

## Zur Verbreitung, Ökologie und Schutz der Kreuzkröte (*Bufo calamita*) im Hagener Raum (Nordrhein-Westfalen)

MARTIN SCHLÜPMANN

### Distribution, ecology and conservation of the natterjack toad (*Bufo calamita*) in the Hagen area (Northrhine-Westphalia)

In the Hagen area (including Iserlohn and Westhofen) since 1970 natterjack toads have been found in 14 different places. The locations are mainly in the Ruhr valley and the adjacent terraces. They mark the present day limit of the extent of the natterjack toad population to the South Westphalian highland. One isolated occurrence near Letmathe is about 15 kilometres from the next one, and thus poses the question of the extension potential over great distances. In municipal areas railway embankments and cuttings fulfil a very important function as corridors for natterjack toads to spread. Currently 5 or 6 of these locations still exist. It is, however, not impossible that several locations came into existence after 1970, so that clear cut trends about their numbers are not possible. One occurrence has been in existence for more than 24 years, others are now more than 10 years old. In comparison a number of occurrences were only noted for just one year. In two cases progressive succession has led to a population decrease. Quarries in the areas investigated are the most important habitats for this species, although slag heaps and other ruderal locations serve as habitats. The occurrences in the water extraction areas and the meadows along the Ruhr are interesting. Pools and ponds with little or no vegetation are typical spawning grounds for natterjack toads. 88 % of spawning grounds are of a temporary character. Preference is given to shallow water. Although small areas of water measuring 1-100 m<sup>2</sup> are accepted with preference for habitation, the size does not appear to be of any great importance really. The natterjack toads' spawning grounds are seldom covered to more than 50 % with vegetation; it is usually noticeably less. All the same it is also true that water full of reeds is accepted, at least if it is not completely overgrown. The spawning grounds are often occupied by typical plant communities of the following orders, although usually providing less cover: *Plantaginetales majoris* (communities with *Plantago major* and others), communities with dominant giant rushes (*Juncus effusus*, *J. inflexus* and *J. conglomeratus*) or dwarf rushes (*Juncus articulatus*, *J. bufonius* and others), *Agrostietales stoloniferae* (communities with *Agrostis stolonifera* and *Alopecurus geniculatus*). A considerable portion of the coverage consisted of *Glyceria fluitans-Glyceria declinata* communities and *Glyceria maxima* reeds (*Glycerietum maximae*). Especially flat, sunny waterpools are often inhabited only by the natterjack toad. Thus the share of monospecific occurrences amounts to 40 %. As far as other species are represented they are of no quantitative importance. The smooth newt most often sympatrically occurs with the natterjack toad, followed by the alpine newt and the midwife toad. Spawning time reaches from the end of April into July, the metamorphosis into August or September. In one case larvae were even found in October.

Usual concepts of nature conservancy are not suited to the preservation of the natterjack toad population. The fact is that the creation of pioneer locations by varied in-