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A new small theropod dinosaur from the Judith River Formation (Campanian) of Alberta Canada

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A new small theropod dinosaur, documented by an incomplete skeleton and three frontals, is described from the Judith River Formation (Upper Cretaceous: Campanian) of south-central Alberta.

It is distinguished from both *Stenonychosaurus* and *Dromaeosaurus* by the structure of the frontal and by the marginal dentition.

It resembles *Stenonychosaurus* in the structure of the frontal and the Dromaeosauridae in the shape of the endocranial cavity and other skeletal features.

The material is referred to a new genus and species of the Dromaeosauridae.

KEY WORDS: – Saurischia – Dromaeosauridae – Judith River Formation – Alberta.

CONTENTS

INTRODUCTION

In 1974, Mrs Victor Vanderloh of Cessford, Alberta, discovered associated remains of the skull and postcranial skeleton of a small theropod dinosaur in the Dinosaur Provincial Park, north-east of Patricia, south-central Alberta.

This discovery was of considerable interest, as associated remains of small theropods are very rare in the classical collecting area of the Judith River Formation (Oldman Formation of authors) of south-central Alberta. The material mainly consists of teeth and isolated elements of the appendicular skeleton, especially phalanges and unguals.

Study of the new find revealed that it is not, as informally reported by the Provincial Museum and Archives of Alberta at the time of discovery, a

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specimen of *Stenonychosaurus inequalis* Sternberg, 1932, but rather it represents a new taxon different from previously described Judithian theropods.

Furthermore, the new find fulfills the hope expressed by Russell (1969: 612) that some of the isolated bones in the older collections from the Judith River Formation may become determinable once more complete material becomes available. It can be shown that three frontals listed by Russell as indeterminate are conspecific with the new material described herein.

The following abbreviations of institutional names were used in the text to identify the place of storage for specimens under discussion, preceding specimen numbers: AMNH, American Museum of Natural History, New York; NMC, National Museum of Natural Sciences, Ottawa; PMAA P, Palaeontological Collections, Provincial Museum and Archives of Alberta, Edmonton; UA, The University of Alberta, Edmonton; YPM, Peabody Museum of Natural History, Yale University, New Haven.

SYSTEMATICS

Class Reptilia
Order Saurischia
Suborder Theropoda
Family Dromaeosauridae
Saurornitholestes **gen. nov.**

Etymology. From σαύρος (Greek): lizard, ὄρνις (Greek): bird, ληστής (Greek): robber; in reference to its similarity to the saurornithoididae and its carnivorous mode of life.

Type species. ***Saurornitholestes langstoni*****, new species.**

Distribution. Judithian (Campanian), Alberta.

Diagnosis. Same as for the type and only species, given below.

Saurornitholestes langstoni sp. nov.

Etymology. For Dr Wann Langston, Jr., now of Austin, Texas, in recognition of his contributions to Canadian vertebrate palaeontology and his personal interest and generous support of the author's work.

Holotype. PMAA P74.10.5, associated remains of an incomplete skeleton, including both frontals, left ectopterygoid, left quadrate, two teeth, two vertebrae, gastralia, fragments of thoracic ribs, a metacarpal, several phalanges and all unguals of the left manus, three isolated prezygapophyses and a number of very fragmentary bones, which are undeterminable at present.

Horizon and type locality. Judith River Formation (Campanian), Dinosaur Provincial Park, south-central Alberta. The site is located in lsd. 13, section 27, township 21, range 12 west of the Fourth Meridian. The specimen was collected from a buff sandstone, exposed approximately 180 to 210 m above the floor of the valley.

Hypodigm. The holotype and three frontals, listed by Russell (1969: 612) as indeterminate at that time: UA 5283, posterior part of a left frontal. From a site 1.5 miles S. E. of the Dinosaur Provincial Park Headquarters, in lsd. 14, section 32, township 20, range 11 west of the Fourth Meridian. NMC 12343 and NMC 12354, incomplete left frontals. Both were found in the Dinosaur Provincial Park but no precise locality data have been recorded; one specimen was collected on the South side of the Red Deer River opposite Happy Jack's ranch, section 2, township 21, range 11 west of the Fourth Meridian.

Diagnosis. Very small, lightly built theropod. Frontal triangular, not basined between the median suture and the orbital rim. Posterior part of the frontal well-rounded and slightly inflated, without frontoparietal crest. Lateral walls of the anterior part of the endocranial cavity flaring laterally. Ectopterygoid complex, pocketed ventrally. Teeth with well-developed denticles (24-26 per 5 mm) on posterior carinae and tiny denticles (*c.* 35 per 5 mm) on anterior carinae.

DESCRIPTION

Skull

(Figs 1 to 3, 4B; Plates 1 to 3, 4 (fig. A))

The cranial material of ***Saurornitholestes langstoni*** consists of the frontals, the left ectopterygoid, the left quadrate and two teeth.

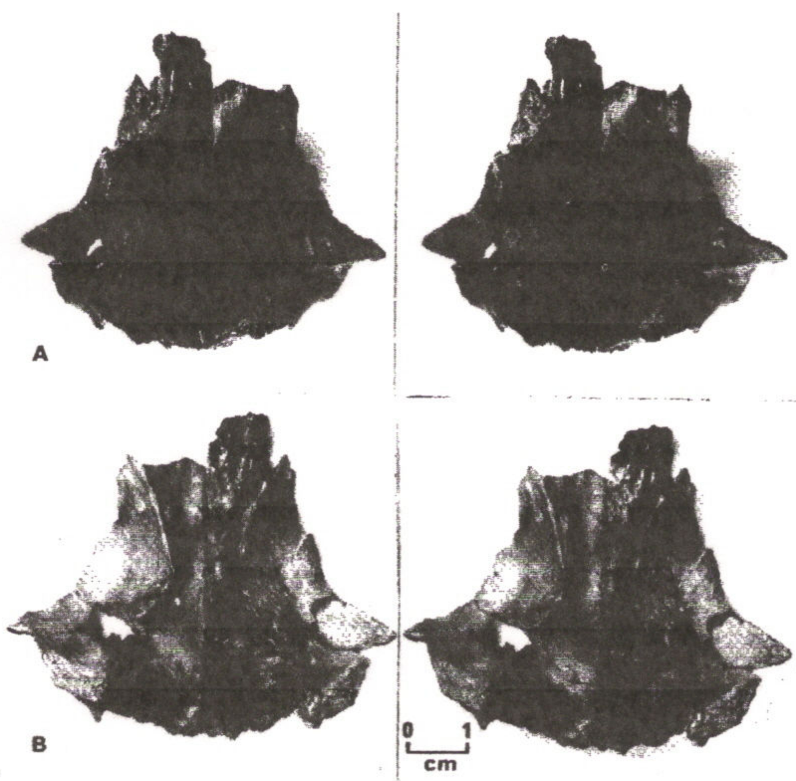


Plate 1. ***Saurornitholestes langstoni***, **sp. nov.**, holotype. Stereophotographs of the frontals: A, dorsal view; B, ventral view.

