



How to read prints from tracking tunnels

Tracking tunnels work by luring animals and invertebrates into the tunnel using the peanut butter bait. The animal/invertebrate walks through the sticky ink on the tracking tunnel card to reach the bait and leaves foot (and sometimes body prints) on the blank cardboard at either end of the tunnel when they leave the trap. The different animals and invertebrates leave different sized and shaped prints which can be identified by comparing with reference prints. For this experiment you will be using peanut butter as the bait. This is most likely to attract rodents, hedgehogs and lizards but you may also see prints of meat-eating predators such as stoats and cats.

The tracking tunnels will be left out overnight on the same night the moth trap is running. In the morning when you check the moth trap you will also collect the cardboard inserts from the tracking tunnels to take back to the lab/classroom to read the prints.

1. Remove the cardboard insert from the tracking tunnel and carefully fold it in half so the ink is on the inside.
2. Write on the back of the cardboard insert (the brown side);
 - The school group
 - The date the tracking tunnel was set up
 - The location
 - The site type
 - A number between 1 and 4 (so that every tracking tunnel at that location has a different number).
3. Back in the lab/classroom gently open the cards up and identify any prints you see on each card. Use the footprint guide to assist in identification. More information can be found at <http://www.pestdetective.org.nz/culprits/>. If need help identifying a print you can photograph it with a ruler for scale and email it to mothnetotago@gmail.com.
4. When you have identified an animal record it on the tracking tunnel data sheet. If the species you have identified is not one of those listed then fill in the details in one of the blank lines.

Note: If you run out of space on the data sheet you can record extra data on another piece of paper but ensure you include

- The school group
- The date the tracking tunnel was set up
- The location
- The site type
- Which tracking tunnel number it is (between 1 and 4)

Guide to footprints of common species

House mouse

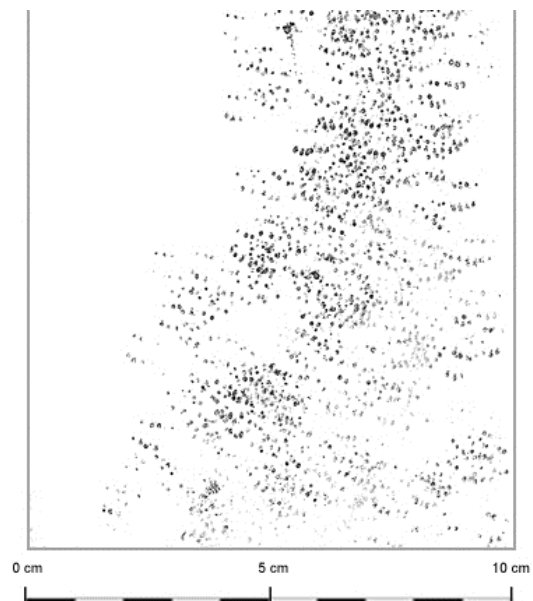
Mus musculus

House mouse prints are very small and can look like scattered dots. Their front footprints have four toes widely spaced in a circular pattern around up to three central pads (~ 7.4 mm wide and 5.1 mm long). Their back footprints have five toes, with the middle three toes in front of the main pad and the outer toes either side of the main pad (~7.4 mm wide and 6.74 mm long).

Mice will often scurry back and forward all over a tracking tunnel card resulting in lots of small footprints that are overlapping, making it difficult to see a clear print. The small size of the prints make them difficult to confuse with other species but it is important to check the cards carefully to ensure tracks of other species are not missed because of the plethora of mouse prints.



House mouse prints (back foot on left, front foot on right).



A tracking tunnel card with lots of house mouse prints.

