SUCCESSFUL HABITAT RESTORATION FOR THREATENED AMPHIBIANS IN ESTONIA

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INTRODUCTION

Currently 33% of amphibian species are globally threatened (Stuart *et al*., 2004).

To complete their complex life-cycle amphibians require both aquatic and terrestrial habitats.

The number of small water bodies has vanished during the 20th century all over Europe (up to 90%; Hull, 1997).

To improve the state of amphibian populations large-scale species-specific habitat restoration will be needed.

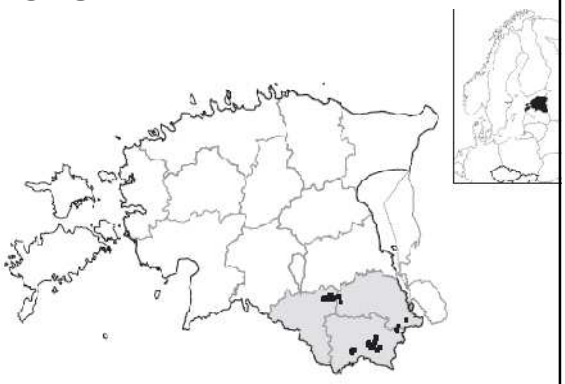
Habitat restoration for threatened amphibians has had only a limited success so far all over the world.

Photo: Lars Briggs

MATERIAL AND METHODS

Summer 2005:

405 small water bodies were **inventoried** in South Estonia to estimate the state of aquatic and terrestrial habitat.



Amphibians were detected by:

- dipnetting;
- searching for eggs.

Autumns 2005-2007:

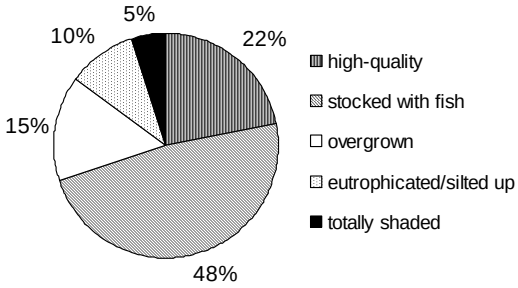
230 small water bodies in 27 clusters were **restored or created**.

The aim: improve breeding conditions and halt the decline of target species.

The crested newt
Triturus cristatus

The common spadefoot toad
Pelobates fuscus

RESULTS



The state of existing small water bodies (N = 405) inventoried in 2005

Terrestrial habitat – mosaic of forest and grasslands/extensive farms.

Altogether 7 amphibian species were found in 2005:
the smooth newt (*Triturus vulgaris*), the crested newt, the common spadefoot toad, the common toad (*Bufo bufo*), the common frog (*Rana temporaria*), the moor frog (*R. arvalis*) and "green frogs" (*R. lessonae* / *R.* kl. *esculenta*).

The principles of pond construction

✓ presence of terrestrial habitat.

Clustering of ponds:

✓ at least 1 pond near the "source pond";
✓ 4-26 water bodies in a cluster;
✓ the distance between ponds less than 500 m.

Variety of ponds:

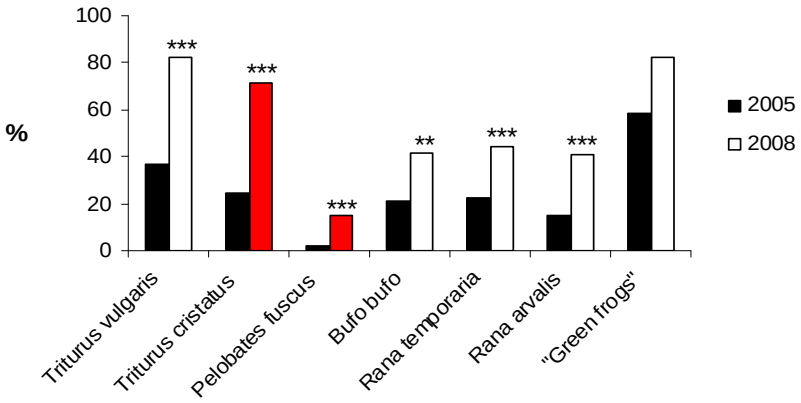
✓ depth 0.4–2.5 m;
✓ total area 12–5000 m^2;
✓shallow littoral zone 0.2-10 m.

Mineral sediment of the pond was favoured.

Connection to running water was avoided (fish, sedimentation, pollution).

The pond construction was guided in the field by an amphibian expert.

Colonisation of ponds



Amphibians in existing ponds in 2005 (N = 405, black bars) **and in three-year-old constructed ponds in 2008** (N = 111, empty bars, red bars – target species).

Differences in pond colonisation:
** p < 0.0001;
***p < 0.00001.

CONCLUSIONS

The pond construction for threatened amphibians has been successful in Estonia.

In only three years number of ponds occupied by the common spadefoot toad increased 6.5 times and by the crested newt 2.3 times.

In addition to the target species, the pond construction effected positively all local amphibians.

The key considerations for the success:

- ✓ habitat restoration at the large, landscape scale;
- ✓ species-specific habitat requirements taken into account (e.g. presence of high-quality terrestrial habitat, mineral sediment of the pond);
- ✓ ponds were constructed in clusters (low mobility, return to the natal ponds);
- ✓ pond construction was guided by amphibian expert in the field.

THANK YOU!

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Photo: Ville Vuorio

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