

MANAGERS' VIEWS ON RIPARIAN VEGETATION MANAGEMENT IN FRANCE

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1. INTRODUCTION

The COST Action CONVERGES "KNOWLEDGE CONVERSION FOR ENHANCING MANAGEMENT OF EUROPEAN RIPARIAN ECOSYSTEMS AND SERVICES" aims to promote the dissemination of scientific and applied knowledge relating to riparian vegetation. This involves synthesizing knowledge on riparian vegetation, coordinating research efforts, contributing to the dissemination of knowledge between scientists and practitioners and promoting the research interests of practitioners within the scientific community. As part of this action, one of the objectives is to propose an analysis of the diversity of issues and management practices associated with this riparian vegetation within the European Union, as well as ways of improvement and the main obstacles to overcome for better management of these systems. To achieve this objective, an international survey was carried out and workshops were organised in various countries in order to gather the vision of the riparian zone managers. This report presents the results of this work for metropolitan France¹.

2. METHODS

The data presented in this report come mainly from two sources:

- An on-line survey carried out at European level in the framework of the COST CONVERGES Action (See Annex 1). This questionnaire was designed by Gorazd Urbanic and Emilio Politti in order to address the issues of riparian vegetation management conditions and also the relations between the scientific and operational worlds. It gave rise in France to 126 responses from French-speaking managers (125 working in France and 1 in Belgium). 93% of the respondents work in the public sector and 7% in associations in charge of natural protected nature areas. They work in a wide variety of physiographical contexts representative of metropolitan France: mountains and piedmont areas (13%), piedmont and lowland areas (25%), lowland and coastal areas (16%), lowland areas only (35%) and all these contexts at once (11%).
- Two workshops were held during the conference "How to improve the management of our riparian zones? What good practices to adopt in the face of new challenges" organised in Orléans (France) from 12 to 14 October 2020 by the FCEN, the Conservatoire Espaces Naturels, the University of Rennes 2, the CNRS and the INRAE. These two workshops entitled "Riparian management today: good practices and obstacles" and "Riparian management tomorrow: needs and emerging issues" brought together some forty participants, a quarter of whom were managers of natural and protected areas, a quarter of whom were academics, a quarter of whom were members of administrations in charge of environmental issues and, for the remaining quarter, members of consultancy enterprises, watershed management structures and NGOs.

3. THE RESULTS OF THE SURVEY

3.1. MANAGEMENT PRACTICES, CONDITIONS AND DIFFICULTIES

The difficulties faced by managers in charge of riparian zones are of several kinds (Table 1).

- Almost half of the respondents mention either a decrease or a lack of financial means. This has both direct effects on management structures (lack of human resources in the field, lack of

¹ area of the French Republic which is geographically in Europe

time to devote to riparian management) and indirect effects on management (price of studies and work pulled downwards leading to unsatisfactory results).