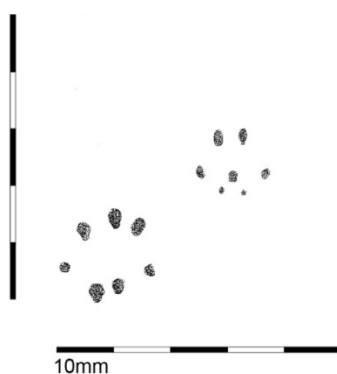
Rats

Kiore (*Rattus exulans*), Ship rat (*Rattus rattus*), Norway rat (*Rattus norvegicus*)

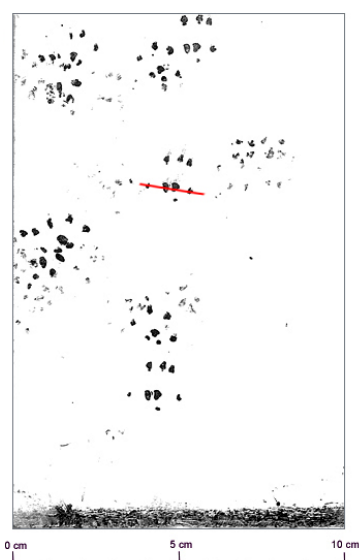
It is very difficult to tell the three rat species in New Zealand apart from each other by their footprints as they all overlap in size depending on the age of the rat. For this project you will just be recording the presence of rats without worrying about what species they are.

Rats have four toes on their front feet and five toes on their back feet. Toes on their front feet are widely spaced in a circular pattern while the three central toes on the back feet are in a line with the outer toes set slightly back. Front feet have three main pads visible in tracks and back feet have around five. The size of adult prints varies between 11-12 mm long and 13-21 mm long.

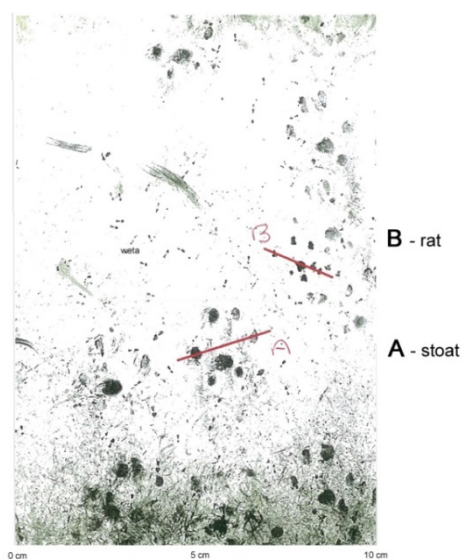
Rat prints can be confused with stoat prints. They can be differentiated by drawing a line between toes 1 and 4 of a front foot and 1 and 5 on a back foot. In rats this line will bisect the central pad or be slightly behind it, while in stoats the line will be in front of the central pad.



Footprints of Ship rat (*Rattus rattus*) with back foot on the left and front foot on right.



A tracking tunnel card with rat prints. Note the red line drawn through the first and fifth toes on the hind foot bisects the central pad.



A tracking tunnel card showing the difference between rat and stoat prints. Note the red line on the rat print bisects the central pads while the red line on the stoat print is in front of the central pad.

Hedgehog

Erinaceus europaeus occidentalis

Hedgehogs have five toes on each foot and different shaped front and back feet. Front feet are wider than they are long (~30 mm long and 35 mm wide) while back feet are longer than they are wide (40-45 mm long and 30 mm wide). Hedgehogs don't have fur between their toes or pads and the toe pads are large and close to the central pad.

Hedgehog prints can be confused with large rat and ferret prints. However, rat prints have similar front and back feet and only four toes on the front foot. Ferrets also only have four toes and fur can show in the prints. Hedgehog toe pads are also larger and closer to the central pad compared with rat or ferret prints.

Note: Hedgehogs prints may appear to only have four toes.



