



Analysis of Body Condition in River Cooters (*Pseudemys concinna*) in the Santa Fe River

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Introduction

- The Santa Fe River had a massive vegetation shift in 2012 from submerged aquatic plants to algae (Adler et al., 2018).
- The river cooter (*Pseudemys concinna*) is the dominant herbivorous turtle species found within the Santa Fe River basin that may be impacted by this shift (Johnston et al., 2016) (Fig. 1).
- A possible change in diet could affect body condition which may be associated with the animal's fitness and health (Peig and Green 2010).
- Our goal was to determine if there has been any change in the overall body condition within the river cooters between 2010 and 2022.

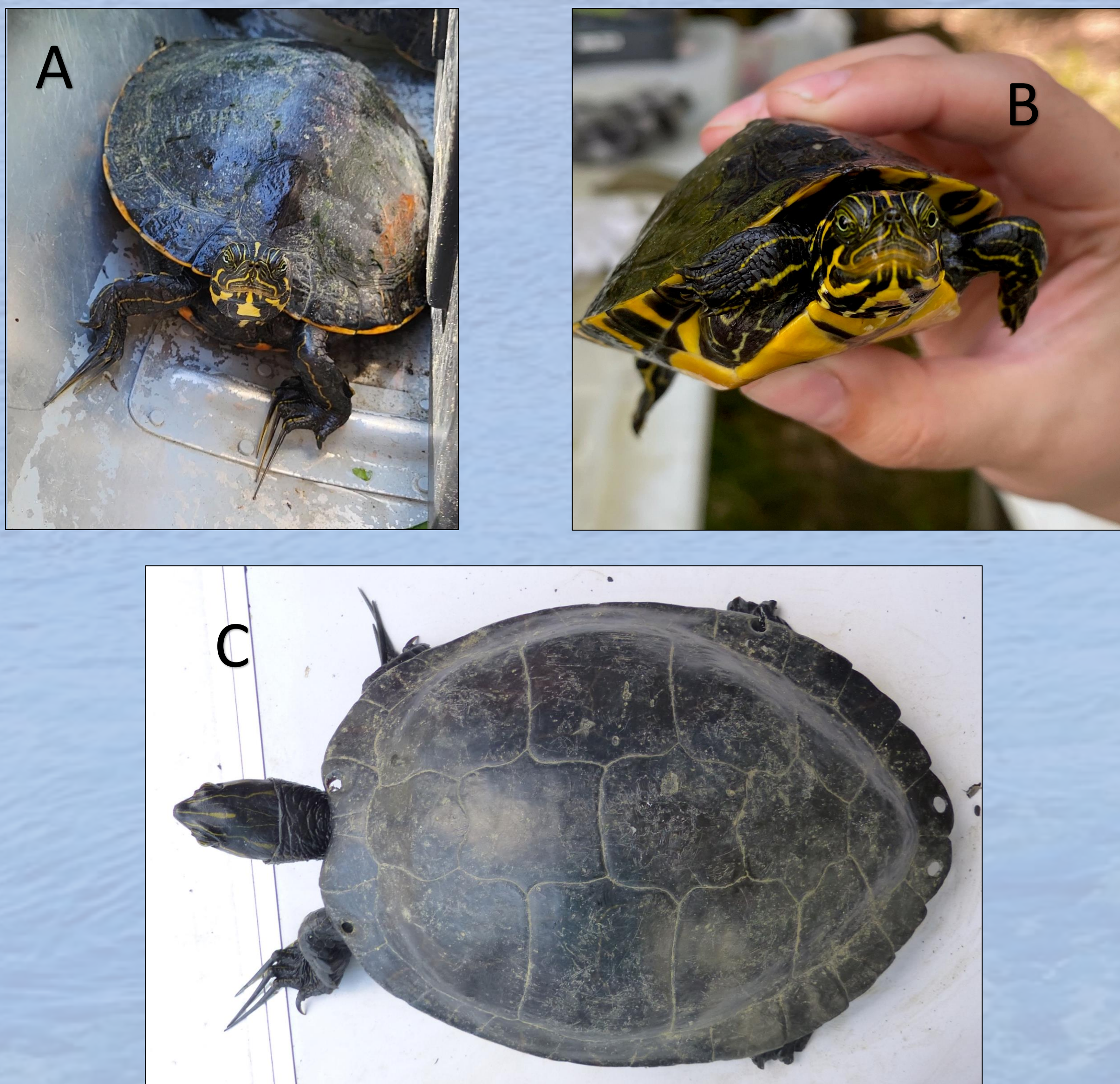


Figure 1: (A) Adult male river cooter, (B) juvenile river cooter, and (C) top view of an adult male river cooter.

