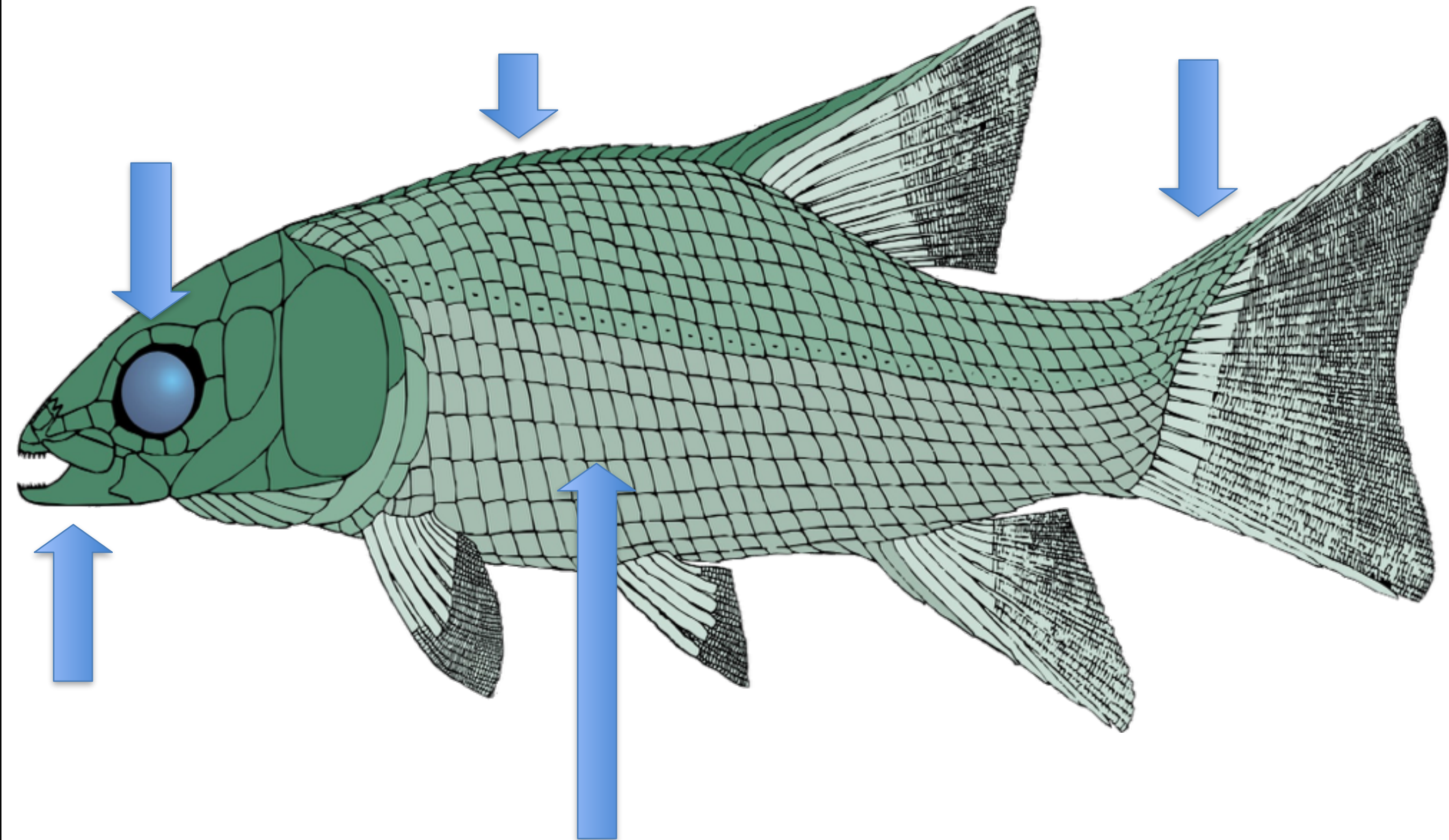


Actinopterygian fishes of the Newark Supergroup and Chinle Formation: new discoveries and comments on the diversity of fishes from the Early Mesozoic



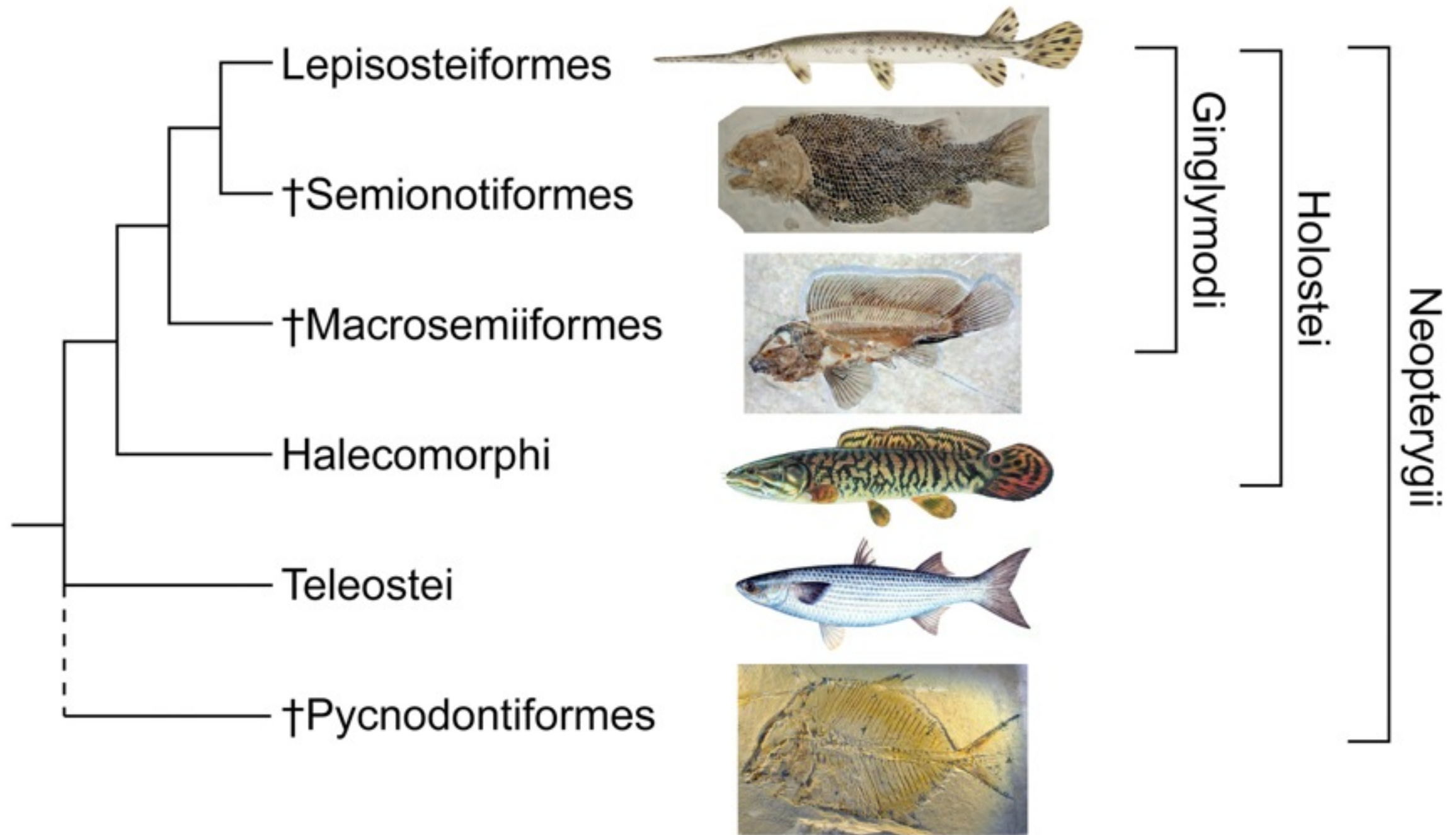
Sarah Z. Gibson
University of Kansas Dept. of Geology