Table 1: Problems encountered in riparian vegetation management

Category	Key issues facing managers	Occurrence (%)
Available means	Lack of/lower financial means: negative effects on the quality of studies and works, lack of agents in the field, management area too large in relation to the means, lack of time, lack of means to communicate, etc.	49
Multifunctionality of riparian vegetation	How to define intervention intensity to combine several issues, particularly to reconcile biodiversity and flood risk or to assess the obligation to intervene in woody debris management	22
	How to manage conflicts of use (leisure activities, wood harvesting, agriculture, urbanisation, etc.), pressure to manage the flood risk component	21
Ignorance or non-recognition of the specificities / challenges of riparian vegetation	Lack of knowledge on the part of riverine residents of how it works and what are the issues, lack of understanding of management choices, lack of interest in an object considered uninteresting, lack of knowledge of their maintenance obligations.	22
	Lack of involvement/ambition of politicians, lack of interest, visibility, legitimacy to work on it	18
	Inappropriate practices and/or failure to take the specificity into account: clear cutting, planting, etc.	18
Status of riparian areas, legislation, administrative context	Difficult access/intervention on private property, difficult to have a homogeneous or coherent approach at catchment scale, or locally adapted, with multi owners (fragmentation) who are left to their own choices or who are unaware of their obligation.	36
	Complex and inappropriate legislation (e.g. 1 ha limit for forest status, too short intervention period, non-application of the maintenance obligation).	22
	Lack of more powerful legal protection tools, lack of financial penalties in case of pollution, lack of a legal definition of good management practices	9
	Complexity of the administrative context	4
Management vision	Habit, the desire for a garden landscape, the weight of tradition, curative practices, but not management, neither anticipated nor at catchment scale, everyone has their own vision of maintenance.	29
	Difficult paradigm change (engineering => ecological), lack of acceptance of free evolution and non-systematic intervention.	5
Skills, knowledge, training, tools	Lack of skills in the management institutions, lack of qualified consulting groups, lack of technical assistance and tools adapted to the context: which species should be favored locally? What are the socio-economic benefits of non-intervention? How should the level of intervention be measured? How can the effect of a particular practice be assessed? How to assess the status and the issues?	26
	Lack of dedicated training	2
Biophysical functioning of riparian vegetation	Invasive species	11
	Climate change (more extreme events = increased demand for maintenance, lower water levels and floods)	3
	Emerging diseases, declines in adapted species	2
Technical issues	Areas with difficult access, difficult work (soil), limited intervention period due to climatic conditions	11
	Lack of soft maintenance technique	1
	Lack of biological material for plantations	1
Others	Lack of communication/exchange with elected representatives and local residents on maintenance obligations, the issues associated with riparian vegetation, possible practices, services provided, etc.	4
	Lack of outlets for wood recovery	4

- The status (ownership, legal protection, administrative rules, etc.) of riparian zones is also a subject very frequently associated with management difficulties. This includes the difficulty of intervening on mostly private land (36%), a legal framework considered unsuitable or not sufficiently restrictive and the complexity of administrative procedures and contexts. For example, in terms of management structures, riparian vegetation is managed by a single management entity in only 45% of cases. Similarly, the legislation is judged to be mostly unclear with regard to the prioritization of issues and degrees of stakeholder involvement (whereas responsibility for maintenance seems clearer) (Figure 1).

