A CASE STUDY IN THE EVOLUTION OF CRESTED NEWT CONSERVATION

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ABSTRACT.— Crested Newts (*Triturus cristatus*) have received ever-increasing amounts of attention in recent decades. This paper reviews changes and events on the northeast edge of Ramsey in Cambridgeshire. It highlights how lack of conservation action evolved first into a reactive approach, then into a more thoughtful strategic operation, which is now beginning to result in benefits for the newts.

CONSERVATION of the Crested Newt (*Triturus cristatus*) is a topic that occupies the time of increasing numbers of people, not only in Britain, but throughout the species' range. As with much of British herpetology, there are so many urgent tasks and so many crises that there is seldom time to reflect on what progress may have been made. As someone who has been involved with herpetological research and conservation for more than 30 years, I am conscious of the fact that today's tasks and crises, real as they are, are often a function of our increased awareness, knowledge and expectations. We have changed from simply not knowing about losses, to trying to prevent them, and then to trying to anticipate and plan action strategically. These changes have occurred gradually. While it is not the purpose of this short paper to document them, I would suggest that two key events were the introduction of the Wildlife and Countryside Act in 1981 and the publication of the Species Action Plan in 1995. It could, however, be argued that these events themselves were precipitated by others.

Inclusion of the Crested Newt as a protected species on Schedule 5 of the 1981 Act catapulted it into the limelight. A start was made documenting where it occurred, studying its ecology (Oldham & Nicholson, 1986) and attempting to safeguard individuals and populations. Still, though, the species continued to decline, in part because much of the thrust of the work was reactive, trying to hold on to what we had. Hopefully the Action Plan and its Work Programme will lead to a much greater emphasis on a proactive approach in an attempt to halt and perhaps even reverse the continual loss of populations.

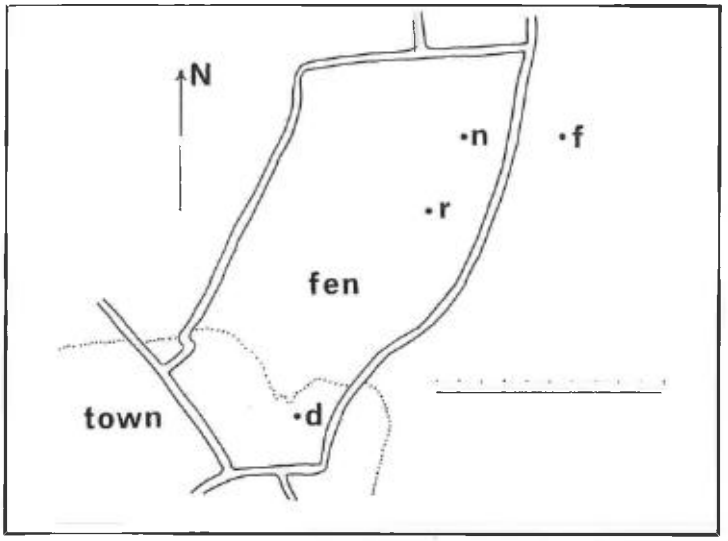
The account below of a translocation at Ramsey in Cambridgeshire is presented not just as a scientific report on the work, but as an illustration of how aims and actions have evolved over the last 50 years or so and how they continue to evolve.

THE DISTANT PAST: THE NEGATIVE PHASE

A summary of the fortunes of Crested Newts in the second half of the last century has been pieced together by interviewing long-term residents of Ramsey. The species was abundant around the northeast edge of the town during the 1950s. An important and traditional breeding pond occurred at TL 291853 on the edge of the town (pond 'd' on the Map). Beyond is a block of fen edge farmland of about 150 ha bordered by roads (see Map). This area is more undulating than typical fenland; one third is high organic matter peat fen, while the remainder is sandy clay loam. At least six ponds occurred there in the past, one of which was known for its Crested Newts.

Crested Newts in the area of Ramsey have suffered from a similar variety of problems to those elsewhere in the country (e.g. Cooke & Scorgie, 1983; Oldham & Nicholson, 1986; Hilton-Brown & Oldham, 1991). From the 1960s,

building work on the outskirts of town will have removed much of their damp foraging habitat, and possibly breeding sites too. By the 1980s, pond "d" was hemmed in by housing and was more or less totally shaded by mature trees; in 1984, accumulated silt was removed from the pond by the landowner. On the farmland, with a diminishing need to provide water for stock, ponds were allowed to silt up or were actively filled in. Only two ponds existed in the fenland block in the 1990s, and these had both been re-dug for conservation purposes in 1989 (shown on the Map as 'r' and 'n').



A sketch map showing the area to the northeast of Ramsey in Cambridgeshire. Principal ponds mentioned in the text are marked as d (donor), r (receptor), n (northern) and f (farmhouse pond at entrance to Worlick Farm). The on-site substitute pond is at the same location as the donor pond. Main roads are indicated and the approximate current edge of the built-up area shown as a dotted line. The scale bar represents 1 km with sub-divisions at 100 m.

