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POLICY PIECE

The Rio Convention, CITES, European legislation and invasive amphibians: are we doomed to lag behind forever?

Joachim Mergeay

The international trade in amphibians and reptiles is a prolific business, be it legal or illegal. Many exotic species end up in ter-

rararia or aquaria. Generally, the legal framework is focused on protecting endangered species from being traded, mostly tropical or subtropical species. The so-called Rio convention

(The 1992 United Nations Convention on Biological Diversity, Rio De Janeiro, Brazil) is the most important of these international agreements.

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In Europe, the treatise of the Rio convention and the earlier CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington DC, USA, 1973) is implemented into Regulation of the European Commission EC338-97. This regulation not only considers the need for the protection of endangered species in their native range, but also acknowledges the danger of certain exotic invasive species on local biota. So in addition to all CITES-listed species, appendix B of EC338-97 includes additional species of which transport into the European Union is prohibited or highly regulated because they represent a threat to lo-



Turkish marsh frog, Pelophylax cf. bedriagae © Robert Jooris

Only the adoption of a white list in European legislation will truly allow the prevention of future biological invasions

cal biodiversity. The only invasive amphibian listed there is the American bullfrog, *Lithobates catesbeianus* (formerly known as *Rana catesbeiana*).

But how efficient is this legislation against invasive species, and in extension, the use of black lists with dangerous species? The concept of a black list implies that any exotic species is considered harmless unless proven otherwise. In other words, potentially harmful species are allowed to become invasive before action is taken. Additionally, no European legislation bans the trade per sé within the European Union in species like the Bullfrog; only the



Edible frog, Pelophylax kl. esculentus © Robert Jooris

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importation of them from outside the EU is banned.

In a paper recently published in *Molecular Ecology* (Holsbeek et al. 2008) the pitfalls of this approach are exemplified in the double invasion of two closely related water frog species in Belgium. The first of these species is the European marsh frog, *Pelophylax ridibundus* (syn. *Rana ridibunda*). Until the 1970ies this species was restricted in Western Europe to regions west and north of the Rhine river, but numerous introductions outside its native range since then have allowed this species to spread throughout Belgium, France and Switzerland. In this introduced range it is a fierce competitor with its much smaller sibling species the pool frog (*P. lessonae*) and with the Edible frog, *P. kl. esculentus*. The Edible frog is a rather peculiar hybrid “species”: it originated through hybridization between Marsh frogs and Pool frogs during the last ice age. When it crosses with other edible frogs or with pool frogs, the offspring will consist again of edible frogs. Also crosses between Marsh frogs

and Pool frogs will result in Edible frogs. However, when Edible frogs cross back with Marsh frogs, the offspring solely consists of genetically reconstituted Marsh frogs. This is the result of the complex reproductive behaviour of Edible frogs (Uzzel and

than half of the populations were already invaded by non-native frogs. However, they did not only find Marsh frogs, but also commonly found a species otherwise restricted to the Middle East and Black Sea region, *Pelophylax cf. bedriagae* (“Turkish marsh frog”). This new spe-



Marsh frog, *Pelophylax ridibundus* © Hugo Willockx

Berger 1975). With regards to conservation issues, this means that populations of Pool frogs and Edible frogs can be easily wiped out by Marsh frogs through hybridization in a time span of two and one generations, respectively.

The invasion of Marsh frogs outside their native range therefore poses a serious threat to both other water frog species. In the study by Holsbeek et al. (2008) more

species is almost indistinguishable from the regular Marsh frog and required genetic tools to confirm its identity. The study also demonstrated that both invasive species readily hybridize in their new range, which is generally a dangerous cocktail for the evolution of invasiveness (Ellstrand and Schierenbeck 2000).

The use of genetic markers also allowed to trace back the two invasive species to trade in water frogs from Turkey to Europe. A large part of this trade is intend-

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ed for frog legs (for culinary purposes), but also for the pet trade. Many pond owners simply buy water frogs and introduce them into their garden pond. This is the stage at which the European and Belgian legislations fail dramatically: because all indigenous amphibians are protected in Belgium, retailers are importing exotic species that are neither protected (or of which importation is prohibited) through EC338/97 (and CITES) and are neither protected in their country of origin. This is the case for the Turkish marsh frog in Turkey, for example. Only intentional release in the wild of non-indigenous species is forbidden in Belgium, but this only shifts the responsibility towards pond owners (in the case of water frogs), whereas intentional release is almost impossible to prove.

Currently the Bull frog is the only invasive amphibian species that is included in Appendix B of EC338/97 (and later amendments). It may take some more years before the Turkish marsh frog is included, by which time it may have become even



Pool frog, *Pelophylax lessonae* © Hugo Willockx

more invasive. And other species will follow in its footsteps, as measures for the prevention of invasions of exotic species on the European territory are entirely lacking. Prevention, however, is always the most cost-effective and environmentally most efficient strategy, but this consequently requires the use of a “white list”: species that have been demonstrated to pose little or no threat for native biota. This principle is applied by Australian legislation, for example (Natural Resource Management Standing Committee & Vertebrate Pests Committee 2004). This is in concordance with the precautionary principle of the Rio convention: “where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty

should not be used as a reason for postponing measures to avoid or minimize such a threat”. Only the adoption of a white list in European legislation will truly allow the prevention of future biological invasions. Without it, we are doomed to be continually be overtaken by new invasion events.

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SEED GRANTS

DAPTF Seed Grants

Tim Halliday

Recipients of DAPTF Seed Grants are generally expected to publish the results of their projects in refereed journals, or as articles in *Froglog*.

The following paper reports work supported by a DAPTF Seed Grant awarded to Megan Gahl and Aram Calhoun (2004):

Gahl, M. K. & Calhoun, A. J. K. (2008) Landscape setting and risk of Ranavirus mortality events. *Biol. Conservation*: 141; 2679-2689. (megan_gahl@umit.maine.edu)

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FROGLOG publishes a range of articles on any research, discoveries or conservation news relating to the amphibian decline phenomenon. We encourage authors describing original research to first make submissions to a refereed journal and then, if appropriate, to publish a synopsis in *Froglog*. Submissions should be in English, normally no more than 1000

words and follow the style of *FROGLOG* Vol 83 (as should references). You may also submit images, maps, figures or tables. We encourage the submission of photographs to accompany text. Short news items and press releases are also acceptable. Please submit potential contributions to Robin Moore at the address in the box to the right.

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