The Herpetological Bulletin 173, 2025: 35–36
SHORT COMMUNICATION

https://doi.org/10.33256/hb173.3536

A baited pitfall trap for the Madeiran wall lizard *Teira dugesii*

JOSÉ CÂMARA[1*] & JOSÉ JESUS[1,2]

[1]Faculdade de Ciências da Vida, Universidade da Madeira, Funchal, Portugal
[2]Madeira Botanical Group (GBM), Faculdade de Ciências da Vida, Universidade da Madeira, Funchal, Portugal

[*]Corresponding author e-mail: tomaschool@outlook.com

Pitfall traps are used for presence/absence surveys and for making population estimates of small terrestrial reptiles, mammals and invertebrates (Lettink & Monks, 2016). The traps may be used in different locations simultaneously and will provide comparable results provided sampling design and trapping effort are similar (Cechin & Martins, 2000; Maritz et al., 2007). The trap described here, known locally as the 'lagartixeiro', is used to capture the Madeiran wall lizard *Teira dugesii*, a species endemic to the Madeira Archipelago, including the Selvagens Islands. The species has an average snout-vent length (SVL) of 64 mm (Cook, 1979) and is locally very abundant; its populations may have the greatest mean body mass density (38.34 kg/hectare) of any terrestrial vertebrate (Arbuckle & Arbuckle, 2023).

The pitfall trap consists of a plastic bucket that, to prevent the lizards from escaping, should have a minimum height of 25 cm and minimum diameter at the top of 27 cm. A wire is stretched across the top of the bucket (Fig. 1A) from which a suitable bait is suspended from the centre by a thread. The bait of choice is a small piece of banana but *T. dugesii* is omnivorous so other baits may be used (e.g. tomato, apple). To ensure that any lizard traversing the wire towards the bait falls into the bucket, two tubes made from Spanish cane *Arundo donax* or plastic are threaded onto the wire either side of the bait. These tubes will rotate when a lizard steps onto them causing the lizard to fall into the bucket from which it is unable to escape (Fig. 1A).

Many island lizards climb trees and shrubs. In such cases, the trap is placed next to the tree but it should be placed in the shade in order to prevent the bucket from being heated by the sun. This avoids heat stress and desiccation that could kill the captive lizards (Dodd, 1992; Hobbs & James, 1999). If it is not possible to have the trap in the shade then to reduce the risk to the lizards, the sampling period should be reduced to 30–45 minutes. Regarding the colour of the bucket, it is generally believed that when compared to lighter shades black is more effective (Crawford & Kurta, 2000). For *T. dugesii*, it was observed that the highest capture rates occurred in buckets of blue and black colours, while colours such as red and white resulted in a significantly fewer captures. However, black buckets may reach higher temperatures in the sun, potentially resulting in increased mortalities. Other factors to bear in mind are that the captured lizards are easy prey for predators such as birds, rodents and cats (Wooley et al., 2021), and also that

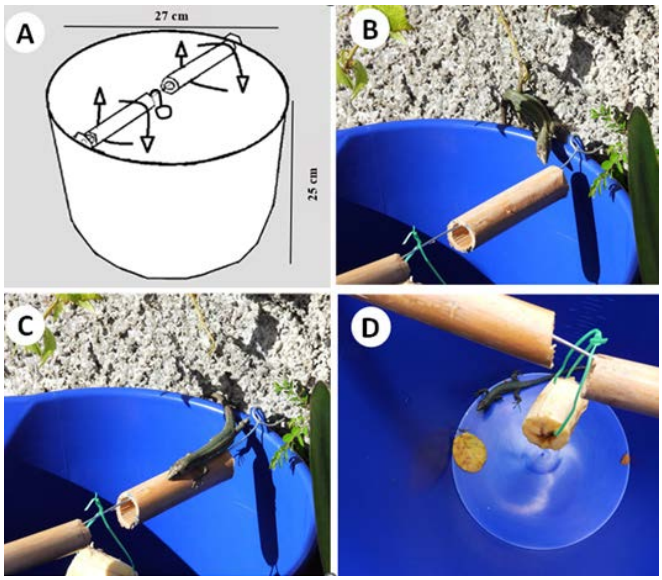

Figure 1. A pitfall trap for capturing *Teira dugesii* - **A.** Representation of the rotation of the tubes in the pitfall trap, **B.–D.** Sequence of an individual *Teira dugesii* falling into the pitfall trap

it is better to avoid trapping in the last hours of sunlight, otherwise after release the lizards may have insufficient warmth to make a quick/safe return to their natural shelters.

