

AN ACCOUNT OF SUCCESSFUL CAPTIVE REPRODUCTION OF *BOMBINA BOMBINA*, THE EUROPEAN FIRE-BELLIED TOAD

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INTRODUCTION

Species of the genus *Bombina* are popular vivarium animals, being colourful and active and generally easy to keep and breed in captivity. *B. bombina*, unlike the commonly kept *B. orientalis* and *B. variegata*, hardly ever breeds under captive conditions (Mattison, 1993) although animals adapt well to captivity and show considerably longevity.

The species has a wide distribution in the wild, from Denmark in the west to the Urals in the east and Greece in the south (Corbett, 1989). It is declining in especially the north-western part of its range and is naturally extinct in Sweden (Arnold and Burton, 1978; Corbett, 1989) although some reintroduction has taken place. The decline is attributed to factors affecting many amphibian populations, namely agricultural practices, habitat destruction and population isolation (Corbett, 1989).

CONDITION OF ADULTS

Two male and one female adult specimens of *B. bombina* were purchased from a specialist dealer in September 1993. The animals were said to be of wild caught Russian origin, as well as being part of a batch of 2000 animals (1800 of which went to America); supposedly the last of this species to be legally taken from the wild.

The three specimens were maintained under natural spectrum lighting in a 60 x 30cm vivarium, the floor area of which was 60% water, about 8cm deep. Artificial lighting was switched on from 9am to 4pm daily, however the vivarium was situated close to a window so as to subject the animals to natural fluctuations in day length. Low growing and aquatic plants and broken pots were provided to create hiding places. Food consisted of crickets and other suitable invertebrates supplemented with a specialist vitamin supplement.

This regime was maintained throughout the winter. Feeding was continued throughout, although reduced considerably during December and January when the animals showed minimal activity.

INDUCING AMPLEXUS AND SPAWNING

One of the males was heard calling on the 3rd of April 1994, the vivarium temperature at this time reaching 25°C during the middle of the day. On 10th April, the animals were transferred to a vivarium 30 x 30cm by 40cm tall (an old acid container). This was heated by a 40 watt bulb, switched on 8am to 8pm. Air temperature reached a maximum of 32°C, the water temperature being roughly constant at 26°C. Water 10cm deep was provided. The vivarium was richly furnished with *Elodea* and *Salvinia* plants, and an island of floating cork enabled the animals to leave the water if desired.

Over the next few weeks, both males were observed calling deeply and rapidly, and approaches to the female were made. All attempts at amplexus were resisted, the female diving to the bottom of the water on each occasion.

The water level in the vivarium was allowed to fall slowly with evaporation until the 11th of May. At this time cold rainwater was added which increased the water depth to 25cm in an attempt to simulate natural flooding of the species' preferred habitat (Corbett, 1989). The males called incessantly on every night subsequent to this until on the evening of the 21st of May newly-hatched tadpoles were observed clinging to the vivarium sides. Unfortunately, despite daily observation, amplexus and spawning went unobserved. Examination of aquatic vegetation was carried out every evening, and as no eggs were observed on the 20th, spawning probably occurred in the early hours of the morning of the 21st. This would indicate that development and hatching of the tadpoles occurred in less than 20 hours. Experiences with *B. orientalis* indicate that (with this species at least), tadpoles may hatch within 22 hours of spawning when maintained at a temperature of 24°C or above.

REARING OF TADPOLES AND TOADLETS

The adults were removed from the vivarium to prevent consumption of their offspring. After 2 days the tadpoles were swimming freely and feeding on aquatic vegetation provided, they were about 4mm in length at this time. They were transferred to a large aerated aquarium maintained at 26°C. 94 tadpoles were recovered. Food was given in the form of fresh aquatic plants as necessary, small amounts of catfood and daily pinches of Tetra Ruby colour food for tropical fish. The latter has proved useful in improving the colour of metamorphosing *B. orientalis*, which tend not to develop their vivid adult colouration under captive conditions.

The first of the tadpoles developed back legs (at about 30mm in length) on June the 11th, and had begun to leave the water by the 15th. Metamorphosis of all tadpoles was not complete until the end of July, the toadlets ranging in size from 9 to 12mm (for the first to leave the water) by this time. The toadlets were fed on newly-hatched crickets dusted with vitamin supplement and garden blackfly. In total, 52 toadlets survived to one month after metamorphosis; the majority of mortality occurring due to larval cannibalism, and a few deaths immediately after leaving the water.

CAPTIVE BREEDING AND CONSERVATION

In view of the apparent decline of the species in the wild, it would seem that the herpetologist could play a significant role in the conservation of this species by the proper maintenance and management of captive, breeding populations of this species which may then be used for provision of toadlets for reintroduction programmes. The success of such activities would of course depend upon the retention and maintenance of suitable habitats into which reintroduction could take place.

The author would be interested in hearing from other individuals or institutions who have successfully bred this species, or who are working on population and habitat conservation in the field.

REFERENCES

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