



Lizards in the library: A case study of an established resident population of Mediterranean house geckos in collection storage areas and the potential impact of global warming on other cultural institutions

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Harry Ransom Center Image by author

Integrated pest management programs in cultural institutions are typically concerned with common varieties of pests living within their buildings, such as carpet beetles or rats. The Harry Ransom Center, however, has an established resident population of Mediterranean house geckos living within its building, including in its collection storage areas. These small lizards are common in Austin, Texas, where the Ransom Center is located, and are generally considered to be beneficial as that they eat insects and spiders. While using insectivores to control small pests in a cultural institution is an intriguing idea, the presence of geckos presents its own set of concerns.



Mediterranean house gecko with prey

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Mediterranean house geckos (*Hemidactylus turcicus*) are a small subtropical species of lizard native to coastal areas around the Mediterranean and Red Seas and have been introduced into areas along the coast of the Gulf of Mexico starting in the mid-20th century. They are very well adapted to human environments and can be found in urban areas, even inside residences. In fact, the preferred habitat of Mediterranean house geckos are buildings with rough surfaced walls. Adults usually reach about 4 inches in length. Because they are nocturnal, they have proportionately large eyes. However, they will often gather around light sources at night looking for easy prey, which can include small moths, crickets, cockroaches, and spiders. In fact, it is quite common to find them near porch lights at night. Mediterranean house geckos have grippy toe pads which allow them to easily climb walls.



Gecko warming in the sun

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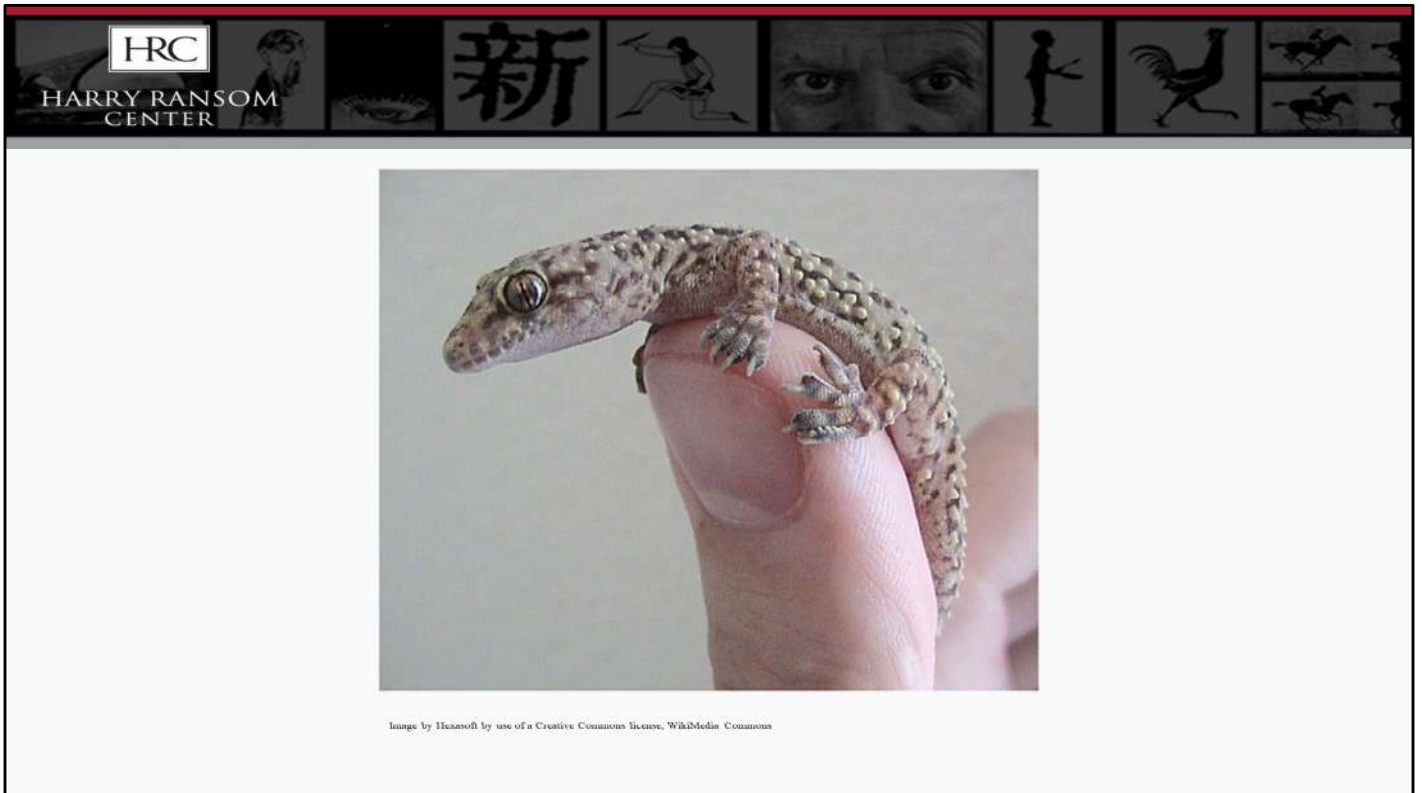
During the day Mediterranean house geckos will usually seek shelter in small cracks and crevices of buildings as well as of rocks. They lay several clutches of eggs during the summer. They are considered beneficial in Austin because they eat common household pests, and some people welcome them into their homes. The geckos are harmless and even sometimes kept as pets. (A little warning: This next slide shows a desiccated gecko caught in a sticky blunder trap)