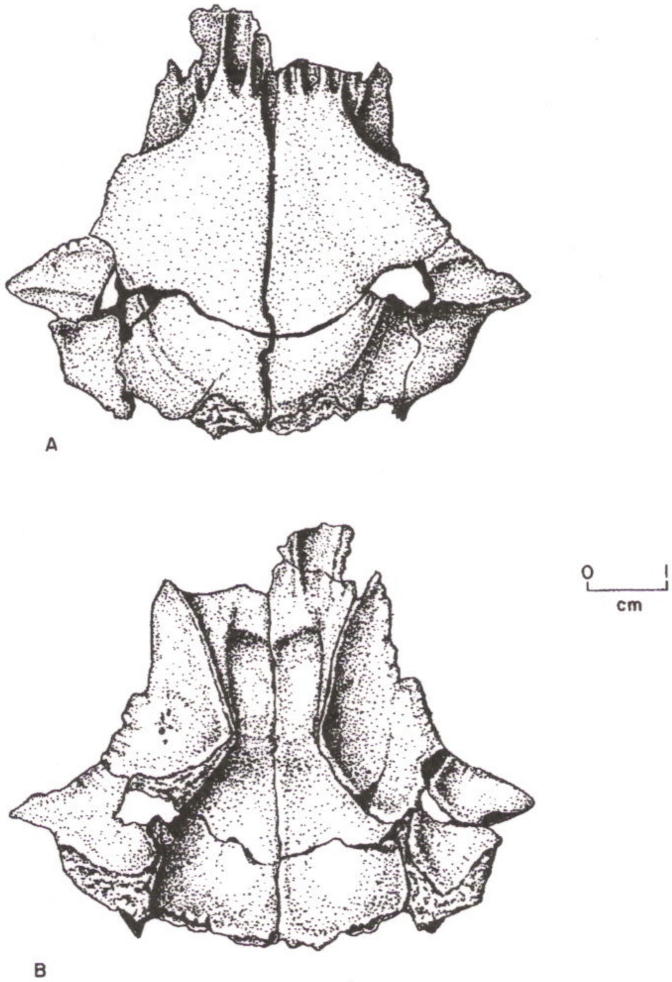


Figure 1. ***Saurornitholestes langstoni*, sp. nov.** Holotype, frontal region: A, dorsal view; B, ventral view.

Frontal. The frontal is triangular and relatively longer than wide in comparison with the corresponding element in *Stenonychosaurus.* Behind the orbit it makes an abrupt lateral turn to form the pedunculate base for the postorbital. The frontal is smaller than that of the smallest specimen of *Stenonychosaurus* (AMNH 6174) studied: It measures 54.5 mm along the midline of the skull dorsally, compared with 72.5 mm in AMNH 6174. The frontal of P74.10.5 measures 32.0 mm in a straight line from the midline suture to the tip of the postorbital process (52.2 mm in AMNH 6174). The interorbital width is large. The frontals are joined for their entire length along a median suture. In contrast to *Stenonychosaurus* and *Dromaeosaurus,* they are not basined between the median suture and the orbital rims. Along the anterior edge of the frontal, surfaces for articulation with nasal, prefrontal and lacrimal are exposed. Two narrow, U-shaped facets on either side of the median suture can be ascribed to the overlap of the nasals. The surfaces for the overlap of

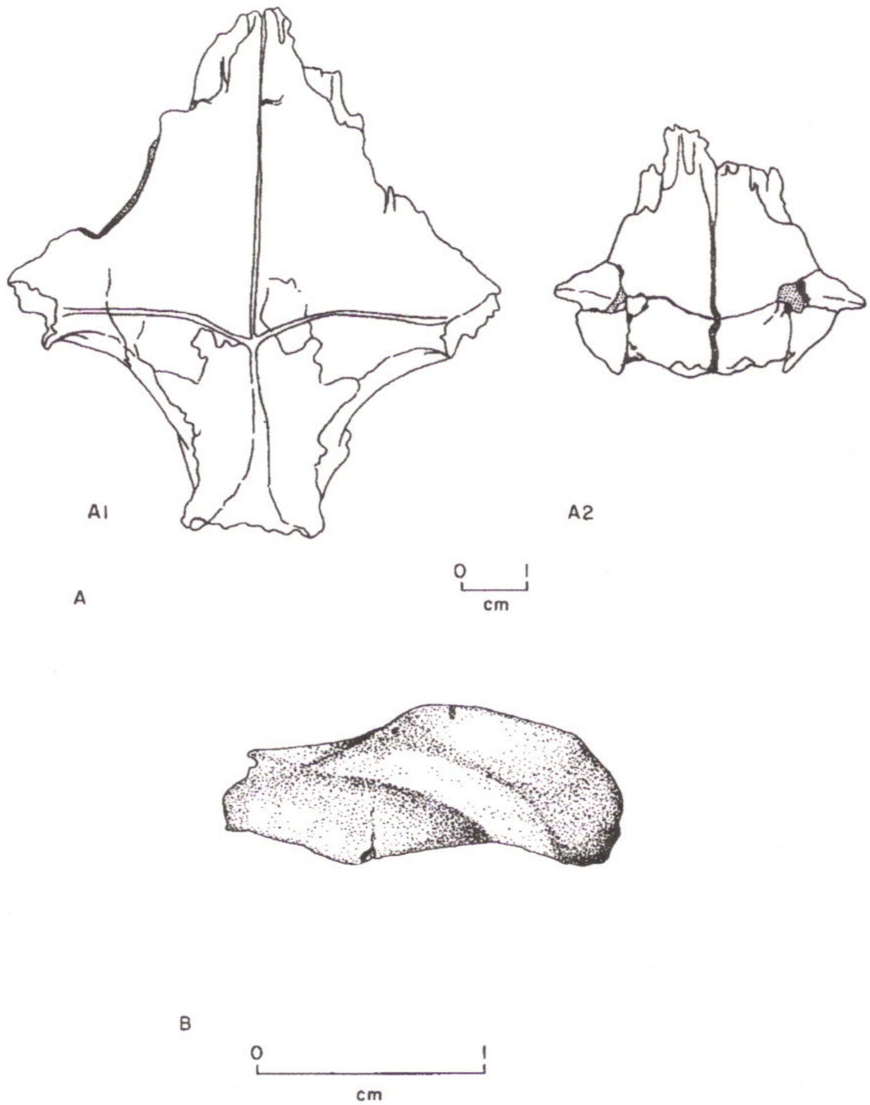


Figure 2. ***Saurornitholestes langstoni*, sp. nov.** Holotype: A, size comparison between the frontal of *Stenonychosaurus* (AMNH 6174; A1) and the frontal of *Saurornitholestes* (holotype; A2); B, quadrate in ventral view.

prefrontal and lacrimal cannot be distinguished with certainty. The sutural contact between the frontal and the parietal is very irregular and closely interdigitating, thus preventing any mobility in this region of the skull. The orbital margins are roughened. The orbit is large and spherical. The posterior margin of the frontal lacks a frontoparietal crest but is well-rounded and smooth and appears to be slightly inflated. The anterodorsal limit of the supratemporal fenestra is indicated by a weakly developed ridge (especially well visible in UA 5283, which belongs to a slightly larger individual) sigmoidally curving posteromedially from the posterodorsal corner of the orbit toward the cranial midline, disappearing prior to meeting the median suture.

