

FURTHER NOTES ON THE CAPTIVE BREEDING OF NATTERJACKS *BUFO CALAMITA*

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Following my article detailing the successful captive-breeding of Natterjack toads of Norfolk origin (BHS Bulletin No. 10, December 1984), members may be interested to learn of further developments during 1985 in relation to outdoor colonies maintained by myself and by Lowestoft-based BHS member Roger Gouldby.

Of the 15 individuals which went into hibernation in my enclosure during the late autumn of last year, most, if not all, have survived. My uncertainty on this point is due to my not being able to gather together more than 14 at any one time; a conclusive count would involve removing the entire contents of the enclosure including all the sand therein, which would be a gargantuan and destructive task.

Most of the toads dug down into the sandy interior of the enclosure to overwinter, and several congregated around the roots of a particularly large *Erica carnea* for this purpose. Only one used the purpose-built hibernation chamber, the floor of which was also lined with sand, with a layer of dry moss above it.

On 31st March several toads were seen to have emerged from hibernation, and the rest appeared in ones and twos during the next ten days or so. They gathered in the hibernation chamber and sat under the asbestos roof, out of sight but absorbing the heat of the sun conducted through that material during the daytime.

No breeding behaviour was noted amongst my colony until mid-May, when some pairing off took place. However, there was no sign of the males calling and no spawn resulted from these liaisons. In contrast, a pair of Roger's toads produced a spawn string on 6th May. This seemed to be fertile but, possibly due to very cold weather, only around 100 tadpoles eventually hatched out and Roger's toads did not subsequently produce any more spawn, although further breeding behaviour continued during the next few weeks.

On 8th June one or more of my male toads was heard calling during the day, for the first time since emergence from hibernation. On the 10th, following persistent calling and pairing off amongst various individuals, a string of spawn was found in the enclosure "slack". I should point out that the "slack" remained very cloudy throughout this time and did not clear until some time after all the spawn had hatched, so I had to locate new strings by "dragging" the bottom with my fingers every day for about two weeks, and memorising their locations. Not an easy job, to say the least! The following day there was another string, and the third (and final) string came to light on the 13th June. All three strings appeared to have been laid during the preceding nights. Males were heard calling at all times of the day and night. Regular checks indicated that these strings were mainly or wholly fertile, but the unseasonably cold weather which followed may have had a damaging effect, as I never saw the large numbers of tadpoles in the slack that I expected from this quantity of spawn. Despite the removal of some sections of spawn to two aquariums in order to ease possible overcrowding in the pool, the total number of tadpoles raised was less than 1,000. This was despite a low mortality rate following hatching. Observation of the tadpoles during their early stages in the pool was badly hampered by the cloudy water.

Most of my tadpoles were released at an advanced stage of development, at an introduction site on heathland on the Suffolk coast. They were released during July, in two batches of 500 and 450, respectively and, it is hoped, will form the basis of a new colony; the first Natterjacks to be found wild in Suffolk for over 20 years, since the species finally became extinct in the county.

Of the 100 or so tadpoles reared by Roger Gouldby, most did well until metamorphosis, but the toadlets were reluctant to feed in the majority of cases, and only about 15 have survived at the time of writing.

It is worth mentioning that Natterjacks have cannibalistic tendencies and, as Roger and I can both verify, they will eat their own toadlets if there is enough of a size difference for this to be possible.

As I mentioned in my previous article, I have more female Natterjacks than males, and I had expected seven or eight spawn strings this year, especially as all the females appeared to be well-grown and mature. The reason for such low productivity is hard to pinpoint, but could be due to a number, or a combination, of reasons such as overcrowding, stress, unseasonal weather or lack of competition amongst males. Roger Gouldby considers that his females were gravid but that the males were not particularly interested. The season was of short duration this year, with breeding and courtship behaviour in my enclosure mainly confined to the second and third weeks in June, apart from a brief spell during the first half of May.

The measurements (snout to vent) of the 14 Natterjacks located in my enclosure on 11th August, and therefore just over three years old, ranged from 68mm down to 52mm with the majority measuring around 60mm.

REFERENCE

Jones, M. (1984) Captive Breeding and Rearing of Norfolk Natterjacks (*Bufo Calamita*). *British Herpetological Society Bulletin* 10, pp. 43-45.