Hedgehog prints (clockwise from top left; front left print, front right print (with claws) and, back left print)



A tracking tunnel card showing hedgehog prints

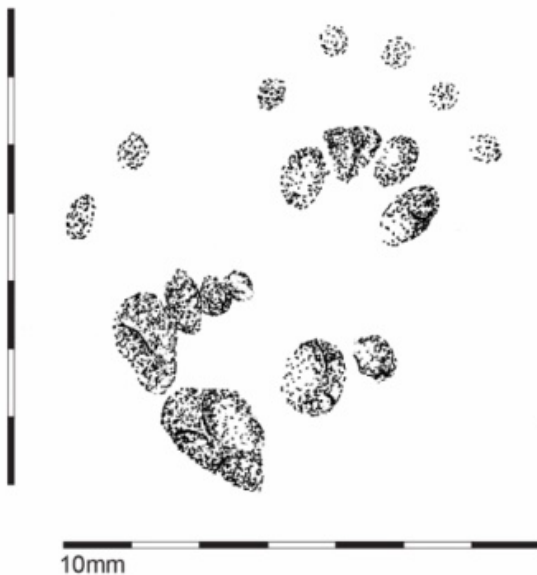
Possum

Trichosurus vulpecula

Possoms have five toes on each foot. Their front feet are hand-like with large cushiony pads and strong curved claws. Their back feet have an opposable 'thumb' without a claw and the second and third toes are fused for most of their length. You will usually only see the front feet of possums in tracking tunnels because possums are too big to fit inside the tunnels. If both front and back footprints are present they will be very close together or even overlapping.

Possum prints aren't easily confused with those of other species due to their large size. They also have quite small toe pad marks in comparison to the cushion pad marks.

Because possums are quite large in relation to the size of the tracking tunnel they often make a mess of the tunnel and cardboard insert and you may find that the insert has been pulled out of the tracking tunnel.



Possum footprints (front foot at top right, back foot at bottom left).



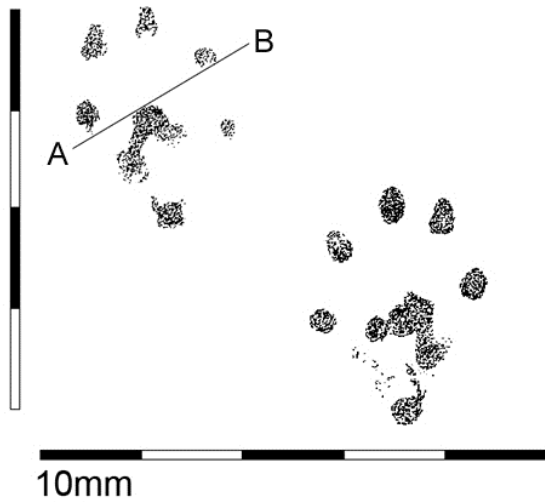
A tracking tunnel card showing the prints of the front feet of a possum.

Stoat

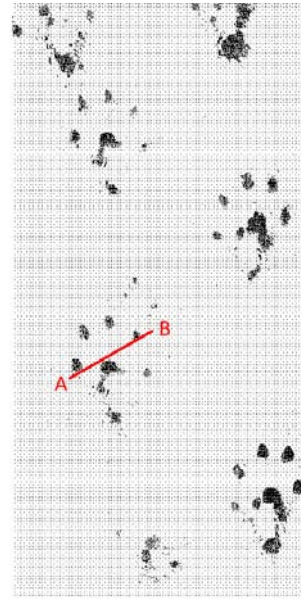
Mustela erminea

Stoats have five toes on each foot with fur between the central pads and toes. Adult front feet are about 22 mm long and 20 mm wide while back feet are about 42 mm long and 25 mm wide.

The prints of small stoats can be confused with rats. See the description and pictures under rats for tips on distinguishing between rat and stoat prints. Stoat prints can also be confused with ferrets and weasels. In general weasel prints are smaller than stoat prints while ferret prints are larger but there can be overlap depending on the size and sex of the individual.



Stoat footprints (front foot on left and back foot on right).

