

Populationsökologie der Rotbauchunke (*Bombina bombina*) in einer Agrarlandschaft Nordost-Deutschlands

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Population ecology of the fire-bellied toad (*Bombina bombina*) in an agricultural landscape in Northeast Germany

In the period from 1993 to 2000 a fire-bellied toad (*Bombina bombina*) population was investigated in an intensively used agricultural area north-east of Berlin. The assessment included population dynamics, age structure as well as migrations based on the individual identification of the ventral colour patterns of the toads. Monitoring data of the population received before 1993 and recent data have been added to the study. With pond restorations and extensively used buffer zones around the ponds as well as new planted hedges the habitat conditions were improved at the beginning of 1990's. Afterwards, the population of the fire-bellied toad stabilised. The minimum numbers of subadult and adult toads (older than about 1.5 years) were recorded in 1995 with 132 individuals. The maximum number of the same age group (after the second hibernation or later) was reached in 1998 with 612 individuals. Moor frog and common spadefoot responded to the landscape conservation measures by a markedly increased population growth. Despite designation as nature reserve referred to the Habitats directive a dramatic decline of fire-bellied toads has been seen since 2008 due to the renewed intensification of agricultural use. Beside agricultural matters, weather conditions also had an important impact on the population dynamics. For example the harsh winter of 1995/96 caused major losses among juvenile and subadult fire-bellied toads. Even though numbers of adult individuals were low the reproduction success of 1996 was exceptional. This was likely supported by small population sizes of predators being limited by the frost penetration of spawning waters. In contrast to this, minimum reproduction numbers were symptomatic in the years 1997 and 1998 with a lack of precipitation and the early drying up of spawning ponds. The sex ratio of 1 : 1,1 (532 ♂ : 584 ♀) was almost balanced. Based on morphological data and observations during mating activities the fire-bellied toads were classified in age groups using snout-vent length measurements (KRL), as follows: KRL < 30 mm => juvenile, KRL 30–40 mm => subadult, KRL > 40 mm => adult. The maximum life span documented for four toads were seven years and nine to ten months. Terrestrial habitats and spawning ponds were between 80 to 1,200 metres away from each other. In addition to this, toads shifted back and forth between spawning ponds within a range of 110 to 1,040 metres. During migrations between partial habitats, fire bellied toads covered a distance up to more than one kilometre on intensively used arable lands. Seasonal activities were particularly sensitive to