Methods

- We conducted surveys from 2010 to 2022 in the Santa Fe River between Poe Springs and Ginnie Springs (Fig. 2).
- For each captured turtle, we took standard measurements of carapace length (CL), shell height (SH), carapace width (CW) to the nearest mm and weighed it to the nearest g (Fig. 3).
- The following equation was used on all turtles collected that had usable measurements:
$$vBCI = \text{Weight} / (\pi \times (CL) \times (SH) \times (CW) / 6000)$$
 (Ashton et al., 2015)
- Only data from male and juvenile turtles captured in May and June were used to calculate body condition.

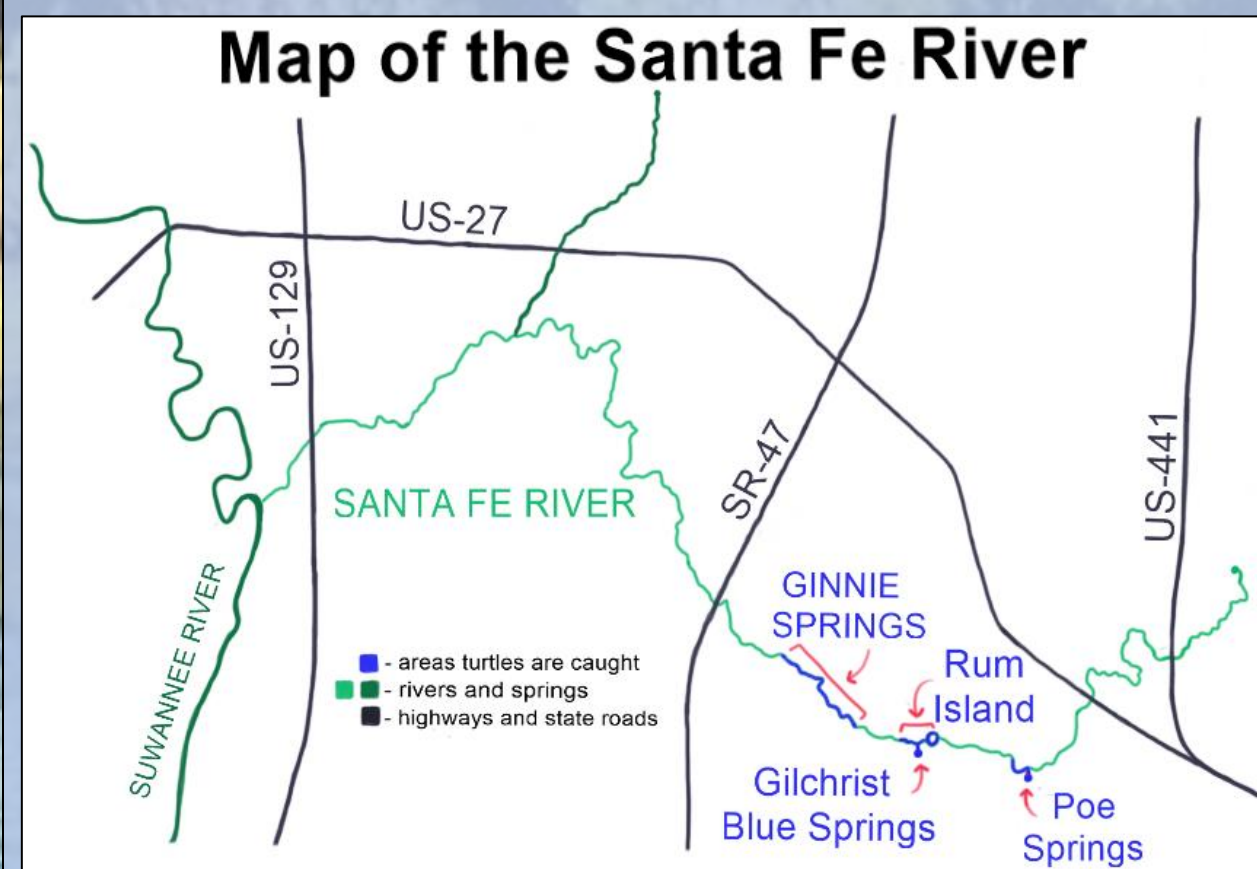


Figure 2 (Left): Shows the Santa Fe River and survey sites.



Figure 3 (Right): An adult river cooter carapace length being measured.

Results

- There was no trend in body condition in adult male river cooters from 2010 to 2022 (Fig. 4, ANOVA, $p > 0.05$).
- There is no trend in body condition in juvenile river cooters from 2010 to 2022 (Fig. 5, ANOVA, $p > 0.05$).

