

OF ROBINS, RATS AND WALL LIZARDS

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Having nurtured a small population of European Wall Lizards (*Podarcis muralis*) for some 15 years and through several generations, I thought I had encountered and overcome all the likely problems that might threaten their continued well-being or even existence. Early escapes from the outside vivarium were countered by trial and error (there were very few and all were re-caught!), cats were excluded from the beginning with a lid frame of chicken wire, mouse predation (if ever it occurs) was presumably prevented by provided enough brickwork that the lizards could find the narrowest chinks in which to hide while they were cold and immobile at night or through the winter. I even had an invasion of small boys over the garden fence on two consecutive days one July which threatened the whole project, but surprisingly the losses then were finally restricted largely to the destruction of the following generation when all eggs that had been laid were inadvertently trampled. Prompt police interest and my investment in a much more robust and far taller fence capped with barbed wire has so far prevented any repetition.

The colony has had fits and starts, but in early May 1996 numbered 6 adult (and gravid) females, 3 adult males, with 3 males and 3 females hatched in 1994 and installed in the vivarium this spring. In my experience young lizards up to 1+ years old are likely to be eaten by the adults, and must be kept apart until at least this age. During the 15 years of the project no lizard has ever lost its tail, so I was surprised when one of the young males appeared without a tail in the third week of May, but assumed it must have been the work of the dominant male, even though I have never seen tail losses in the many lizard-lizard encounters I have seen. At the beginning of June the dominant male, a large and magnificent animal, disappeared. I have had no escapes since 1981, there have been no epidemics and I am not aware of any mammals larger than mice ever having managed to enter the vivarium. Of course older lizards have finally succumbed, mostly not emerging one spring. In fact I have not had any lizard unaccountably vanishing except following a winter, but in this case, when all appeared normal I still persisted in assuming that this was just a first, if unusual, example of an apparently healthy animal 'missing presumed dead' through unknown but 'normal' causes. In retrospect I should have been more vigilant.

There followed several days of poor weather when I would not expect to see any of the lizards. At the next opportunity when sunshine and spare time at the right time allowed an examination, I was thoroughly alarmed. Just three lizards could be seen, one young female from the 1994 hatch and two adult females, one minus half her tail. I know the behaviour patterns of these lizards and know that in 'good' weather it is normal for most or all to be abroad, active and observable, particularly when sun first strikes in the morning. Despite my families' assurances that all was well, the missing lizards were still about but taken to late rising, or had become far more cautious, I was convinced that a real debacle had occurred. But what, and where was the evidence? The wire lid, though now past its best and needing replacement still serves its purpose and showed no sign of interference. There was no disturbance to the vegetation within the vivarium, such as

might be expected if a blood-crazed cat or fox had managed to enter, and in any case the lizards of course are fast and wary of larger predators. What could possibly have gone wrong to so devastate my lizards?

I still have no positive identification of the cause, although initially I was convinced the losses were the work of a robin. A few years ago I noticed sparrows were dropping into the vivarium to feast on some large field crickets intended for the lizards. The crickets were cold and slow moving and made an easy meal for the birds. However, I could not say that the birds were frequent visitors. During the period leading up to the major lizard loss this year, I had also been working my vegetable patch adjacent to the vivarium. A robin had been attracted by my exertions, or rather the chance of a quick meal revealed as I worked the soil, and I had seen it dropping into the vivarium and taking mealworms during this same period. I wondered whether the robin had learned how to deal with the lizards. They were concentrated in a small area, and would always reappear to bask even after disturbance. At first emergence in the morning they tended to be slower, sometimes lying full out before the sun had yet reached the vivarium, so they were probably fairly easy to pick off by a persistent predator that learnt the necessary tricks. Birds are quick to learn, lizards have a limited capacity by comparison. In natural circumstances these lizards would not be so concentrated, and would probably be more wary - mine are certainly now (or were!) more approachable than wild individuals, while they tended to emerge and lie out in anticipation of the first sun which does not reach the vivarium until around 10.00 am and until then, being cooler, their reactions and flight speed would be relatively slow. In natural situations they would have immediate access to the sun and would reach preferred active temperature rapidly. Lizards are a normal component of the diet of many birds, although it is doubtful if that is so for robins in England. They are not specialist lizard feeders, and lizards are not a conspicuous component of many habitats that robins frequent. I thought this was an example of a robin exploiting an unusual feeding opportunity that it could easily deal with, perhaps initially attracted by the mealworms but discovering that a quick peck at a lizard sometimes, perhaps very early in its attempts, produced results. I did wonder whether a robin could handle, i.e., swallow a mature male wall lizard, but the bird's gape is more than ample. I would think though that the lizard would stretch the capacity of the robin's stomach!

After this episode I covered the chicken wire lid with plastic bird netting as sold for soft fruit protection. The closer mesh of the plastic netting must reduce slightly the sun's intensity beneath but this was the only disadvantage to the new system. There were no further losses for a few weeks, the robin was no longer obvious and I did not see it showing further interest in the vivarium or its content, the severed tail of one of the adults lizards regrew and the two adult females laid their eggs. It seemed that I had indeed solved the puzzle and I relaxed. Then, in July, the female with the regrown tail lost her tail again, and before I had an opportunity to remove the remaining lizards, they all vanished. It was now impossible for birds to enter the vivarium, and again there was absolutely no evidence to suggest a cause.

My final, though tentative, conclusion is that a rat took up residence in the vivarium and destroyed all the lizards. My jogging sons tell me that locally rats have been far more conspicuous this year in nearby Epping Forest, while during the summer two young rats have been killed and left on separate occasions on the lawn by cats - we have not seen this before. I suppose that my arguments given earlier implementing the poor old robin can be equally well applied to rats, although while at optimum temperature I cannot imagine that the lizards would be easy prey. I suspect that they were attacked whilst under cover, although the vivarium is full of nooks and crannies amongst brickwork that

are impossible for a rat to enter, which would have had to learn the strategy of waiting for the re-emergence of the lizards.

Young lizards from the 1995 hatch will eventually be put in the outside vivarium, having first ensured that no rodents are present. In the long term this event is probably just a hiccup, though producing a severe genetic 'bottleneck' in a small population already closely inbred. In the shorter term, my source of eggs is curtailed - I have been studying their 'behaviour' during incubation and now have only a small number this year, and the young males will probably not be mature enough for reproduction next year so there are not likely to be any eggs now until 1998.

While I am a committed conservationist and am pleased to encourage all forms of wildlife, conflicts do occasionally arise and resolving them can be difficult. If birds are involved in predation within vivaria they can easily be excluded, but it is difficult to find alternatives to eradication or rodents if they are involved, unless rodent entry to the vivarium can be totally prevented, which is rather more difficult than for birds. Whatever the cause of predation, it is clear that small lizards housed in high concentration and frequently observed but without disturbance are more applicable, their flight response becomes delayed and the survival advantage of flight is never put to the test. If ever a small predator eg a bird or rat does manage to reach them, they have partially lost their survival capabilities and are in trouble.