

Review of the GB Framework Strategy for Invasive Non-native Species

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Introduction

- As required by the terms of reference of the contract, the present assessment has been based on an analysis of the GB strategy, and on a review of selected international case studies.
- The GB approach to invasive species has been reviewed on the basis of the documentation provided by the Non Native Species Secretariat, on available literature, and on interviews with selected experts.
- The international case studies have been selected with the aim to provide examples of approaches at different levels of ambition, of regulatory vs. non regulatory basis for dealing with invasive species and to provide information on different aspects of the policies on this issue.
- On the basis of the information collected, the GB strategy on invasive species has been discussed in terms of efficacy, identifying strengths and weaknesses, and discussing possible ways to enhance the GB approach on this issue.

International case studies

- Several reviews have assessed the approaches adopted at the national or regional scale to deal with invasive species (e.g. EC 2011, Riley 2014, Shine et al. 2008, Takahasi 2006); therefore the scope of this paragraph is not to present a comprehensive overview of the approaches developed in different countries on the issue of invasive species, but to synthetically describe a limited number of case studies, selected to provide useful examples for discussing the efficacy of the GB approach.

Norwegian strategy

- In May 2007, the Norwegian Biodiversity Information Centre presented a Norwegian Black List of alien species that may have negative impacts on ecosystems, indigenous species or genotypes in Norway. The first edition of the Black List was based on ecological risk analyses of about 220 alien species that already occurred in Norway. The Black List intended to provide a better scientific basis for setting priorities and further developing measures to combat invasive alien species in the sectors responsible for this issue.
- The strategy included an aim to develop a comprehensive legislation on the issue, that should have introduced a regulation of the import and possession of black listed invasive species. The Norwegian Nature Diversity Act, approved in 2009, included a Chapter 4 dealing with alien species and contained specific provisions for preventing the establishment of alien organisms in the Norwegian environment. The Act was aimed at introducing a regulatory framework. However, the provisions have not yet become operative, partly due to the on-going discussion in Norway as well as at the broader European scale, on the implications of the regulatory approach and in particular with the possible overlaps or conflicts with the plant health regime.

Spanish legislation

- In 2011 Spain adopted the Royal Decree 1628, based on a “black list” of invasive species and on a list of potentially invasive species. The Decree included provisions regulating the import, possession, trade and transport of invasive species listed in an annex. After its first release, there has been a wide and active debate in Spain and several stakeholders opposed the approach proposed by the legislation. The text has thus been revised and a new Decree (630/2013) entered into force in August 2013 (<https://www.boe.es/boe/dias/2013/08/03/pdfs/BOE-A-2013-8565.pdf>).
- The legislation is based on a list of 181 species (or higher taxa) posing a severe threat to native species, habitats or ecosystems. The list can be updated by the Min. Agriculture & Environment, based on proposal by regional authorities. The bill includes the possibility to adopt decision with urgency in specific cases. For species in the list, there would be a ban of possession, transport, trade, release into the wild, as well as a general prohibition of uses that can cause an increase of the species (e.g. use for baits).
- The main challenge of the new Spanish approach is likely going to be the actual enforcement of the legislation, that will require an active role of the local communities. Also, there have been criticisms on the possibility to derogate to bans, and some NGOs have questioned the overall efficacy of the framework.

USA

- The US framework, based on the Executive Order 13112, is aimed at ensuring a coordination among the different decision levels of the US federal system. The order has established the National Invasive Species Council (NISC), that has the aim to maximise organisational effectiveness and collaboration among international, Federal, state local governments and stakeholders. NISC does not have the legal authority to impose action to agencies, or to reorganize departments. The efficacy of NISC action depends on its ability to conduct evaluations across Federal departments and agencies, collecting budget information on agency spending and thus permitting a continuous overview of Federal government’s operations in a strategic way.
- Another significant element of the US system is that the Federal government provides funding for research into invasive species, administered under the auspices of the USDA. This central mechanism indeed is considered to provide an important starting point for prioritizing research programs.

Japan

- Japan has adopted a specific and quite ambitious legislation on invasive species, the Invasive Alien Species Act, that was approved in 2004 and enforced since 2005. The framework is based on two lists: a list of invasive species (comprising around 100 species, defined as causing damage to ecosystems, human safety, agriculture, forestry and/or fisheries), and a list of potentially invasive species (several hundreds taxa). The legislation introduced a ban to import, possess, raising, transfer, releasing, planting or sowing invasive alien species; it requires an authorisation for import of potentially invasive species, based on a risk assessment and a consultation, not exceeding a duration of 6 months.
- The frameworks has also provided funds for carrying on control of selected invasive species, amounting to slightly over m3 USD/year, in the 2008-2010 period.