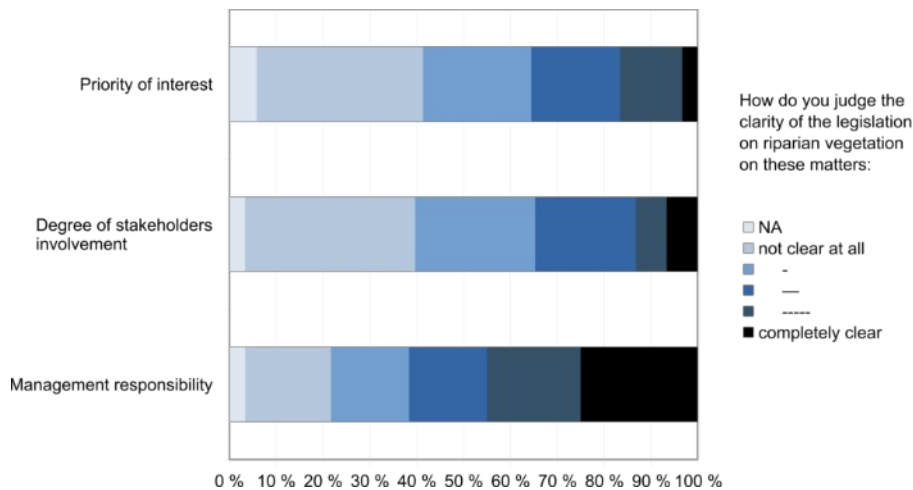


Figure 1: Clarity of legislation concerning riparian vegetation

- The multifunctional nature of riparian vegetation generates difficulties both in managing conflicts between users and in combining several issues. The couple that most often comes up as being difficult to reconcile is the combination of the "flood risk" issue and the "management of biodiversity and aquatic ecosystems" issue. Thus, the riparian zone is associated primarily with flood risk and ecosystem (particularly aquatic) management issues and secondarily with sediment management (Figure 2). The issues of quantitative management of water and forest resources appear to be less of a priority; they are even irrelevant for more than 30% of respondents.
- Knowledge and representations associated with riparian vegetation are also included in the categories as sources of difficulty for more than a quarter of respondents. This covers, on the one hand, a feeling of non-recognition of the issues/specificities associated with riparian vegetation by elected representatives, local residents or landowners (whether through lack of interest or inappropriate practices) and, on the other hand, management which is still mainly based on maintaining habits and the slow evolution of the vision of what this management can/should be (e.g. maintaining an open and gardened landscape, etc.). Such knowledge and representations are crucial, as the main reasons for decisions on riparian management are socio-political. Indeed, the answers 'political will', 'stakeholder pressure' and 'habit/tradition' are more widely accepted than reasons based on some form of expertise or scientific data or modelled data (Figure 3).

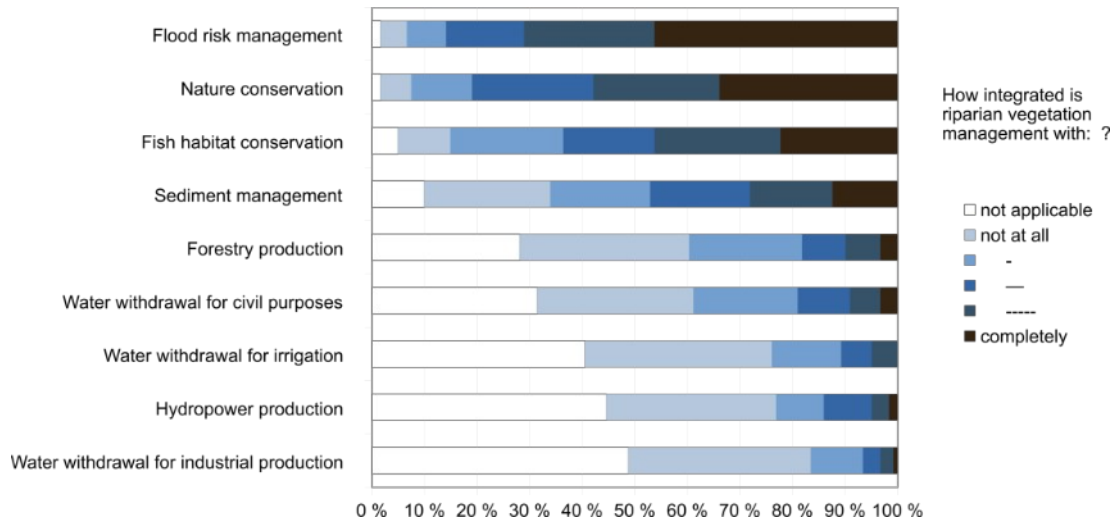


Figure 2: Applied issues associated with the management of riparian vegetation.

