REPTILES & AMPHIBIANS

Status and Observations of the Critically Endangered Turks Island Skink (*Spondylurus turksae*)

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Abstract.—The Turks Island Skink, *Spondylurus turksae* Hedges and Conn 2012, is endemic to the Turks Bank, Turks and Caicos Islands, at the southeastern terminus of the Lucayan Archipelago in the greater Caribbean region. An International Union for the Conservation of Nature (IUCN) Red List Assessment provided strong evidence that the species' range declined precipitously throughout the 20th century, and a status of Critically Endangered was assessed in 2016. While previously found on several of the Turks Islands, the species was not documented between 1972 and 2008, when we discovered a new population on Cotton Cay. We report on the status of the Turks Island Skink based on surveys of the Turks Cays from 2008 to 2022–2024. We found that the skink is likely restricted to a novel population we report on Cotton Cay and that this is possibly the only remaining population of the species, reinforcing its status as Critically Endangered. We further provide the first published photographs of live individuals of the species.

The Turks Bank (~324 km^2), the easternmost bank of the Lucayan Archipelago with emergent islands (other banks located farther east are completely submerged), is located ~125 km north of Hispaniola. The most remote islands on the bank are the Sand Cays, the largest of which is Big Sand Cay (58 ha), located ~11.3 km south of Salt Cay. The Turks Cays constitute a group of islands and islets bounded by the largest and only inhabited islands on the bank, Grand Turk (17.4 km^2) to the west and north and Salt Cay (6.7 km^2) to the south and west (Fig. 1), which constitute the Grand Turk Cays Land and Sea National Park. This park is an area that has been the focus of renewed efforts to document biodiversity (e.g., Pienkowski et al. 2005; Austin 2023; Reynolds 2023). Clockwise from Grand Turk, the islands include Gibbs Cay (6 ha), Round Cay (1 ha), Long Cay (23 ha), Pear Cay (11 ha), East Cay (46 ha), Cotton Cay (113 ha), and Peniston Cay (3 ha). While only Grand Turk and Salt Cay are presently inhabited by people, humans historically lived year-round on Cotton Cay and temporarily on Gibbs Cay and East Cay (Gascoine 1991). Indeed, the Turks Islands have a long history of human habitation, which has resulted in many environmental impacts, including a significant alteration of vegetation owing to development, agricultural activities, and the introduction of grazing animals such as donkeys and goats (Mills 2008). Numerous invasive species are present on most islands, with at least ten non-native reptiles and amphibians

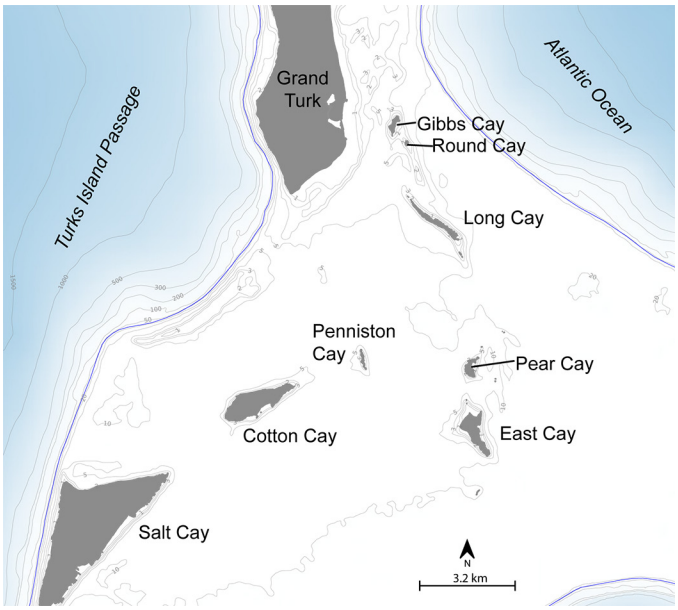

Figure 1. The Turks Cays, located on the central Turks Bank, Turks and Caicos Islands. Bathymetry contour depths are in meters. Map redrawn from the Marine Spatial Planning Tools for Turks and Caicos (https://webgis.gov.tc).

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recorded from the region (Reynolds and Niemiller 2010; Reynolds 2011; Reynolds and Giery 2023).

