

Management in Practice

From networking to a coordinated management strategy for the invasive alien species of the Loire-Brittany basin

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Editor's note:

This is one of five papers prepared by participants of the conference “Freshwater Invasives – Networking for Strategy II”. Held in Zagreb, Croatia from the 11th – 14th July 2016, the conference was organized by the University of Zagreb, Faculty of Agriculture, European Inland Fisheries and Aquaculture Advisory Commission (EIFAAC) and the Croatian Biological Society (HBD). The primary objective of the conference was to share new information and provide a forum where international scientists, policy makers and stakeholders could encourage the development of the management and policy in the increasingly important area of biological invasions

Abstract

Since its creation in 2002, the objectives of the working group “invasive alien species of the Loire basin” led to scientific and technical information exchange on the management of freshwater invasive plants, and common tools. The structuration of the network was achieved at this scale through multi-level coordination groups: local, departmental regional and basin levels. Each group relaying bottom-up and top-down the information and the needs for tools, the coherence of the action is multiplied on most parts of the basin. The members of the group are experts, management project leaders, territorial structures as well as institutions and non-profit organizations. It relies on a network of practitioners. Based on the learnings of more than 10 years, the Loire basin invasive alien species management strategy 2014–2020 is articulated with the strategies at European, national and regional levels. It aims to coordinate relevant actions at the scale of a large river basin and to exchange on the management of freshwater invasive plants and animals methods. This document identifies guidelines for emerging invasive alien species management projects.

The 24 priority actions for this period (2014–2020) are grouped in 5 main subjects: Coordination, Knowledge and Exchanges, Monitoring and Early intervention, Management and Awareness, Communication and Training. Each action is detailed with aim, context, partners, evaluation and expected products.

The deployment of the strategy will take place in the frame of the Loire nature program 2014–2020. It will promote the monitoring, the rapid response to new populations (e.g. new species or on colonization fronts). An accent is also given on awareness raising and information exchange in this European funded program.

Key words: invasive alien species management, mutualisation, shared tools, Loire water catchment

Introduction

Species have always coevolved with their environment and colonized new territories. The development of human societies and their consequences impact all the planet's ecosystems, in particular with the movement of animal and plant species and their

establishment outside of their native distributional range due to human activity, either deliberate or accidental (Foley et al. 2005). The spread of invasive alien species is considered as one of the main causes of biodiversity loss at the global scale (Gurevitch and Padilla 2004). These proliferations lead to high costs which are estimated to be several billion

dollars per year (UICN 2000). In Europe, near 1100 invasive alien species have been counted. 10–15% of these species have negative effects and induce estimated annual expenses around 12,5 billion euros, 77% of which are attributed to damages and 23% to management (Kettunen et al. 2009).

Biological invasions impact all ecosystems but aquatic environment is amongst the most affected by invasive alien species (Gherardi 2007). Freshwater invasive species have negative impacts on practices, riparian uses and the development of local species (Maman and Jomain 2003). Since several decades, damage induced by biological invasions have become more and more perceptible. Considering this, researchers, managers and decision-makers gathered to have a common reflection for improving invasive alien species management. In 2001, the first meeting on invasive alien plants took place in the Pays de la Loire French region. A regional committee was thus created with the aim of facilitating exchange, improving knowledge on these species, their impacts and their management.

Based on this model, a working group on freshwater invasive alien plants of the Loire-Brittany catchment was created by the Loire-Brittany water agency in 2002. Since 2007 this group is coordinated by the Nature Conservancies Federation (Fédération des Conservatoires d'Espaces Naturels – FCEN). The working group aims to (i) provide scientific and technical responses to invasive species managers, share experience feedback and suggest operational management strategies, (ii) contribute to better knowledge on the worst species and (iii) elaborate common tools for better information.

From stakeholders coordination to a management strategy for the invasive alien species of the Loire-Brittany basin

The Loire catchment as an exchange space

With its 1010 km, the Loire is the longest river in France and one of the longest in Europe. Its catchment area covers a fifth of the French metropolitan territory, and the hydrographic system still presents mobile river course parts. The Loire valley being the largest river system in France, its banks have been inhabited and supporting the commercial exchanges since long. It is also the place of ancient, numerous and repeated introductions of species. The Loire basin has been the ground of the first practitioners' coordination project on biological invasions, at the regional and basin scales. The basin scale for the management strategy is consistent with the aims of

the different public policies concerning freshwater ecosystems restauration and preservation, or even public health (Maman and Jomain 2003). The inclusion of Brittany in the working group study area is supported by the coherence of the territoriality of the Loire-Brittany water agency.

A network of stakeholders

The basin working group is formed by a wide range of stakeholders, such as experts, awareness and management projects leaders, community representatives, institutions, etc. This important group member diversity allows great exchanges on the basin: action plan progress, experience feedback, knowledge improvement, research needs and research-management programs results (Figure 1). It also favors the elaboration of common tools, such as state of art documents on the management and the identification of the freshwater invasive plants (Haury et al. 2010; Hudin and Vahrameev 2010). These documents are available online on the Loire nature resources center, which gathers all information available on invasive alien species and networking strategies on the Loire basin.