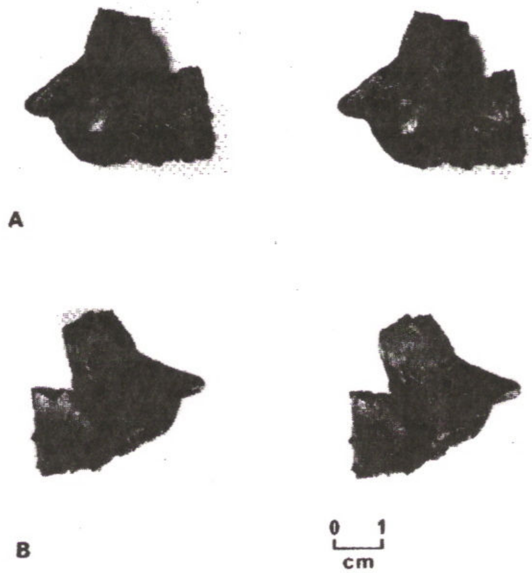


Plate 2. ***Saurornitholestes langstoni*, sp. nov.** Stereophotographs of an incomplete left frontal (UA 5283), showing details of the posterior region: A, dorsal view; B, ventral view.

On the ventral surface of the frontal the impressions of the olfactory bulbs and cerebral hemispheres are visible. Relative to the impressions on a frontal of *Dromaeosaurus* (NMC 12349), the olfactory bulbs are smaller and the cerebral hemispheres are larger. The endocranial cavity is relatively larger than in *Stenonychosaurus*. The lateral walls of the anterior part of the endocranial cavity flare out and show sharply defined ventral edges.

Quadrate. An incomplete left quadrate closely resembles the corresponding element of *Dromaeosaurus* (Colbert & Russell, 1969: fig. 9).

A large part of the mandibular articulation and the distal part of the ascending process are preserved. The mandibular articulation is broad and transversely oriented. Lateral and medial condyles are traversed by an obliquely and anteromedially extending groove. The ascending process is too incompletely preserved to warrant description.

Ectopterygoid. A single incomplete element, triradiate and closely resembling the ectopterygoid of *Deinonychus* (Ostrom, 1969: fig. 13 and cast of YPM 5210) and of *Dromaeosaurus* (Colbert & Russell, 1969: fig. 10), is interpreted as a left ectopterygoid. It has a stout, hook-shaped lateral process curving posteriorly and lateroventrally, abutting against the inner surface of the jugal in life. A second, more robust process extends posteroventrally but much of it is broken off. It probably formed the ectopterygoid flange, as in *Deinonychus* (YPM 5210). The ventral surface of this process shows a deeply excavated pocket of unknown function, as in *Deinonychus*, *Dromaeosaurus*, *Albertosaurus* (Ostrom, 1969: 27), *Daspletosaurus* (Russell, 1970: fig. 9),

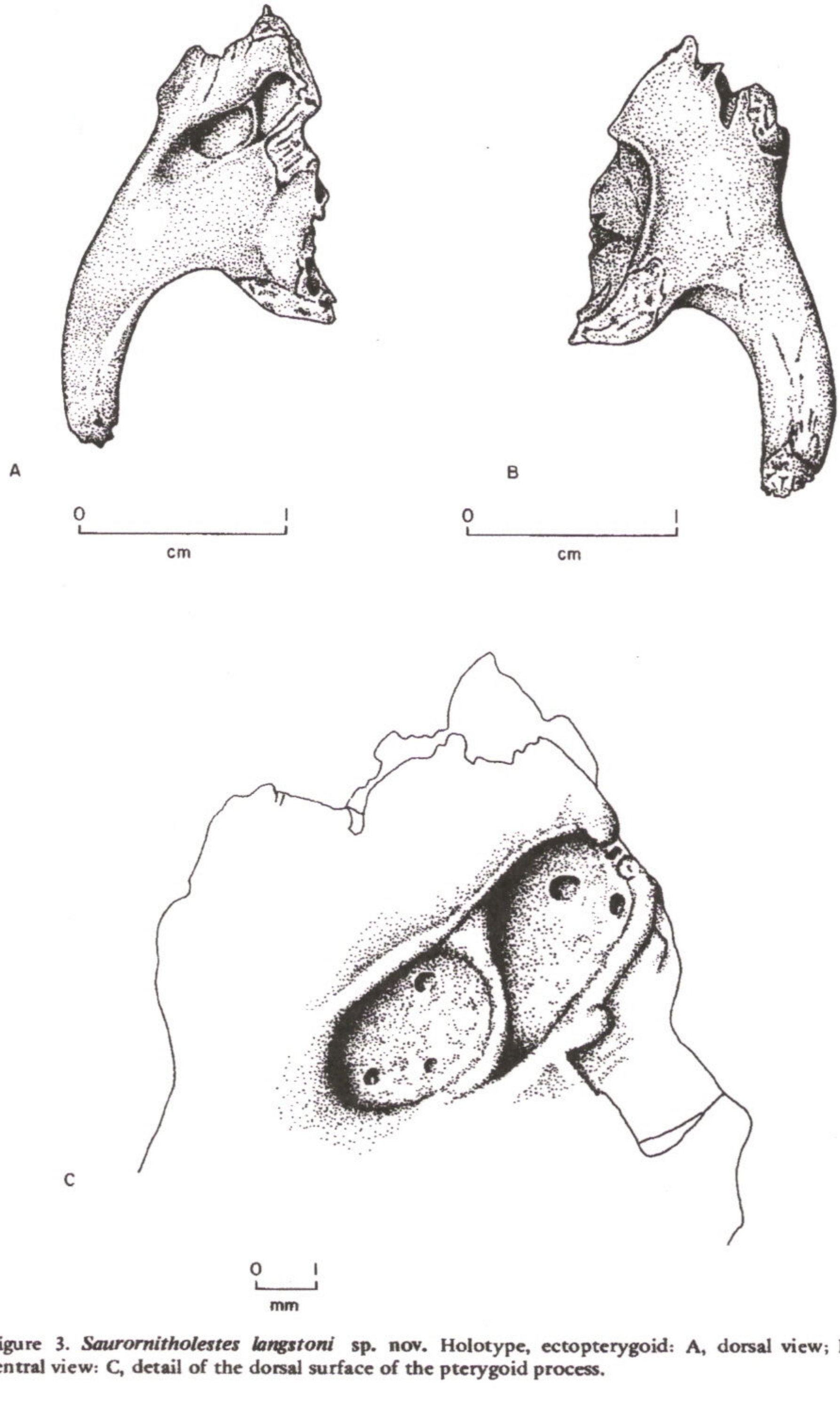


Figure 3. ***Saurornitholestes langstoni*** sp. nov. Holotype, ectopterygoid: A, dorsal view; B, ventral view: C, detail of the dorsal surface of the pterygoid process.

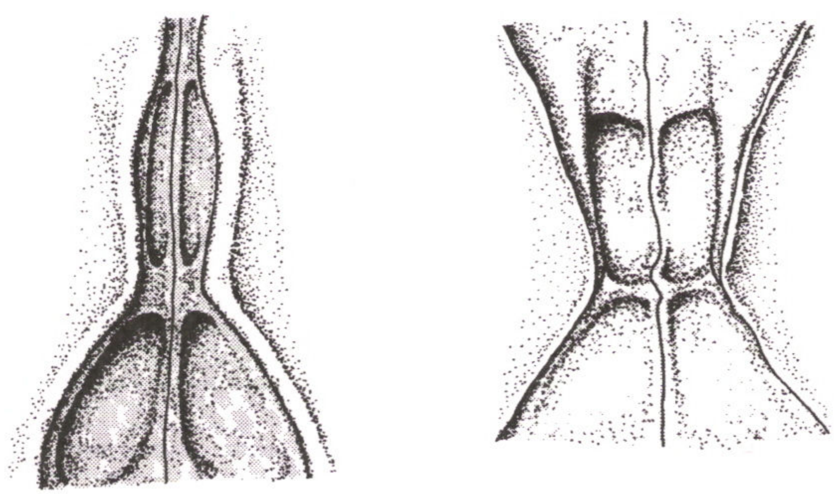
Table 1. Distal transverse widths of the phalanges and the metacarpal ?