Six species of native terrestrial reptiles occur on the Turks Bank (Reynolds 2011; Buckner et al. 2012; Hedges and Conn 2012). All of these are endemic to the Turks and Caicos Islands, but two lizards are endemic to the Turks Bank. The Turks Islands Least Gecko (Geckolet), *Sphaerodactylus underwoodi* Schwartz 1968, is relatively common and found throughout the islands of the Turks Bank (Reynolds 2011; Buckner et al. 2012). The Turks Island Skink, *Spondylurus turksae* Hedges and Conn 2012, was described in a 2012 monograph on the scincid fauna of the Caribbean (Hedges and Conn 2012) and also is endemic but is rare and has a restricted distribution. Previously considered conspecific with the Virgin Islands Bronze Skink, *S. sloanii* (Daudin, 1803) (formerly *Mabuya sloanii*), from Puerto Rico, the Turks Island Skink and the Caicos Skink, *Spondylurus caicosae* Hedges and Conn 2012, were described as distinct from the Puerto Rican skink fauna. Both Turks and Caicos Islands (TCI) species lack median contact between the supranasal scales, differ in coloration, and are relatively small in body size relative to others in the genus. *Spondylurus turksae* and *S. caicosae* are very similar morphologically. *Spondylurus turksae* is thought to reach a slightly larger body size than *S. caicosae* (to 79.1 mm SVL and 8.5 g versus 77.6 mm SVL and 8.0 g; Hedges and Conn 2012), although too few of the former species have been measured to suggest a substantial difference in body size. *Spondylurus caicosae* has lateral black stripes that extend 1/3 of the way to the hindlimbs, whereas in *S. turksae,* the stripes continue to the hindlimbs. *Spondylurus turksae* has 211 total lamellae (196 in *S. caicosae*) and a higher ear height than *S. caicosae* (Hedges and Conn 2012). Despite relatively few external diagnostic traits, ongoing phylogenetic work supports not only the distinction of *S. turksae* and *S. caicosae* from Puerto Rican scincids, but also suggests that the two TCI species are highly divergent from one another (Hedges and Conn 2012; Rayna Bell and Danielle Rivera, pers. comm.).

Spondylurus turksae was described from an adult female (University of Kansas Natural History Museum [KU] 242171) collected on Grand Turk in 1961 by Albert Schwartz, part of a series of three specimens he secured just outside Cockburn Town. Four other paratypes exist; one (KU 242170) was collected by Albert Schwartz on Gibbs Cay in 1972, and the other three specimens (Academy of Natural Sciences of Drexel University [ANSP] 3825; Museum of Comparative Zoology [MCZ] R-11946–47) have no collection or locality information other than that the MCZ specimens were collected by L.A. Mowbray in 1916. Presumably, all of these came from Grand Turk, but this is speculative. Thomas Barbour (1916) suggested that skinks were rare on Grand Turk, which is not surprising given the long history of high human population density during the salt-raking era of the 17th to 19th centuries that dramatically modified the island's habitat (Mills 2008; Sadler 2020). Domesticated animals, such as goats, horses, and donkeys, heavily browsed the vegetation, and rats, cats, and dogs were all introduced in abundance. Reynolds (2011) optimistically listed *S. turksae* as present across the Turks Islands, specifically Grand Turk, Salt Cay, and the Turks Cays. While skinks almost certainly occurred historically on Salt Cay, the island (like Grand

Table 1. Observations of herpetofauna during surveys of the Turks Bank by the authors since 2008. Abbreviations are as follows: ST: *Spondylurus turksae*, CYC: *Cyclura carinata*, AS: *Anolis scriptus*, SU: *Sphaerodactylus underwoodi*, CC: *Chilabothrus chrysogaster*, LP: *Leiocephalus psammodromus*, HM *Hemidactylus mabouia* (introduced).

Year	Day(s)	Island	ST	CYC	AS	SU	CC	LP	HM
2008	August 4–5	Salt Cay	0	0	1	1	0	0	1
2008	August 6-8	Grand Turk	0	0	1	1	0	0	1
2008	August 6	Gibbs Cay	0	0	1	1	1	1	0
2008	August 7	Long Cay	0	1	0	0	0	1	0
2008	August 8	Gibbs Cay	0	0	1	1	1	1	0
2008	August 8	Cotton Cay	**1**	0	1	0	0	0	0
2022	March 1–2	East Cay	0	0	1	1	1	1	0
2022	March 2–3	Long Cay	0	1	1	1	0	1	0
2022	March 3–4	Gibbs Cay	0	0	1	1	1	1	0
2023	February 28–March 2	East Cay	0	0	1	1	1	1	0
2023	March 2–3	Gibbs Cay	0	0	1	1	1	1	0
2024	March 4–5	Cotton Cay	**1**	0	1	0	0	0	0
2024	March 7	Grand Turk	0	0	1	1	0	0	1
2024	March 8	Gibbs Cay	0	0	1	1	0	1	0

Turk) has been heavily impacted by human activity for centuries (Mills 2008; Sadler 2020), and the skink has never been formally documented on the island (Buckner et al. 2012).

