Glyptemys. insculpta exhibit long lifespans and delayed maturation which amplifies the negative effects of any loss to a population (Gibbons et al. 2000. BioScience 50:653–666). The Kaplan-Meier survival estimate for this population using telemetry data (not including the road mortality) is 0.875 (CI: 0.727–1.00), which is unsustainable for this site (Methner 2022. M.S. Thesis, Grand Valley State University, Allendale, Michigan. 95 pp.). This level of predation over a relatively short time span, combined with the effects of road mortality and nest predation, will likely lead to local extirpation of *G. insculpta.* We recommend further monitoring and assessment of predation risk for *G. insculpta* and quantifying predator abundance in turtle habitats, to assess the impact of predation on population stability.

Funding was provided by Grand Valley State University and the Little River Band of Ottawa Indians. Turtles were handled under permit FSCP02232021125400 from the Michigan Department of Natural Resources – Fisheries Division.

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***HEOSEMYS GRANDIS* (Giant Asian Pond Turtle). DIET.** *Heosemys grandis* is a large (48.0 cm maximum straight carapace length [SCL]), semi-aquatic geoemydid turtle species found across the southeast Asian mainland in Cambodia, Laos, Malaysia, Myanmar, Thailand, and Vietnam (Turtle Taxonomy Working Group 2021. Chelonian Res. Monogr. 8:1–472). Although widely distributed, there have been no publications to date on its diet in the wild. In captivity, this omnivorous species is known to consume nearly anything it is offered, including fruits, vegetables, meat, and fish.

On 26 May 2024 at 1341 h, we observed an adult male *H. grandis* biting at and consuming the foam nest of *Polypedates megacephalus* (Big-headed Treefrog; Anura: Rhacophoridae) in a captive enclosure at Cuc Phuong National Park, Ninh Binh Province, Vietnam. *Polypedates* is a genus of frogs collectively known as whipping frogs due to the characteristic foam nests in which their eggs are laid. In this case, a *P. megacephalus* suspended its nest above the concrete pond of the *H. grandis* enclosure at the Turtle Conservation Centre—an ex-situ conservation facility jointly operated by Cuc Phuong National Park and Indo-Myanmar Conservation's Asian Turtle Program (Fig. 1). One *H. grandis* was able to position itself, with some difficulty, at the edge of the pond and reach the arboreally suspended nest to take several bites of the foamy contents. This, to our knowledge, is the first documentation of this behavior, as well as the first time the lead author has seen this occur in nearly a decade of working at this facility. This observation demonstrates that *H. grandis* is capable of consuming frog eggs in suspended foam nest.

FIG. 1. *Heosemys grandis* reaching out over a captive pond to consume the foam nest and eggs of *Polypedates megacephalus* in Ninh Binh Province, Vietnam (A) and a close-up view of the predation event on the arboreally suspended nest of *P. megacephalus* (B).

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***LEPIDOCHELYS KEMPII* (Kemp's Ridley Sea Turtle). NEST SITE FIDELITY.** Sea turtles demonstrate nesting site fidelity, typically returning to their natal beach to nest as adults (Miller 1997. *In* Lutz and Musick et al. [eds.], The Biology of Sea Turtles Volume I, pp. 51–82. CRC Press, Boca Raton, Florida). This behavior can provide insight on nesting populations and the movements of females within those populations. *Lepidochelys kempii* is the most critically endangered sea turtle in the world (Wibbels and Bevan 2019. IUCN Red List of Threatened Species 2019: e.T11533A155057916, 3 Sept 2024). This species has a very limited nesting range, with the majority of the population nesting at one primary beach near Rancho Nuevo, Tamaulipas, Mexico, with secondary nesting beaches in south Texas, USA (Pritchard and Marquez 1973. IUCN Monograph No 2: Marine Turtle Series, 30 pp.; Hildebrand 1982. *In* Bjorndal [ed.], Biology and Conservation of Sea Turtles, pp. 447–453. Smithsonian Institution Press, Washington, D.C.; Miller 1997, *op. cit.*).

These secondary nesting beaches primarily consist of North Padre Island (spanning Nueces, Kleberg, Kenedy, and Willacy counties; NPI), South Padre Island (across Willacy and Cameron counties; SPI), and Boca Chica Beach (BCB) in Cameron County (Fig. 1; Shaver et al. 2016. Gulf Mex. Sci. 33(2):158–178; Shaver et al. 2020. Herpetol. Notes 13:907–923). NPI, SPI, and BCB host 86.1% of all *L. kempii* nests documented in Texas (1979–2024) and are the only major nesting sites for *L. kempii* in the USA. Therefore, understanding site fidelity on, and movements between, these three south Texas beaches is critical to understanding the nesting behaviors of *L. kempii* within the USA.