THE RECENT PAST: THE REACTIVE PHASE

Donor pond 'd' and its on-site substitute

Despite undertaking local surveys and enquiries into Crested Newt sites in the early and mid 1980s, I failed to find the donor pond itself, although I knew non-breeding newts had been seen nearby. I first visited the pond in September 1988, by which time its Crested Newt population had all but disappeared. It measured about 11-12 m x 5-6 m and was more than 1 m deep. Recent events at the site are listed chronologically in Table 1 and night counts are summarised in Table 2. The pond was initially scheduled for destruction in 1991, but, because of delays, it survived until 1999.

Translocation began in 1991 and finished in 1993, by when it was no longer cost-effective in terms of time. Newts were caught both by netting at night and by bottle-trapping. Eggs laid on plastic strips were also transferred. Resources were not available to fence the pond and intercept immigrating or emigrating newts. Numbers of adults caught were: 1991, 13 netted and 4 trapped; 1992, 4 netted; 1993, 2 netted. Prior to release into the receptor pond 'r' about 1 km away, the total length of each adult newt was measured (mean ± SE for 7 females = 136±4 mm, for 16 males = 128±2 mm). No immature Crested Newts or larvae were encountered and the lack of any adult <120 mm implied a population whose recruitment was failing. This was subsequently confirmed in 2001 when males from the receptor pond were measured (see below). During these operations, Smooth Newts (*Triturus vulgaris*), Common Frogs (*Rana temporaria*) and Common Toads (*Bufo bufo*) were recorded in small numbers and some were translocated, but details are not given in this paper.

A decrease in population size, perhaps associated with translocation, was confirmed for Crested Newts with mean night counts declining significantly 1989-1999 (Table 2, $r_s = -0.914$, $n = 6$, $P<0.05$). Searches were made during draining in July 1999, but no adult, immature or larval Crested Newts were found. Thus there was no evidence that any left behind in 1993 had survived and/or bred during the time that the pond remained.

The on-site substitute pond was dug in 1999 (Table 1) shortly before the donor pond was

Date	Event
September 1988	Asked to check for Crested Newts by landowner who was applying to renew planning permission to build houses in paddock containing the pond. Nothing found, but informed by neighbour that Crested Newts still occurred.
Spring 1989	Night counts confirmed presence of newts (Table 2). Landowner undertook to safeguard newts within the development, including managing the pond positively.
November 1990	Informed by landowner that site plan agreed with District Planning Officers, but pond would need re-siting by 15-20 yards, probably in 1991. I expressed disappointment, but agreed to help and advise. Decided to move newts to receptor pond to safeguard them during construction and to establish a new breeding population. If the on-site substitute pond was suitable and well-managed, some would be returned.
Springs 1991-1993	Newts and eggs transferred to receptor pond.
Mid 1990s	Donor pond too overgrown for making observations.
Spring 1998	Site had changed ownership and was being developed by a local builder. Surrounding scrub removed, so night counting resumed (Table 2).
July 1999	Pond drained and substitute pond dug and filled with water. House construction started.

Table 1. Events at the site of the donor pond (and the substitute pond), 1988-1999.

drained. It was located less than 20 m away, was of similar size, and water pumped from the donor pond was used to fill it. The substitute pond was subsequently sold as a feature of the front garden of one of the new houses. Its Habitat Suitability Index was in the region of 0.5-0.6 in 2001, suggesting it might support a small population (Oldham et al., 2000). However, the pond lacks any suitable terrestrial habitat around its edges and has barriers to migration on all sides. The owner reported having seen no residual wildlife, such as newts, in the pond.

Receptor pond 'r' and northern pond 'n'

The receptor pond is located at TL 297862, and measures a maximum of 12 x 10 m, being typically >1 m deep. Although situated in arable farmland it is adjacent to ditches and old, broad hedges along which newts might move and forage. In 2001, its Habitat Suitability Index was assessed as 0.71. The initial aim was to provide a site into which the translocated newts could settle and breed.

Night counts revealed an increasing population, 1991-2001 (Table 2, $r_s = 0.900$, $n = 9$, $P<0.01$). Illness prevented night counting in 1999 and 2000. The pond dried in the summer of 1992, so there was no metamorphosis that year; and this perhaps resulted in the low numbers of adults two years later. Immature newts were recorded at night in most years. Small fish, assumed to be Sticklebacks, were common in 1995, but disappeared before they could be positively identified. No Smooth Newts or other amphibians have been seen in this pond, indicating its isolation from colonising sources and supporting the contention that its Crested Newt population resulted from the translocation.

A sample of nine adult male Crested Newts was netted at night in April 2001 and measured for comparison with the original males; they were significantly shorter than the 16 males caught at the donor pond, 1991-3 (mean ± SE = 117±3 mm, $t_{23} = 3.36$, $P<0.01$). Of the nine caught in 2001, only three were longer than the smallest translocated male. As newts continue to grow after they become sexually mature (e.g. Baker & Halliday, 2000; Cummins & Swan, 2000), the data confirm that the original translocated adults did not include any younger recruits and had probably not bred successfully for several years. Similar observations have been made on adult newts about 5 km away at Shillow Hill, when three years of breeding failure were followed by successful breeding (unpublished observations).