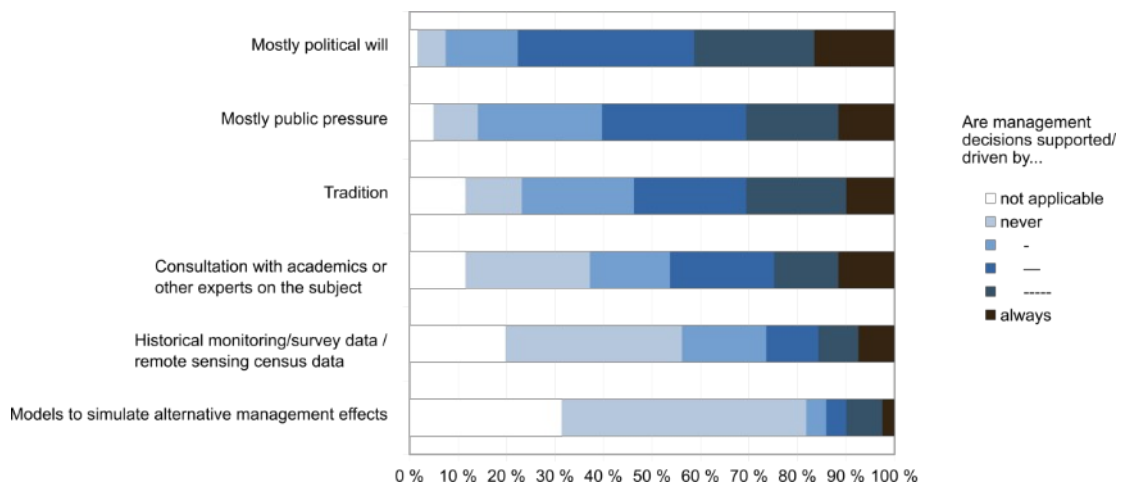


Figure 3: Are riparian management decisions based on...

- The lack of specific skills is mentioned in more than a quarter of the responses. This corresponds both to the competence of the structures in charge of riparian vegetation management and the competence of the consulting groups and operators in charge of the works. This category refers to many concrete expectations in terms of adapted tools and training to answer questions such as: which species to plant? How can the socio-ecological effects of a given practice be assessed? Etc.
- Secondly, other issues were mentioned, such as those related to the biophysical functioning of riparian zones in a context of global changes (climate change, invasive species), technical issues (poor accessibility of riparian zone for work, lack of planting material, etc.) or low communication level, etc.

3.2. RELATIONS WITH THE ACADEMIC WORLD

The availability of scientific tools in support of riparian vegetation management is generally estimated in a fairly uniform manner according to the different subjects (ecological status, flood risk, etc.), except for forest management issues which seem to be less in the focus of attention in the French context (cf. Figure 1). On average, 20 to 30% of respondents consider this availability to be nil or very low and 40% consider it to be optimal or satisfactory (Figure 4). However, in response to the question 'are the existing tools easy or practical to use', only 30% of respondents find them very easy or practical (9%) and rather easy or practical (21%).

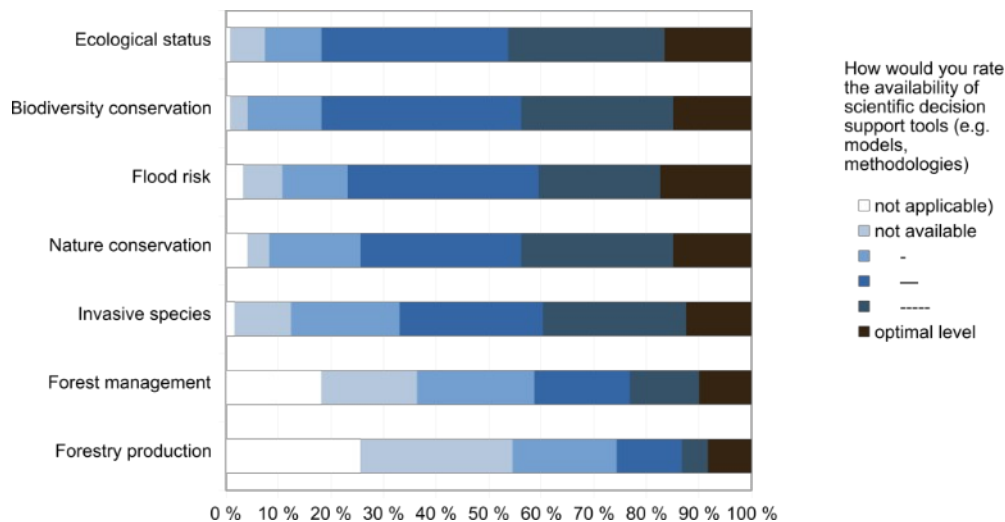


Figure 4: How would you assess the availability of scientific decision-making tools?

At the same time, the main obstacle identified by managers to the use of these tools is the lack of a relationship with the academic world (Figure 5); this response is reinforced by the estimation of a transfer from the academic world which is judged in the majority of cases to be too weak and too irregular (Figure 6). Then, in a second stage, the following reasons are mentioned: lack of coordination between the entities involved in management, lack of financial resources, lack of legal obligation, lack of training and the absence of these tools (Figure 5).