Semionotiform fishes

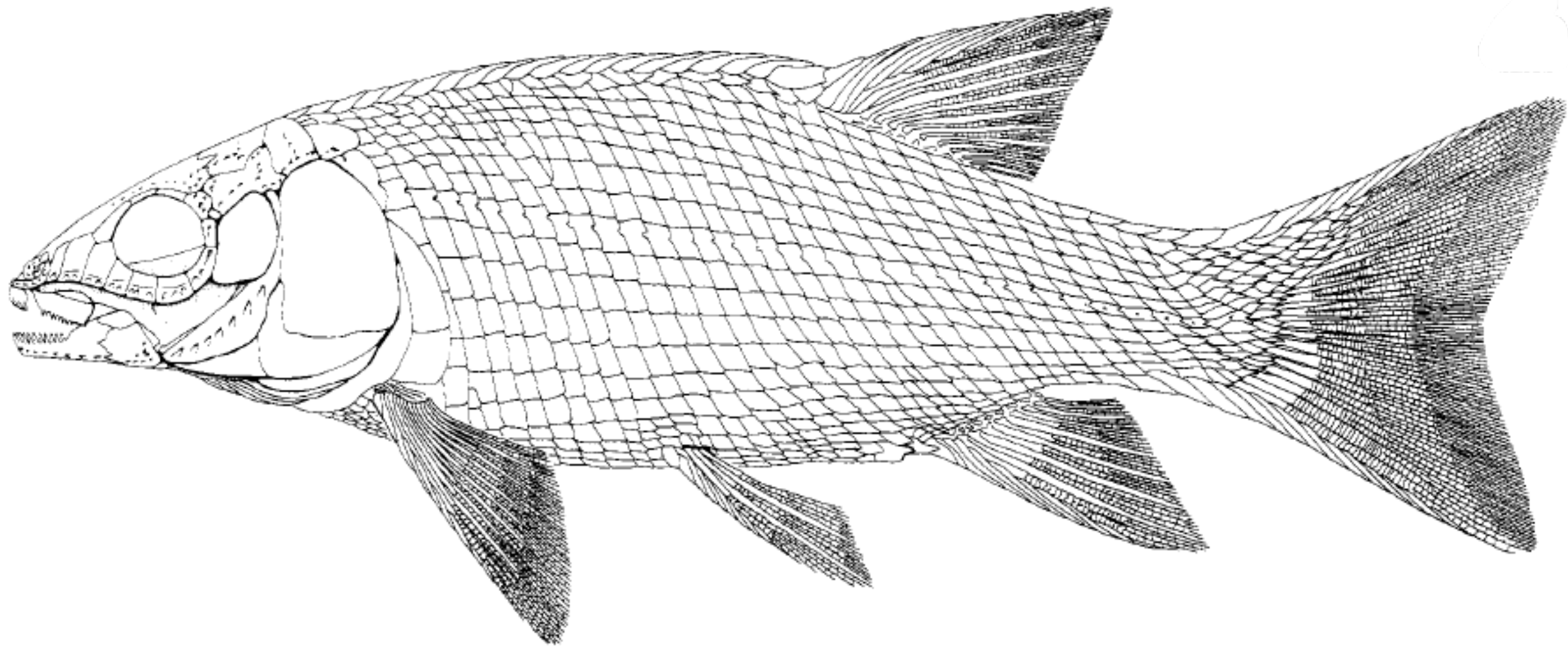


Modified from Schaeffer and Dunkle, 1950

Neopterygian Relationships



Semionotus elegans



From Olsen and McCune, 1991

Semionotids from the Newark Supergroup





courtesy Ron Blakey, CP Geosystems

The Chinle Formation, southwestern North America

- Upper Triassic deposits
 - 210-205 Ma
- Spread across Utah, Colorado, New Mexico, Arizona, and Nevada
- Series of lacustrine, fluvial, deltaic deposits
- Lisbon Valley, Utah



courtesy Ron Blakey/CP Geosystems



A wide-angle photograph of a desert landscape featuring prominent geological strata. The sky is filled with large, grey, overcast clouds. The terrain is composed of several distinct rock layers, each outlined with a white line. The top layer is a thick, reddish-brown sandstone. Below it is a thinner layer of similar material. The middle section consists of a light-colored, tan-colored sandstone. At the base of the main cliff face is a dark, reddish-brown layer. The foreground is a flat, arid plain covered with sparse, low-lying green shrubs and small trees. The overall scene is a typical desert environment with clear geological features.

Wingate Ss.

Church Rock Mbr.

