

## EVER-EARLIER BREEDING MIGRATIONS BY ALPINE NEWTS (*TRITURUS ALPESTRIS*) LIVING WILD IN BRITAIN

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Alpine Newts have been living and breeding in my garden and its ponds ever since the introduction of just a few individuals nearly 20 years ago, before the Wildlife & Countryside Act rendered such deviant behaviour inadmissible. *Triturus alpestris* proved very successful, rapidly building up to such numbers as to become the second most abundant of the four species using my ponds every year. One aspect of Alpine Newt behaviour that became apparent very early on, however, was late arrival at the ponds in spring. Over the first five years when the colony was becoming established the average day of first sighting an Alpine Newt was March 17th; this was a good six weeks later than the first Smooth Newts, which arrived around the start of February, and some five weeks later than the Palmates and Crested Newts that share the same pools.

One thing I have tried to do over the years is to keep accurate records of the dates upon which newts first enter my ponds. This is not difficult since it involves no more than stepping outside the back door for a few minutes after dark and inspecting the ponds (which are cleared of weed every autumn) with a powerful torch. I am therefore pretty confident that my records are accurate, at least to within a day or two. On the basis of these observations, a dramatic trend is apparent over the 17 years since the newts were first introduced. As shown in Figure 1, the Alpine Newts have arrived progressively earlier over the years with the result that by the early 1990s the average time of arrival was January 28th, a full 7 weeks ahead of their migration times in the late 1970s.

What could be the reason for this change? Interestingly, the trend has not been confined to Alpine Newts but all four species have become earlier over the years and, for example, the average time of Smooth Newts during the early 1990s was December 31st. Differentials have therefore almost been maintained, with Alpine Newts still arriving about four weeks later than the native species.

It is my belief that climate change is primarily responsible for newts migrating earlier. Winter average temperatures have risen over the past 17 years, and at least a few newts have changed their behaviour accordingly. However, the situation is by no means straightforward because the first newts to arrive in the ponds often do so quite some time before the bulk of the population. I am not at all clear, because the detailed observations are difficult to make, whether *most* newts have responded in the same way as the vanguard individuals. My impression is that newts are responding at the population level, but less dramatically than would be implied by Figure 1, it is not unusual now to find newt eggs in my ponds in January, for example, but I estimate that even in recent years newt numbers probably peak in March. However, ten years ago April was undoubtedly the month to see newts at their most abundant.

It will be interesting to see whether current trends continue. This year (1994-5, not shown on the graph) the first of the three native newts arrived on November 21st, and the first Alpine on December 27th, earliness records in all cases. On December 29th I found male Crested Newts and Smooth Newts in full breeding condition in

a pond in Hampshire, and on January 14th I made similar observations with Smooth and Palmate Newts in Sussex dewponds at quite high elevations.

It is now well established that atmospheric carbon dioxide levels, as well as other "greenhouse" gases, are increasing fast and are already higher than at any time since the last ice age. This is bound to cause global warming, and amphibian migration might well be a sensitive indicator of these changes. Or we might just be seeing a temporary trend that will later reverse, or something that has nothing to do with climate at all. Though the latter seems unlikely to me, a cautionary observation is that Common Frogs, which also use my ponds, have not changed their first spawning date significantly over these same 17 years; the average remains more or less the same as it always was, the final days of February.

Despite the caveats, I must admit to finding all this quite exciting. Since the earliest writings about herpetology in Britain, such as Bell's "British Reptiles" of the mid nineteenth century, we have expected our amphibians to do the decent thing and turn up in ponds just as the weather is becoming comfortable enough to enjoy watching them. We may now be facing a different prospect, perhaps the Spanish experience, in which winter becomes a major breeding season for many species and field herpetology an even rarer pursuit among naturalists than it is today.

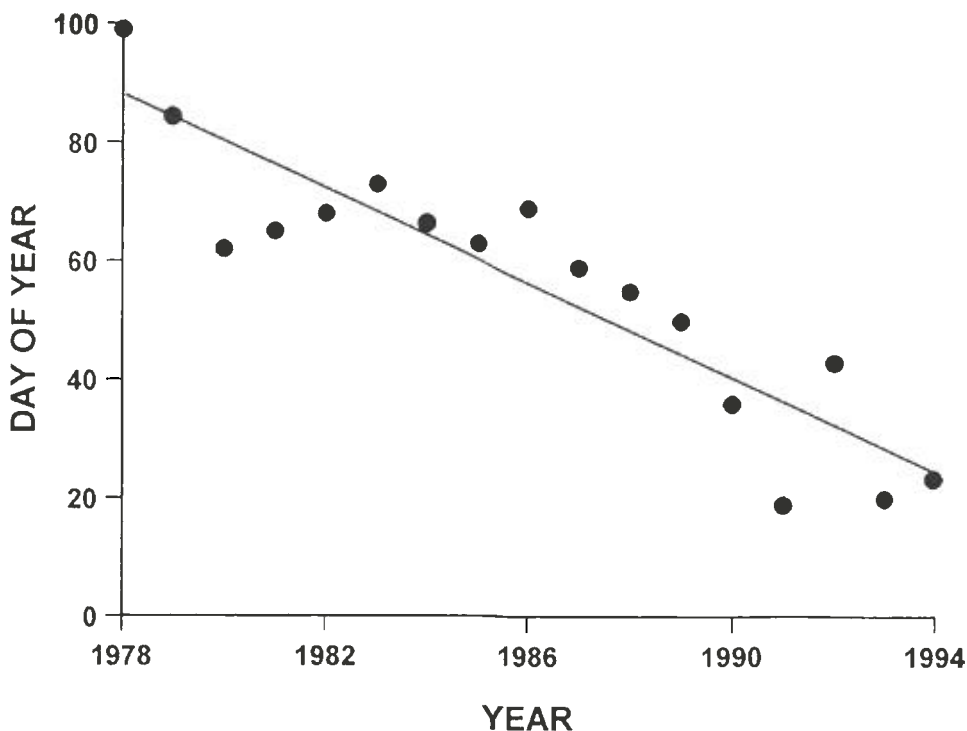


Fig 1: Day of year upon which the first Alpine Newt was seen in Woodingdean garden ponds.