EVOLUTIONARY INSIGHTS FROM PRELIMINARY STATISTICAL ANALYSIS
OF TEETH OF THE VENOMOUS MICROVERTEBRATE UATCHITODON
(ARCHOSAURIFORMES) FROM THE UPPER TRIASSIC (SANFORD SUB-BASIN,
CUMNOCK FORMATION) OF NORTH CAROLINA, USA
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Venom is one of the most potent weapons in the animal kingdom, and evolved
multiple times in a diverse array of lineages, yet only rarely in the highly successful
archosauromorphs. Only two named extinct venomous archosauriformes are known, both
from Late Triassic teeth (Graoullyodon hacheti and Uatchitodon kroehleri). Here we report
the discovery of numerous (~30) venom-conducting teeth and tooth fragments in the Upper
Triassic of North Carolina (Moncure locality, Cumnock Formation, Sanford sub-basin)
that are similar to broadly contemporaneous, previously described teeth from Arizona as
well as U. kroehleri. The Moncure teeth are tall, recurved, and laterally compressed, with
serrated edges possessing compound denticles and a venom canal on both the labial and
lingual surfaces. We therefore assign these teeth to the genus Uatchitodon, although the
encapsulation of the venom canal varies from infolded but open to completely enclosed and
tubular and thus may warrant a separate species designation from the open U. kroehleri.

We measured length, width, the distance of canals with respect to carina, the surface and
each other, intercarinal angle, and area of canals as visible on the basal-most exposed cross-
section. All results are preliminary, owing to small (n = ~10) sample sizes. Canal shape
does not vary significantly with position in the jaw, as inferred from intercarinal angle (\(n_{ipr}
=10.02\pm0.46\)) or canal area (\(8.01\pm0.57\)) or distance from the surface (\(8.06\pm0.02\)), but it
does with respect to distal offset of the canals (\(12.03\pm0.63\)) and canal proximity to each
other (\(9.00\pm0.84\)). The variation from two median canals (U. kroehleri and some Moncure
specimens) to enclosed tubes (other Moncure specimens and Arizona specimens) mirrors the
ontogenetic stages seen in elapid and viperid fangs and leads us to suggest that these teeth
could represent a similar evolutionary trajectory. Also, given the high proportion of these teeth
at the site, and the variation implying that they are from several different positions in the jaw,
we suggest that Uatchitodon had a unique arrangement of venom-conducting teeth unlike
that of known analogs.