- The efficacy of the legislative framework appears confirmed by the decrease in the number of imported specimen, that has been of 47.3% of mammals, 70.8% for birds, 38% for reptiles, 84.2% or amphibians, and 11.5% for ornamental fish (Goka 2010, Goka et al. 2008, Mizutani & Goka 2010).

Australia

- Australia has developed a stringent biosecurity policy since the beginning of the XX century, based on several pieces of law, and undergoing a revision, aimed at developing a Biosecurity Bill, updating previous legislative acts.
- There have been criticisms over the efficacy of the Australian policy in terms of management of invasive species, and of coordination among states' actions (e.g. Riley 2014). However, the country has indeed one of the most stringent biosecurity policies in the world, in terms of regulation of imports (Beale et al. 2008). The framework in fact prohibits the entry of animals, plants and their products into Australia, unless they are already on an authorised list.
- The Australian biosecurity framework is based on a synergic approach among agriculture, forestry, fishery and the environment. Furthermore, the framework is supported by very significant investments, with a total budget of \$1.6 billion since 2009, and \$524.2m of new funding for the 2012-13 period.
- The Australian biosecurity policy has permitted to keep the country free of several highly invasive species; for example, Australia is one of the very few countries free of the Varroa mite, and this has permitted to prevent losses to the Australian plant industries for \$21.3-50.3 million/year over thirty years (CSIRO).

EU upcoming regulation on invasive species

- The EU has launched a proposal for a Regulation on invasive species that is at present being debated by the EU Parliament, the European Council, and the European Commission. Although the final structure of the legislation is not finalized yet, some principles appear to have been largely agreed. At the present level of the discussion, it can be expected that the regulation will affect action by EU member states in several ways:
 - EU Regulation will form the framework for MS action, encouraging prevention, eradication and control measures applied at the national level;
 - MS will be encouraged to develop national "black lists" and it will be permitted to apply regulation of import, trade and possession for the black listed species;
 - MS will have an obligation to identify key pathways of introduction of invasive species, and to develop and enforce action plans to address these pathways;
 - MS will have obligations to promptly detect and respond to new invaders;
 - information sharing will be a key element of the framework, there will be reporting obligations, and the EU will implement a European platform for facilitating data sharing. MS will probably have to develop national information systems interlinked with an upcoming EC platform. The need to ensure early detection and rapid response to new invaders will require interlink also with international information systems, storing key data for enabling rapid action.

Discussion

- Many countries around the world have adopted national legislations on invasive species, and the number of legislative tools has increased sharply after the adoption of

the Convention on Biological Diversity in 1992. In 2010 it was calculated that 55% of the countries signatory to the CBD had adopted legislative tool on this issue (McGeoch et al 2010).

- In general, at the global scale, it is acknowledged that Australia and New Zealand have the most stringent and effective biosecurity policies (e.g. Simberloff et al. 2012, Takahashi 2006). These are based on a regulatory approach, that imposes very strict rules for the import of any organism into the country, adopting a so called “white list” system (only permitted species allowed).
- Regulatory although less ambitious systems have been adopted in several countries such as Japan, that have introduced a permit system for any import of species, based on a “black list”. The results gathered in Japan seem to indicate that this approach can significantly reduce the arrival of risky species into the country.
- As noted by Shine et al. (2009) many European countries have some kind of regulation of import, even if often restricted to a limited number of species. The most comprehensive legislation is the one recently adopted in Spain, that comprises 181 species. Most other countries have a very limited number of regulated species.
- The limited number of European countries that have adopted black list legislations is partly due to the concern to create conflicts with existing legislations, in particular the plant health regime, or more in general to determine contradictions with the free trade regime at the basis of the EU treaty. For example, when Norway adopted the Nature Diversity Act in 2009, there was the intention to introduce a regulatory framework covering a wide range of invasive species. The concerns raised at the national and European level, in particular concerning possible contradictions with the plant health regime, started a long discussion, not yet concluded.
- Apart from the regulatory approaches, several European countries have adopted national strategies or action plans, including Austria, Denmark, Ireland, Finland, France, Norway; many others have partly addressed the issue in the national biodiversity action plans. However, most of these tools remain largely on paper, setting the principle of action, but with very limited concrete effects on the organisational and statutory aspects, and thus the enforcement of concrete measures is far from satisfactory.
- One of the challenges in developing effective policies on invasive species lays in the highly intersectoral basis of the issue. As recently noted by Riley (2014) a common trait when dealing with invasive species, is that each country has a range of jurisdictions relevant for different aspects of the issue, and several government agencies and interest groups. Therefore a common but problematic challenge is how to coordinate and synthesize processes across the many lines of responsibility and relevant levels of government.
- Despite the crucial importance of coordination, there are very few cases of policies based on the establishment of peak coordinating bodies (*sensu* Riley 2014), and these include GB and USA. There are several examples of national initiatives nested in national scientific or technical bodies (e.g. Invasive Species Ireland <http://invasivespeciesireland.com>, Belgian Forum on Invasive Species <http://ias.biodiversity.be>), but in most cases these are aimed at improving information sharing more than at ensuring coordination and catalysing action through a direct involvement of the key national agencies.
- The interlink with the agricultural and plant health sectors is particularly crucial for the efficacy of invasive species policies. One reason is that the agricultural sector has in most countries competencies over the border control for plants and potential pests, and the authorisation processes for the import of living organisms, sectors that are

