

## METHODS

# Collecting Non-native Madagascar Giant Day Geckos, *Phelsuma grandis* (Gray 1870), in Florida: A Novel Approach Combining the Fishing and Glue-trap Techniques

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The Madagascar Giant Day Gecko (*Phelsuma grandis*) is native to Madagascar (Glaw and Vences 2007), but has been introduced to Florida, where it is now established in Miami (Thawley and Stroud 2017), Homestead (Fieldsend and Krysko 2019a), and on at least 14 of the Florida Keys (Fieldsend and Krysko 2019b). Capturing these geckos is challenging because they are extremely wary and quick

(Krysko and Hooper 2006). Although one occasionally can capture one of these geckos by hand, doing so without harming them is very difficult, due to both the ease with which their tissue-thin skin is torn and their readiness to autotomize their tails when handled. Similarly, captures employing a noose pole invariably lead to substantial tearing of the skin around the neck. “Fishing” with a baited hook (Krysko 2000)



**Fig. 1.** A Madagascar Giant Day Gecko (*Phelsuma grandis*) stuck in a mouse glue trap, into which it was lured with a baited hook (left). Olive oil was used to remove the unharmed gecko from the trap (right). Photographs taken on Plantation Key, Monroe County, Florida by Thomas Fieldsend.

is effective, but leads to damaged tissue in the mouth as well as both tail autotomy and substantial skin damage when the struggling and thrashing gecko is handled.

Bauer and Sadlier (1992) detailed their use of mouse glue traps to successfully capture arboreal geckos in New Caledonia. Herein, we describe a novel approach combining a glue trap along with the fishing method. This new approach has proven highly effective at capturing *Phelsuma grandis* in southern Florida and is likely to be suitable for a variety of similarly sized ( $\leq 30$  cm) arboreal lizards.

When we locate a target (*Phelsuma grandis*) in an arboreal location such as the trunk of a tree or a man-made structure like a wall or fence, we place a mouse glue trap on level ground, ensuring that it abuts the base of the tree or structure on which the lizard is perched. At least in the case of *P. grandis*, the glue trap can be positioned without alarming the lizard by keeping one's movements slow and controlled, and by keeping one's eyes lowered and not directly looking at the lizard. We back away to a distance of around 2 m and dangle a hook baited with a live domestic cricket within the field of vision of the lizard, taking care to keep the cricket close to the surface on which the lizard is perched; if this is done correctly, the lizard will almost always take an interest in the cricket and pursue it. We begin gradually maneuvering the cricket toward the ground, keeping it far enough away from the lizard to prevent it from being eaten, but close enough to ensure that it remains within the lizard's field of vision. Most geckos on which this approach was tested followed the cricket until they were near the base of the tree or structure (i.e.,  $< 30$  cm). At this point, however, some became wary and hesitant to continue pursuing the prey. If this occurred, we allowed the lizard to take one to three crickets from the hook, withdrawing and re-baiting the hook each time. These "free lunches" emboldened the lizard to continue following the bait. We then led the lizard to the edge of the glue trap and dangled the cricket just above the ground at the side of the glue trap farthest from the lizard's perch. Doing this forces the lizard to attempt to traverse the glue trap in order to capture

the cricket. Almost all of the geckos on which we tried this technique were hesitant to actually step onto the glue trap, but they were eventually enticed to do so and became stuck. We have never observed a *P. grandis* free itself from a glue trap. Once the lizard is ensnared, we release it from the glue trap by applying harmless olive oil or corn oil to its body and gently "peeling" it off of the trap (Bauer and Sadlier 1992). Even in the case of the *P. grandis*, doing this rarely resulted in tail autotomy or any damage to the skin.

While live crickets are our bait of choice, many other invertebrate species probably would work equally well as bait. Cole (2004) recorded various arboreal geckos pursuing a dot of light projected from a laser pointer, sometimes following it all the way to the ground, and we have successfully used this technique to capture nocturnal House Geckos (*Hemidactylus* spp.) in Florida. We have not yet tried using a laser pointer for *P. grandis*, but it could potentially serve as a substitute for a baited hook. Our new approach has proven highly effective at capturing *P. grandis* in southern Florida and is likely to be suitable for a variety of similarly sized ( $\leq 30$  cm) arboreal lizards.

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