

# New Red List for herpetofauna in the Netherlands

**Introduction** In the new Dutch Red List 23 indigenous species were evaluated by both national criteria and international IUCN-criteria. Over 400,000 records were used for the renewal of the Red List.

**Methods** The status of species was determined by comparing the present distribution (1997-2006) to distribution data of a reference period (situation around 1950). Several statistical methods were tested and compared, integrating data from atlas surveys and monitoring data. By using Chao2-techniques (Magurran, 2003) we compensated for different research intensities between the two periods. Thus, an estimation could be made for the nationwide changes in distribution of species. Not evaluated are exotic, introduced species (i.e. *Triturus carnifex*) or/and non-reproductive species (marine turtles and terrapins).

Amphibia	Dutch criteria	IUCN-Criteria
<i>Salamandra salamandra</i>	EN	EN
<i>Mesotriton alpestris</i>	LC	LC
<i>Triturus cristatus</i>	VU	LC
<i>Lissotriton helveticus</i>	VU	VU
<i>Lissotriton vulgaris</i>	LC	LC
<i>Alytes obstetricans</i>	VU	VU
<i>Bombina variegata</i>	CR	EN
<i>Pelobates fuscus</i>	EN	EN
<i>Bufo bufo</i>	LC	LC
<i>Bufo calamita</i>	NT	VU
<i>Hyla arborea</i>	EN	LC
<i>Rana arvalis</i>	LC	LC
<i>Rana temporaria</i>	LC	LC
<i>Rana lessonae</i>	LC	LC
<i>Rana kl. esculenta</i>	LC	LC
<i>Rana ridibunda</i>	LC	LC



## IUCN Criteria

The international IUCN-criteria focus on:

- small population size OR
- extinction risks OR
- recent trends in monitoring (1997-2006)

Interpretations of extinction risks are only accepted with calculated and published scientific references. These are not available for Dutch herpetofauna. The decrease of many species has stabilised, therefore only small population size or recent negative trends in monitoring can be used. This excludes many species which qualify for the Red List applying Dutch criteria.

## Changes in Red List status

In the former Red List (Hom *et al.*, 1996; Creemers, 1996) a simple method was used. Present distribution was compared relatively straightforward to the total known range of the species, with a relatively small correction for colonisation-processes of species. This method is very similar to the Austrian method (Gollmann, 2007).

The use of Chao2-techniques leads to better statistical fundaments for the Red List, especially for species with a relatively large range. For species with a very restricted range, regional corrections have to be made. The results of the Chao2 method were quite similar to the results with the old method on the new data, which indicates the robustness of the large dataset.

In comparison to the former Dutch Red List *Rana arvalis*, *Rana lessonae* and *Anguilla fragilis* changed status from 'vulnerable' to 'least concern'. *Zootoca vivipara* and *Bufo calamita* enter the Red List for the category 'near threatened'.

## Threats

The main threat to Dutch herpetofauna is intensified agricultural land use, causing the disappearance of suitable habitats and isolating the remaining habitats. Moreover, urbanisation, acidification, eutrophication, desiccation and inadequate management are putting a large pressure on the remaining populations.

## Habitat restoration

The decline of populations of some critical species is halted and some populations are increasing again (e.g. *Podarcis muralis*, *Lacerta agilis* and *Hyla arborea*). Habitat management and restoration is a crucial factor for increasing populations. A close cooperation of volunteers, professional herpetologists, nature management organisations and the Dutch government is likely to rescue several other species from further decline or even extinction.

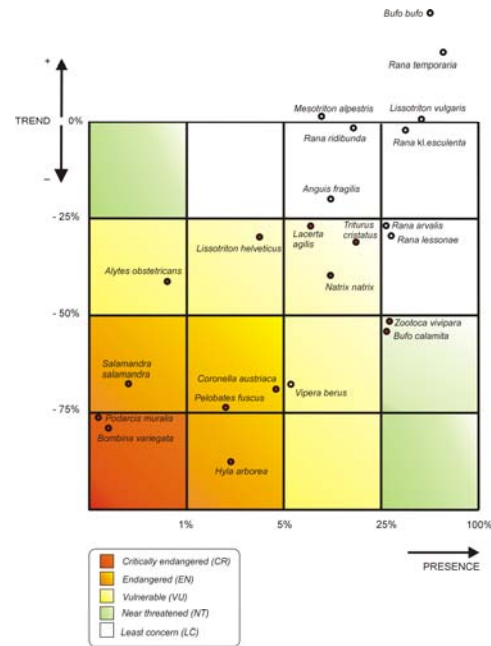
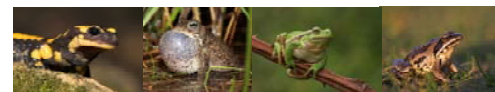


Figure 1: Classifying 23 species into categories, according to Dutch criteria



## National Criteria

The Dutch Government has modified the international IUCN-criteria for national application. In the Dutch system both trend (since 1950) and present distribution are weighed. These criteria are applied to the entire Dutch fauna. These Red Lists are used for updating the legal protection status of species.

Reptilia	Dutch criteria	IUCN-criteria
<i>Anguilla fragilis</i>	LC	LC
<i>Lacerta agilis</i>	VU	LC
<i>Zootoca vivipara</i>	NT	VU
<i>Podarcis muralis</i>	CR	EN
<i>Coronella austriaca</i>	EN	LC
<i>Natrix natrix</i>	VU	LC
<i>Vipera berus</i>	VU	LC

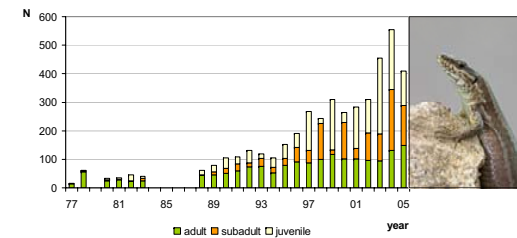
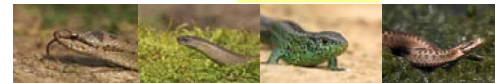


Figure 2: Positive population development for *Podarcis muralis* (critically endangered)

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