An integrated management program for a catchment basin

The thematic of invasive alien species is a priority for the Loire program since 2007. The fourth phase of this program (2014–2020) aims at preventing the introduction of new species and controlling the established ones, and also funds the coordination at the Loire basin scale. The coordination of the network's actions is made possible thanks to the support of the institutions and local authorities involved in the Loire program.

A management strategy for the catchment basin

Since its creation in 2002, the objectives of the working group led to the elaboration of a coordinated management strategy at the scale of the Loire basin. This strategy was completed in 2014 and validated by all the group members, national and regional state institutions and nation structures concerned by the invasive alien species thematic.

In the absence of a national strategy, the Loire basin strategy was based on texts elaborated at regional levels and taking into account the European strategy and guidelines (Genovesi and Shine 2004; Matrat et al. 2012; CPIE des Monts du Pilat 2013; Mercier 2013). The strategy is completed by a range of actions identified to implement its objectives, at different scales: from local to basin ranges.

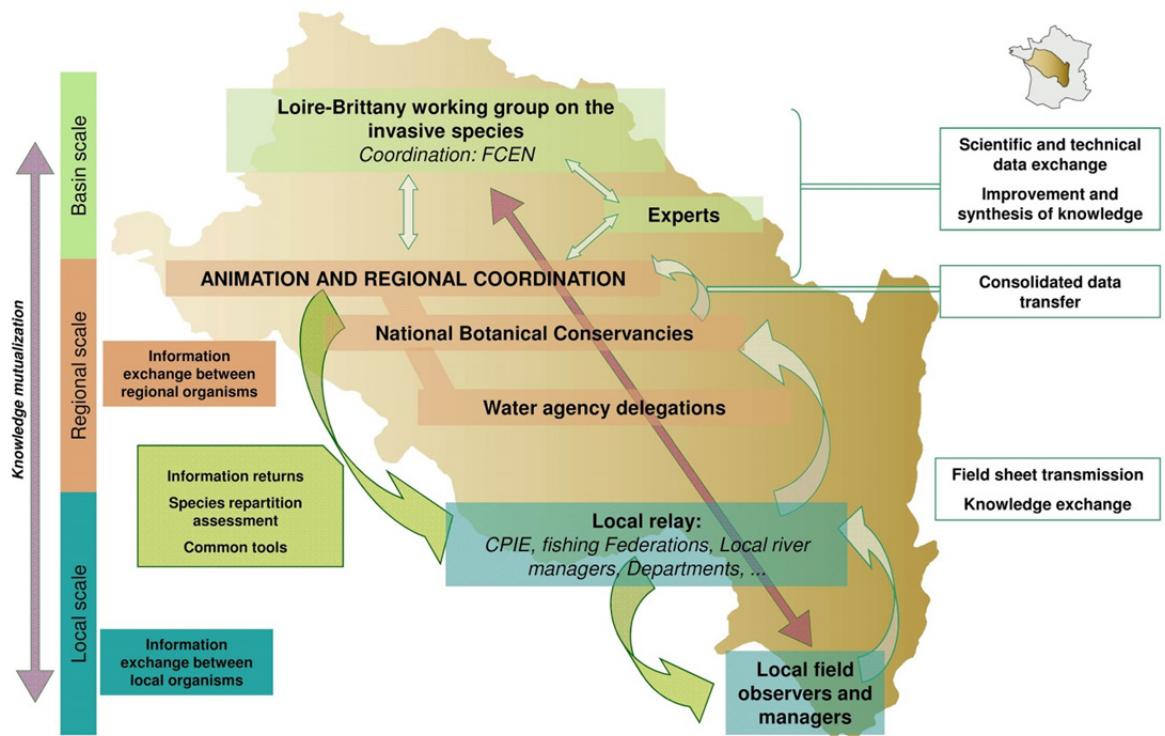


Figure 1. Organization of the stakeholders network “invasive alien species of the Loire-Brittany basin”.

Guiding lines for a joint approach

The Loire basin invasive alien species management strategy 2014–2020 (Hudin et al. 2014) aims to coordinate relevant actions at the scale of a large river basin and to exchange on the freshwater invasive plants and animals management methods. The actions planned are articulated and relevant to the general lines of the strategy, and aim to be relevant at the scale of the Loire-Brittany hydrological system. They also target the optimization of human and financial means used at the different levels (basin, regional or local levels). The listed actions are also in consistency with public policies concerning water management and biodiversity such as the Water Framework Directive, the Habitats Directive, Development program and water management, Regional schemes of ecological coherence, etc.

