the two central questions of the meeting, i.e.:
> what must be done to make better use of research results?
> which topics should research address in the future?

They were the subject of the discussions during the afternoon session. In terms of making better use of results, several speakers

mentioned the need to further segment communication tools and formats, adapting them to the various publics and providing:
> basic information for the general public on the issues involved in preserving wetlands;
> numerical data and their economic translation for elected officials;
> practical information for farmers on the ecological impact of breeding practices, risks involving parasites and the forage value of meadows.

Noting the omnipresence of paper documentation (over 10 000 references to wetlands in the national document database) and the resulting risk of information dilution, Quentin Gauthier (Ecology ministry) proposed the development of more instructive and interactive tools, such as web documentaries or events in the field. Philippe Dupont (Onema) in turn highlighted the need to improve the transfer of tools to users, e.g. via technical workshops organised around the country. Fundamentally, the organisation of regular, face-to-face meetings between scientists and managers was seen as a key prerequisite for fruitful discussions.

These discussions, indispensable for the transfer of existing knowledge, will also help in orienting wetland research toward operational needs. Citing a number of local examples, the speakers and the audience listed a set of topics and needs requiring research that coincided with and confirmed the results of the MNHN study. On the whole, a majority of stakeholders agreed that it is important to work on all wetlands, including the most common whose functions in hydrological regulation should be fully acknowledged. Similarly, there was consensus concerning the need to remove barriers between approaches, notably thanks to the contribution of the human and social sciences with the notion of wetlands as eco-socio-systems. On the other hand, the debate remains heated between two perceptions of wetlands, the first seeing them as a reference state requiring restoration and the second as evolving entities on a trajectory determined by political decisions. The relevance of each perception depends of course on the type of wetland in question, its ecological value and the services it renders. In any case, the financial resources allocated for agro-ecological research remain a decisive factor. At the end of the meeting,

Informing and raising awareness directly in the field

Emmanuèle Gautier,
Physical-geography laboratory, CNRS
"Keep it simple for long-term observatories"

The creation of long-term observatories, requested by numerous stakeholders, would appear indispensable in order to understand the functions of wetlands. Unfortunately, it is very difficult given the current organisational structure of research (National research agency, EU) generating very large projects requiring complex management systems. On side channels along the Loire river, we succeeded in equipping a number of sites since 1995 thanks to the national research programme for wetlands and several minor contracts with the Nature conservatory and the Loire valley nature reserve. We measured water levels, ran chemical and isotopic analyses, etc., i.e. pretty simple stuff, but that nonetheless produced very interesting results on the exchanges between the water table, the river and the wetlands. If a new national programme is launched, it should encourage this type of work.

Luc Abaddie (president of the Onema scientific council) clearly positioned wetland issues in the framework of climate change. Wetlands are complex and unforeseeable systems in which "simple" questions are no longer relevant and it is more important than ever to work on developing a shared environmental awareness. ■

For more information

Slides from the symposium:
http://www.onema.fr/Acquis-et-besoins-operationnels-un

A Meeting Recap will be available in 2014 at www.onema.fr, in the Resources section (Meeting Recap series).

Meeting organisation

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