Boca Chica Beach represents the southernmost nesting beach for *L. kempii* in the USA. Since 1979, 158 *L. kempii* nests have been documented on BCB, though this number is likely an underestimate as BCB was intermittently patrolled 3–5 days per week until 2021, when efforts increased to seven days a week. Of these 158 nests, 21 nests have been attributed to five high-fidelity females who have been documented nesting exclusively on BCB. These 21 nests represent 13.3% of all *L. kempii* nests laid on BCB.

The five high-fidelity females were identified through Inconel tags (National Band and Tag Company, Newport, Kentucky, USA), passive integrated transponder (PIT) tags (Biomark, Boise, Idaho, USA; ADEQID BM Technologies, Coventry, England, UK), and/or kinship analysis, wherein unobserved females were assigned to nests via genetic analysis of tissue samples collected from dead embryos and hatchlings (Frey et al. 2014. Endanger. Species Res. 23:63–71). Two additional females were initially matched to nests laid on BCB in 2005 and 2006, however after inclusion of additional genetic material from recent years, those

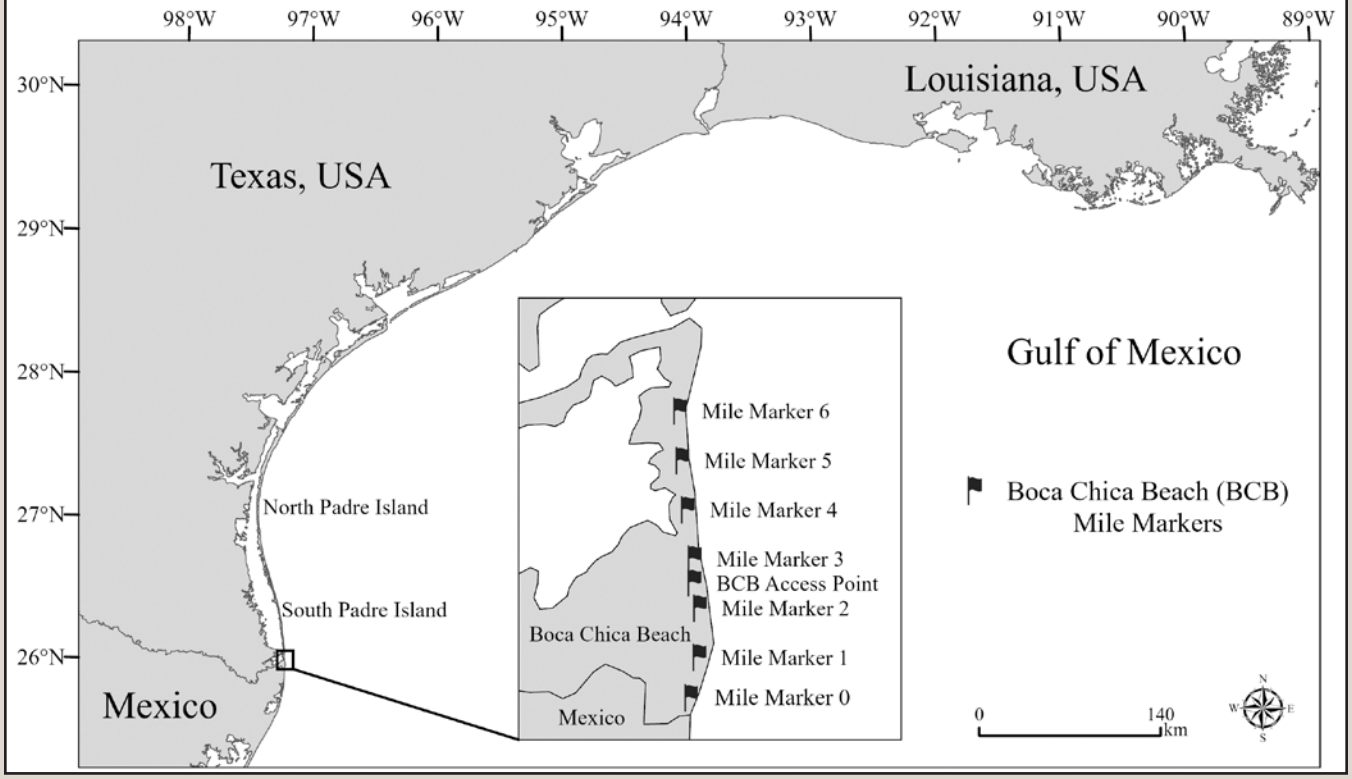

FIG. 1. Map of mile markers on Boca Chica Beach, Texas, USA.

initial results are no longer conclusive, and the two females were not included in the analysis.

