

Nebraskites haresiceratiforme n.g.n.sp., a new ammonite
from the mid-Turonian *Prionocyclus percarinatus* zone
in Nebraska, United States

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With 3 figures in the text

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Abstract: The new form is interpreted as a dwarf member of the Acanthoceratinae DE GROSSOUVRE, 1894.

Zusammenfassung: Die neue Ammonitenform wird als verzweigter Vertreter der Acanthoceratinae DE GROSSOUVRE 1894 gedeutet.

Introduction

The combination of small adult size and simplified sutures is displayed by several members of the Upper Cretaceous ammonite family Acanthoceratidae. In a number of published cases these have been claimed as progenic dwarf offshoots of 'normal' sized genera, combining features of the inner whorls of their presumed ancestor and body chamber features that are distinctive and which show them to be genuinely diminutive adults. Furthermore, recognition of dimorphism in these minute ammonites shows them to be genuinely diminutive taxa, rather than the microconchs of some larger form. This phenomenon has been documented at length for *Protacanthoceras* SPATH, 1923, of the Acanthoceratinae (WRIGHT & KENNEDY 1980, 1987; KENNEDY & WRIGHT 1985) and we have subsequently recognized similar dwarf derivatives of a number of US Western Interior lineages including *Acanthoceras* of the *amphibolum* MORROW, 1935 group, *Metoicoceras* HYATT, 1903 and *Sumitomoceras* MATSUMOTO, 1969. These will be described elsewhere. We here describe what we believe to be a genuinely diminutive middle Turonian genus and species, *Nebraskites haresiceratiforme* n.g.n.sp., which we suggest to be an offshoot of some normal-sized member of the subfamily Acanthoceratinae DE GROSSOUVRE, 1894.

Systematic palaeontology

Superfamily Acanthocerataceae DE GROSSOUVRE, 1894

Family Acanthoceratidae DE GROSSOUVRE, 1894

Subfamily Acanthoceratinae DE GROSSOUVRE, 1894

Genus *Nebraskites* KENNEDY & COBBAN n.g.

Derivation of name: From Nebraska, whence the type species originates.

Type species: *Nebraskites haresiceratiforme* n.g.n.sp., middle Turonian *Prionocyclus percarinatus* zone, Nebraska, USA.

Diagnosis: Small, adult at 22 mm diameter. Very involute, compressed with flattened flanks and narrow tabulate venter. Ornament consists of feeble umbilical bullae giving rise to pairs of primary ribs with incipient inner and clavate outer ventrolateral tubercles, linked over the venter by a low rib. On adult body chamber, primary ribs are single, incipient inner ventrolateral tubercles are lost and ventral ribbing strengthens on last part before aperture. Suture very simple with near-entire E/L, L, L/U₂, U₂ and auxiliary saddles.

Discussion: The holotype is the only known specimen, and was collected by E. A. MEREWETHER and W. A. COBBAN in 1974. Since that time no other specimens have been found among the tens of thousands of middle Turonian ammonites from the US Western Interior we have examined.

The modification of ornament on the body shows the holotype to be an adult. This small size, ornament and greatly simplified suture (Fig. 3) distinguish it from all other described mid-Cretaceous ammonite genera. Determining the affinities of *Nebraskites* is difficult, because of its very generalised morphology. The presence of umbilical, inner and outer ventrolateral tubercles plus primary and secondary ribs but the absence of a siphonal row is a feature possessed by members of two Turonian groups, the Mammitinae HYATT, 1903, and certain members of the Acanthoceratinae DE GROSSOUVRE, 1894, in which the siphonal clavi have been secondarily lost, as in the case of species of *Watinoceras* WARREN, 1930. The suture, although simplified, lacks any sign of the development of advective lobes and we therefore exclude affinities with contemporary Placenticeratidae HYATT, 1900. Involute coiling is common to *Nebraskites* gen. nov. and family Coiloceratidae HYATT, 1903, some members of which have a tabulate venter, as in *Hoplitoides* VON KOENEN, 1898 (see COBBAN & HOOK 1980). Coilo-

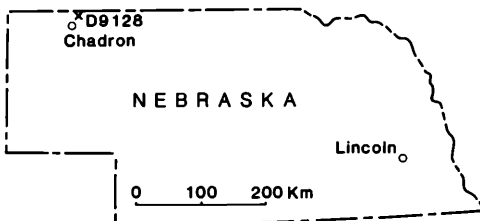


Fig. 1. Map showing the type locality of *Nebraskites haresiceratiforme* n.g.n.sp.