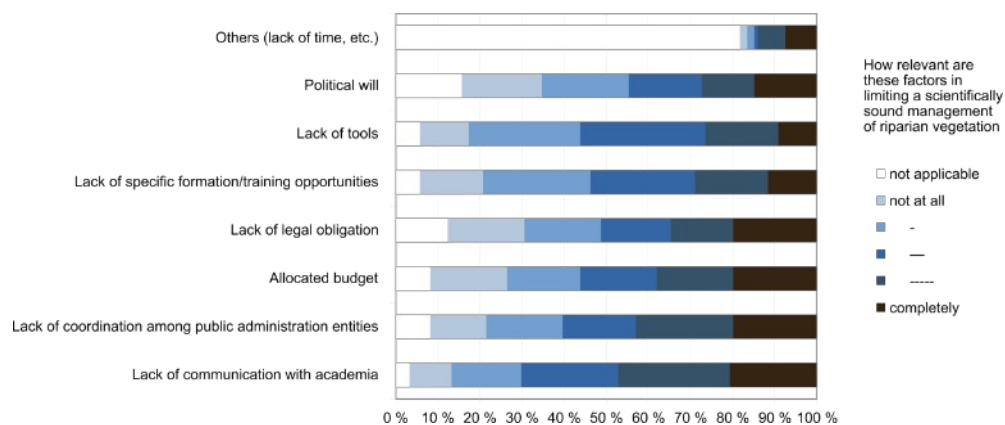


Figure 5: How relevant are these factors in explaining the low use of scientific tools for managing riparian vegetation?

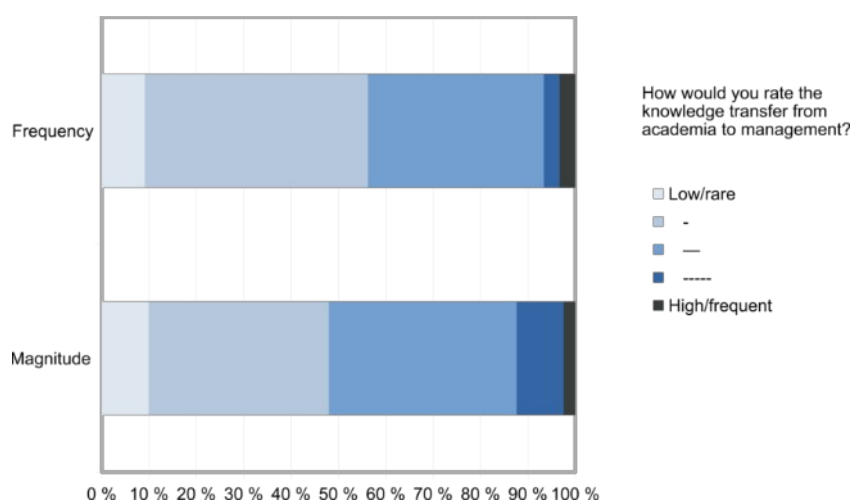


Figure 6: How do you assess the transfer of knowledge from the scientific world to the management world?

The proposals for improving exchanges between the academic and management worlds include first of all a request for training and time for exchanges on riparian zone management (Table 2), to which it is also possible to add the proposal to produce communication media such as "technical guidebook", "newsletters", "forums", etc. Then, a series of proposals were formulated on the concrete modalities of a stronger involvement of academics in riparian zone management: involving researchers in the management institutions, integrating this involvement in the evaluation of researchers, making links and also the post-study feedback from scientists more systematic, etc. Finally, proposals are made regarding the accessibility of information, the need for local relays and the need for data/methods that are better adapted to each context.