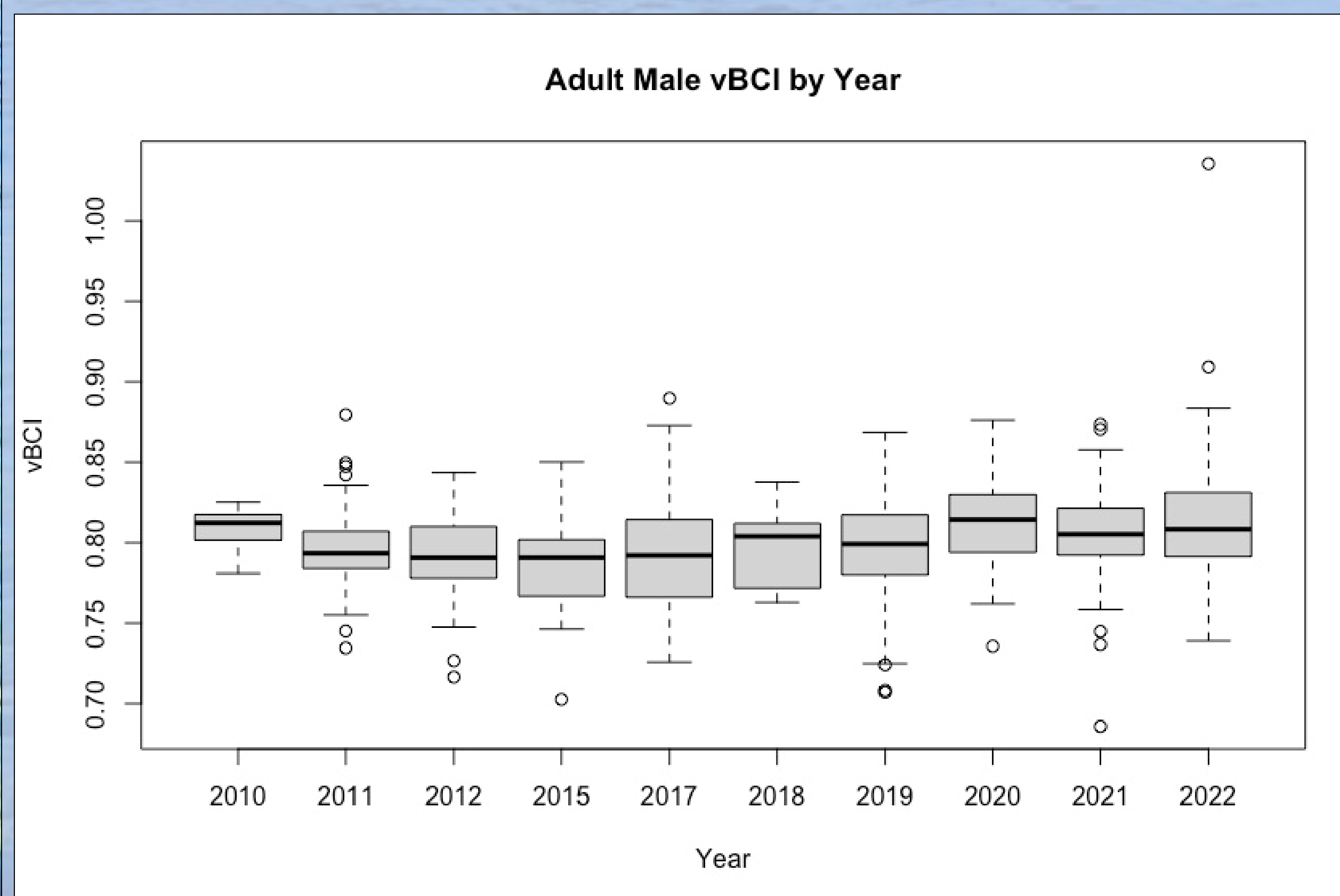


Figure 4: vBCI distribution of adult male river cooters over the 12-year span.