The pitfall trap is specific for species that show climbing behaviour, as is the case with many lacertids (Vanhooydonck & Damme, 1999) and in the specific case of *T. dugesii*, it is possible to capture a large number of individuals in a short period of time, e.g. with three traps we captured 96 lizards in one hour in northern Madeira. It is important to note that this trap is suitable for studying diet, as the lizards fall into the bucket before feeding on the bait but the success of the trap depends largely on the lizards being attracted to the food bait, so placing the trap where there are other food sources close by may significantly reduce its effectiveness. A particular advantage is that the trap, unlike more conventional pitfalls, does not disturb the habitat as it is not necessary to dig a hole in which to place the bucket and no drift fence is needed as a guide to the trap (Ellis, 2013; Maritz et al., 2007). Other advantages include ease of construction and low cost (< 5 € per unit).

One disadvantage with the trap that we have noticed is that it may be unsuitable for studying the age structure of

populations, as many juveniles do not approach the trap due to the presence of adult individuals; these are known to be cannibalistic (Cosgrove & Pie, 2025). Furthermore, the trap may be unsuitable for small mainland lizards, which are usually insectivorous in contrast to island species that are more likely to be omnivorous and include fruit in their diets (Valido et al., 2003; Vidal & Sabat, 2010). Consequently, this type of trap is likely more suitable for use on islands than on the mainland.

ACKNOWLEDGEMENTS

We thank the Instituto das Florestas e Conservação da Natureza – IFCN for allowed the captures of specimens under the permit 01/IFCN/2024.

REFERENCES

Arbuckle, K. & Arbuckle, A.J.N. (2023). The Madeira lizard *Teira dugesii* may have the greatest population density of any terrestrial vertebrate. *The Herpetological Bulletin* 163: 24–27.

Cechin, S.Z. & Martins, M. (2000). Eficiência de armadilhas de queda (pitfall traps) em amostragens de anfíbios e répteis no Brasil. *Revista Brasileira de Zoologia* 17(3): 729–740.

Cook, L.M. (1979). Variation in the Madeiran lizard *Lacerta dugesii*. *Journal of Zoology* 187: 327–340.

Cosgrove, D.W. & Pie, M.R. (2025). Cannibalism in the endemic Madeiran wall lizard *Teira dugesii*, an observation of intraspecific predation in its native range. *The Herpetological Bulletin* 172: 44–45.

Crawford, E. & Kurta, A. (2000). Color of pitfall affects trapping success for anurans and shrews. *Herpetological Review* 31(4): 222–224.

Dodd, C.K. (1992). Biological diversity of a temporary pond herpetofauna in north Florida sandhills. *Biodiversity and Conservation* 1: 125–142.

Ellis, M. (2013). Impacts of pit size, drift fence material and fence configuration on capture rates of small reptiles and mammals in the New South Wales rangelands. *Australian Zoologist* 36(4): 404–412.

Hobbs, T.J. & James, C.D. (1999). Influence of shade covers on pitfall trap temperatures and capture success of reptiles and small mammals in arid Australia. *Wildlife Research* 26(3): 341–349.

Lettink, M. & Monks, J.M. (2016). Survey and monitoring methods for New Zealand lizards. *Journal of the Royal Society of New Zealand* 46(1): 16–28.

Maritz, B., Masterson, G., Mackay, D. & Alexander, G. (2007). The effect of funnel trap type and size of pitfall trap on trap success: Implications for ecological field studies. *Amphibia-Reptilia* 28: 321–328.

Novosolov, M., Rodda, G.H., Feldman, A., Kadison, A.E., Dor, R. & Meiri, S. (2016). Power in numbers: drivers of high population density in insular lizards. *Global Ecology and Biogeography* 25: 87–95.

Valido, A., Nogales, M. & Medina, F.M. (2003). Fleshy fruits in the diet of Canarian lizard *Gallotia galloti* (Lacertidae) in a xeric habitat of the island of Tenerife. *Journal of Herpetology* 37: 741–747.

Vanhooydonck, B. & Van Damme, R. (1999). Evolutionary relationships between body shape and habitat use in lacertid lizards. *Evolutionary Ecology Research* 1: 785–805.

Vidal, M.A. & Sabat, P. (2010). Stable isotopes document mainland–island divergence in resource use without concomitant physiological changes in the lizard *Liolaemus pictus*. *Comparative Biochemistry and Physiology* 156B: 61–67.

Woolley, C.K., Knox, C. & Watson, M. (2021). Evaluating the risk of predation for lizards constrained in live traps. *New Zealand Journal of Zoology* 49(2): 166–173.

Accepted: 24 December 2024