particularly challenging when introducing regulations for the import of species. As stressed above, the potential conflicts with the plant health regime has created significant obstacles to the development of dedicated legal tools on invasive species for example in Norway. On the other hand, the most successful examples of biosecurity policies addressing invasive species – namely Australia and New Zealand – have been obtained with the direct involvement of the agricultural sector in the implementation of these policies.

- As an example, in the discussion occurred at the EU lever for the development of a European Union legislation on invasive species, the main driver has been the environmental sector of the European Commission (DG ENV), but the progresses occurred in the last few year have largely been due to an improved cooperation with the agriculture and health directorate (DG SANCO).
- The upcoming EU Regulation on invasive species will indeed significantly change the legal and policy framework of national initiatives by European Member States. In particular, if the key principles at present under discussion at the EU level will be confirmed, a more active role of MS will be encouraged, both in terms of management action on invasive species, and on regulatory approaches to address prevention. It is likely that the new legislation will clarify the possibilities that MS have for developing regulatory measures aimed at preventing the entry of invasive species into their territories, that will be required to be based on formal risk assessments. Also, MS will be required to identify and address priority pathways of introduction, and this may be done by voluntary and regulatory measures, depending on the specific pathways. Last but not least, the EU Regulation will include provisions for compulsory action on invasive species of EU concern, and MS will need to take into account these new obligations, addressing as appropriate the obstacles to the required actions (e.g. compulsory access to private land).
- One key issue in enforcing measures on invasive species, is the assessment of the risks. Risk assessment is crucial when introducing regulations of import of import and/or trade - because the EU and global free trade regimes impose that decisions are based on science and fully justified -, but also to prioritize action at different levels.
- There are indeed very sophisticated risk assessment protocols in Europe (e.g. Belgium) and the world (e.g. Australian Weed RA), and several European countries have developed priority lists based on standardized risk assessments (e.g. Germany, Austria). The scientific community has in many instances highlighted the limits of existing risk assessment procedures, and have invested significant efforts in improving the accuracy and precision of screening methodologies (e.g. Leung et al 2013). However, in terms of decision making it should be noted that very detailed and accurate risk assessments require an investment in time and resources that is not always justified. For example, in the case of newly recorded non native species, introduced without an authorisation, it would be justified the to immediately start a removal campaign based on partial evidences of risks of impact (quick screening *sensu* Genovesi et al 2010 and EPP0), instead of postponing action to produce a detailed and comprehensive risk assessment.
- Risk assessment standards and methodologies adopted within the GB framework appear of high scientific standard. It is important to constantly improve and update the risk assessment protocols on the basis of the advancements in the scientific community, but it is also important to balance the resources devoted to a single risk assessment with the importance to finalize a higher number of assessments, even if based on a less detailed level of screening, for example to guide rapid action or to develop alert lists.

