

Why and when do you need to trap rodents?

There are a number of reasons why trapping rodents is required, most usually when you need the rodent itself, rather than just evidence that a rodent is present. There are occasional other uses for trapping, also. **However, animal welfare must be a primary consideration when using traps. Animal welfare may render traps - both live and kill - unfit for use.**

Trapping can/should be used:

- a) To obtain genetic material (DNA) to **help assess a project's feasibility - is eradication sustainable** or are rats likely to reinvade quickly?
 - A genetic comparison should be made between the animals on the target island with those of likely/possible source populations on the mainland or neighbouring islands, particularly those within twice the known swimming distance of the target species. This involves taking representative DNA samples from each population (See 3.5 below).
 - Results are used to estimate the frequency of animals invading the island - or the 'connectivity' of the island's rodent populations with potential source populations - which will support a decision on whether or not eradication is the best course of action.
 - However, recent research shows that newly arriving rats are less likely to become established on islands where rats are already present (Fraser et al. 2015). This means that rat populations on two islands may be genetically distinct despite rats being able to move between them. The results of DNA genetic comparison studies should therefore be interpreted very cautiously, especially where the islands are within or close to the known swimming distances for rats.

- b) To obtain DNA to **assess rodenticide resistance** in the island rodent population, and so be able to identify a toxin that is likely to achieve a 100% kill rate - i.e. **is eradication technically feasible?**
 - Resistance to a number of rodenticides is known in the UK, including from islands. Tests for some types of resistance are available and require DNA samples in order to be conducted.
 - **N.B. There is a trade off between applying early for rodenticide permissions and conducting early resistance testing & conducting resistance testing closer to the time of eradication and applying later for the rodenticide permits. Seek advice.** Head to the website section 'ask the experts'.

- c) To obtain DNA for **biosecurity planning** purposes.
 - DNA samples can be used as the basis for a genetic comparison if rodents are discovered and collected on the island after the eradication in order to gauge whether there was a reinvasion or the eradication attempt failed. **This can only be done if DNA samples are taken prior to the eradication.** It may be possible to get a university or resistance testing facility to store the DNA strand information for the project in one of their long-term DNA/resistance mapping projects.
 - This knowledge is crucial: if there has been a reinvasion you will need to revisit biosecurity arrangements. If the initial eradication failed, you need to re-evaluate the Operational Plan and Operation Log and determine the cause of failure and whether or not it can be addressed if a fresh eradication attempt is made.

- d) To determine the exact rodent/target species present on the island, gain insight into abundance and spread across the island to assist with the **Feasibility study** and also

Operational planning, and gain insight into their diet (e.g. to help demonstrate the **project need**).

- Ensuring correct rodent identification is important, for example, to determine the required grid size across the different project areas
 - An idea of abundance and spread can be gained by Index trapping (see 3.3 below). If there are hotspot areas, a smaller grid may be required in these areas. In areas of low rodent density (e.g. in poor habitats such as bogs) it may be possible to reduce the number of grid points.
- e) If the presence of house mouse/other invasive rodents is unknown - i.e. as **part of the assessment of the project's environmental-acceptability (Feasibility Study)**. It is important to determine whether or not there a rat-suppressed house mouse population with potential for mesopredator release, for example.
- If mice are present, your project objectives may need to change (you may need to target mice as well). If you do not target mice, you will need to assess the likely environmental impact of replacing a rat population with a potentially invasive mouse population.
 - To determine if mice are present, 'trap out' rats from an area of good house mouse habitat (e.g. around buildings), protect the area from rat reinvasion (e.g. by rat-proof fencing), allow time for mice to respond/population to recover and implement a mouse surveillance programme. An area approximately 1-5ha should be trapped to ensure that there are enough mice present to produce a measurable response to the lack of rats within a reasonably short time. Historical information and/ or consultation with residents may also provide information on the presence of mice. Setting traps specific for small mammals (e.g. Longworth live-capture traps), tracking tunnels and camera traps can also be useful ways of determining the presence of mice
- f) In the lead up to an eradication attempt using toxins, routine rodent control using such products must stop (**implementation of Operational Plan**).
- This is most likely to be necessary on inhabited islands, but control using rodenticide may also be in place on uninhabited islands.
 - Rodenticide use for routine control purposes should cease at least six months before the start of the eradication operation. In between times, residents may wish to have an alternative control method to the use of poisoned bait. Traps should be provided to the residents by the project (free of charge), and a suitably skilled person should provide training in proper trap use. You must ensure guidelines (1.2 below) are followed.
- g) As a **complimentary eradication technique** used, for example, around homes and food stores. **N.B. Traps are not effective tools for eradication unless used in combination with anticoagulant rodenticides** (although future developments in trap design or efficiency may increase their role in eradication projects).
- You must ensure guidelines (below) are followed.
- h) To respond to a confirmed rodent sighting towards the end of the eradication operation or at any point after it (**eradication and biosecurity implementation**)
- If a rat/mouse is discovered on a recently cleared island, an emergency response should be initiated to locate and kill it. As many different detection and capture devices as possible should be deployed in the area, including traps. **N.B. Traps are not usually used as part of on-going surveillance for rodents, but are deployed in response to a rodent being detected by other devices.**