In August 1999, S. Blair Hedges searched Grand Turk for skinks but found none (Hedges and Conn 2012). We have previously suggested that Grand Turk has experienced some extirpations of reptilian species (Reynolds 2011; Reynolds and Gerber 2012; Reynolds et al. 2012; Reynolds and Hedges 2016), and the skink could be among them. Since the last observation in 1972, the only skinks docu-

Figure 2. A Turks Island Skink (*Spondylurus turksae*) found beneath a limestone slab at night on 4 March 2024, about 20 m from the beach on the southwestern end of Cotton Cay (see Fig. 4). Photographs by R.G. Reynolds.

mented on the Turks Bank were a new population that we discovered on Cotton Cay in 2008 (Buckner et al. 2012) and describe below. We further relate our efforts to document this species since 2008.

Methods

We have conducted four periods of herpetofaunal surveys of the Turks Cays since 2008 (Table 1). Diurnal survey efforts involved turning over rocks and examining vegetation during random walking around each island, attempting to cover all representative habitat types. Nocturnal surveys were from sundown to about midnight and consisted of random walks through all habitat types using high-power headlamps, with occasional rock flipping.

In 2008, Reynolds and Niemiller visited Gibbs Cay, Long Cay, Cotton Cay, and Salt Cay to conduct diurnal herpetofaunal surveys as part of a more extensive country-wide assessment (included in Reynolds 2011). From 1–3 March 2022, Reynolds conducted herpetofaunal surveys on East Cay (sometimes called Pinzon or Martin Alonso Pinzon), Long Cay, and Gibbs Cay, spending one night and one day on each island. From 28 February to 2 March 2023, Reynolds and Comșa surveyed East Cay and Gibbs Cay, spending two nights on the former and one night on the latter. Reynolds and Comșa surveyed Cotton Cay one night on 4–5 March 2024 and Gibbs Cay one day on 8 March 2024. In addition, we surveyed Grand Turk diurnally for 2 hours on 7 March 2024. All herpetofauna that were encountered were recorded, and some of this information has been reported elsewhere (Reynolds and Niemiller 2009; Reynolds 2011, 2023). Herein we focus on observations of the Turks Island Skink.

Results

During our fieldwork, we observed *Spondylurus turksae* (Fig. 2) only on Cotton Cay (Fig. 3), finding two individuals in 2008 and nine in 2024. We were unable to find skinks on any of the other islands on the Turks Bank. On 8 August 2008, we found two individuals under rocks in two hours of diurnal searching (0630–0830 h). On 4 March 2024, we found five individuals under rocks in 30 minutes in the afternoon (1610–1640 h), two individuals under rocks at night (2122–2132 h), and two individuals under rocks in the morning (0804–0828 h) of 5 March 2024.

Discussion

In 1916, Thomas Barbour suggested that skinks were rare on Grand Turk, implying that *Spondylurus turksae* was in decline. This was probably prophetic, as the species now is either exceedingly rare or has been extirpated throughout nearly all of its historic range. Surveys since 1972 show that our newly discovered population on Cotton Cay is the last remaining robust population of *S. turksae*. We failed to find them anywhere else in their historic range, although we have not yet conducted a nocturnal survey on the Sand Cays.

The population on Cotton Cay is dense, and both trips to the island quickly yielded observations. Cotton Cay is a privately owned island with a history of human habitation and agriculture. While no intact permanent or temporary buildings are currently on the island, ruins are extensive. These include the ruins of several houses on the southwestern end of the island, as well as approximately 1.5 km of decaying rock walls between 1–2 m in height that would have served to isolate hoof stock. Historically, goats, donkeys, and horses occurred on the island, and much of the island was cleared for planting Sisal (*Agave sisalana*) and Sea Island Cotton (*Gossypium barbadense*). Goats are probably still present (we saw signs of them in 2008 but not in 2024), and Sisal and Aloe (*Aloe vera*) grow in dense stands on the southwestern end of the island. Rats (*Rattus rattus*) are abundant but we found no signs of other invasive mammals. The vegetation

