BRITISH NATURALISTS' ASSOCIATION

FOUNDED 1905

Guide to Practical Field Work With Small Mammals 1

By Roger Tabor

Live Trapping

Although hedgehogs, rats, moles, weasels and others are smaller than deer or badgers the term 'small mammals' when employed specifically is normally used to designate mice, voles and shrews. It is unstatedly taken to mean terrestrial small mammals rather than bats, even though some, like the pipistrelle, are undeniably small. (On occasion, however, the term may sometimes just be used descriptively for any small mammal.) Live small mammals, despite their relative abundance and ecological importance, are infrequently encountered except by naturalists engaged in live trapping studies. The use of Longworth traps is demonstrated during BNA Small Mammal Workshops. (See Wells, 1982.)

There are other manufactured live traps in use, also worked by treadles in a tunnel, but for our climate it is essential for the traps to have a bedding compartment to avoid unnecessary mortality due to heat loss.. Place sufficient hay in the Longworth trap's bedding compartment, then add an amount of food (grains, etc). Michael Clark recommends a slice of apple in hot weather for moisture, and a piece of cat food for shrews. In the tunnel section check the spring is at the required setting. A significant feature of the Longworth trap is the paired stops that position the end of the bottom of the tunnel section just inside the nest-box, so that the nest-box is up at a slight angle to the tunnel. This ensures that when the tunnel is horizontal the water condensing on the cold metal of the nest-box at night from the animal's breath drips out of the trap (along with urine). If a contained small mammal's fur becomes soaked the animal could die through heat loss, and it is essential to avoid this.

Whilst holding the catch out, push the tunnel section into the bedding compartment beyond the cover plate, then pull back to connect the top cover-plate. Lodge the lower end of the tunnel section against the preferred stops. Then lock the catch onto the ridges on the top of the tunnel. Ensure that the outer door-flap is open and, if it is not, release the flap catch and lift the flap until it engages. Place the trap on the ground where it is to be used, such that the tunnel section is flat by appropriately wedging up the end of the nest box section. Place a scattering of food in the tunnel and also just in front of the entrance to the trap. When the small mammal follows the trail of food into the tunnel and reaches the far end, it steps on the treadle bar, and so drops the entrance flap, which locks into place. Inspect the traps the following morning after setting them in the evening. When handling the traps wear disposable rubber gloves and wash hands thoroughly due to the potential risk of leptospirosis and other health hazards arising from contact with rodent urine.

Pitfall traps and non-trapping methods.

Instead of using manufactured live-traps it is possible to make pitfall traps by sinking large glass jars (such as sweet shop jars) into the ground. Unfortunately, glass jars accumulate condensation, and this can be avoided by using, instead, a length of soil-pipe sunk onto a tile to prevent burrowing. Any moisture will ooze out at the imperfect junction. Some dry bedding and food should, of course, be provided. To keep rain out a piece of flat wood can be supported over the top on three or four wooden pegs or stones, with clearance of about one and a half inches. Without the lid mice could easily jump out, for wood mice can jump eighteen inches vertically from standing while I find adult yellow-necked mice are even stronger jumpers capable of clearing twenty to twenty-one inches.

An advantage of the pitfall trap is that it can be closed by removing the pegs and putting the wood cover flush on the ground, and then re-opened at a later date as part of a prolonged study. However, their lack of manoeuvrability and flexibility keeps the Longworth live-trap the preferred choice.

Nonetheless an inexpensive non-trapping method of monitoring small mammals can be achieved using track plates with a smoke coating or dusting with fine talc in box tunnels placed on the ground. CCTV is a new method. To a certain extent an index of population can be gauged also from searches for droppings, particularly in dry or covered settings. Some measure of prey species of small mammals can be made by

monitoring the activities of predators, such as the analysis of owl pellet contents, or what your cat may bring home.

Population density – Grid or Line ?

Trapping can give a measure of the population density of an area. Using a large number of traps in a grid system it is considered possible to have an absolute measure of density. Frequently, however, it is sufficient to only have a relative estimate of numbers and to obtain this index it is enough to use a trap line. The relative value of an index for one season compared with other years or seasons taken from the same trap line positions can build up to a valuable picture of population trends and fluctuations.. (It is even possible at some stage during trap-line study to briefly superimpose a grid system of further traps, to "calibrate" the trap line by yielding a multiplication factor.)

To gauge population density, trapped animals are marked (such as by clipping a toe-nail or fur mark) and released. On another occasion (often the following evening) the traps are reset and a fresh catch made. This will probably contain some of the animals caught before and some that were not in the first group. This dilution of animals captured before by fresh animals can be taken as a reflection of the numbers of animals about. The simplest measure of this type of population estimate was put forward in 1930 and called the Lincoln Index.

$$N = \frac{A \times B}{C}$$

(N = area's total population; A = total number in first catch; B = total number in second catch; C = number of recaptured marked animals).

The Lincoln Index is still a useful indicator, although it is based on a number of assumptions, but even more sophisticated estimating methods still have weaknesses. (It is possible to estimate population by completely removing animals but most naturalists would wish to disturb the animals in the study area as little as possible. Further, the absence of resident animals can cause an influx of others.)

One advantage of using a grid (or a roving trap-line), is that the home range can be followed by re-catching and re-releasing a marked animal over a period of time, to find it's normal pattern of movements. One very large snag with any trapping regime is that interpretation depends on animals keeping to their normal activity despite occasionally being trapped. Unfortunately for this assumption, some animals do become trap-shy and others become addicted to traps – popping in for free board and lodging! It is possible to reduce these effects by infrequently trapping, but then population mobility may become more noticeable. Despite the greater application of statistical interpretation, fundamentally much of small mammal work remains a matter of judgement and acquired skill. Like much of natural history, it may have a mathematically scientific base but it still depends on flair, "the good cook makes the best omelettes"! This becomes most marked perhaps in the choice of position for traps as to whether an animal will investigate the trap. Placing a trap alongside a log in a small mammal's track will have a much greater chance of trapping the animal than merely placing the trap near the log, as small mammals run alongside large solid objects.

Tarzan – Mighty Mouse!

One relatively unexplored area of small mammal investigation is the use of above ground runs along branches of bushes and shrubs. I have had great success in this type of trapping, and incorporated it as part of some BNA Small Mammal Field Workshops. By tying the Longworth tunnels to near-horizontal branches the bedding compartment remains at it's required drainage incline The jumping capacity of woodmice, and particularly of yellow-necked mice ("bouncing mice"!) takes on a new significance as we come to realise the amount of their time spent above ground. So far field studies of small mammals have made little allowance for the three-dimensional nature of home ranges, usually referring to a particular area in a certain type of habitat (such as 2,000 square meters in woodland for woodmouse).

However, particularly with the small sizes of home range normally used by small mammals, it will probably become important to either consider the volume used rather than just ground areas., or at least some estimate of trackways. The availability on shrubs of not only the autumnal fruits, such as hips, haws and blackberries, but also of buds and shoots in winter and spring, plus insects like bark beetles and caterpillars must make this a significant part of some small mammal's home range, and of great survival advantage.

Further Reading:

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