Kane Springs
beds

Cutler Group

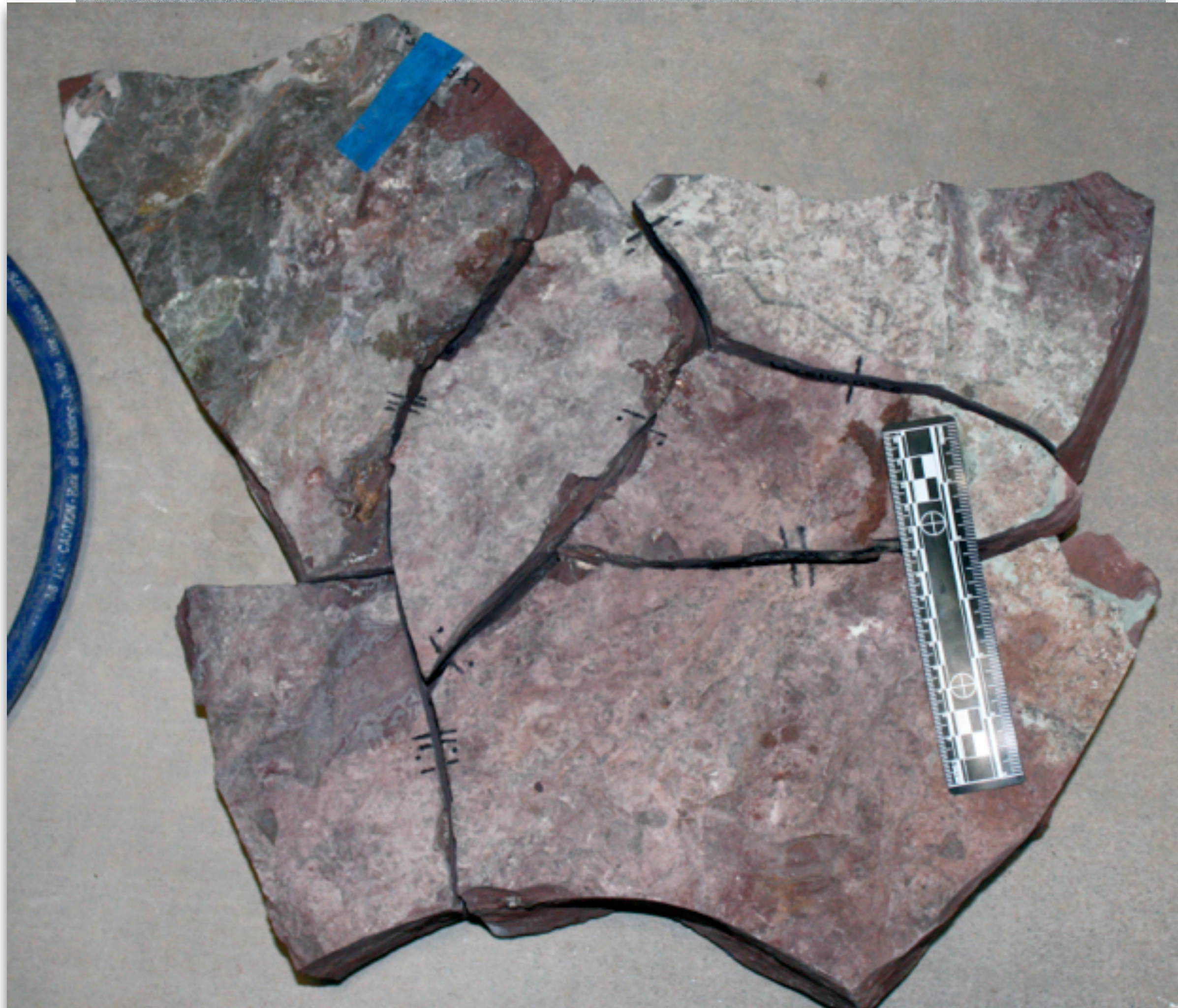


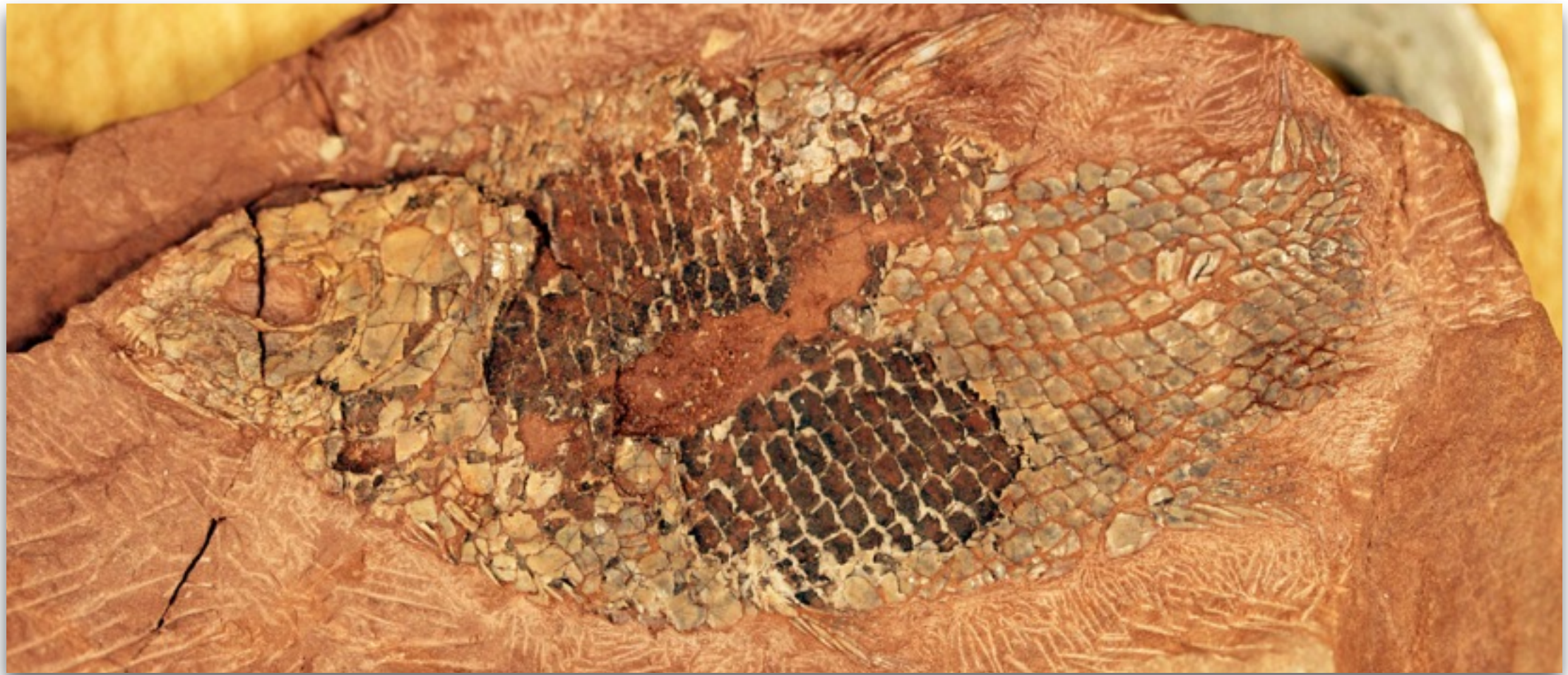




PALEOSTRAT



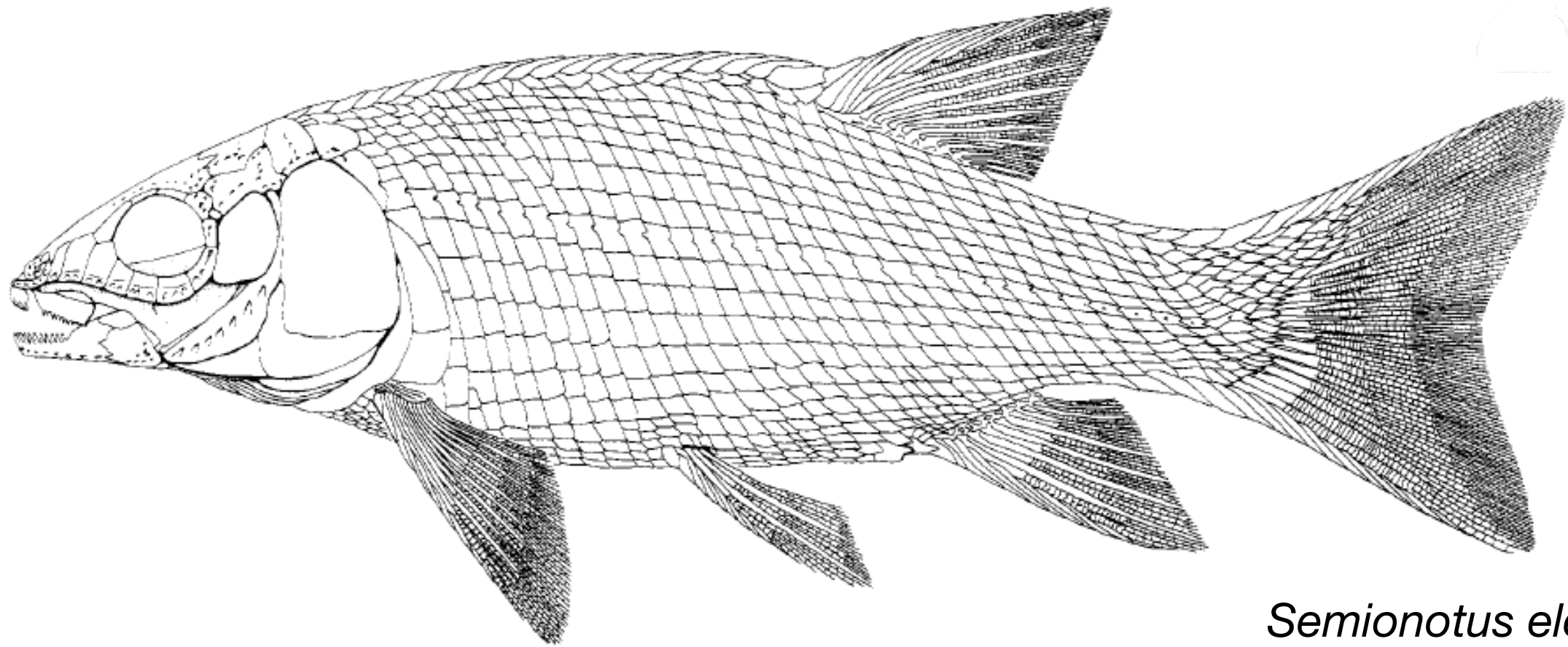




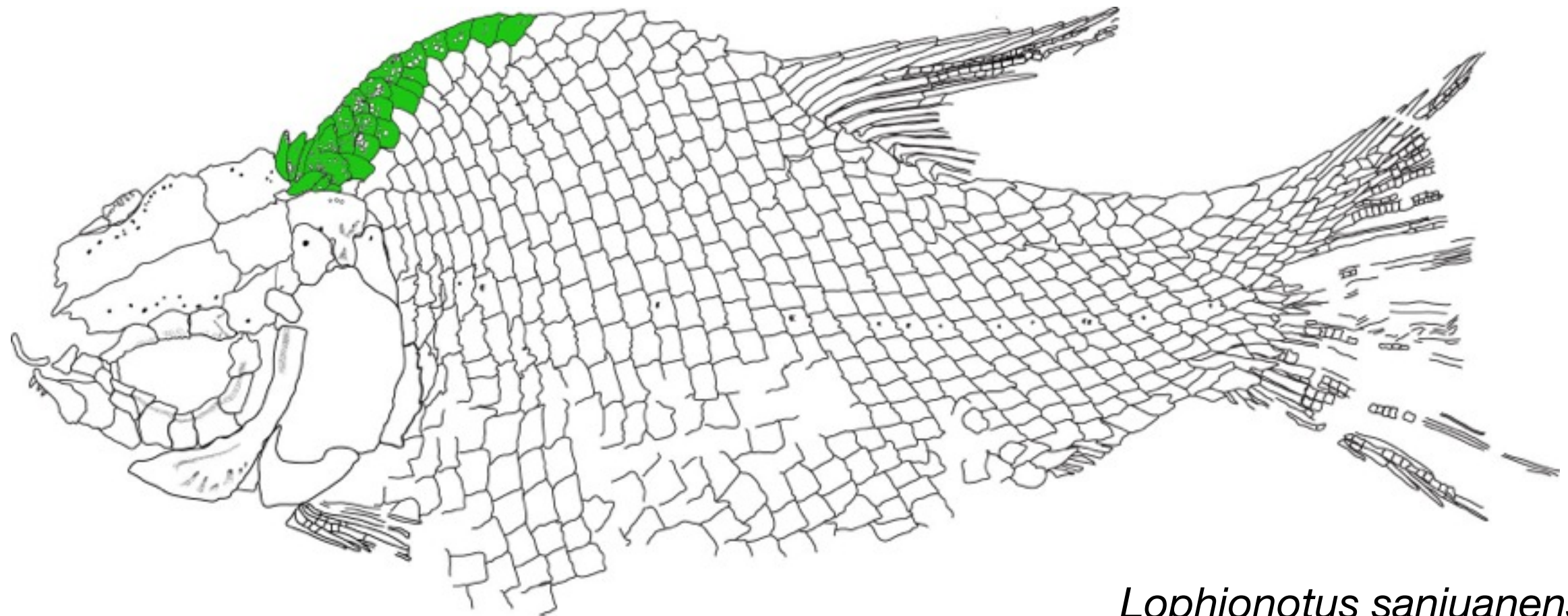
Lophionotus sanjuanensis, gen et sp. nov.