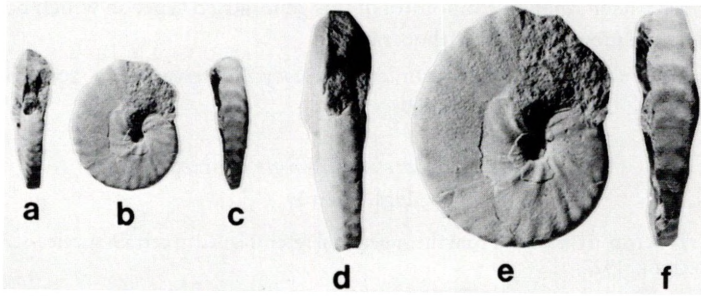
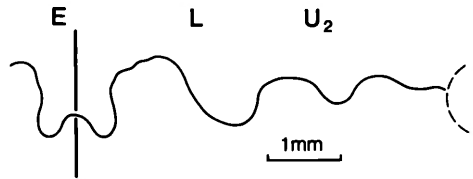


Fig. 2. *Nebraskites haresiceratiforme* n.g.n.sp. The holotype, USNM 420370; a-c are $\times 1$; d-f are $\times 2$.

Fig. 3. External suture of the holotype of *Nebraskites haresiceratiforme* n.g.n.sp., USNM 420370. Bar scale is 1 mm.



poceratidae have highly distinctive sutures, however, and never develop the style of ventrolateral tuberculation of *Nebraskites*.

The small size and greatly simplified sutures of *Nebraskites* may reasonably be assumed to reflect its origin through pedomorphic processes, and we regard it as a progenic dwarf, as with certain other diminutive acanthoceratids (KENNEDY & WRIGHT 1985). It is the innermost whorls of possible ancestral taxa that might therefore give clues to the evolutionary origin of the new genus. Amongst Mammitinae, the innermost whorls of *Mammites* LAUBE & BRUDER, 1887 are known from specimens from the slightly older Fence Lake fauna from New Mexico described by COBBAN & HOOK (1983: 8, pl. 4, figs. 4-9). The very smallest specimens known are evolute serpenticones that are at first near-smooth, thereafter with umbilical, inner and outer ventrolateral tubercles and primary and intercalated ribs. The initial smooth stage and serpenticone coiling are greatly different from the phragmocone whorls of *Nebraskites*. In the later species of *Watinoceras* that occur in the middle Turonian, *W. cobbani* COLLIGNON, 1967 (see COBBAN & HOOK 1979: 17, pl. 5, figs. 1-8) has more involute, feebly ornamented inner whorls that are flat-sided with umbilical bullae, primary and secondary ribs, inner and outer ventrolateral tubercles. These features plus the bar-like ventral ribs of adult *W. cobbani* suggest that the origin of *Nebraskites* lies, if not in

Watinoveras itself, then in ammonites of this generalised type, on which basis we regard it as a member of Acanthoceratinae.

Occurrence: Middle Turonian *Prionocyclus percarinatus* zone of Nebraska in the US Western Interior.

Nebraskites haresiceratiforme n.g.n.sp.

Figs. 2 and 3

Derivation of name: From the superficial resemblance to certain species of *Haresiceras* REESIDE, 1927.

Type: The holotype in USNM 420370 from USGS Locality D9128, NE¹/₄SW¹/₄ sec.28, T.35.N., R.47.W., Dawes County, Nebraska (Fig. 1). It was collected from the top of the Fairport Member of Carlile Shale, middle Turonian *Prionocyclus percarinatus* zone, associated with *P. percarinatus* (HALL & MEEK, 1856), *Scaphites* (*Scaphites*) *praeoquus* COBBAN, 1952 and *Inoceramus* sp.

Dimensions:

D	Wb	Wh	Wb:Wh	U
16.2(100)	9.6()	--(--)	-	1.3(8.0)

Diagnosis: With the characters of the genus.

Description: Specimen is slightly crushed and retains 270° of body chamber. Coiling is very involute with a tiny umbilicus comprising 8% of the diameter, the umbilical wall flattened and subvertical, the umbilical shoulder rather broadly rounded. The whorl section is very compressed, with a whorl breadth to height ratio of 0.66 at the end of the phragmocone, the body chamber being crushed. There are an estimated 10–12 long umbilical bullae on the outer whorl. These give rise to prorsiradiate ribs. On the first half whorl they arise in pairs, on the last half they are generally single. Shorter ribs intercalate around mid-flank, to give a total of 15 ribs per half whorl. The ribs are low and broad, and on the exposed section of phragmocone strengthen into an incipient inner ventrolateral tubercle. All ribs bear a delicate outer ventrolateral clavus, which extends to the end of the body chamber. These are linked across the venter by a low, broad, transverse rib that strengthens markedly on the last half of the body chamber.

Suture line very simple (Fig. 3) with broad E, broad E/L, slightly narrower L and L/U₂, all with only minor irregularities in a near-smooth outline.

Discussion: Modifications of flank and venter ornament suggest the holotype to be an adult.

Occurrence: The type is from the top of the Fairport Chalky Shale Member of the Carlile Shale at US Geological Survey Mesozoic locality D9128 in the NE¹/₄SW¹/₄ sec.28, T.35.N., R.47.W., Dawes County, Nebraska.

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