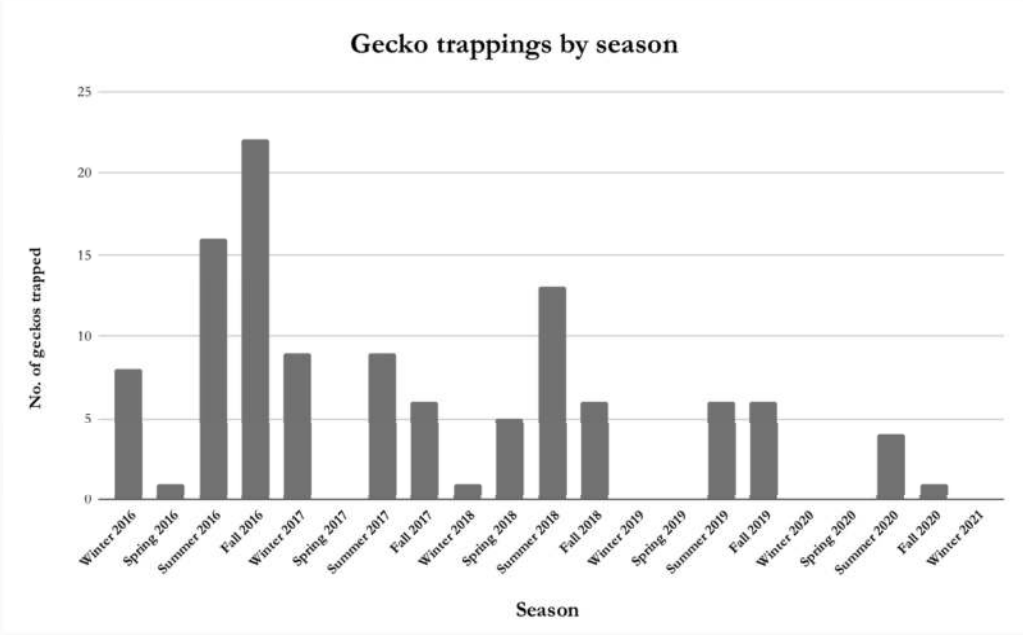
Desiccated gecko caught in sticky blunder trap

Image by author

Mediterranean house geckos started appearing in sticky blunder traps at the Ransom Center when we initiated an IPM program in 1990. They can be found throughout the building, including in collection storage areas and especially in facilities equipment areas. Though the typical adult size Mediterranean house gecko is around 4 inches in length, the Ransom Center's population rarely exceeds 2 ½ inches. Because typical gecko prey do not consistently appear in the Ransom Center, it is assumed that the resident population subsists on smaller species of insects within the building, including odd beetles. The population seems to be in decline as recent efforts to address insect issues within the building are proving successful. The Ransom Center's geckos are rarely seen outside of sticky blunder traps (I have only seen two untrapped geckos), but occasionally one can hear them chirping in dark storage areas.



So, why would a house gecko want to live in a humanities research library and archive such as the Harry Ransom Center? There are plenty of reasons! There is a consistent climate, including no freezes. There is potentially a steady food supply, or was until we made an effort to control that food supply. There are no predators, and if there were predators then I would have a bigger problem than geckos in my library. Our closed stacks collection storage areas tend to be dark and quiet, which Mediterranean house geckos like. When you are two inches long, a big storage area feels like the great outdoors. Once you get down to it, the Ransom Center is a very comfortable place for house geckos.



This chart shows seasonal fluctuations in trapped geckos at the Ransom Center. Because gecko egg clutches hatch in the summer, and more geckos appear in traps in the summer and fall, it seems apparent that gecko activity is much greater in that part of the year. The chart also shows an overall decline in trapped geckos, which correlates with less insect activity in the building. Unlike most reptiles, Mediterranean house geckos are resistant to most common pesticides, probably due to their close association with human habitats and a built up resistance. The Ransom Center has been successful in controlling its population by eliminating gecko food sources. After successfully renewing a concerted effort to control and eliminate insects within the building, there has been a noticeable drop in the number of trapped geckos.