Table 2: How to improve transfers between the scientific and management worlds

Proposals for improving knowledge transfer	Occurrence (%)
Training for technicians, consulting groups, politicians, etc., having "compulsory" training courses funded.	24
Communications, annual conferences, technical meetings, decentralised workshops, in the field, thematics, product for large audience (elected representatives, local residents).	24
Funding research so that it can take part in management bodies, setting up exchange groups, funding applied research projects, including involvement in the career assessment of researchers, creating referral roles, involving scientists and managers upstream of each project, funding expertise missions, making it compulsory to return from science to management, etc.	20
Producing technical guides, case studies, videos, newsletters, mailing lists, exchange forums	16
Make methods/studies/data accessible centrally (via internet), too much material dispersed between institutions	8
Strengthening local relays (managers' associations, etc.)	2
Produce localized, scaled and relevant data	2
Develop more applied tools	2

4. THE RESULTS OF THE WORKSHOPS

4.1. GOOD PRACTICES AND MANAGEMENT OBSTACLES

The discussions on the issues and management objectives generally highlight the question of reconciling the different uses or functions performed by riparian zones. This point is particularly important for the combination of flood risk management on the one hand and habitat and biodiversity preservation/restoration on the other hand; these two elements are generally considered difficult to reconcile.

The discussion of the obstacles to better manage riparian vegetation and alluvial forests raises the following points:

- The means of management
 - lack of means (human time for monitoring actions, budget, etc.),
 - budget allocation sometimes problematic (i.e. focused on restoration and not on regular management, non-recognition of non-intervention by funders, etc.).
 - lack of relevant monitoring indicators, diagnostic tools, decision support (e.g. how to prioritize the species to be favored, etc.).
 - Lack of clear legal status of riparian zones.
- The actors of the management
 - diversity of actors, conflicts and uses
 - complexity of ownership, notably for non-navigable streams
 - complexity / confusion / contradiction between the institutions involved
 - lack of a shared vocabulary between actors
 - Being accepted by the actors
- The management context
 - lack of skills of some actors (on riparian zone functioning, in GIS, etc.).
 - Regulations and policies that are sometimes complex, not adapted and generate excessively long delays.
 - An "old-fashioned" view of nature and management on the part of some local residents and elected representatives
 - Difficulty to work in emergencies, for example following a disaster or flood
 - Difficulty to work on processes such as erosion as a support for biodiversity
- Incomplete understanding of the functioning of riparian zones
 - effects of invasive species and climate change
 - lack of knowledge of the dynamics of certain species and environments
- Prioritisation of issues
 - issues of coherence between public policies (e.g. hydraulic versus ecological management)
 - difficult prioritisation between environments and issues

To remove these obstacles, several solutions were mentioned, such as the opportunity effect of setting up integrated water management, the possibility of working at finer scales (considered "easier"), the use of mapping tools, investment in dialogue with stakeholders, the use of an approach based on local history as a means of discussion, and work on the Common Agricultural Policy (CAP) (particularly on the issue of afforestation of buffer zones).

4.2. EMERGING NEEDS AND ISSUES

Discussions on new needs and emerging issues highlighted:

- issues related to global changes including
 - expected effects of climate change on the functioning of fluvial systems and on plant species
 - how to manage invasive alien species? What are the means of combating them? Should we learn to live with them? How to adapt the response to each species?
- anticipating new uses, some of which are considered undesirable, and their impacts (e.g. increased demand for wood energy).
- the prospects for an evolution of the legal framework and regulations associated with riparian management.
- the need to develop tools / knowledge to consider the management of driftwood in a relevant spatial logic (upstream/downstream flow, identification of risk areas).

The tools that it would be possible to mobilize to support the emergence of these issues are of various types:

- long-term observation tools (observatory, long-term data records, etc.).
- communication and awareness-raising tools: signs, information sheets on ecosystem services provided, collections of good practices, feedback, etc.
- management/diagnosis tools: simple management plan, Payments for ecosystem services (PES), zoning and mapping methods, management guides available in local versions, invasive alien species management methods, invasive alien species identification sheets, etc.
- use of the nature-based solution concept
- making the link and mobilizing the tools of the Common Agricultural Policy (CAP)

The two workshops also converged to stress the importance of considering the diversity of the stakeholders involved and the need to develop approaches that facilitate exchanges between these stakeholders. This concerns the links between management and academic worlds, as well as the links between management stakeholders or the links between scientific disciplines. The role of institution that could play this role of link between stakeholders was underlined.