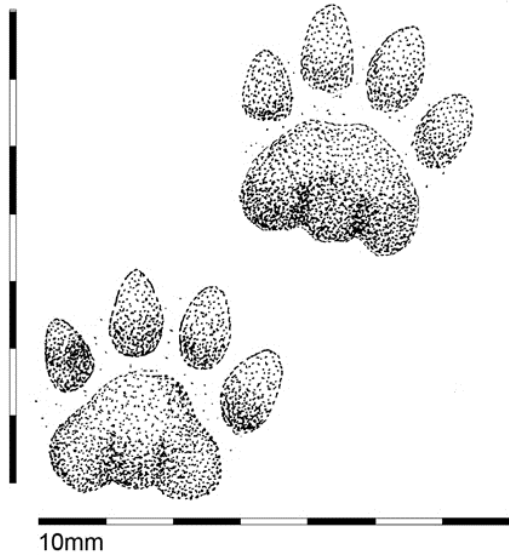


A tracking tunnel card showing stoat prints. Note the red line drawn between the first and fourth toes is in front of the central pad.

Cat

Felis catus

Cats have four toes with large pads on each foot and a large cushiony central pad that is 'heart-shaped' with three parts. The two middle toes are not aligned next to each other and the inner toe is set further forward than the outer toe. The prints are usually wider than they are long.



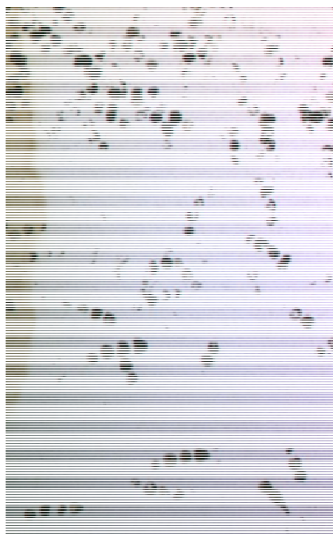
Stylised cat footprints.



A tracking tunnel card showing prints of a small cat.

Weta

Weta prints consist of two to four small dots in a row. They are not easily confused with other prints but may be obscured by prints of other species especially mice.



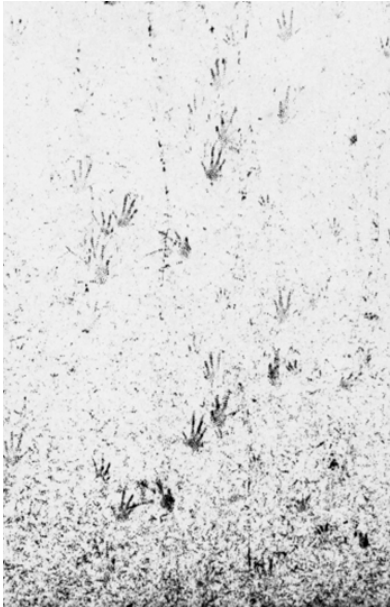
Part of a tracking tunnel card magnified to show weta prints.



Part of a tracking tunnel card showing weta prints (circled).

Skink

Skinks have five toes on each foot. The toes are long and narrow and taper continuously to a sharp point at the end. Prints from the tail dragging along the card are often visible as long sinuous lines.



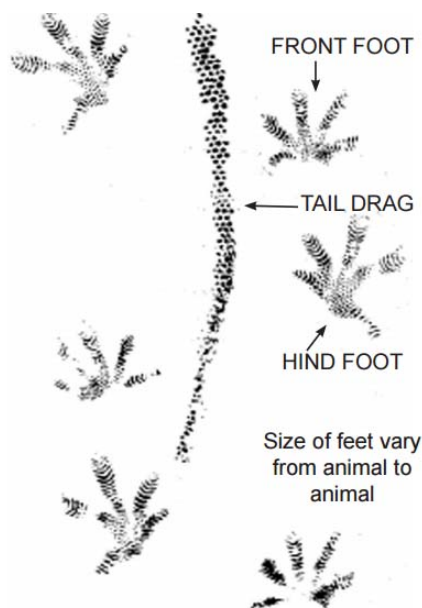
Tracking tunnel card showing skink footprints.



Tracking tunnel card showing skink prints, notice that both the feet and tail drag marks are visible.

Gecko

Geckos also have five toes on each foot however the toes are more robust and the prints clearly show the lines on their pads that allow them to climb almost any surface. Tail drag marks are also often visible but can be more ornamental than those of skinks.



Foot and tail prints of a gecko.