Digit I, 1	9.8 mm
Digit II, 2	9.5 mm
Digit III, mtc. ?	6.6 mm
Digit III, 1	7.7 mm
Digit III, 3	8.9 mm

Table 2. Dimensions of the ungual phalanges

Phalanx	Length along outer curve (mm)	Height of facet (mm)	Proximal transverse width (mm)
I, 2	–	13.6	6.3
II, 3	48.5	13.0	6.2
III, 4	36.6	11.2	5.3

Tyrannosaurus (Osborn, 1912: fig. 6), and *Allosaurus* (Ostrom, 1969: 27), being relatively much smaller in the latter four genera. The flattened pterygoid process, the dorsal surface of which is marked by a conspicuous oval depression, extends medially from the base of the ectopterygoid and jugal processes. The depression on the pterygoid process is subdivided by a ridge. The left pit is oval and shows a small foramen anteriorly and two smaller ones posteriorly. The right pit is wedge-shaped and houses three foramina: a small anterior one, a small lateral one and a large posterior one, which opens to a canal continuing posteriorly into the large ventral pocket of the ectopterygoid flange. The depression corresponds to the "small, oval pit, marking the dorsal



A B

Figure 4. A. ***Stenonychosaurus inequalis:*** ventral view of the endocranial cavity. B. ***Saurornitholestes langstoni:*** ventral view of the endocranial cavity (not to scale).

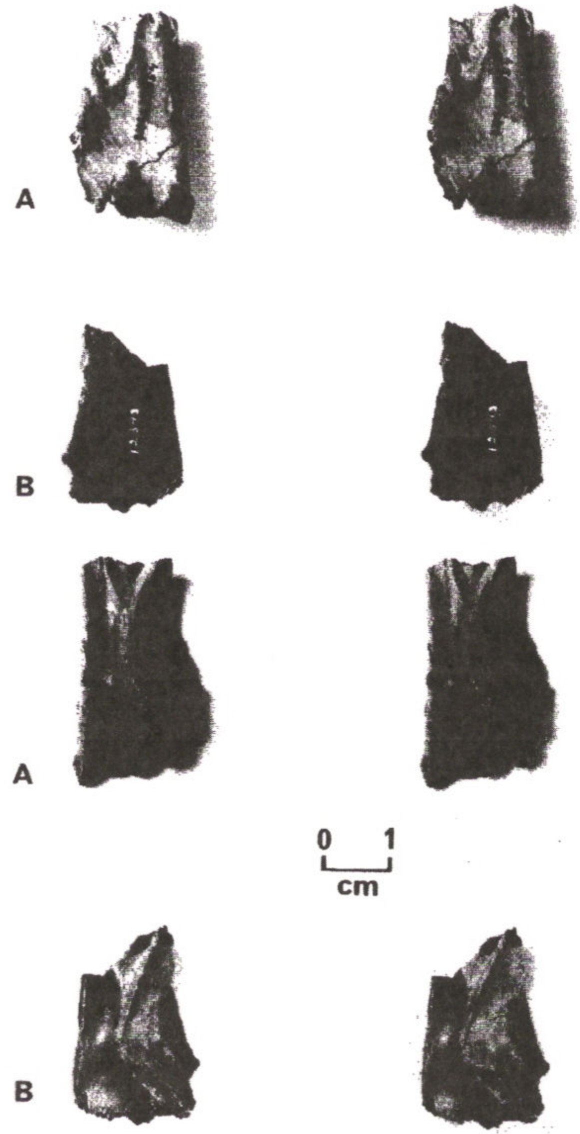


Plate 3. ***Saurornitholestes langstoni*, sp. nov.** Stereophotographs of two referred frontals (NMC 12343 and NMC 12354): A, dorsal view; B, ventral view. (In all photographs: upper row: NMC 12354, bottom row: NMC 12343.)

surface of this process [ectopterygoid process–HDS] at its junction with the jugal process" mentioned by Ostrom (1969: 27), although it is not shown in the illustration of the ectopterygoid in that paper (Ostrom, 1969: fig. 13). Personal examination of a cast of the right ectopterygoid (YPM 5210) of *Deinonychus* shows a relatively conspicuous pit in the same position as on the ectopterygoid of ***Saurornitholestes***. Ostrom (1969: 27) suggested that this pit might be related to the origin of the *M. pterygoideus dorsalis*.

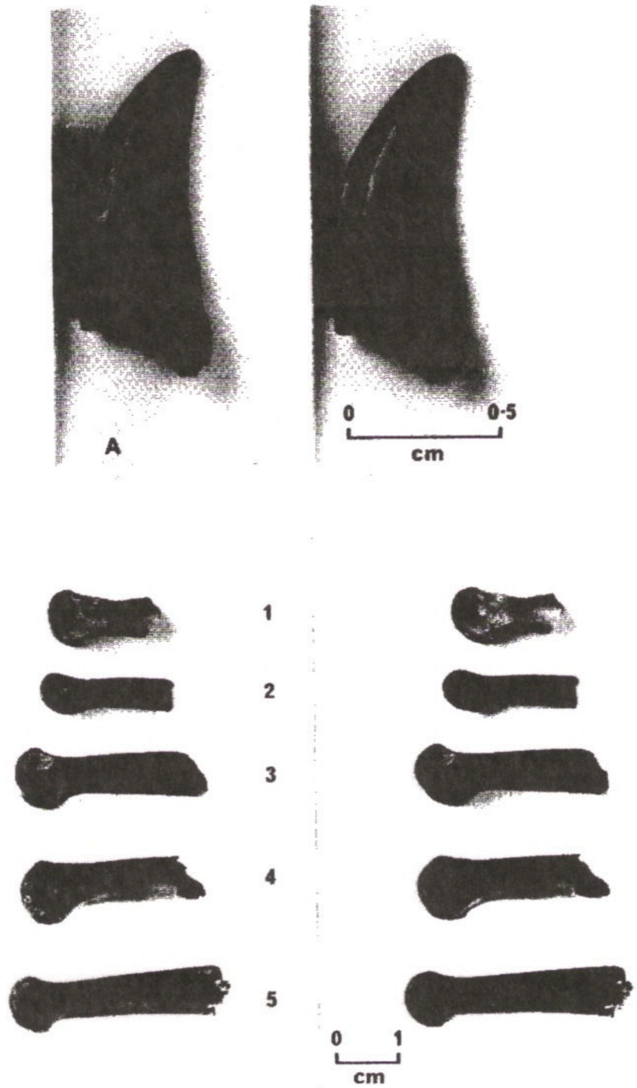


Plate 4. ***Saurornitholestes langstoni*, sp. nov.**, holotype. A. Stereophotographs of a tooth. B. Stereophotographs of phalanges and a ?metacarpal of the manus: 1, phalanx 1, digit III; 2, ?metacarpal, digit III; 3, phalanx 2, digit II; 4, phalanx 1, digit I; 5, phalanx 3, digit III.

Teeth. Two isolated teeth are present among the material. They are small, sharply tapered, laterally compressed and distinctly recurved. The roots of the teeth are parallel-sided. One tooth shows a pit in its base, produced by basal resorption during the process of replacement. A distinctive feature of the teeth is the extreme size disparity between the serrations on the anterior and posterior carinae. The posterior carinae show well-developed denticles (24-26 per 5 mm), whereas the anterior carina only shows very small denticles (*c.* 35 per 5 mm), which are three to four times lower than those on the posterior carina and give the anterior carina a fluted appearance. The serrations on the anterior carina only extend along about 70% of the height of the crown. The very tip of the tooth lacks serrations on either side. The crown of the tooth is slightly asymmetrical, i.e., a plane passing through the anterior and posterior denticles divides the tooth unequally.