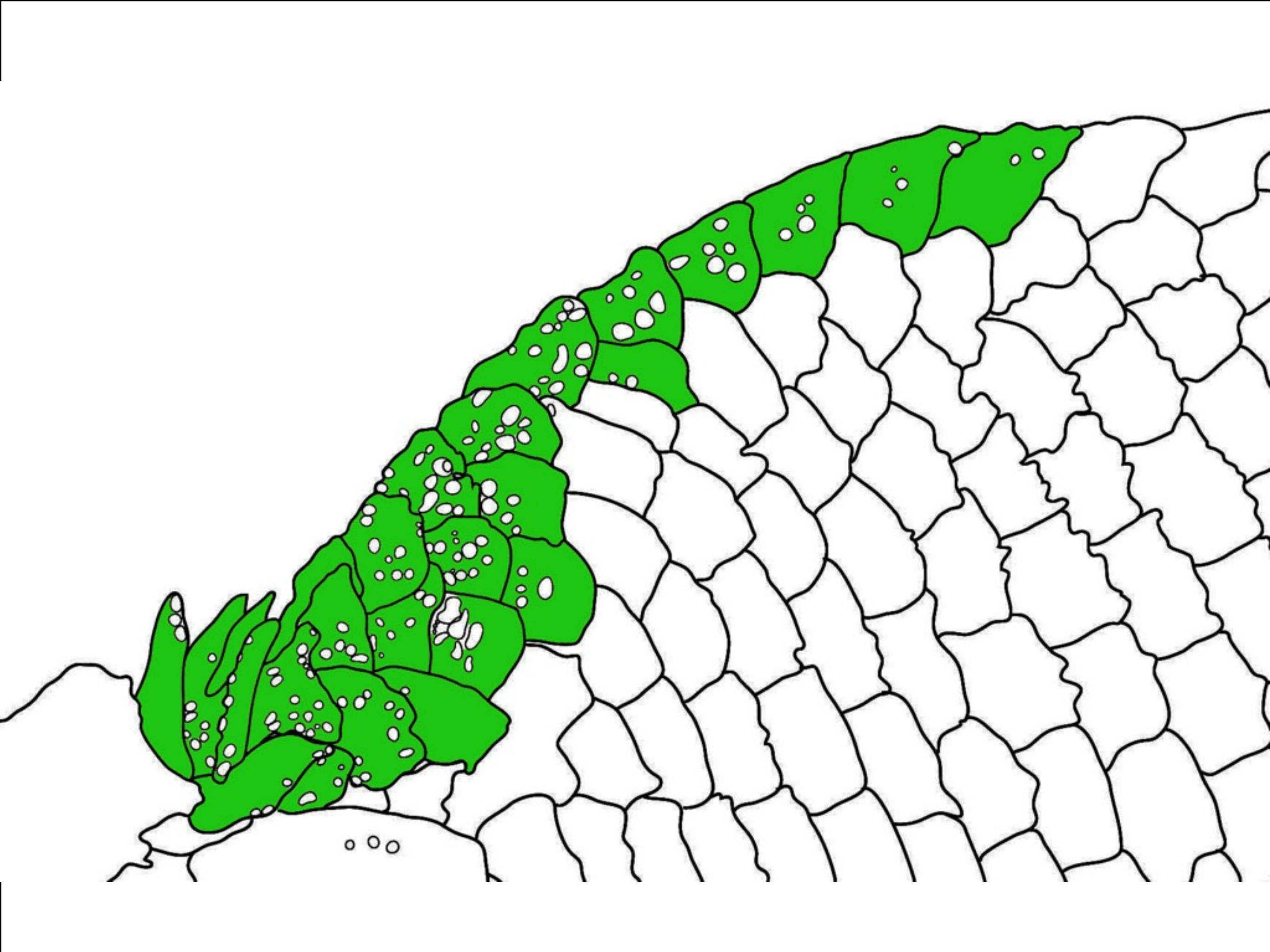
AMNH 5680A Holotype



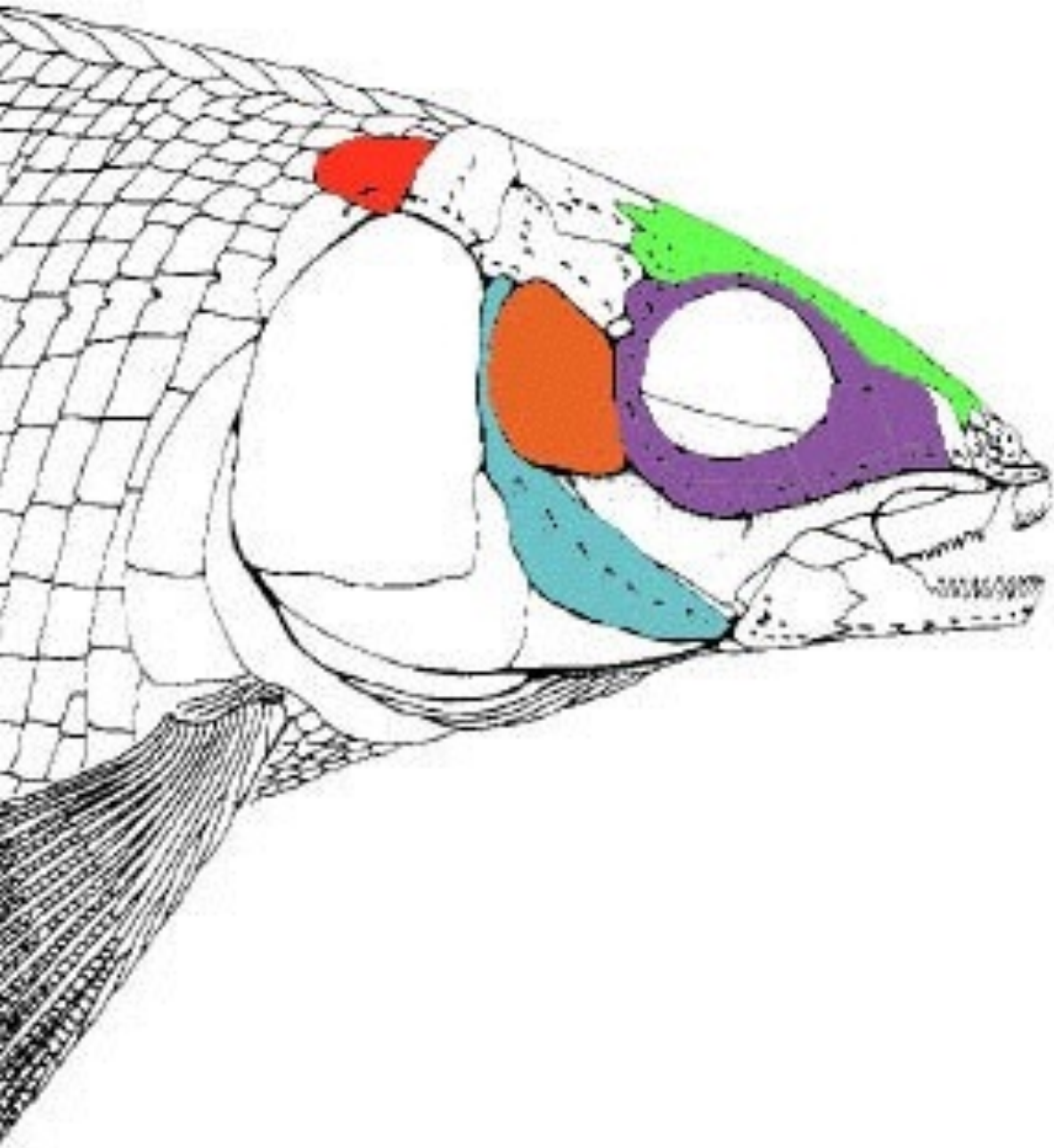
Semionotus elegans



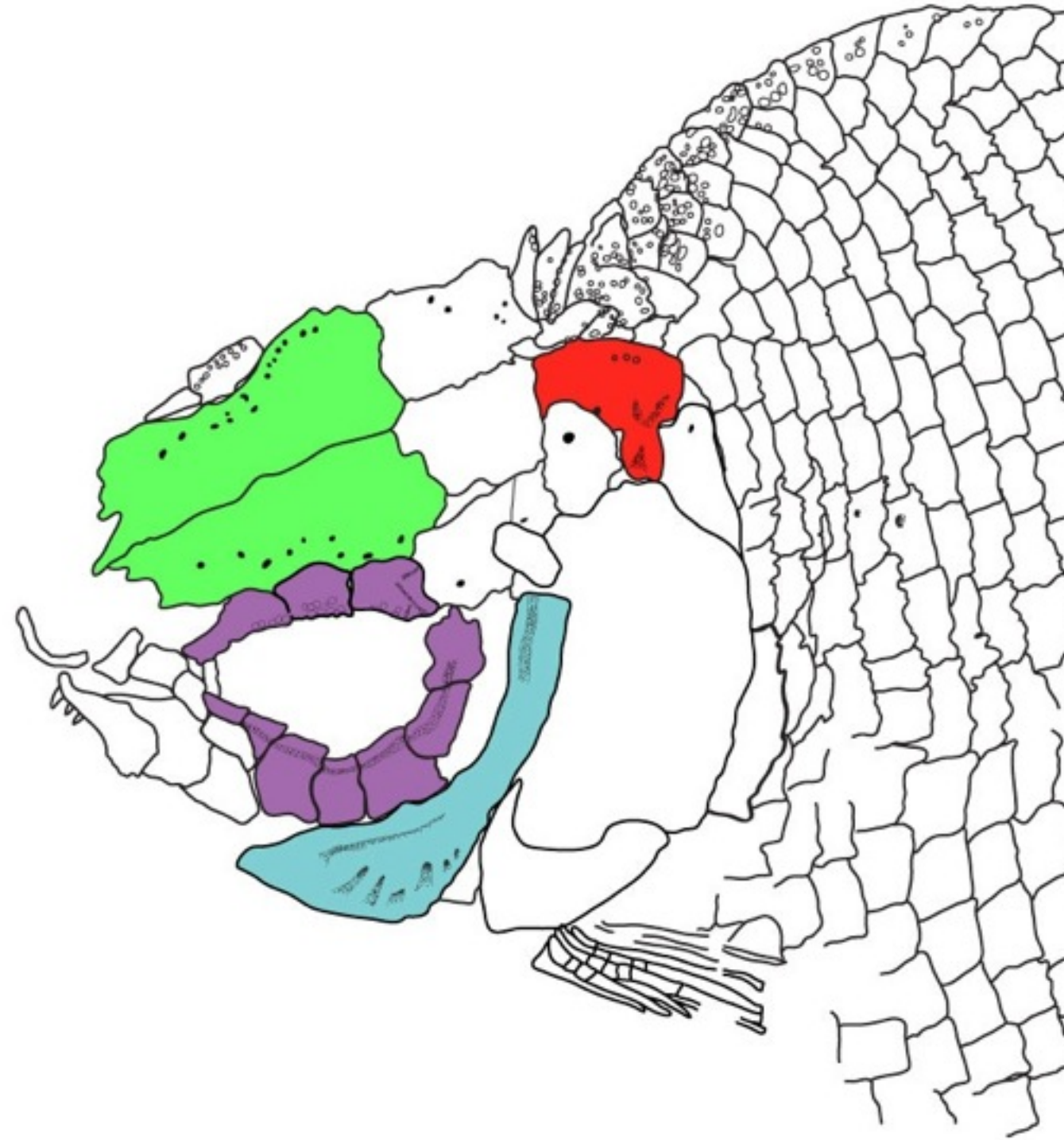
Lophionotus sanjuanensis



Semionotus elegans



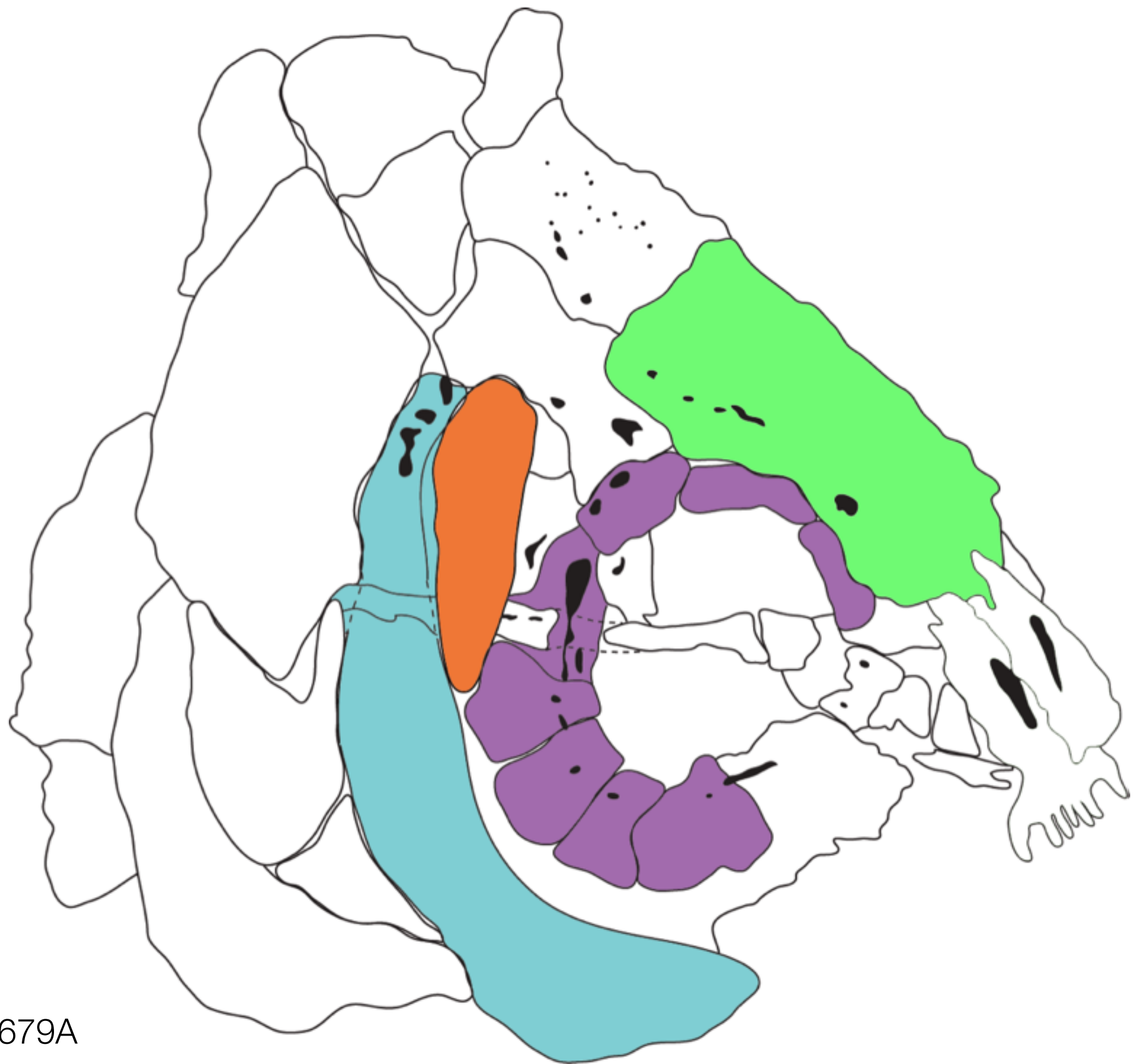
Lophionotus sanjuanensis



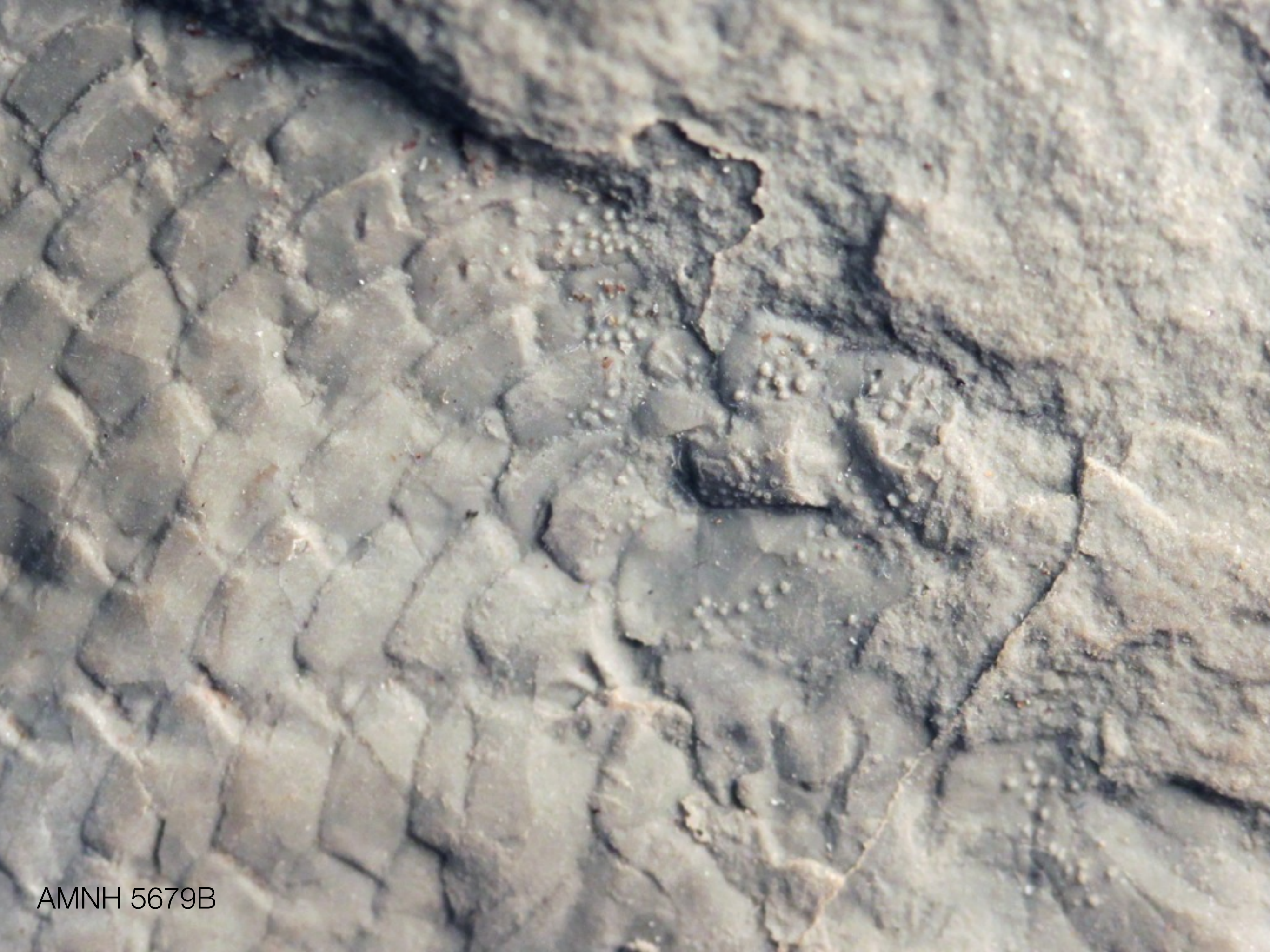
Lophionotus sanjuanensis,
gen et sp. nov.



AMNH 5679A



AMNH 5679A



AMNH 5679B



AMNH 5690

5690



AMNH 5690

Diagnostic characters of *L. sanjuanensis*

- Medium-sized semionotiform (avg. 87 mm SL)
- Pronounced post-cranial hump
- Dense tuberculation on dorsal ridge scales, extrascapulars, and posttemporals
- Preoperculum with vertical, narrow dorsal process and short, broad, paddle-like ventral process
- 1–2 rows of tubercles on supraorbital
- Anteroventral process on posttemporal

Lophionotus chinleana, gen et sp. nov.

