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Re-evaluation of the taxonomy of *Compsemys*: an enigmatic turtle from around the Cretaceous–Paleogene boundary

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INTRODUCTION and AIM

Compsemys, a fossil North American turtle from the Cretaceous and Paleogene periods, has been known for over 150 years. *Compsemys victa*, the type species, was named from fragmentary fossil shell material from the Late Cretaceous of North Dakota, that had a unique surface sculpturing. This was followed by more fossil material collected from Paleocene strata, much of this material more complete than the Cretaceous fossils. Several species were named mainly from this Paleocene material, but eventually all were synonymized with *Compsemys victa*, often due to perceived sexual dimorphism.

New specimens have implied a re-evaluation of previous specimens and the taxonomy of this turtle is warranted. While some of this variation may deal with sexual dimorphism, others suggest interspecific variation. This re-evaluation helps understand this turtle, and place it in a clearer evolutionary context.

METHODS

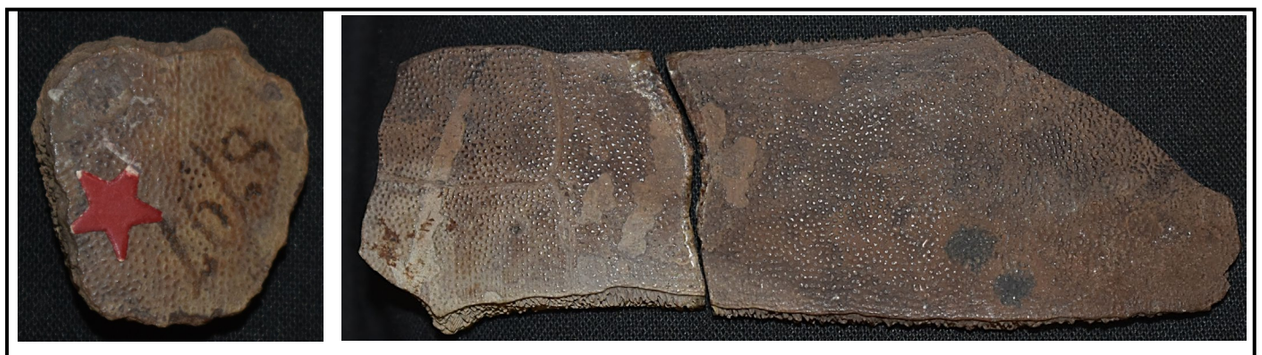

Fig. 1. *Compsemys victa* type (USNM 960).

The type specimen (USNM 960) of *Compsemys* (*C. victa*) is fragmentary. The distinct surface sculpturing has been used to refer many fragmentary fossil specimens to this turtle.

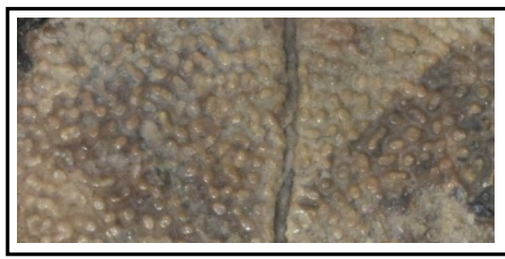

Fig. 2. *Compsemys vafer* type (USNM 6551), highlighting surface sculpturing.

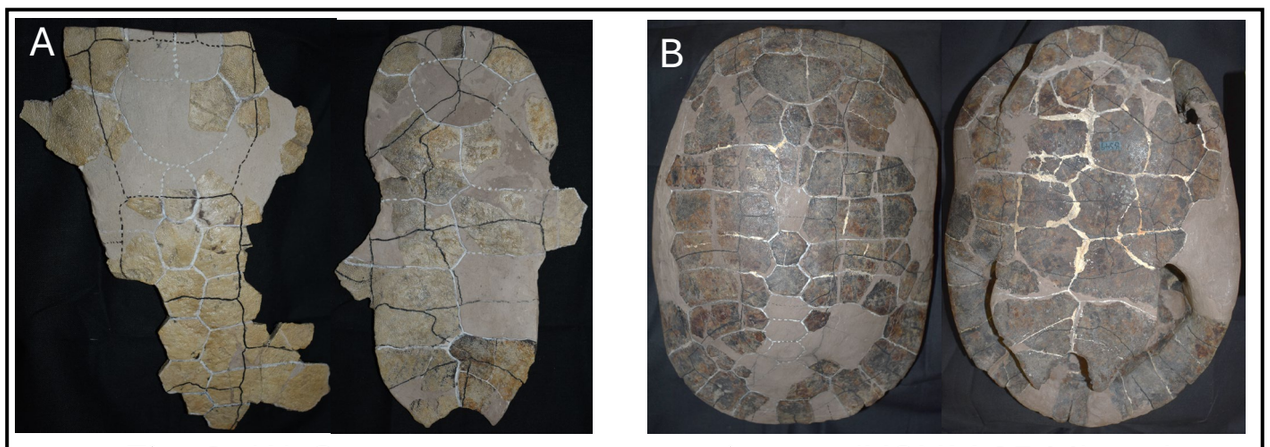

Fig. 3. (A) *Compsemys puercensis* type (USNM 8544) and (B) *Compsemys torrejonensis* type (USNM 8549).