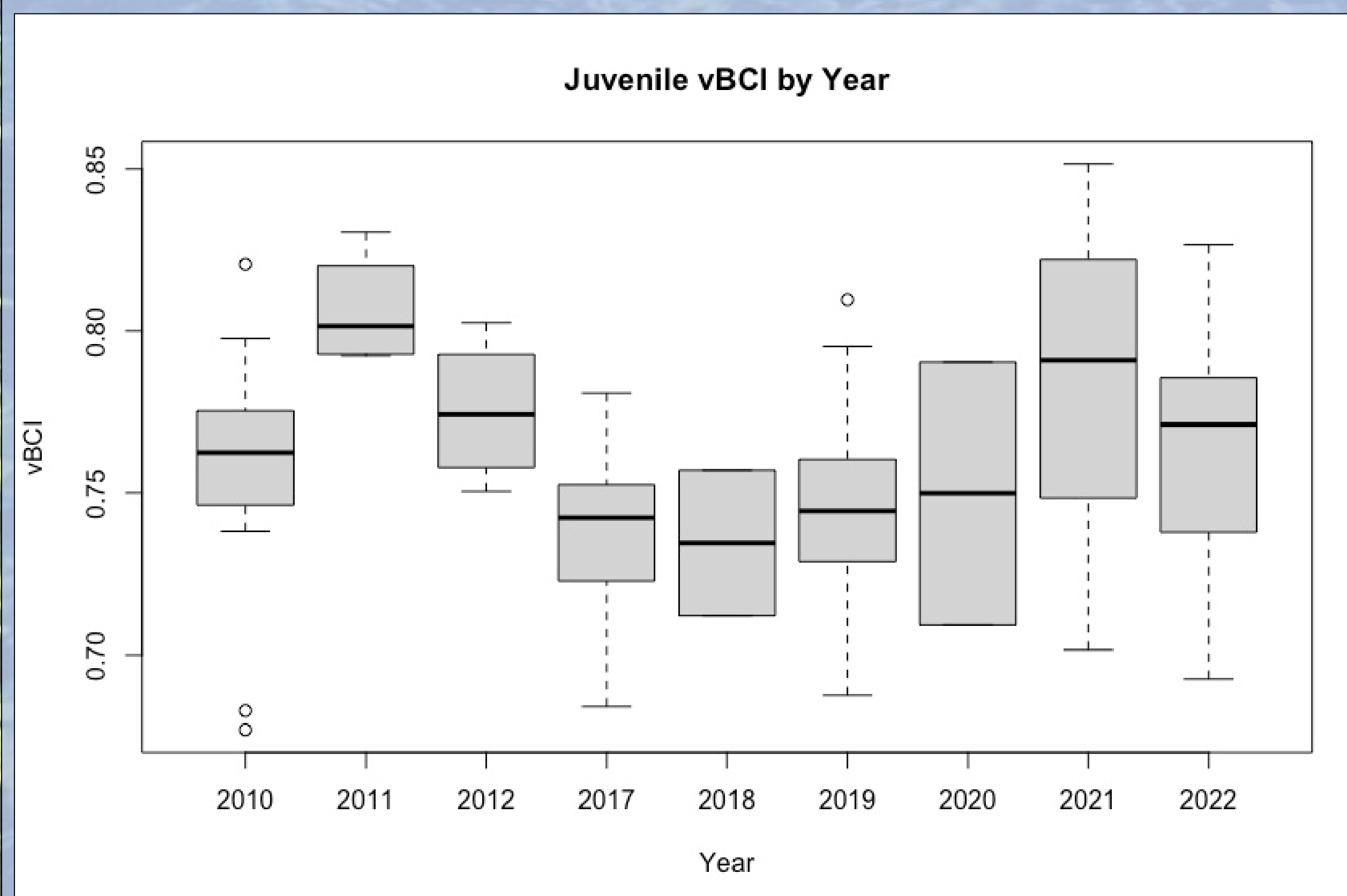


Figure 5: vBCI distribution of juvenile river cooters over the 12-year span.

Discussion

- The lack of change in body condition suggests that the shift in vegetation has had no significant effect on the health of the turtles (Fig. 6).
- The small sample sizes of juveniles during several years (2011, 2012, 2018, and 2020) limits our ability to thoroughly assess variation in body condition.
- Because juveniles vary substantially in body size, dividing juveniles into different size categories may give more accurate results in future analysis (Fig. 7).