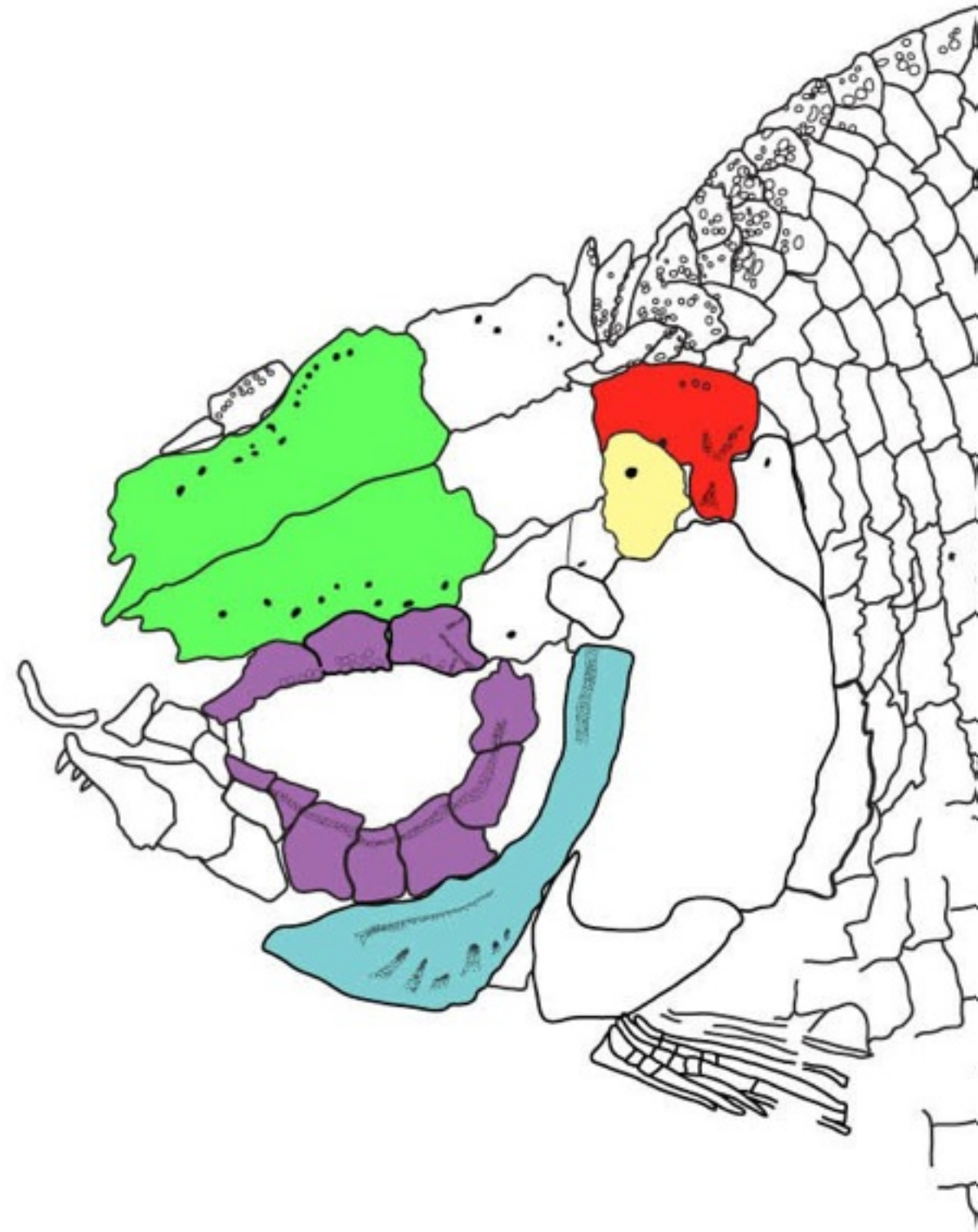


UMNH VP 19417





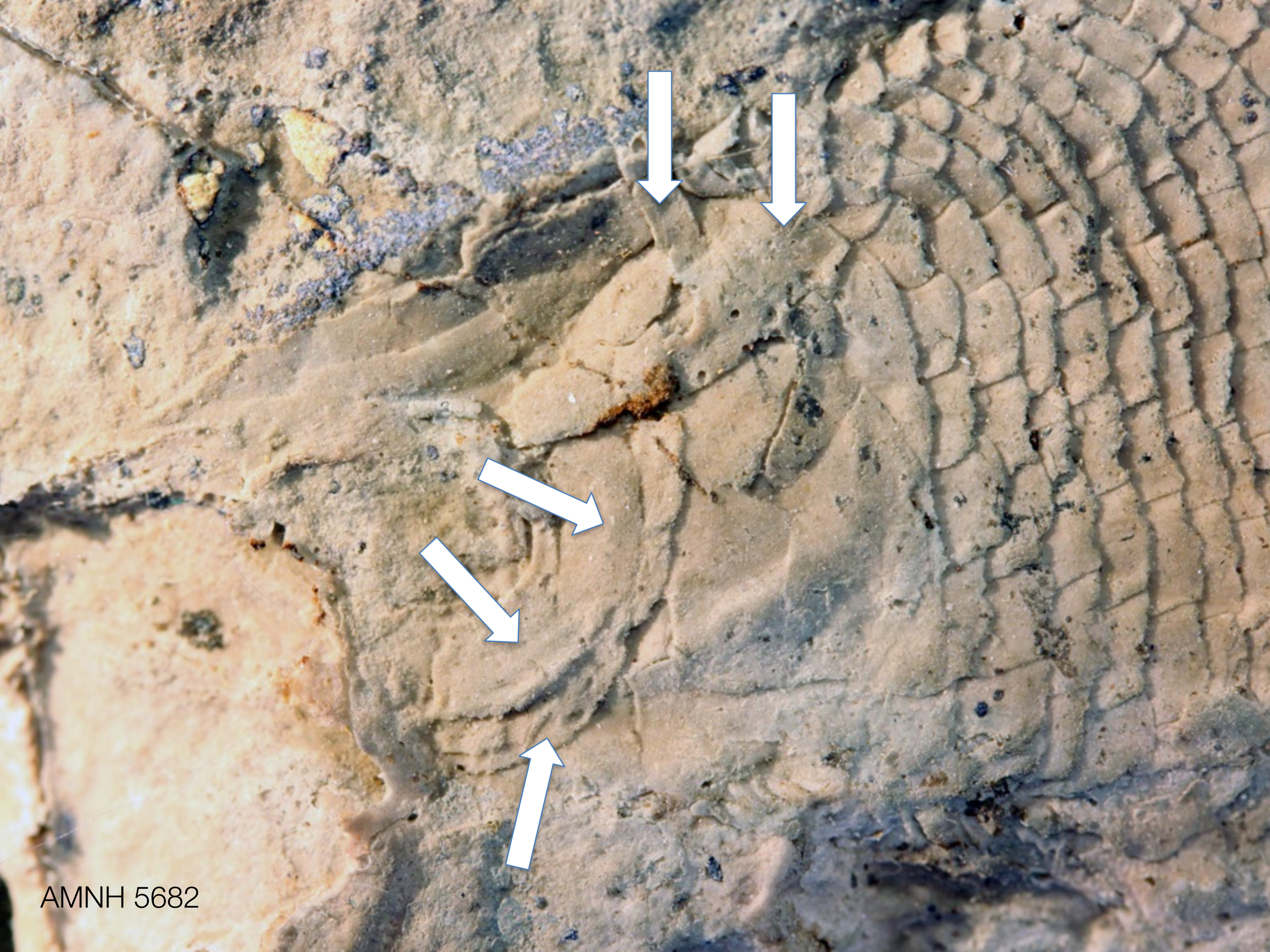
L. chinleana



L. sanjuanensis



AMNH 5682



AMNH 5682

Diagnostic characters of *L. chinleana*

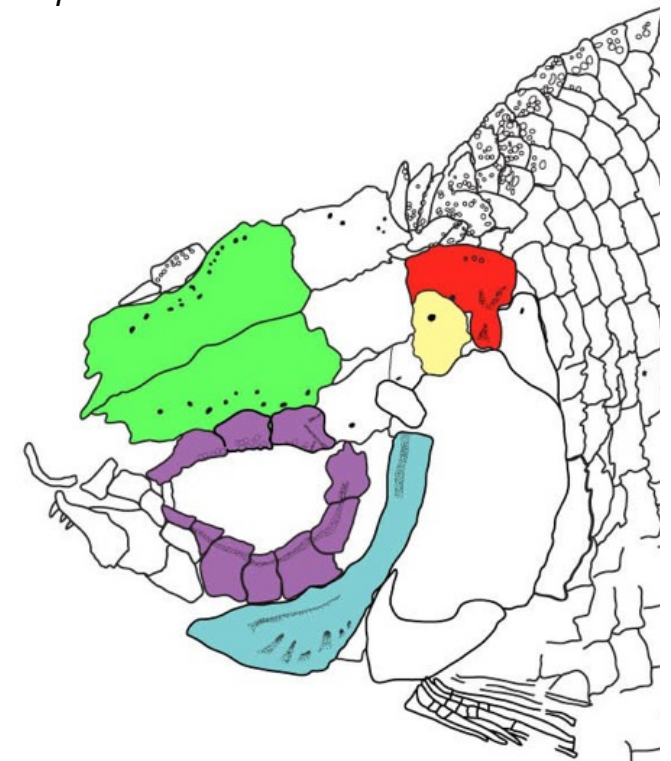
- Smaller body size (average 68 mm) than *L. sanjuanensis*
- Gently curved dorsal border (lacking postcranial hump)
- Lacking dense tuberculation
- Narrow, crescent-shaped preoperculum
- Presence of postspiracular bone