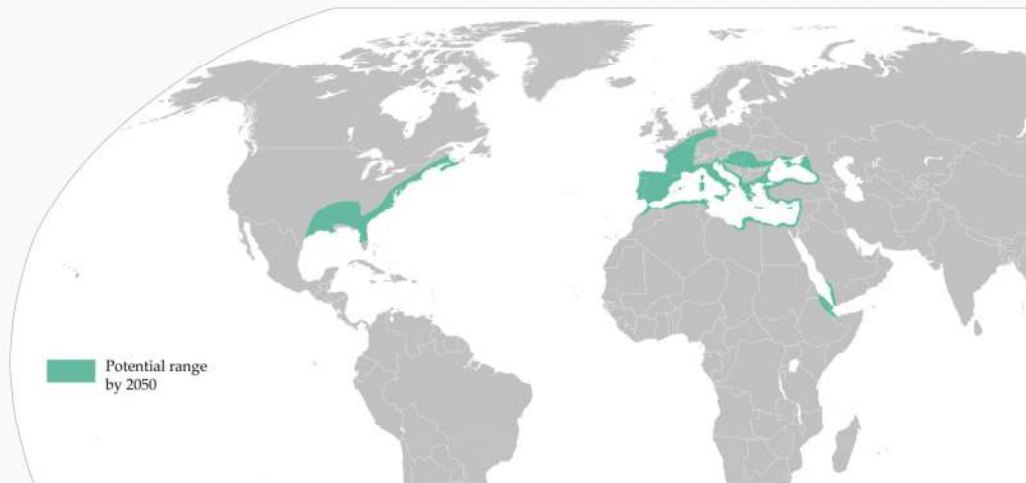
Gecko droppings

Image courtesy of Texas A&M AgriLife Extension <https://citybugs.tamu.edu/files/2010/04/gecko-eggs1.jpg>

Though geckos can be beneficial in controlling insect populations within a building, there are concerns about keeping them in areas with collection materials. Dead geckos can provide a food source for pests that eat proteins, including cockroaches and carpet beetles. Gecko droppings can stain collection materials as well as pose a potential source of salmonella, a health concern. Lastly, staff who are unaccustomed to being around small lizards often are reluctant to be near them or are frightened by them.



The current distribution of Mediterranean house geckos is in primarily tropical and subtropical areas, which have warm to hot summers and warm to cool winters, around the Mediterranean Sea, the Red Sea and the coast of the Gulf of Mexico, with remote populations mostly in urban centers scattered in southern California and the Southeastern United States. Limits to the distribution range seem to be guided by climate (Meshaka 2006). As such, models predict that as the climate changes, this distribution area could move significantly northward (Wetterings, Vedder, 2018).



You can see here how the range could shift up the eastern seaboard of North America all the way up into Canada. On the other side of the Atlantic we can see the range potentially moving up into northwestern Europe as far north as Hamburg, Germany. Because Mediterranean house geckos do well in urban environments outside of their usual climates, it is quite possible that they could even occupy buildings in cities further north than that. As a result, institutions in areas unaccustomed to small household lizards may find themselves having to deal with a new category of pests within the next few decades. As a point of reference, Texas has more than 55 species of lizards whereas Germany has only 20 species, including no geckos.



Sri Lankan house gecko

Photo courtesy of David M. Glorioso, <http://www.louisianaherps.com/sri-lankan-house-gecko-1.html>

Tropical house gecko



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Two other *Hemidactylus* species are also potential cultural institution invaders. Much like our friend the Mediterranean house gecko, the Sri Lankan house gecko (*Hemidactylus parvimaculatus*) and the tropical house gecko (*Hemidactylus mabouia*) are both species that live in close proximity to human habitats that have been introduced into the United States and are thriving. It is quite possible that either of these exotic species may displace Mediterranean house geckos in the next decade. As with the Mediterranean house gecko, the ranges of these two species are expected to move northward with global warming.



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- Mediterranean house geckos are very well adapted to human environments and happily live in buildings
- Though insectivores, geckos are not a good choice for controlling pests in a cultural institutional environment
- Geckos can be controlled by controlling their food sources
- The Mediterranean house gecko range can be expected to move northward into areas unaccustomed to small lizards





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Citations:

Meshaka, Walter E. Jr., Samuel D. Marshall, Jeff Boundy, and Avery A. Williams, 2006. "Status and Geographic Expansion of the Mediterranean House Gecko, *Hemidactylus turcicus*, in Louisiana: Implications for the Southeastern United States." *Herpetological Conservation and Biology* 1(1):45-50.

Weterings, Robbie and Kai C. Vetter, 2018. "Invasive house geckos (*hemidactylus* spp.): their current, potential and future distribution." *Current Zoology* 64(5):559-57.

Special thanks to Travis J. LaDuc, PhD, Curator, Herpetology, Biology Instruction Office, Assistant Professor of Instruction, Department of Integrative Biology, University of Texas at Austin



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