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## New tortoise royalty on Red Hill

Archbold Biological Station

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Leyna Stemle holding the small “heir” of Gopher Tortoise 21, whom Archbold researchers affectionately call the Queen of Red Hill. This picture shows how young tortoises are a different color from adults, as they change from yellow to brown with age.

LEYNA STEMLE PHOTO

In the deep, rust-colored sands of Red Hill resides one of the oldest known Gopher Tortoises at Archbold Biological Station. Tortoise number 21, affectionately known as the Queen of Red Hill, is one of the original marked tortoises from the Station’s long-term tortoise mark-recapture project started in 1967. “She was already an adult when she was first found back in 1968, making her at least 63 this year!” explains Herpetology & Restoration Ecology intern Dylan Winkler. Every week Winkler enjoys finding Gopher Tortoise 21 as a

continued part of the long-term tracking study. “For decades she has lived at Archbold, being recaptured by many researchers. But until last July we had never found her nest, partly because tortoises bury their eggs and scientists still do not fully understand how they decide where to nest.”

Researchers from Georgia Southern University were at the station in 2019 studying how climate change may affect Gopher Tortoises, which are already a threatened species. Collaborating with Archbold Herpetology staff, they hatched tortoise eggs from 18 nests, then collected blood samples before marking and releasing each baby tortoise back at the nest site. DNA extracted from the blood samples was used to genotype each hatchling to determine its parents. This process revealed that Gopher Tortoise 21 had five babies with the male tortoise 158 (another long-time resident of Red Hill) in 2019.

“Not only was this the first time her nest was found and linked to her with genotyping, but those five babies mean that she has the ability to reproduce even after 50+ years of being sexually mature!” said graduate researcher Leyna Stemle from University of Miami. We know Gopher Tortoises can live a very long time, but little is known about how long they are able to produce healthy babies, in other words, what is their reproductive longevity. Many tortoises can live for a long time, over 100 years in captivity for some species, but it is important to consider how long they can keep adding to a population. Such information is not known for most turtle species and is one reason why long-term studies are essential. “This find is very encouraging and we hope to continue to track Gopher Tortoise 21 and her reproductive success!” says Herpetology Research Assistant Amanda West.

It seems West’s wish was heard. In July 2020, Stemle and Winkler were in the field assessing the condition of previously mapped tortoise burrows. Stemle remembers: “While walking through the scrub, I discovered a tiny yellow tortoise sitting in the sand. Looking closely, I saw notches along its shell, evidence it had been previously marked and released last year. Notching is a marking technique used by turtle researchers to uniquely identify tortoises. According to the notching code, this tortoise was Number 1328 – one of Gopher Tortoise 21’s babies from 2019!”

This little individual was in a restored sandhill area, about 50 meters from 21’s confirmed nest site. Stemle and Dr. Betsie Rothermel, director of the Archbold Herpetology & Restoration Ecology program, took detailed measurements of the tortoise and found it grew 19 mm in length and nearly doubled in weight during its first year. “We were interested in where it would go once we finished measuring it,” Winkler recalls, “so we followed it until it reached its destination – a tiny burrow! We probably would not have noticed this burrow if it hadn’t led us right to its home. Young tortoises are very understudied because their small size and great camouflage make them so difficult to find.” For the herpetologists at Archbold, every recapture is vital to uncovering the secrets of immature tortoises.

Stemle states, “Overall, this was an uplifting encounter and we now know the Queen of Red Hill is still adding to this special population of Gopher Tortoises – even at 60+ years old!”

You can see a video about Gopher Tortoise 21 on YouTube, search “Queen of Red Hill”, or read this blog post from 2018:

<https://archboldedublog.org/2018/07/21/queen-of-red-hill/>

A Moody