- Any captured rodent should be necropsied to determine whether or not they are already breeding on the island - and so to help assess at what stage the invasion may be at/whether there are more rodents that require capture (see 3.4 below).

In addition to the DNA samples, other information important to the project can also be obtained from trapped rodents (e.g. breeding status of population, population structure). Follow the guidance in 3.4 (below) to obtain this information from the animals you capture.

Guidance on the use of live and kill traps for rodents

You must ensure that all trap use as part of the project, or resulting from the project, is in accordance with these guidelines.

Animal welfare should be a primary consideration when using traps: animal welfare may render traps - both live and kill - unfit for use.

DO NOT USE LIVE TRAPS IF THERE MAY BE ACCESS ISSUES WHICH MEANS DAILY CHECKING CANNOT BE GUARANTEED.

Traps should be set at dusk and checked and disarmed at dawn. The target species are most active at night, so this increases the chances of trapping successfully whilst also reducing the chances of catching non-target species.

Live traps may be useful if there is a high risk of non-target casualties resulting from the use of kill traps. However, live traps will need to be checked ***at least twice a day*** as any animal caught in them is protected by the Animal Welfare Act (2006) (making it an offence to cause unnecessary suffering). Live traps must be placed so that any captured animal is protected from weather and temperature extremes or flooding.

Spring traps (e.g. Fenn and DOC traps) should be checked ***at least once per day*** as a kill cannot be guaranteed. Only spring traps designed to catch and kill rats or mice humanely, listed by the relevant Spring Traps Approval Order and used in accordance with the stipulations of the Order may be used. Approved kill traps have to cause irreversible unconsciousness within 5 minutes (300 seconds) in 80% of captures. Fenn traps are currently legal for use in the UK but are likely to be withdrawn for stoats in the near future due to their failing to meet the AIHTS standards (Agreement on International Humane Trapping Standard). New Zealand DOC traps are relatively expensive, bulky and must be used inside bespoke wooden tunnels, but they achieve very high kill rates, with a high catch efficiency. They are not, however, suitable for catching mice.

Spring traps approval is a devolved issue. Relevant documents can be found on <http://www.legislation.gov.uk> Check you are referencing the correct Order (and for updates):

Break-back (snap) traps may be used against rats and mice. They are not subject to the Spring Traps Approval Order so any models can be used. However, Baker et al. (2012) assessed the performance of break-back traps available in the UK, with a view to their humaneness and found that strength and performance varied widely between models. Seek advice from professionals in the field before selecting trap types. Trapper T-Rex™ traps and Victor Professional™ break-back traps are easy to carry in the field and set, but may not kill particularly large brown rats. Ideally, break-back traps should also be checked once a day.

It is illegal to use leg-hold traps (gin traps) in the EU. There are serious welfare concerns surrounding the use of glue boards and these should not be used (unless set upside down to capture hairs as part of surveillance (see Chapter 2), though using Velcro is preferable.