Troodon formosus (based on but a single tooth) (L. S. Russell, 1948: figs 1-3) differs in having subequal anterior and posterior denticles and only having 7-8 serrations per 5 mm.

In *Saurornithoides junior* most teeth show denticles only along the posterior edge (Barsbold, 1974: fig. 6); a few teeth may have denticles on the anterior carina but then only at the base of the crown (Barsbold, 1974: 20). Although the teeth are poorly preserved in *Saurornithoides mongoliensis* (AMNH 6516), denticles appear to be limited to the posterior edge. The same condition is found in several teeth described from the Lance Formation by Estes (1964: 142, 143) as cf. *Saurornithoides* sp. and *Paronychodon lacustris*. The teeth of cf. *Saurornithoides* sp. are characterized by a deeply denticulated posterior carina with 7 to 12 very large serrations (Estes, 1964: fig. 69a); such teeth are now also known from the Judith River Formation of Alberta (Sues, in progress). The teeth referred to *Paronychodon lacustris* are described as having finely denticulated posterior and smooth leading carinae (Estes, 1964: 143). *Saurornithoides mongoliensis* has 12 serrations per 5 mm, as have the maxillary teeth of *Saurornithoides junior*, whereas the dentary teeth of the latter species have 15 to 17 per 5 mm (data for *Saurornithoides junior* from Barsbold, 1974: 20).

The teeth of *Velociraptor mongoliensis* (AMNH 6515) differ in the number of denticles (38 to 40 denticles per 5 mm on anterior carinae, 25 to 26 on posterior; Colbert & Russell, 1969: 40) and in having better developed anterior denticles.

The teeth of *Dromaeosaurus albertensis* (AMNH 5356) differ in having well-developed anterior serrations, the number of denticles (16 per 5 mm on both carinae) and (in the anterior part of the jaw) by the medial displacement of the anterior carinae near the base of the crown.

The teeth of *Deinonychus antirrhopus* (see Ostrom, 1969) differ in the number of denticles (30-31 denticles per 5 mm on anterior carinae, 16-18 on the posterior carinae) and in having better developed anterior denticles (which are half as large as those on the posterior carinae).

It is evident from the comparisons that the teeth of ***Saurornitholestes*** more closely resemble the teeth of the Dromaeosauridae than those of the Saurornithoididae.

Postcranial skeleton

(Fig. 4; Plates 4 (fig. B), 5 and 6)

Vertebrae. A well-preserved centrum with a large part of the neural arch probably belongs to a posterior dorsal vertebra. The centrum is slightly platyçoelous and the anterior and posterior surfaces for intercentral articulation are almost parallel. A ventral keel is absent. The centrum is constricted at mid-length and the ventral and lateral surfaces are strongly concave in longitudinal direction. It is 18 mm long, 23 mm high and 25 mm wide posteriorly. The lateral surfaces of the centrum show deep pleurocoels

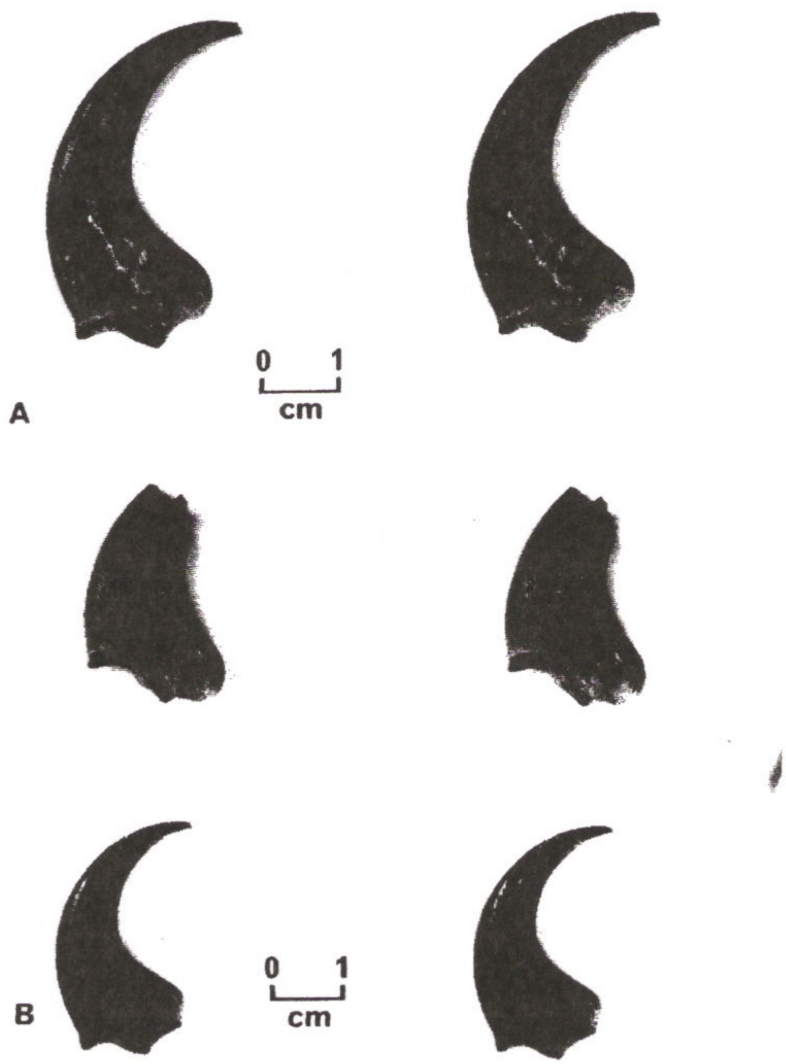


Plate 5. ***Saurornitholestes langstoni*, sp. nov.,** holotype. Stereophotographs of the unguals of the left manus: A, phalanx 3, digit II; B, upper row: phalanx 2, digit I; bottom row: phalanx 4, digit III.

parallel to the suture of the neural arach. Within the pleurocoels a large anterior and a small posterior opening can be distinguished. No parapophyses are visible. The neural arch is incomplete; the left half and part of the spine are broken off. The diapophysis is very short and the arch is excavated. The edges of the neural spine show very rugose furrows, probably areas of attachment for interspinous ligaments (Ostrom, 1969: 57).

Three isolated prezygapophyses are present among the material. They are subcircular, of moderate size and appear to be very similar to those of the anterior dorsal vertebrae of *Deinonychus* (Ostrom, 1969: fig. 33).