Turtle #111 was the most prolific nester of the five females, laying nine nests on BCB between 2004–2022, with an average clutch size of 108.9 ± 15.3 eggs (Table 1). This female was observed during 66.7% (6/9) of her nesting events. Of the nine nests, three nests were laid consecutively during 2022. During nest #2, this female abandoned three chambers before laying in the fourth chamber. Hatching success for Turtle #111's nests was high during the 2008–2010 season (93.8 ± 2.3%) but then decreased to 76.5 ± 10.2% during the 2012–2018 seasons, and even further to 0% in 2022. The nine nests had a mean hatching success of 58.7% and of these, the six nests that hatched had a mean incubation period of 49.8 ± 1.9 days.

Turtle #273 laid the second highest number of nests (N = 5) on BCB, with an average clutch size of 106.6 ± 8.2 eggs (Table 1). This female was observed during 60.0% (3/5) of her nesting events recorded between 2007–2017. Mean hatching success for the female's five nests was 77.8% and mean incubation period was 48.2 ± 1.3 days. The remaining three high-fidelity females laid fewer nests on BCB: Turtle #639 laid three nests on BCB between 2017–2018 while Turtles #159 and #571 each laid two nests on BCB between 2007–2008 (Turtle #159) and in 2017 (Turtle #571). Observation frequencies for these females during nesting events ranged from 33.3% (1/3) to 100% (2/2). Hatching success of these females' nests ranged between 0–98.1%, and mean incubation period varied between 48.0–51.0 days (Table 1).

As part of the ongoing, long-term, mark-recapture efforts to establish *L. kempii* population level parameters, straight (SCL) and curved (CCL) carapace length measurements were recorded for every female observed nesting in Texas. Maximum and minimum SCL and CCL measurements were recorded during the first yearly encounter of every female unless time and/or equipment did not allow for full documentation to be completed during that nesting event. Attempts were then made at each subsequent encounter to obtain any remaining measurements.

Carapace measurements of the five high-fidelity females were recorded at varying degrees of completion. Curved minimum carapace measurements were recorded during six encounters with Turtle #111, both encounters of Turtle #159, three encounters for Turtle #273, neither encounter for Turtle #571, and one encounter for Turtle #639 (Table 2). The five high-fidelity nesting females demonstrated a remigration interval of 2.73 ± 1.6 years. Of the females that demonstrated more than a year interval between nesting seasons, their remigration intervals have generally increased since 2010 (with the exception of Turtle #639, which was identified only in 2017 and 2018, and hasn't been identified since 2018).

Only one paved road provides access to BCB, and historically nesting was geographically described as either north or south of this access road. In 2022, mile markers were placed along the beach to provide more detailed beach locations and better align with location recording practices already in place across NPI and SPI beaches. These mile markers divide BCB into 7 sections: mile 0 starting at the Rio Grande at the southern end of the beach (USA/Mexico border) and mile 6 at the northern end of the beach (closest to SPI).

To investigate historic use of BCB by nesting *L. kempii*, the GPS locations of nests recorded prior to the installation of mile markers on BCB were retro-actively matched to the new mile marker locations established in 2022. Then, BCB mile markers were assigned to all nests laid by the high-fidelity females on BCB. In terms of site fidelity, Turtles #159 and #639 exhibited similar behavior; both laying nests at opposite ends of BCB (mile

TABLE 1. Summary of nesting, incubation, and hatching information for the 21 high-fidelity *Lepidochelys kempii* nests documented on Boca Chica Beach, Texas, USA, including the nest number by female, lay date, clutch size, percent hatched, and total number of incubation days. *The date of first emergence was used for clutches split into multiple nest chambers.