The work performed since 2002 through the working group animation has led to the emergence of several regional groups on the greatest part Loire watershed, relaying the basin actions and multiplying the dissemination of the information. At first, the aquatic invasive alien plants were targeted by the working group, but the increase of solicitations concerning other species groups led to a broadening

of exchange subjects. For this reason, the working group has wished to have a coordinate strategy considering both fauna and flora invasive alien species.

A strategy with 5 main groups of actions

The invasive alien species management strategy of the Loire-Brittany basin aims to constitute a coordinated frame to improve invasive alien species prevention, management and awareness raising. Its objectives concern the whole basin and the regions where a territorial animation exist or remain to be built. The strategy has five main groups of actions:

Coordination

The strategy is based on the links between basin and regional scales, and the articulation with the national level. It aims to coordinate a network bringing together the managers and researchers and facilitate sharing of information and experiences. The basin animation is in charge of organizing work and exchange meetings, information exchange and the elaboration of common tools and documents. The working group’s reflections contribute to knowledge synthesis, validation of mutual tools and advises

about the realization and monitoring of management projects. This group of actions includes the importance of exchanges with structures or animations outside the basin (national scale, other groups on invasive alien species, etc.) in order to maintain the consistency with national and European levels about the invasive alien species issue.

Knowledge and exchanges

The management of invasive alien species needs to gather knowledge about ecology, impacts of these species, management methods, etc. The strategy aims thus to provide the managers and the concerned stakeholders some detailed and updated information in order to facilitate decision making concerning the invasive alien species management of the basin.

Monitoring and early intervention

It is well recognized that the management of invasive alien species must be the earliest possible to minimize their impacts (Soubeyran et al. 2012). Early detection and rapid response are thus some fundamental elements of every management strategy on this thematic. The basin strategy will help structure the exchanges to allow a fast, effective decision, and actions in case a new species is detected in the Loire-Brittany basin.

Management

Planning the management of invasive alien species population is really important: a well-organized preparation of operations can decrease the costs induced by the management itself, the time needed, and help evaluate the results. Providing support to project holders from the earliest steps of the management preparation is crucial to maximize efficiency of the considered management operation. The strategy aims at the improvement of the planning through better information on methods and past experiments.

Awareness, communication and training

Higher success in invasive alien species management can be achieved by awareness raising, identification of established and emergent species and communication about invasive alien species. A lot of exotic species are released in the environment due to public ignorance of their impacts on ecosystems and native species (Haury et al. 2010). This highlights the need of a better communication on the biological invasions thematic near professional and non-professional publics by the use of supports and messages well-adapted to the targeted public (managers, elected representatives, local authorities, etc.).

An ambitious action plan for 2014–2020

The strategy implementation relies on the objectives operational declination in 24 actions. For each of these actions, the aim, context, partners, evaluation and expected products are detailed. The realization of actions relies on the basin animation on the one hand, and on the projects and network dynamic in the Loire-Brittany basin on the other, for the best efficiency possible.

The deployment of the strategy will be supported in the frame of the Loire nature program 2014–2020. The Loire nature program strategy stipulates this issue has to cross the administrative boundaries and requires coordinated actions at the scale of concerned territories. The basin network animation (actions 1 to 3 of the actions program 2014–2020) allows mutualisation and knowledge exchange (actions 4 to 10 and 17 to 24) and aims to achieve the objectives of the Loire nature program with the arrival of new species avoidance (actions 13 and 14) and the control of established species (actions 9, 15 and 16).

Discussion

Invasive alien species have growing impacts: financial and human means allocated to their management can't live up the economical, ecological and health encountered stakes. In the Loire basin, to answer the growing managers' requests for assistance, the Loire-Brittany Water Agency has built a framework for exchange and a common work.

Working at the basin scale was considered as pertinent, the hydrographic network being considered as one of the most important dispersion pathways for invasive alien species (Lefevre 2013), either aquatic or terrestrial. The basin level has to articulate with the territorial coordination scale, these last being to the administrative boards (departments, regions) which are generally financing the management actions. In order to avoid some redundancies in the role of each level, the basin strategy action program identifies their specific roles.

Conclusion

The indicators specified in the action plan will allow the strategy's implementation, its monitoring and its evaluation. The strategy assessment is planned in 2017 and 2020 and some adaptations may be made to update the basin strategy at half-course (2017). On the other hand, a study on the 2014 distribution of the main invasive alien species of the territory is in progress. This assessment will be renewed in 2020 and compared to the initial state to determine if

the non-aggravation objective of the Loire nature program has been achieved.

In France, this territorial strategy at the scale of a major hydrographic basin is a first, as no interregional strategy preexisted. The coordination of actions sharing guidelines and objectives is an initiative made possible thanks to stakeholders, institutions and authorities support, committed in the Loire nature program 2014–2020. This document is aimed to be shared and widely spread amongst the other metropolitan and European basins. The working group experience will serve other French basins currently working on their own invasive alien species management strategy, like the Rhone-Mediterranean-Corse and Rhin-Meuse basins.

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