- 2 pairs extrascapulars of different size

Diagnostic characters of the genus *Lophionotus*

- Single, narrow, tall suborbital
- Deep infraorbitals that expand below suborbital and contact anteroventral region of preoperculum
- Parietals (frontals) broad and short
- Two supraorbitals



Lophionotus chinleana



Lophionotus sanjuanensis

Serpionotus sakahabensis, Schaeffer & Dunkle 1950



Holotype AMNH 8870



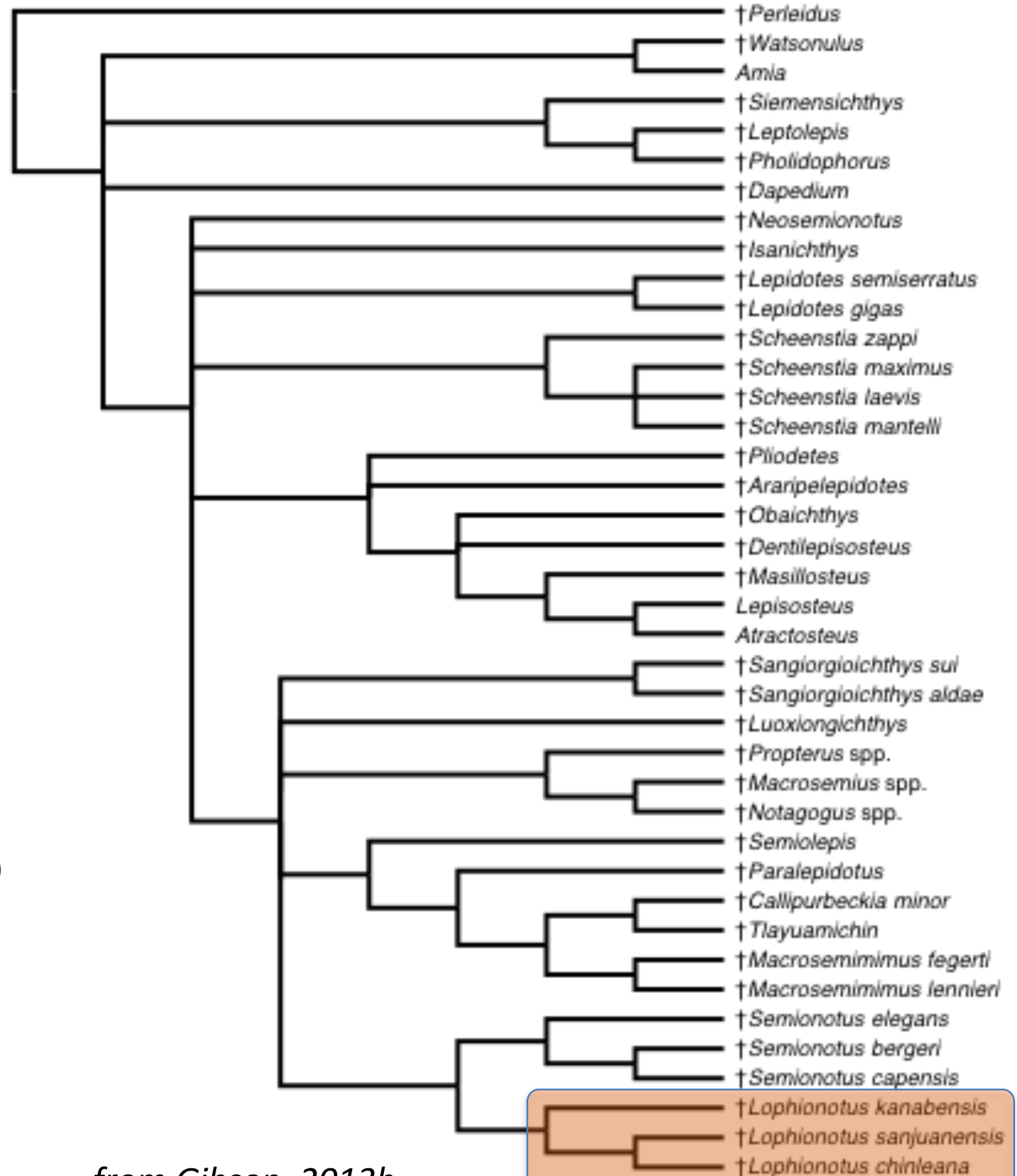
Phylogenetic relationships of *Lophionotus*