Conclusions

- Following the concerns on the impacts caused by invasive species, and the global decisions on this issue, many countries and regions around the world have developed response measures at different scale, from stringent legal systems, to peak coordinating bodies nested in the legislation, to non binding national strategies and action plans.
- There are indeed examples of policies that have effectively prevented unwanted introductions, in particular those based on regulations of import. However, also policies focused more on the coordination of decision levels can be an effective response to the issue.
- The discussion on how to respond to invasive species in Europe has started over 10 years ago. The European Strategy on Invasive Species was in fact adopted by the Council of Europe in 2003, after a discussion continued for several years. Since then, several European countries – as stressed above - have adopted national strategies or action plans on invasive species, but in most cases these have mostly addressed information gaps, and recommended approaches without introducing a statutory or regulatory framework, and in most cases not establishing any coordinating body, or identifying a body more focused on the scientific aspects and on the sharing of information.
- It must be stressed that the GB approach on invasive species has been developed at an early stage of the European discussion on this issue, and can be considered the most comprehensive and effective approach so far enforced in the region. GB is the only European territory that has structured an organisation to enforce the principles set in the strategy, and since the adoption of the document, the NNS has ensured an effective coordination among different agencies and levels of decision, as well as key stakeholders. The recent review by Riley stressed how the coordination approach established in GB indeed addressed some of the most serious challenges in dealing with invasive species, and at the same time gives representation to the private sector, more than a strictly regulatory body could possibly do.
- Although the GB approach is rather peculiar, and it is therefore not possible to directly compare the efficacy of this framework with similar approaches adopted in other regions (apart from US), there are several evidences that confirm the strengths of the GB approach.
 - For example, GB is the only European country that has established a species alert framework for the Asian hornet (*Vespa velutina*), accidentally introduced into France in 2004, and progressively expanding since then. Although the impact of the species is well known, the arrival into Spain, Portugal and Italy has been detected with some delay, and no measures had been established to catalyse a response in any of these countries. GB – that is not yet invaded by the species - has established a contingency plan, involved bee keepers, prepared information forms and created a model of a low cost trap to try respond to the species once it will arrive in England.
 - In terms of response, GB has already removed 6 invasive species in an early stage of invasions; this number may appear low, but is higher than any European country, as far for what spp. 5 in Ireland, 2 in Spain and Netherlands, 1 in France, Portugal, etc.
 - The Ruddy duck eradication – almost completed – is indeed one of the most ambitious eradications ever planned, and has required effective coordination at

several levels, direct involvement of the competent technical agencies, and active communication.

- Having said this, the GB approach appears to have some limits and constraints. The non binding approach and non statutory organisation, limit the implementation of prevention and management measures. Although the substantial investment in risk assessments, very few species have been regulated so far (or are being regulated; import and trade of 5 freshwater plant species will be banned in the next few months). Some management activities are obstructed because the access to some key areas is not granted by owners. Some of these constraints have been addressed in Scotland, through the Wildlife and Natural Environment Act 2011, that has amended a previous legislation.
- One of the positive elements of the GB framework, is that information and assessments are used for concrete action more than in other countries. For example, several European states (e.g. Belgium, Germany, Austria) have developed quite advanced risk assessment procedures, that have been used for prioritisation exercise. However, in general these efforts have not brought to regulate import and trade of black listed species, or to enforce eradications.
- Having said this, not all the research efforts supported by public money in GB appear to have been designed to inform decision making.
- The quality and updating of information is crucial for enabling effective decision making and response. The GB NNSIP portal indeed provides relevant information on invasive species, and the quality of data has indeed been an important element for supporting response. However, there are still gaps in the information provided by the system (for ex in terms of distribution data), and the links with international information systems could be improved.
- One conclusive remark is that the GB framework on invasive species seems underutilized. The coordination mechanism ensured by the NNSIP has shown to be very effective, in particular when considering the limited cost of the structure. The involvement of stakeholders has worked well, and coordination among the relevant government agencies been more effective than in most other countries. This potential has led to effective results, but could permit a much more ambitious response in terms of prevention (e.g. number of species whose import, trade or possession is regulated), and management (e.g. number of rapid responses, eradications, management programs).

Recommendations

- Make better use of the GB framework, strengthening the actual systems, considering the development of a stronger statutory role of NNSIP, and setting more ambitious targets such as:
 - focus more on future invaders, improving contacts with other countries to encourage control and to identify possible new invading species to GB;
 - consider expanding risk assessment to pathways, not only species;
 - number of alert species and contingency plans should be increased substantially, taking into account the outcomes of the horizontal scanning exercise applied in April 2013;
 - rapid removal of invasive species should be applied more widely, but selecting candidates that offer good chances of success (avoid marine species, priority to vertebrates, etc.);

- whenever appropriate, strengthen involvement of key stakeholders for enforcing rapid response measures;
- increase substantially the number of species managed based on a GB action plan, and with government support;
- consider introducing a stronger role of NNSS in steering action by the competent agencies.
- Improve coordination with the plant health sector, avoiding overlaps, but increasing synergies.
- Consider the development of a dedicated legislation, taking into account the Scottish experience, addressing the present constraints (e.g. grant access to private land for carrying on management actions within official action plans).
- More in general, consider developing a regulatory approach, increasing substantially the number of regulated species, and introducing provisions for:
 - regulating the import, possession and trade of a significantly larger number of the invasive species that have been identified as high risk through risk assessment;
 - consider a generalised ban of release of alien species into the wild, unless authorised.
- Focus and prioritise research. Publicly funded research projects should be selected on the basis of the direct effects on policy making and effective response to invasive species.
- Improve the information system, strengthening the interlink with other national, European, and international tools, in order to improve the information basis provide to decision making (such as records of invasiveness elsewhere, management alternatives, etc) and providing more accurate and updated distribution data.

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