5. SYNTHESIS

The combination of the results of the survey and the workshops presented in this report highlights certain strong elements in the management of riparian vegetation in metropolitan France.

5.1. MANAGING THE COMPLEXITY AND RECONCILING THE CHALLENGES RELATED TO RIPARIAN ZONES

There are many sources of complexity in riparian zone management, among which the most frequently mentioned are the multiplicity of stakeholders (local residents, owners, elected officials, financiers, businesses, etc.), the spatial and temporal variability of situations (multi-scale, context effect, weight of traditions and legacies, etc.) and above all the co-existence of multiple issues that are difficult to prioritise (e.g. between the ecological quality of environments and security or the extraction of wood energy).

Ways of tackling this complexity are emerging (e.g. sector-based management of driftwood), but the lack of miracle and transposable recipes must be recalled. In this context, the implementation of new authority distribution rules in water management since 2014 (called in France the Aquatic Management and Flood Prevention Competency or GEMAPI) was highlighted both as an issue (e.g. lack of appropriate skills in certain structures) and as an opportunity (e.g. bringing stakeholders together within the same discussion/decision-making structures).

5.2. UNDERSTANDING CULTURAL FRAMEWORKS AND IMPROVING THE FINANCIAL, TECHNICAL AND REGULATORY FRAMEWORKS FOR THE MANAGEMENT OF RIPARIAN ZONES

Riparian vegetation appears as objects that are not very visible or not at all visible, poorly identified, whose specificities and associated functions remain poorly known (e.g. by elected representatives and local residents). This "invisibility" can be illustrated by the absence of explicit mention in several certain policies that are nevertheless important for their management (e.g. Water Framework Directive (WFD), Common Agricultural Policies (CAP)).

It results in management that is often based more on habit, the will (implicit or explicit) to clean up, poorly adapted practices, anticipation of risks (whether proven or not) than on up-to-date scientific knowledge, a factual assessment of the issues and the actual state of the systems. Practices of the "non-intervention" type thus have difficulty being considered as relevant management options.

This relative invisibility also leads to an additional difficulty, that of legitimate means for managing riparian vegetation. The lack of financial and human resources is a very strongly emphasised element and managing riparian zones in an appropriate manner, at the right scales, takes time. It takes time because the issues are diverse, the actors numerous and the policy frameworks sometimes considered not adapted. In this respect, the private nature of riparian areas regularly comes back as a major obstacle to their management. Some perspectives have been proposed, such as the development of tools such as "simple management plans" or work to update and improve legal frameworks.

The question of means also includes a technical dimension. There is a strong demand for tools adapted to local situations, diagnostic tools (e.g. to assess the invasion rate of a catchment), decision-

making tools (e.g. which species to favor?), etc. The question of resources also includes a technical dimension.

5.3. TRAINING ISSUES

Combating the invisibility of riparian zones and disseminating appropriate tools also seems to require communication and training: organising times for exchanges and training, proposing bibliographical reviews and case studies feedback, having relatively centralised sources of information, but also maintaining networks and/or exchange forums. The issue of knowledge dissemination includes a technical component, i.e. a series of actions for managers, but also a general public component, i.e. actions for elected representatives and riparian zone users.

5.4. KNOWLEDGE ISSUES

Certain applied issues also raise the question of the underlying scientific knowledge. This is particularly the case for several emerging issues such as anticipating the effects of global changes or assessing the impact of invasive alien species and pathogens. Indeed, scientific knowledge does not yet allow for a systematic response on the sensitivity of species or varieties, combined effects, threshold effects, etc. Similarly, a better understanding of the role of riparian vegetation in terms of effects on flooding remains an important research focus to provide objective information for discussions on reconciling risk and biodiversity. This will notably involve a more systematic analysis of the flows and distribution of wood in rivers.

The improvement of the frameworks mentioned in point 5.2 also requires a better understanding of all the social dimensions associated with riparian vegetation: perceptions, representation, uses, etc.