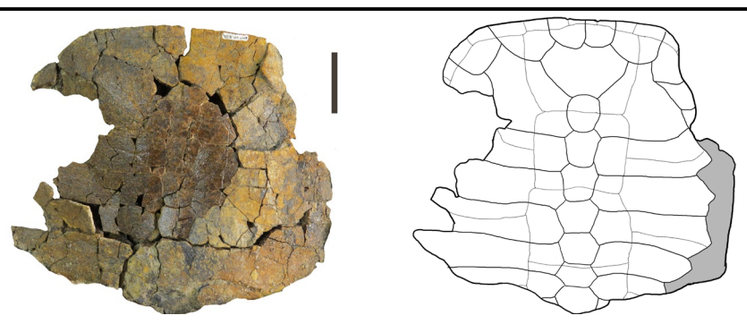

Fig. 4. *Compsemys torrejonensis* newly referred specimen (SMP VP-832), dorsal view (left), illustrated dorsal view (right).

RESULTS and DISCUSSION

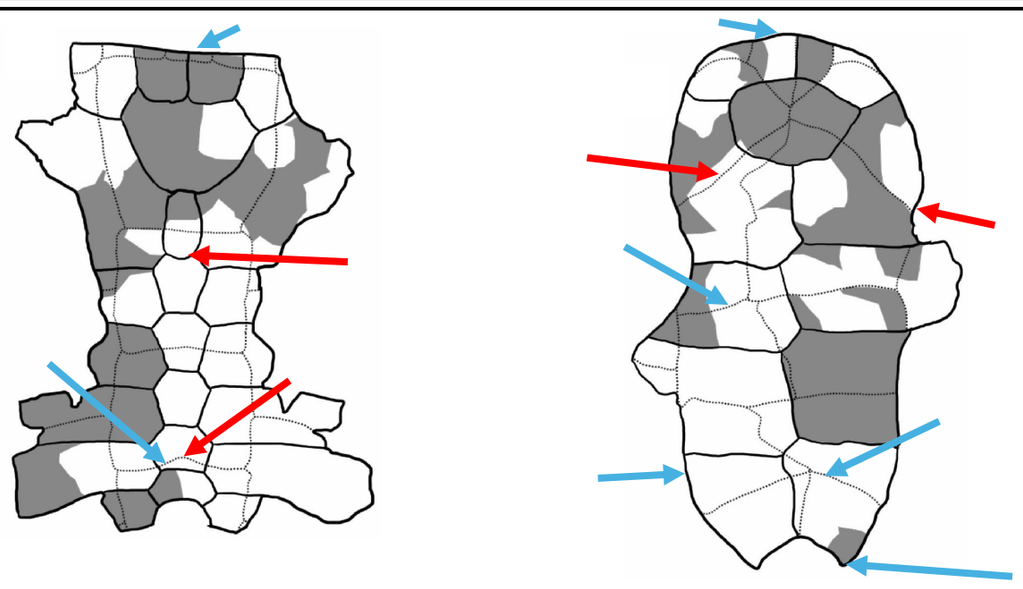

Fig. 5. *Compsemys puercensis* distinguishing features with *C. victa* (red) and *C. torrejonensis* (blue).

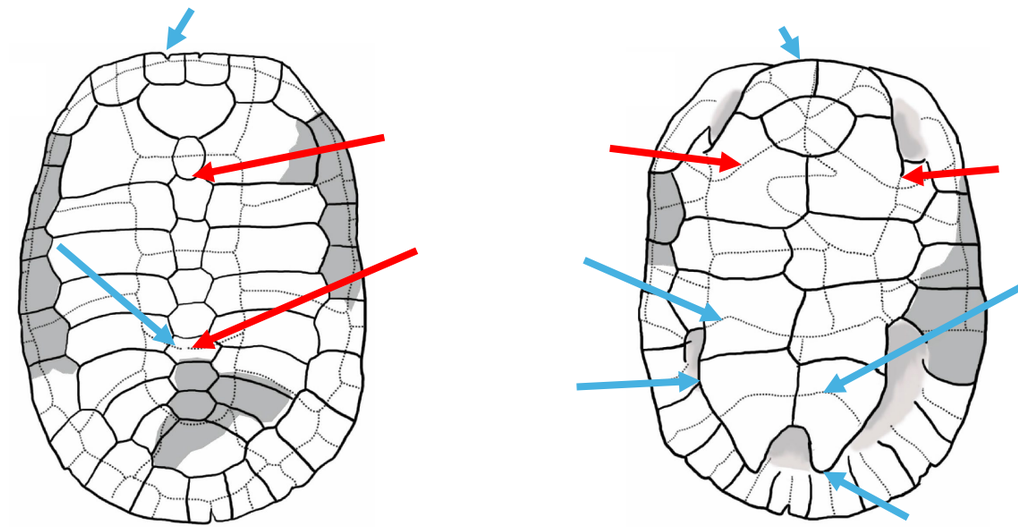

Fig. 5. *Compsemys torrejonensis* distinguishing features with *C. victa* (red) and *C. puercensis* (blue).

Several features of the carapace and plastron help distinguish these species, and not all of these are tied to the posterior plastron where sexual dimorphism is known to be more common in turtles.

CONCLUSIONS

- Multiple species of *Compsemys* are valid
- One species (*C. victa*) from the Cretaceous in North America
- Multiple species (C. *puercensis*, *C. torrejonensis*) valid from Paleocene of southern North America
- Speciate after K-Pg Mass Extinction event
- Turtles suffer through mass extinction event, but survive, allowing some species to fill newly open niches
- Compsemydidae
- Probably carnivorous, may have had a similar paleoecology as extant *Platysternon megacephalum*

KEY REFERENCES

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