	111				159				273				571				639			
Nest no.	Lay date	Clutch size	Hatch %	No. ID*	Lay date	Clutch size	Hatch %	No. ID*	Lay date	Clutch size	Hatch %	No. ID*	Lay date	Clutch size	Hatch %	No. ID*	Lay date	Clutch size	Hatch %	No. ID*
1	11 May 2004	116	76.7	48	27 June 2007	114	0	–	7 June 2007	102	71.6	47	26 April 2017	109	94.5	52	8 May 2017	115	70.4	49
2	18 May 2006	119	93.3	48	16 May 2008	105	98.1	48	27 May 2009	105	95.2	47	15 May 2017	103	90.3	50	30 April 2018	105	88.6	52
3	28 June 2008	118	91.5	53	–	–	–	–	10 June 2012	101	76.2	49	–	–	–	–	5 June 2018	76	85.5	46
4	2 June 2010	129	96.1	50	–	–	–	–	11 May 2017	104	98.1	50	–	–	–	–	–	–	–	–
5	5 May 2012	98	86.7	51	–	–	–	–	26 May 2017	121	62.0	48	–	–	–	–	–	–	–	–
6	17 May 2018	89	66.3	49	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
7	5 June 2022	83	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
8	24 June 2022	116	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
9	13 July 2022	112	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Mean	–	108.9	58.7%	49.8	–	109.5	46.6%	–	–	106.6	77.8%	48.2	–	106.0	92.5%	51.0	–	98.7	80.1%	49.0

TABLE 2. Summary of remigration intervals, curved maximum carapace measurements, and observation method for the 21 high-fidelity *Lepidochelys kempii* nests documented on Boca Chica Beach, Texas, USA.

	111			159			273			571			639		
Nest no.	Remig. interval (y)	Carapace size (cm)	Obs. Method	Remig. interval (y)	Carapace size (cm)	Obs. Method	Remig. interval (y)	Carapace size (cm)	Obs. Method	Remig. interval (y)	Carapace size (cm)	Obs. Method	Remig. interval (y)	Carapace size (cm)	Obs. Method
1	–	–	Genetics	–	67.9	M-R	–	–	Genetics	–	–	M-R	–	–	Genetics
2	2	72.0	M-R	1	67.5	M-R	2	68.7	M-R	–	–	M-R	1	67.5	M-R
3	2	-	Genetics	–	–	–	3	70.4	M-R	–	–	–	–	–	Genetics
4	2	74.9	M-R	–	–	–	5	70.0	M-R	–	–	–	–	–	–
5	2	-	Genetics	–	–	–	–	–	Genetics	–	–	–	–	–	–
6	6	75.0	M-R	–	–	–	–	–	–	–	–	–	–	–	–
7	4	75.0	M-R	–	–	–	–	–	–	–	–	–	–	–	–
8	–	74.9	M-R	–	–	–	–	–	–	–	–	–	–	–	–
9	–	75.5	M-R	–	–	–	–	–	–	–	–	–	–	–	–
Mean	3.0	74.6	–	–	67.7	–	3.3	69.7	–	–	–	–	–	–	–

0 and mile 6). Turtles #273 and #571 nested across BCB, with nest locations ranging from mile 0 to mile 5. All nests by Turtle #111 were laid within miles 5 and 6. Across all 21 high-fidelity nest sites, the majority of nests (85.7%) were laid at the either the northern or southern ends of BCB (i.e., miles 0–1 or 5–6).

Sea turtle nesting site fidelity can provide local and population-wide insights on the nesting population. Turtle #111 is the first BCB exclusive nester to be documented since 2018. Identification via observation of tags and genetic sampling indicate these five females have not nested at other beaches in Texas. Due to the intermittent nature of nesting patrols on BCB prior to 2021, the five high-fidelity females may have nested there with greater frequency but either nested undetected or were not genetically matched to clutches laid there if hatchlings emerged, or nest contents were lost before genetic samples could be acquired.

Future research to expand the genetic sampling of nesting females at the primary nesting site in Mexico could generate insight on the importance of BCB as a secondary nesting site by females nesting at the primary nesting beach. The five turtles documented nesting exclusively at BCB during the study period may also be nesting at other beaches, including those in Tamaulipas, Mexico. Additionally, nesting at the southern end of BCB (miles 0–1) suggests these high-fidelity females could be utilizing the beach located directly across the Rio Grande (USA–Mexico border) from BCB. The high-fidelity of these five females to BCB indicates the intensive, mandated work being done in south Texas to protect the nesting habitats, females, and nests of this endangered species is critically important for the future of the secondary nesting colony that is becoming established in south Texas (Shaver et al. 2020, *op. cit.*). Continuation and strengthening of the on-going mark-recapture program and routine patrols to detect nesting turtles and their nests in Texas is required to protect the significant portion of *L. kempii* turtles in the USA that utilize south Texas as nesting habitat.

All activities (nest detection, relocation, monitoring, tagging, sampling, and photographing) were conducted under state (Texas Parks and Wildlife Department Scientific SPR-0412-044; SPR-0190-122) and federal (U.S. Fish and Wildlife Service Endangered Species PER0013385; ES840727) permits, with ethical approval from the National Park Service Institutional Animal Care and Use Committee (201909289).