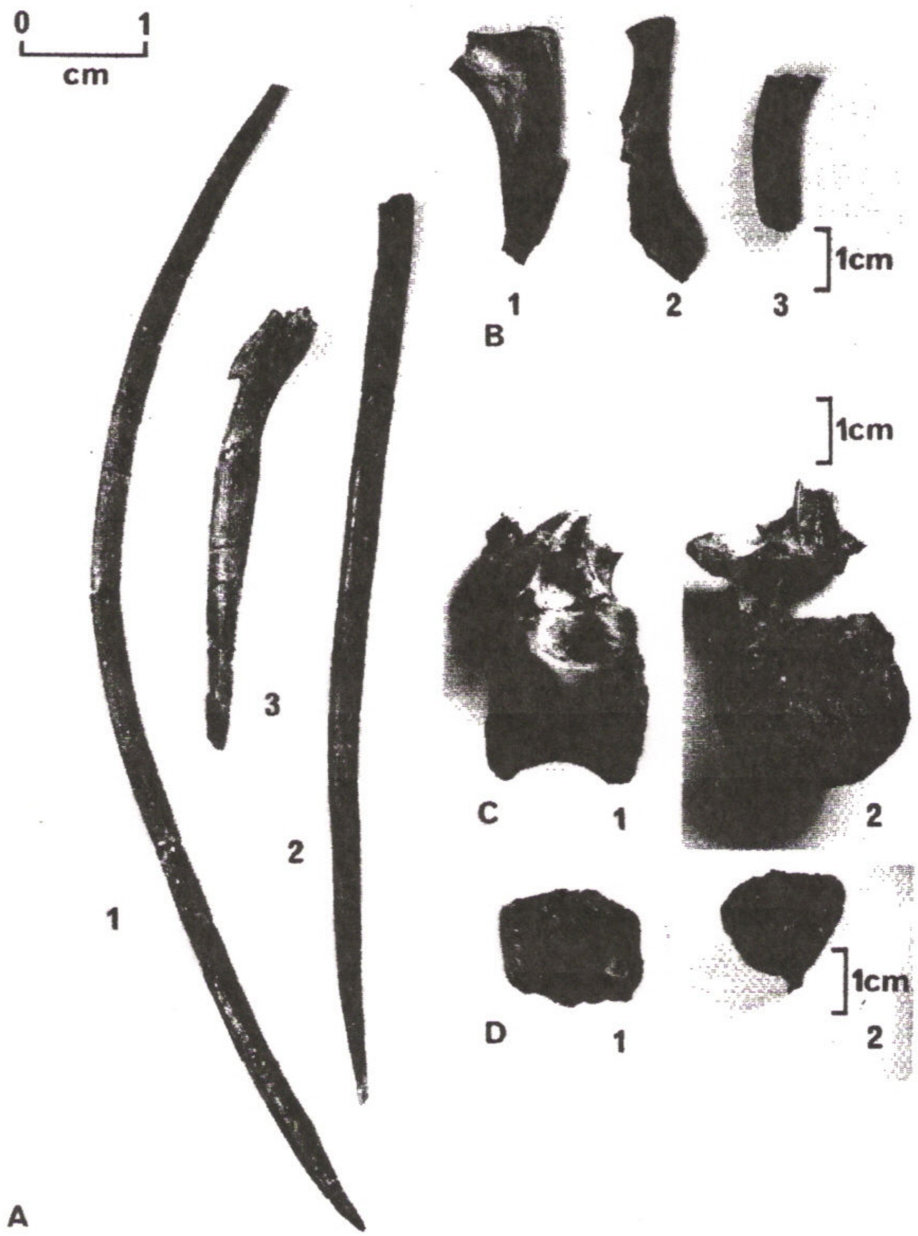


Plate 6. ***Saurornitholestes langstoni*, sp. nov.**, holotype. A. Gastralia: 1-2, lateral segments of gastralia "ribs"; 3, medial segment of a gastralia "rib". B. Fragments of thoracic ribs: 1, head of a mid-dorsal rib; 2, head of an anterior dorsal rib; 3, shaft fragment. C. Posterior dorsal vertebra: 1, right side; 2, anterior view. D. Centrum of a ?first ?dorsal vertebra: 1, left side; 2, anterior view.

An incomplete centrum shows roughly triangular surfaces for intercentral articulation. The posterior surface is incompletely preserved dorsally but appears to be slightly higher than the anterior one. The centrum is constricted at mid-length. A large, subcircular pleurocoel (quite different from the pleurocoels on vertebrae of *Deinonychus* (see Ostrom, 1969)) is situated near the posterior end of the lateral surface of the centrum. A ventral keel is present. The centrum is 18 mm long, 13 mm high anteriorly and its maximum width anteriorly is *c.* 13 mm. There is some resemblance to the first dorsal ("cervicodorsal") vertebra of *Deinonychus* (Ostrom, 1969: 53) in the presence of a ventral keel and the shape of the anterior surface of the centrum, but the specimen under discussion differs with regard to the shape and position of the pleurocoel and in being relatively longer than high.

Ribs. Ribs are represented by two incomplete rib-heads and several shaft fragments. In the more completely preserved rib-head the capitular process seems to be longer than the tubercular process but the latter is incomplete. The surface of the capitulum is oval, convex and smooth. The surface of the tubercular process is situated above and is widely separated (*c.* 20 mm) from that of the capitular process. The separation of the capitular and tubercular surfaces suggests that the rib-head probably belongs to a more anterior rib. It differs from the heads of the dorsal ribs of *Deinonychus* described by Ostrom (1969) in that the tubercular process is directed posteriorly. In the other rib-head part of the capitular process is broken off but the tubercular process is preserved. The tuberculum is situated posteriorly to the capitulum and the tubercular process is only very small. The adjacent, expanded proximal part of the rib-shaft is an extremely thin lamina of bone. The marked similarity between the fragment and a mid-dorsal rib (YPM 5249) of *Deinonychus* suggests reference of the rib-head to a mid-dorsal rib.

Gastralia. An almost complete, broadly curved rib-like bone and a large part of another probably represent segments of gastralia "ribs". They are slender rods, tapering toward both ends and oval in transverse section at mid-length. A similar element in *Stenonychosaurus* (Russell, 1969: fig. 8) is more robust and shows much stronger curvature.

One incomplete, somewhat flattened rod with an expanded articular surface at the preserved end shows resemblance to a medial segment of a gastralia rib of *Deinonychus* illustrated by Ostrom (1969: fig. 52C, D).

Manus. Remains of all three digits of the left manus are available. Identifications were made on the basis of comparison with excellent casts of the elements of the left manus of *Deinonychus* (YPM 5206 and YPM 5215), generously forwarded by Dr J. H. Ostrom. The three unguals (one of them lacking the distal extremity) clearly belong to the manus, as shown by the position of the proximal articular facet. They very closely resemble those of the manus of *Deinonychus.* The unguals are large, strongly curved, laterally compressed and stoutly constructed. The articular facets are well-defined and ridged. A large flexor tubercle (for attachment of strong flexor muscles) projects ventrally well below the inferior border of the articular facet and shows a rugose surface. Laterally the unguals show a deep groove extending from the base of the proximal articular facet to the tapering distal extremity on each side. The ungual phalanges 3 of digit II and 4 of digit III appear to be subequal in size.

A distal part of a long and slender bone shows some resemblance to the metacarpal III of *Deinonychus* and is identified as third metacarpal *faute de mieux*. Its distal end is expanded transversely and vertically, and the medial and lateral margins of the articular surface are separated by a shallow groove. The articular surface is not as rounded as in the corresponding element in *Deinonychus*.

All phalanges show well-defined and highly finished surfaces for interphalangeal articulation and deep, subcircular fossae (for attachment of collateral ligaments) on each side of the distal articular ends.

Digit I is represented by the distal end of phalanx 1 and phalanx 2 (ungual). The first phalanx shows a deeply grooved articular facet at its distal end, which is only slightly asymmetrical. Thus, only slight rotation of the claw during flexion occurred (as in *Deinonychus;* Ostrom, 1969: 105).