Goodnature A24 traps (self re-setting multi-kill devices) have been approved for use in England against rats (as well as stoats in areas where they are not native). Approvals for use in the other UK nations are also likely but updates to the individual countries Spring Traps Approval Orders need to be made before they can be used there. Check <http://www.legislation.gov.uk> for updates.

Even approved kill traps may not kill all animals that enter them: all personnel involved in checking traps should be trained in killing injured or maimed animals in a humane, legal and efficient manner. It is illegal to release some non-target species in the UK (such as grey squirrels - see Section 14 of the Wildlife and Countryside Act for full lists). You must have a plan for dealing with the accidental capture of such species - e.g. personnel must be trained and prepared to kill these species also, even if they are not harmed in the trapping process, or to transport them to a rescue centre where they will live in captivity.

All set traps must be covered so as to reduce the likelihood of non-target species being maimed or killed. Covers should be designed so as to guide the rodent into the front of the trap to increase the likelihood of a clean kill: e.g. by building a natural or artificial tunnel, or placing in a bespoke rodent surveillance box (see images below).

A full assessment of risks to non-target species should be conducted prior to setting traps and appropriate mitigation measures installed. For example wire, or similar, should be placed across the entrances of covers to **reduce the entrance size**. This should be covered in the Environmental Impact Assessment (as part of the **Feasibility study**). Be aware that such measures may make it less likely that traps are set where there is plenty of natural cover and where rodents are likely to be active e.g. alongside walls, buildings or large rocks, around the base of trees, or near any rodent sign.

Break-back (snap) traps must be tied firmly with strong string or wire to vegetation or held by a firmly set peg, so that injured animals cannot drag them away or be dragged away by scavenging predators.

Break-back traps should be set in pairs, back to back. Leave a slight gap between them so one trap can be set off without triggering the second. If both rats and mice are present, or if you are unsure which rodents are present, set a mouse and a rat trap at each site. If only rats or only mice are present, set two traps of the appropriate type. Always use the right trap: large rats may escape from mouse traps (or not be killed cleanly), whilst mice may not trigger rat traps.

A lure (commonly known as 'bait' but not be confused with poison bait containing rodenticide) should be placed between traps if one cannot be placed in each trap. A mixture of rolled oats and peanut butter is recommended, but chicken eggs, chocolate, fish oil, and bacon can also be used. Use a protein bait for brown rats.

Ensure traps are on a level surface and are stable so that they don't move/rock if pressure is put on any corner or side of the trap.

Traps need to be maintained. Un-galvanised traps may rust quickly if used outside, reducing their efficacy. Some traps are capable of breaking a person's fingers. Ensure you only ever handle a set trap from the back. Refer to guidelines for individual trap types and seek assistance if unsure. Cover safe trap handling within the Health and Safety Plan.

Rodents are carriers of diseases which can be fatal to humans. Appropriate measures should be taken to ensure people handling rodents and rodent carcasses are protected, e.g. cover scratches and cuts, wear gloves and wash hands thoroughly before eating, drinking or smoking. Cover safe rodent handling within the Health and Safety Plan.



Above: Two (set) Trapper T-RexTM traps back to back in a homemade wooden tunnel. The entrance to the tunnel restricts entry by larger species and prevents the trap being dragged away. The gap between traps prevents them setting each other off. Below: The same in a natural tunnel made of branches (shown both open and covered). Images © WMIL.



Figure (left): trap set and placed within a lockable plastic box (Protecta™) and (right) station closed and secured to post with wire. Single trap use like this is most likely in response to an incursion or reinvasion (biosecurity breach), rather than initial scoping and planning phases. Images © WMIL.



Rodent trapping equipment

- Kill traps (break-back traps are the usual choice) (e.g. 150)
- Trap covers (half the trap number, if setting in pairs - every trap must be covered as specified above)
- Lures/ non-toxic bait, such as peanut butter (e.g. 450 'doses' for three nights of trapping: assume you need to replace each night)
- Wire/sturdy tent pegs to secure every trap / cover
- String to tie the traps to the tent pegs (to prevent them being dragged away by injured rats)
- Marking poles & flagging tape (to help locate traps)
- Plastic tags (to number traps) and warning labels
- GPS device