40 Taxa (7 outgroups, 33 ingroup)
90 Characters (modified from López-Arbarello, 2012)

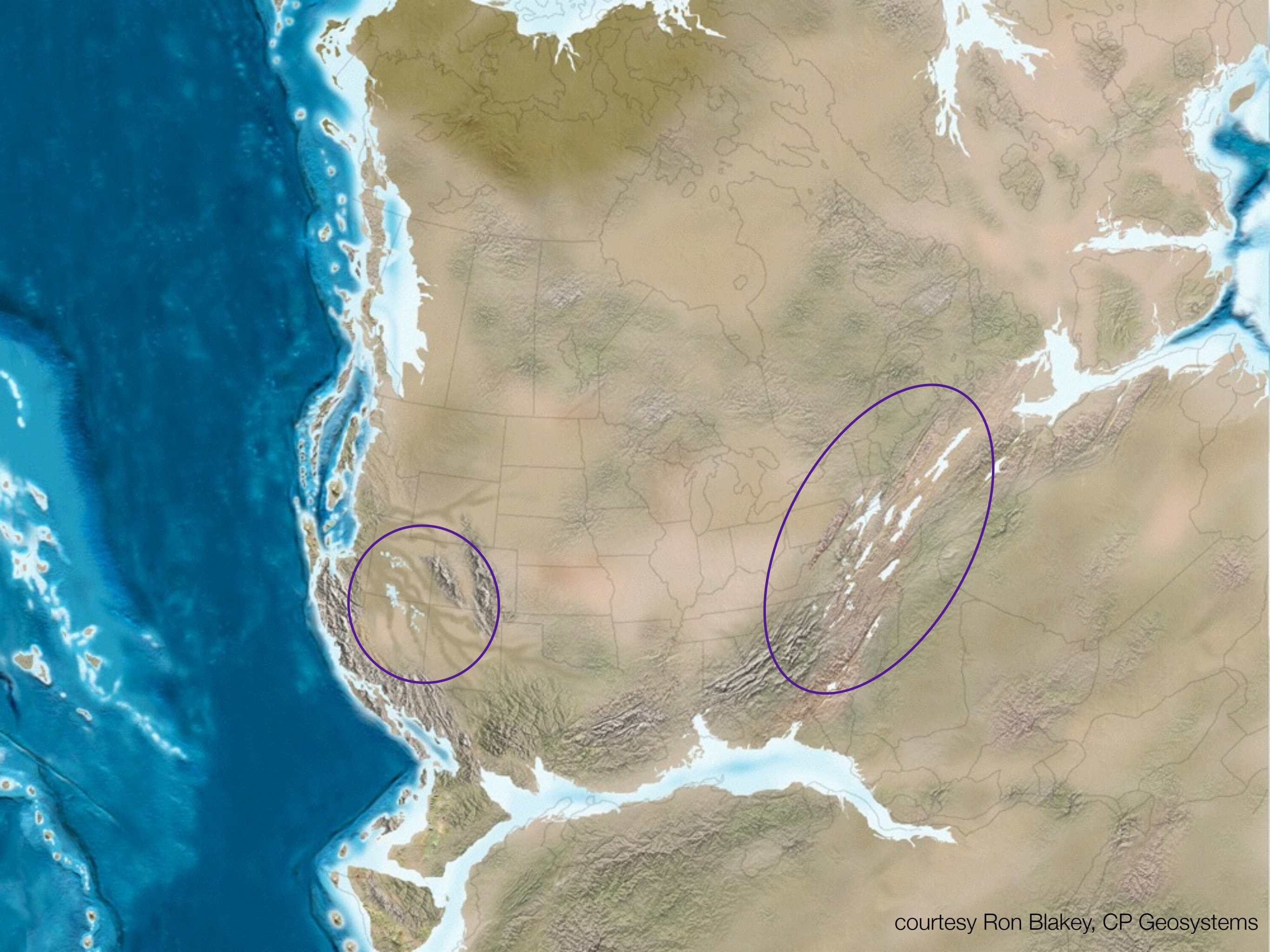
16 Most Parsimonious (CI=0.399,
RI=0.727)

Parsimony analysis

- TNT v. 1.1 (Goloboff et al., 2008)
- 20 heuristic searches
- Tree-bisection-reconnection (TBR) branch swapping
- Characters unordered and unweighted
- Symmetric resampling bootstraps (Goloboff et al., 2003) with 100 replicates



from Gibson, 2013b



courtesy Ron Blakey, CP Geosystems

Acknowledgements

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Field Museum of Natural History
American Museum of Natural History
St. George Dinosaur Discovery Site at Johnson Farm
New Mexico Museum of Natural History and Science

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Bureau of Land Management –
Scott Foss
SITLA



Thank You!

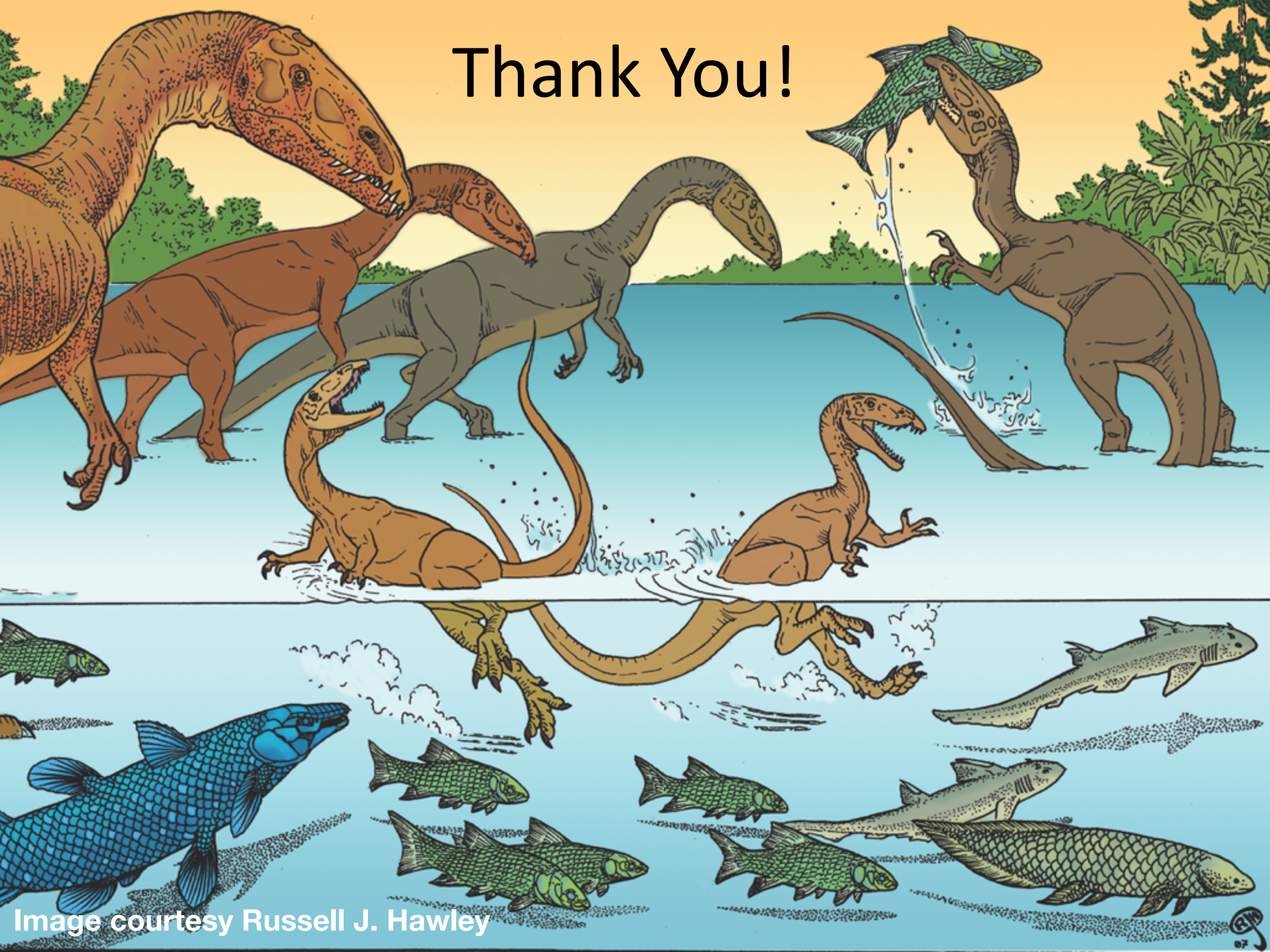


Image courtesy Russell J. Hawley