Digit II is known from the distal end of the penultimate phalanx (2) and Phalanx 3 (ungual). The distal end of the second phalanx is deeply grooved, markedly asymmetrical and slightly inclined with respect to the ridge on the proximal articulation facet of the ungual, permitting supination of the claw during flexion.

Digit III is documented by the distal part of phalanx 1, phalanx 3 (almost complete) and phalanx 4 (ungual). The first phalanx is very short and stout and has an asymmetrical distal facet. As in the corresponding phalanx of *Deinonychus,* the condyles of the articular facet extend further back ventrally than dorsally. The lateral condyle is larger than the median condyle and is less rounded in lateral view. The penultimate phalanx is elongate. Obviously, the third digit shows the same peculiar arrangement of phalanges as that described in *Deinonychus* (Ostrom, 1969: 107).

The manus appears to be highly complex in its structure, well adapted to powerful grasping, and might be regarded as a "miniature edition" of the manus of *Deinonychus* (Fig. 4).

Most of the corresponding elements of the manus of *Stenonychosaurus* are unknown. A manus claw figured by Russell (1969, fig. 10D) is too incomplete to warrant comparison. Sternberg (1932, pl. 2, fig. 2) figured the distal end of phalanx 2 of digit II (now apparently lost), which resembles the corresponding element in ***Saurornitholestes*** in its structure.

TAXONOMIC DISCUSSION

There are several small to medium-sized Judithian theropods, to which ***Saurornitholestes langstoni*** has been compared: *Stenonychosaurus inequalis* Sternberg, 1932; *Dromaeosaurus albertensis* Matthew & Brown, 1922 and *Chirostenotes pergracilis* Gilmore, 1924.

Stenonychosaurus inequalis is relatively well known from cranial and postcranial material, thoroughly described by Russell (1969).

Dromaeosaurus albertensis, redescribed by Colbert & Russell (1969), is known from the holotype, consisting of an incomplete skull, some hyoid bones and a few scattered bones of the left pes (AMNH 5356); furthermore, a left frontal (NMC 12349) and a few pedal unguals can be referred to this species.

Chirostenotes pergracilis is based on associated left and right manus (NMC 2367); Gilmore (1924) refers two extremely long and slender dentaries,

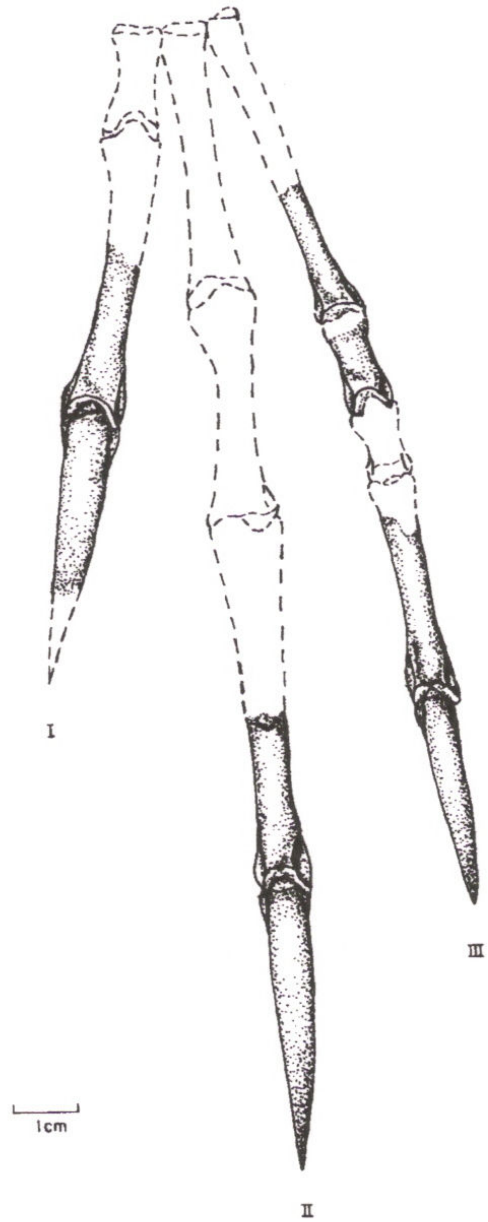


Figure 5. ***Saurornitholestes langstoni*, sp. nov.** Holotype, left manus (reconstructed; preserved parts shaded, proportions from *Deinonychus* and *Velociraptor*).

obtained from a different locality three years after the discovery of the holotype, to *Chirostenotes*—a procedure not substantiated by any evidence. Perhaps these dentaries belong to the same taxon as an elongate frontal (NMC 12355).

Comparison is restricted to frontals, teeth and phalanges of the manus, although not even all of these elements are known for all three species.

The frontal of ***Saurornitholestes*** shows resemblance to that of *Stenonychosaurus* in its general outline and its relationships to the surrounding

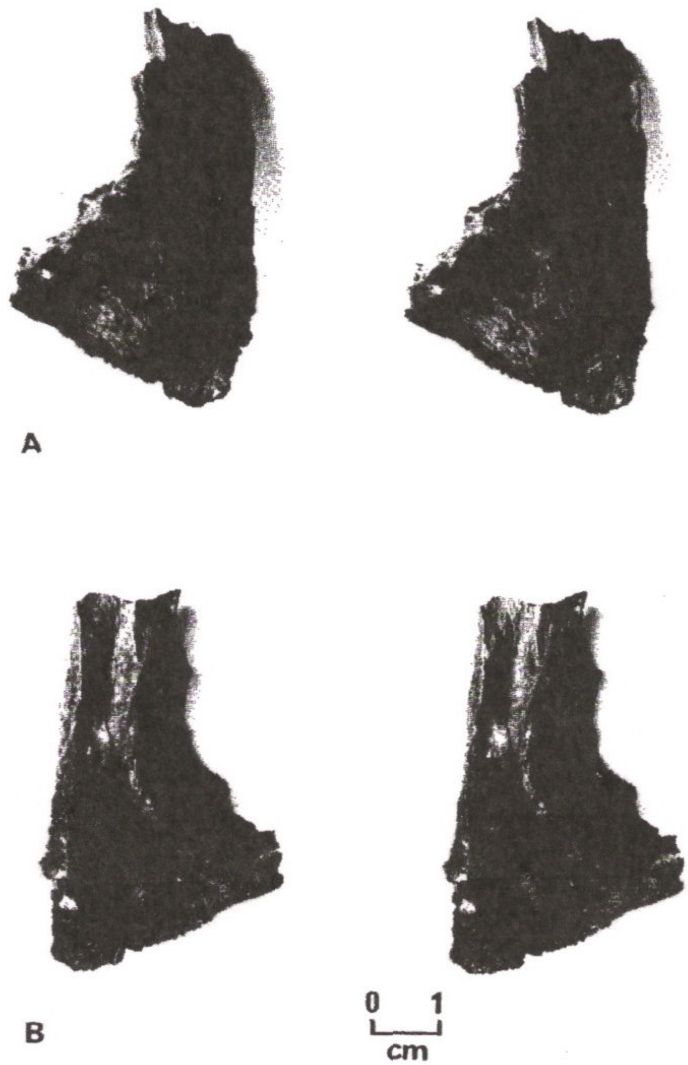


Plate 7. *Dromaeosaurus albertensis.* Stereophotographs of a left frontal (NMC 12349), for comparison with Plate 1: A, dorsal view; B, ventral view.

elements (as indicated by the facets for articulation on the frontal). Certain differences, e.g. the lack of a crest between frontal and parietal and the absence of depressions between the median suture and the orbital rims, *per se* could be initially regarded as ontogenetic differences, considering the small size of the specimens. The features of the posterior part of the frontal, however, are too distinct to be explained as such differences.