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***MESOCLEMMYS RANICEPS* (Amazon Toad-headed Turtle). PHENOTYPIC CHANGE.** For nearly two decades, the question of the validity of *Mesoclemmys heliostemma* (McCord et al. 2001. Rev. Biol. Trop. 49:1–57) in relation to that of *Mesoclemmys raniceps* has been a source of uncertainty. *M. heliostemma* was (likely incorrectly) "revalidated" by Molina et al. (2012. Zootaxa 3575:63–77) and was the focus of a purported distribution extension by Morcatty and Cobra (2015. Herpetol. Rev. 46:381–382). A notable publication described a range extension of the two taxa in sympatry, with the color morph "*M. heliostemma*" on the right margin of the Jutaí River and *M. raniceps* on the left margin of the Jutaí River, both in the Municipality of Jutaí, Amazonas, Brazil (Morcatty and Cobra 2015, *op. cit.*; Morcatty 2015. Herpet. Rev. 46:382).

Cunha et al. (2019. Chelon. Conserv. Biol. 18:195–205) attempted to clarify the uncertainty by presenting results on the reproductive biology of *M. raniceps*, where a clutch from a known female *M. raniceps* resulted in hatchlings with morphological

PHOTOS BY RICHARD VOGT

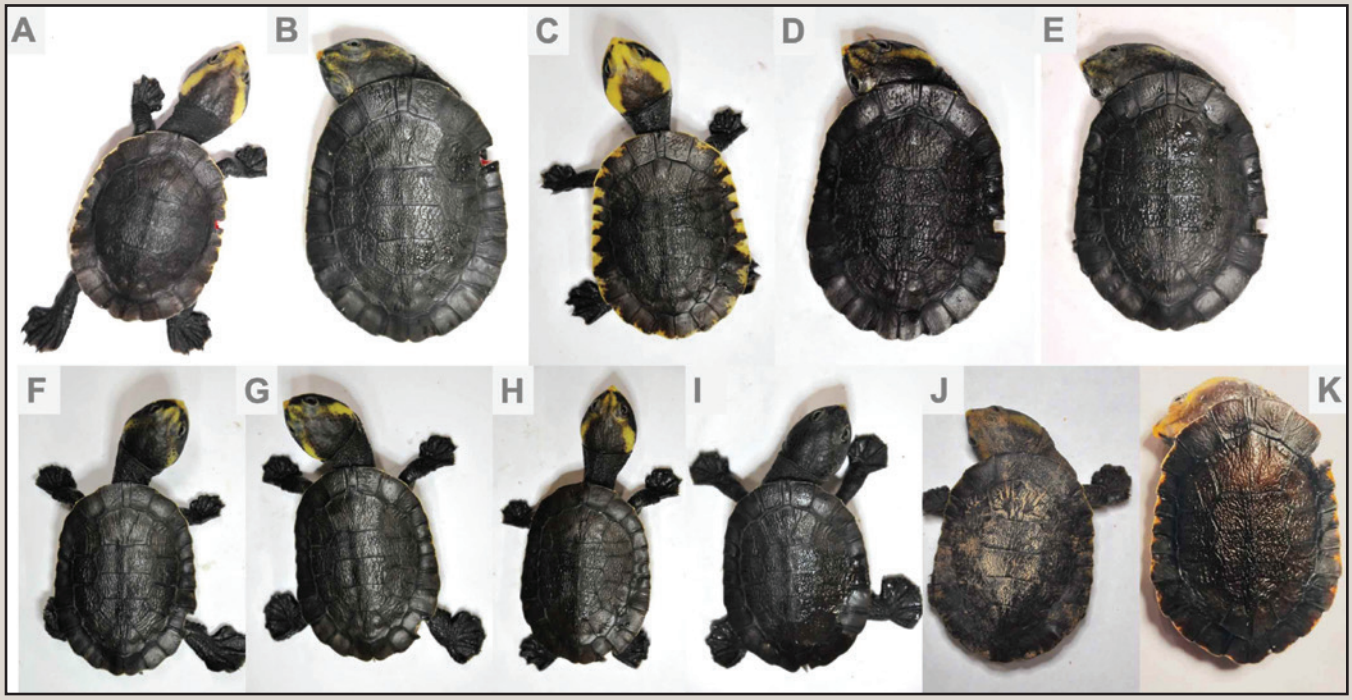

FIG. 1. A–K) Hatchlings of *Mesoclemmys raniceps* incubated at room temperature in Manaus, Amazonas, Brazil. Note individual I, the only completely black hatchling from the same clutch.