The northern pond is 400 m along ditches and hedges from the receptor pond (TL 297866). Its Habitat Suitability Index was calculated as 0.72 in 2001, so it is of comparable suitability to the receptor pond. Although night visits were made

annually from 1995 to 1998, and again in 2001, no newts or other amphibians have been recorded.

THE PRESENT AND FUTURE: THE PROACTIVE PHASE

The point reached in 2001 is that a traditional, but failing, Crested Newt population in the town has been translocated to the re-created receptor pond on the farmland, thereby establishing a new and larger colony. While this is reasonably satisfactory, it should not be seen as an end point. The Action Plan Work Programme for the species identifies the need to create new ponds and colonies so as to reverse the long-term loss of populations.

Scientific studies, including modelling, can help inform on actions on the ground. Thus the receptor site is isolated, being about 700 m from the nearest Crested Newt population in a farmhouse garden ('f' on the Map), and is therefore more liable to extinction in the longer-term (Griffiths & Williams, 2000). The northern pond is about 400 m from the receptor pond, but remains uncolonised. Baker & Halliday (1999) reported that Crested Newts failed to colonise new farm ponds that were 400 m or more from existing breeding sites. A new pond was, therefore, created mid-way between the receptor and northern ponds in May 2001. A decision needs to be made whether to wait to see if colonisation occurs naturally or whether introductions should be made from the receptor pond (or from elsewhere to improve the gene pool). Hopefully, in time these three ponds will together provide habitat for a larger, and less vulnerable, population. Thus the original aim has now evolved into establishing a robust and self-sustaining metapopulation (see Griffiths & Williams, 2000). It is also possible that the substitute pond beside the original donor site may one day prove suitable to receive stock back from the new sites on the farmland.

Year	Donor pond		Receptor pond	
	No. of counts	No. of newts	No. of counts	No. of newts
1989	2	4.5±1.5	-	-
1990	0	-	0	-
1991	10	1.7±0.4	2	0
1992	8	0.6±0.4	4	4.0±1.7
1993	8	0.6±0.3	3	4.7±0.9
1994	0	-	3	1.7±1.7
1995	0	-	3	7.3±3.0
1996	0	-	3	15.3±2.9
1997	0	-	3	18.3±7.2
1998	1	0	3	14.0±2.5
1999	1	0	0	-
2000	-	-	0	-

Table 2. Mean night counts of adult Crested Newts ± standard errors, 1989-2001. The donor pond was destroyed in the summer of 1999, while the receptor pond was re-dug in 1989.

It is worthwhile summarising the changing fortunes of ponds and of Crested Newts in the fenland block enclosed by roads (i.e. excluding the farmhouse pond, see Map). At least six ponds occurred there until the 1970s, and one is reported to have been good for newts. By the mid 1980s, all of the ponds may have been lost. Excavations in 1989 re-created two of them, and one of these had newts established in the 1990s. Creation of a third pond in 2001 opens up possibilities for enhancement.

The farmhouse pond is at the entrance to Worlick Farm. Cooke (2001) described the recent establishment of a Crested Newt population in six historic fishponds at the Farm, about 1 km to the east of the farmhouse pond. The farmhouse pond itself provided poor habitat for newts when visited one night in 1990, being silted and marshy; only a single Crested Newt was seen (Cooke, 2001). This pond was re-dug in 1997, and on the next night visit in May 2001, 25 Crested Newts were counted. This additional area at Worlick Farm, which is also about 1500 ha in size, has seven ponds, all of which have been re-dug during the last 20 years, and two Crested Newt populations of reasonable size and robustness. The environment is improving gradually.

CONCLUSIONS

This case study is another example of how translocation of Crested Newts may be made to work. Fortunately, the temptation was resisted to assume the substitute pond would be satisfactory and the newts would be safeguarded on-site during construction of the new houses. It should, however, be pointed out that the initial criterion for success was limited to the newts settling and breeding in the receptor pond. Furthermore, this account should not necessarily be taken as an endorsement of the benefits of translocation. Despite goodwill and commitment on all sides, the operation could have failed for a number of reasons. For instance, the newts were only moved 1 km, and might have tried to return to the donor site. Secondly, the newts have been — and still are — dependent on a single pond, so being vulnerable to catastrophic factors that might have caused extinction, e.g. fish predation on larvae or certain farm operations. It is as well to remember that both translocation and doing nothing involve taking risks. All the more reason therefore to embrace a proactive and strategic approach.

ACKNOWLEDGEMENTS

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EDITORIAL

Erratum

A CASE STUDY IN THE EVOLUTION OF CRESTED NEWT CONSERVATION by Arnold Cooke, *Herpetological Bulletin* number 78, pp. 16-20. On page 19, the final line of data was omitted from Table 2. This summarised counts for the receptor pond in 2001: for 4 counts, the mean number of Crested Newts ±SE was 28.3±7.7. Counts in 2001 confirmed establishment and survival of a translocated population.