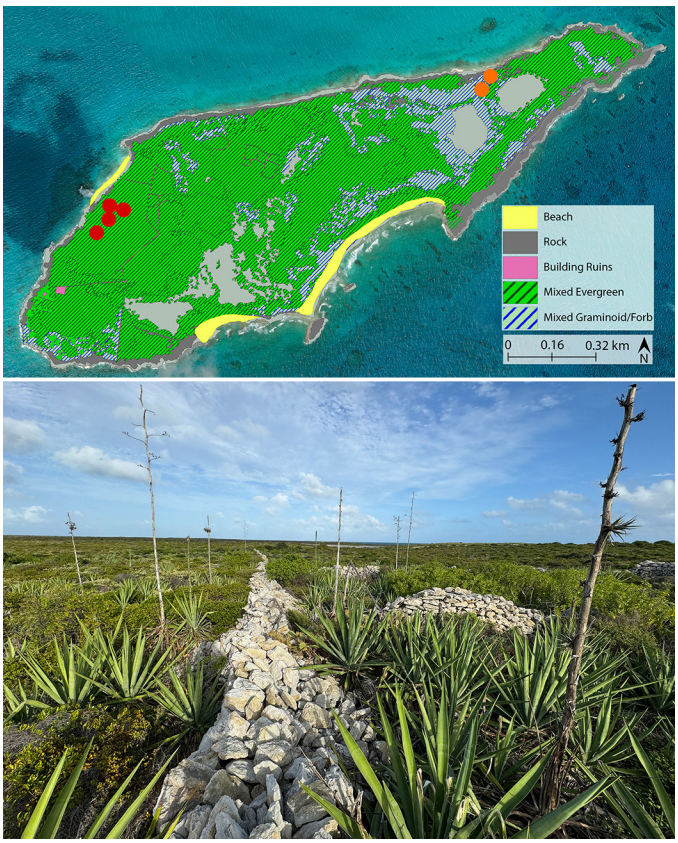

Figure 3. Cotton Cay is a 113-ha island located near the center of the Turks Bank, Turks and Caicos Islands. Major habitats are shown and labeled. The linear gray lines are rock walls and ruins from when the island was actively farmed. Point locations show individual skink observations from 2008 (orange) and 2024 (red). Light gray areas on the island are ponds or marshes. Map redrawn from the Marine Spatial Planning Tools for Turks and Caicos (https://webgis.gov.tc) (top). View looking northeast across Cotton Cay (image taken at site marked by the pink dot on the map), showing Sisal (*Agave sisalana*) and rock wall ruins in the foreground. Photograph by R.G. Reynolds.

is a dense mixed graminoid and evergreen coastal scrub and a series of large brackish ponds lie along the southern margin and central northeastern parts of the island (Fig. 3). Rocks are abundant and provide an enormous amount of surface cover for skinks. Skinks were always found under rocks along open areas bordered by thick vegetation (Fig. 4). The island is relatively low-lying, with portions below sea level that are regularly flooded. A rise to the southwest leads to a high point reaching ~15–20 m above sea level.

Grand Turk and Salt Cay are heavily modified, and both have a long history of human industry (Mills 2008; Sadler 2020) and the associated ecological damage and invasive species seen on many Caribbean islands. The remaining Turks Cays are small, although some are ecologically intact. Gibbs Cay and East Cay are both free of invasive mammals and support populations of the Turks Island Boa (*Chilabothrus chrysogaster*). Long Cay also is free of rats, has dense but low vegetation, and, along with the Sand Cays, supports the only robust population of Turks and Caicos Rock Iguanas (*Cyclura carinata*) on the Turks Bank (Reynolds 2011). The only islands we have not explicitly surveyed for skinks are the Sand Cays. However, these islands are the site of ongoing conservation work on the iguanas and have been visited numerous times by experienced herpetologists documenting plant and animal life in addition to iguana conservation data. No skinks were seen on any diurnal expeditions to the Sand Cays (Glenn Gerber and Joseph Burgess, pers. comm.).

Figure 4. Ideal habitat for Turks Island Skinks (*Spondylurus turksae*) on Cotton Cay, Turks and Caicos Islands. The vegetation is mixed evergreen coastal scrub. Note the large rocks strewn on the surface. Photograph by R.G. Reynolds.

The Turks Island Skink has been assessed as Critically Endangered based on criteria B1ab and B2ab, triggered by a severe decline in or limitation to the extent of occurrence and the area of occupancy (Reynolds and Hedges 2016). Based on our surveys, we believe that the only robust population remains on Cotton Cay, an island with a large population of rats. Removal of these rats and any remaining goats should be considered the top conservation priority for this species, followed by establishing additional populations on islands free from invasive mammals and with minimal ecological damage or human impact. Additional surveys might target some of the smaller cays to determine whether any other populations remain. However, this would be doubtful given the small size and sparse vegetation of the other islands.

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