- We did not use female river cooters in our analysis of turtles captured in May and June because that is when they are nesting. Gravid and non-gravid females may have highly variable body condition.



Figure 6: A river cooter eating algae.

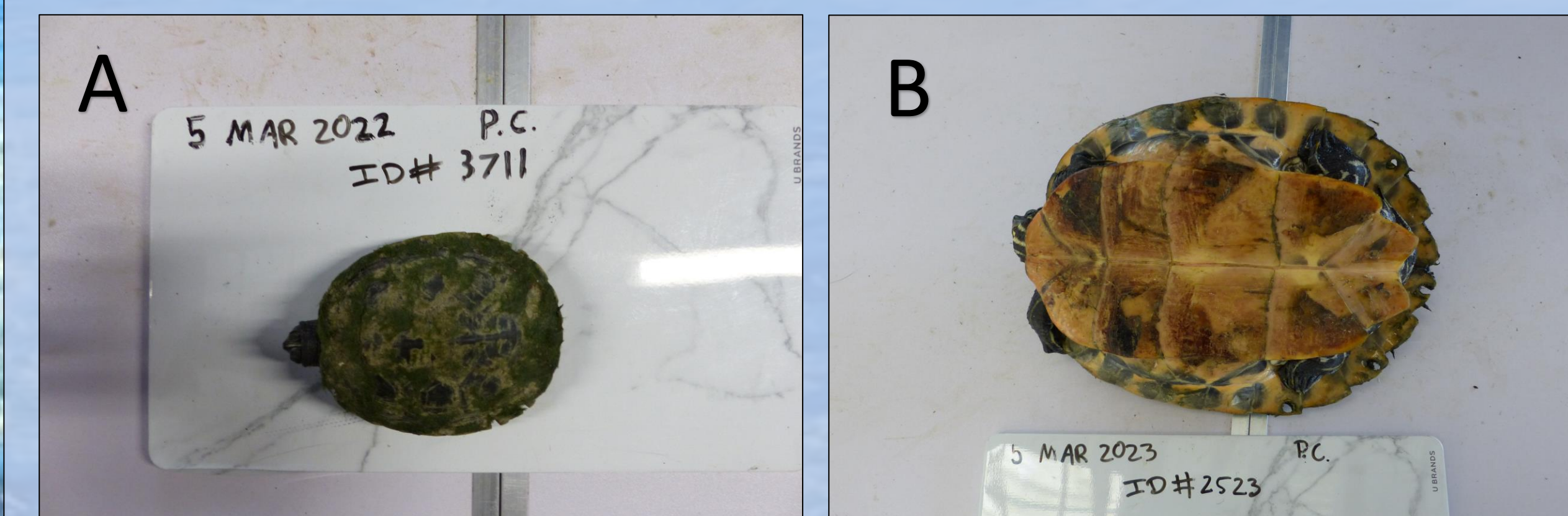


Figure 7: (A) Juvenile river cooter with a carapace length of 84 mm, (B) juvenile river cooter with a carapace length of 211 mm.

Acknowledgments

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Literature Cited

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