

**A New Aquatic Eosuchian  
from the Newark Supergroup  
(Late Triassic-Early Jurassic)  
of North Carolina and Virginia**

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**Abstract**

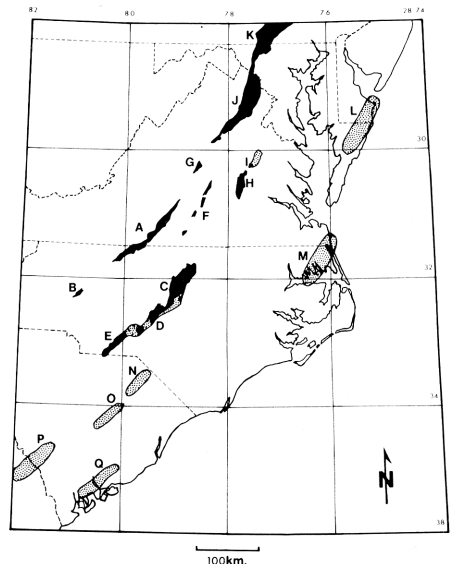
*Tanytrachelos ahynis* (n.gen., n. sp.) is a lepidosaur from the Late Triassic Dan River Group (Newark Supergroup) of North Carolina and Virginia. The new reptile has gracile proportions similar to *Tanystropheus* (Middle Triassic) and is referred to the family Tanystropheidae of the suborder Prolacertiformes. Unlike *Tanystropheus*, *Tanytrachelos* has relatively short cervical vertebrae bearing splintlike ribs anteriorly and plowshare-shaped ribs posteriorly. The species is much smaller than *Tanystropheus* and has long straight ribs fused to the most distal dorsal vertebrae and proximal caudal vertebrae. The associated fish and nonmarine invertebrate fauna and flora suggest that the age of the *Tanytrachelos*-bearing horizon is Middle Keuper (Carnian of the Late Triassic).

**Introduction**

The Newark Supergroup (Olsen, 1978; Van Houten, 1977) consists of thick continental sequences preserved in discrete basins exposed in the Piedmont province of eastern North America from Nova Scotia to South Carolina. Despite the great geographic area involved and the considerable time repre-

sented by the Newark (at least Late Triassic through Early Jurassic, Olsen and Galton, 1977), knowledge of this interval has been very sketchy, primarily because it was thought to be fossil poor.

This negative concept had to change in 1974, when a locality in the upper member of the Cow Branch Formation of the Dan River Group [Newark Supergroup of North Carolina and Virginia (Thayer, 1970)] was discovered (Fig. 1). This site has yielded many skeletons



**Fig. 1**

Map of southeastern United States showing extent of Newark Supergroup Rocks. A, Dan River Group; B, Davie County Basin; C, D, E, Durham, Sanford, and Wadesboro Basins of Chatham Group; F, Farmville Basin and minor basins to the south; G, Scottsville Basin; H, Richmond Basin; I, Taylorsville Group; J, Culpeper Basin; K, Gettysburg Basin; L, M, N, O, P, Q, Newark Supergroup rocks inferred to exist below the Coastal Plain sediments.

of small reptiles, reptile footprints, five genera of fish, abundant insects, other arthropods, and a rich megafossil flora (Olsen, et al., 1978) constituting a reasonable representation of a large Late Triassic lake. In this lake lived abundant tanystropheid lepidosaurs and their remains form the basis for this report.

Prior to the discovery of the Cow Branch reptile, the family Tanystropheidae was definitely known only from the marine Middle Triassic *Tanystropheus* (Peyer, 1931). This form is characterized by an extremely long neck and skeleton with a number of lizardlike features: the resemblance has suggested to some (Wild, 1973) that *Tanystropheus* was, in fact, a true lizard. Recent advances in our understanding of lizard phylogeny (Gow, 1975; Carroll, 1977) suggest that *Tanystropheus* is closely allied to the lizardlike family Prolacertidae, and that true lizards have had a completely independent history. It now seems that the prolacertilians (including *Tanystropheus*) underwent a radiation of their own culminating in the Middle Triassic, prior to their replacement by aquatic true lizards, plesiosaurs, and archosaurs.

A comparison of the diminutive Cow Branch tanystropheid, certainly lacustrine, with the giant (ca. 6 m) *Tanystropheus*, found in marine deposits, points up the differing sorts of trophic strategies present in closely related species living in different environments. In fact, many of the gross morphological differences between the new reptile and *Tanystropheus* are such that one could be "derived" from the other by relatively simple geometric transformations; hence, a number of interesting evolutionary interpretations come to mind (Gould, 1977). These interpretations, as well as the functional anatomy and ecological relationships of the new reptile will be dealt with in a separate work. Now, however, it is appropriate to present a brief diagnosis and description of this tanystropheid to facilitate further work and reference.

## Material and Methods

The material for this work consists of more than 100 skeletons in various states of

completeness from a single locality (see below) in the upper member of the Cow Branch Formation.

All of the skeletons are preserved as black or silvery compressions on black or gray laminated dolomitic siltstone; their preparation is hindered by a thin covering of this siltstone. It can be cleaned off by several weeks of soaking in dilute acetic acid (ca. 15%) followed by careful removal of the matrix by the "air-brasive" method. Two specimens have been prepared in this manner; three required no preparation. The majority of the findings presented in this paper are principally based on these five specimens.

## A Note on the Locality

The owners of the *Tanytrachelos* locality have been extremely cooperative but do not want the position of the site to become common knowledge; therefore, a code will be used for the locality data, the key to which is recorded in the archives of the Yale Peabody Museum (Olsen, 1978a). The first reptile specimens were found in displaced boulders that were later traced to their origin. Both the area of displaced boulders and the extensive exposures that produced them are termed CB1. A number after CB1 indicates the exact stratigraphic position of the fossil or fossiliferous unit, and a letter after that gives the geographic location. The locality designation for the area of displaced boulders is CB1-A (no stratigraphic position) and those of four collecting sites along a single horizon are CB1-2-B, CB1-2-C, CB1-2-D, and CB1-2-E (see Fig. 9). The quarry from which most of the material was recovered is at CB1-2-D. Several specimens have also been recovered from units CB1-3 and CB1-16 from the same large exposure as CB1-2-B through CB1-2-E.

## Systematic Paleontology

Class **Reptilia**

Subclass **Lepidosauria**

Order **Eosuchia**

Suborder **Prolacertiformes**

Family **Tanystropheidae** Gervais, 1858