A striking difference to any frontal of *Stenonychosaurus* (based on personal observations and (for NMC 12340) the figures given by Russell (1969)), ruling out reference to that genus, is the shape of the endocranial cavity, which closely resembles that of *Dromaeosaurus* (NMC 12349). Reference to *Dromaeosaurus*, on the other hand, is precluded by fundamental differences in

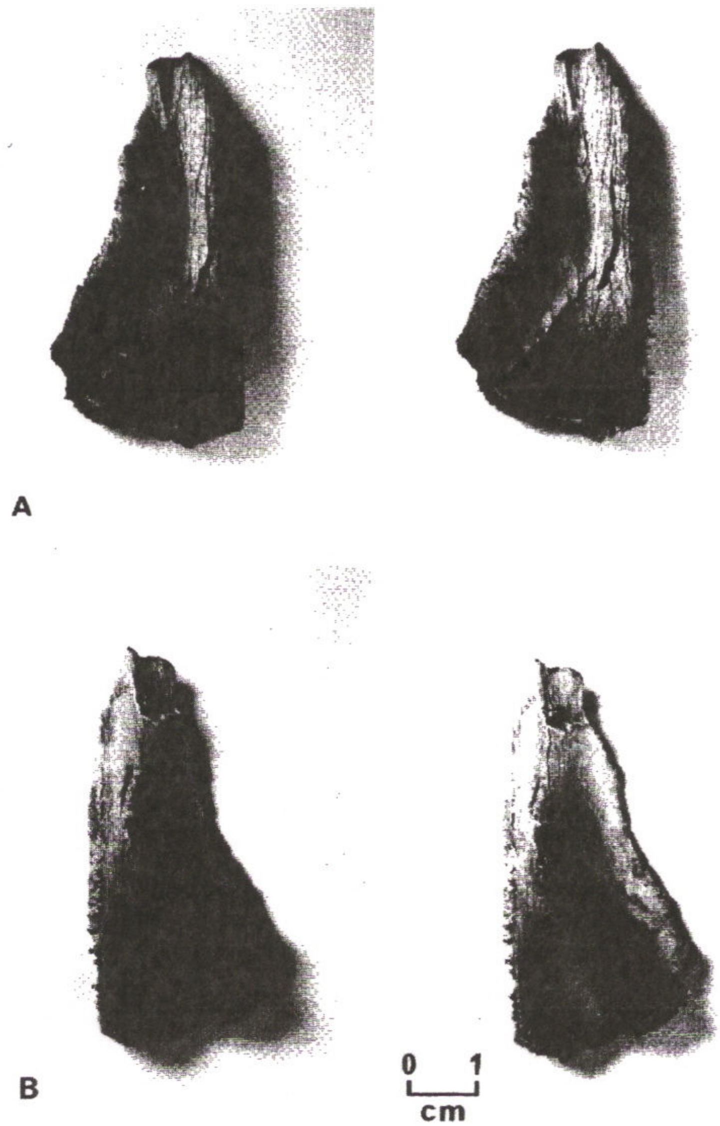


Plate 8. Gen. et sp. indet. Stereophotographs of a left frontal (NMC 12355), for comparison with Plate 1: A, dorsal view; B, ventral view.

most other aspects of the frontal. The frontal of *Dromaeosaurus* is massively constructed. The orbital margins parallel each other. The frontal is lightly basined between the orbital rim and the median suture. The nasal extends far posteromedially onto the frontal and leaves a very distinct, broadly V-shaped facet. The anterodorsal limit of the supratemporal fenestra is formed by a ridge curving posteromedially to approach rapidly the median suture at the contact of frontal and parietal (see Plate 7).

The third type of frontals of small "deinonychosaurian" theropods from the Judith River Formation of Alberta is documented by NMC 12355 (here figured as "gen. et sp. indet."), which is similar to the frontal of *Stenonychosaurus* but differs in being relatively more elongate. It differs from the frontal of ***Saurornitholestes*** in the same features as does *Stenonychosaurus* (see Plate 8).

The teeth of ***Saurornitholestes*** are different from those of *Dromaeosaurus* and *Saurornithoides*, a genus very closely related (if not identical) to *Stenonychosaurus*, as already shown above. Direct comparison with *Stenonychosaurus* is not possible due to the lack of teeth definitely referable to *Stenonychosaurus*. None of the two types of small theropod teeth from the Judith River Formation, which are possibly referable to *Stenonychosaurus* (Sues, 1977), is similar to the teeth of ***Saurornitholestes***.

The unguals are not strikingly different from those of any other dromaeosaurid or saurornithoidid described. Only the enigmatic *Chirostenotes* (a genus of problematical affinities) differs in having longer and less recurved claws, a less prominent flexor tubercle and in lacking a secant cutting ventral edge of the unguals; a characteristic feature is the presence of a prominent dorsoposterior extensor crest (Gilmore, 1924; pers. obs. on P67.19.147; D. A. Russell, in litt.).

Considering the differences to other Judithian theropods of similar size presently known, which are ruling out reference of the new specimen to any previously described genus, I have taken the approach to consider it to represent a new genus.

On the basis of its similarity to *Stenonychosaurus* in several features of the frontal I originally referred this genus to the Saurornithoididae. However, ***Saurornitholestes*** resembles *Dromaeosaurus* in the shape of the endocranial cavity, and the structure of the teeth of ***Saurornitholestes*** approaches the dromaeosaurid pattern more closely than the saurornithoidid pattern, supporting assignment to the Dromaeosauridae.

Ostrom (1969 and in litt.) only recognizes one family Dromaeosauridae within the "deinonychosaurian" theropods, distinguished from all other small to medium-sized theropods by the possession of the highly specialized second digit of the pes. Various differences in the skull and pes (Russell, 1969; Barsbold, 1974) support a distinction of *Saurornithoides* and *Stenonychosaurus* on one hand and *Deinonychus, Dromaeosaurus* and *Velociraptor* on the other at the suprageneric level, at least at the level of subfamilies (a solution which would be accepted by Ostrom (in litt.) to express the differences between the two groups). I maintain a separation at the family level, as proposed by Russell (1969 ("Troodontidae") and in litt.) and Barsbold (1974). However, the main difference between the Dromaeosauridae and Saurornithoididae, as conceived by Barsbold (1974), is the presence of strongly elongated prezygapophyses and chevrons provided with rod-like ossified tendons in the tail of the genera referred to the former family (*Deinonychus*, see Ostrom (1969: 60-80, figs 35-37); *Velociraptor*, see Kielan-Jaworowska & Barsbold (1972: pl. 2, fig. 2)). The absence of these structures in the tail of the holotype specimen of *Saurornithoides junior* is probably only an artifact of preservation (Ostrom, in litt.); examination of Barsbold's illustrations of the caudal vertebrae (Barsbold, 1974: pl. 4, fig. 3b, c) reveals that the chevrons are dorsoventrally compressed as in *Deinonychus* and *Velociraptor* and that this feature already occurs on the 11th caudal vertebra – unlike non-deinonychosaurian theropods (Ostrom, in litt.) but as in *Deinonychus* and *Velociraptor*.

Saurornitholestes is referred to the Dromaeosauridae in this paper but further material of the skull and pes might favor assignment to the Saurornithoididae.

At least two dromaeosaurid genera are now reasonably well documented from the Upper Cretaceous of North America.

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