P. M. Currie and E. H. Koster (eds.), 4th Symposium on Mesozoic Terrestrial Ecosystems, Drumheller: Short Papers: Occasional Papers of the Tyrell Museum of Palaeontology., v. 3, p. 205-207.

A diapsid faunule from the Lower Jurassic of Nova Scotia, Canada. H.-D. Sues (Montreal, Quebec), P.E. Olsen (Palisades, New York), and N.H. Shubin (Cambridge, Massachusetts).

Recent discoveries of Early Jurassic vertebrates from the McCoy Brook Formation (Fundy Group) of Nova Scotia, Canada (OLSEN et al., MS.) provide a test for the hypothesis of faunal change at the Triassic-Jurassic boundary recently proposed by OLSEN and SUES (1986). They are remarkable for the numerical abundance and quality of preservation of the bones, the lithological diversity of fossil-bearing deposits, and the excellent degree of stratigraphic resolution. The vertebrate remains from the McCoy Brook Formation currently represent the oldest well-dated terrestrial tetrapod assemblage from the Jurassic.

The Fundy Group of the Newark Supergroup is a 1000 m thick sequence of red clastic sediments, minor strata of carbonates, and extrusive tholeiitic basalts. Vertebrate remains occur in the basal portion of the 200+ m thick McCoy Brook Formation, the youngest formation of the Fundy Group. The bone-bearing strata fill a penecontemporaneously faulted, irregular upper surface of the North Mountain Basalt.

Vertebrate fossils occur in four different types of facies within the McCoy Brook Formation at Wasson Bluff near Parrsboro (Minas Basin): 1) a brown fluviolacustrine sandstone with remains of protosuchid crocodilians and sphenodontians; 2) thin beds of brown sandstone with basalt clasts and siltstone chips, sandwiched between eolian deposits dominated by prosauropod dinosaurs and sphenodontians; 3) basalt agglomerate with red mudstone matrix containing bones of tritheledontid synapsids and protosuchid and sphenosuchid crocodylomorphs; and 4) a lacustrine limestone and interbedded basalt agglomerate with semionotid fishes and ornithischian dinosaurs.

Palynofloras dominated by Corollina meyeriana, radiometric dates for the North Mountain Basalt, and comparisons of the reptilian footprint assemblages with those from other basins of the Newark Supergroup strongly suggest an Early Jurassic, specifically Hettangian, date for the lower portion of the McCoy Brook Formation. Characteristic Late Triassic archosaurs such as phytosaurs, aetosaurs, ornithosuchians and rauisuchians all appear to be absent from the new assemblages.

In addition to tritheledontid synapsids, remains of sphenodontian lepidosaurs, crocodylomorph archosaurs, and dinosaurs have been recovered to date. Most specimens are well-preserved but disarticulated bones. An incomplete skeleton of an anchisaurid prosauropod and a virtually uncrushed partial skull and mandible of a sphenodontid represent notable exceptions.

Much of the material has yet to be prepared and catalogued, and this paper only constitutes a preliminary report.

Sphenodontia are represented by two taxa, aff. Sigmala sp. and cf. Pelecymala sp. The former is much more common than the latter and is documented by numerous jaws and jaw fragments. An admirably preserved partial skull is also referable to this form. The posterior (additional) teeth of cf. Pelecymala sp. have large, transversely broadened crowns and closely resemble those of P. robustus FRASER, 1986 from allegedly Triassic fissure fillings in England.

Skeletal remains of crocodylomorph archosaurs are especially abundant. In addition to countless isolated scutes, protosuchid crocodilians are documented especially by dentaries. The robust dentary is characterized by the presence of two prominent "pseudocanines" in positions 3 and 4, reminiscent of the condition in the Paleogene eusuchian Diplocynodon, and a corresponding "bulge" in the lateral margin of the dentary. The alveoli for the small teeth in positions 1 and 2 point distinctly forward. The teeth behind the "pseudocanines" have smaller, somewhat lanceolate crowns. The anterior and posterior edges of the crowns of all known teeth are serrated. Several partial braincases and numerous isolated, distinctively sculptured skull elements will permit a comprehensive anatomical survey of the skull in this protosuchid, which probably represents a new genus. Considerable structural diversity among the osteoderms hints at the possible existence of more than one species in the crocodilian material from the McCoy Brook Formation. Sphenosuchid crocodylomorphs are documented by a number of isolated maxillae and a crushed snout to date. The maxillae are characterized by the development of a large antorbital fossa and fenestra and closely resemble the corresponding element in Terrestrisuchus (CRUSH 1984: fig. 2). The teeth have recurved crowns with finely serrated edges. Numerous isolated postcranial elements of Crocodylomorpha from the McCoy Brook Formation are referable to either Protosuchidae or Sphenosuchidae. Extensive osteological comparisons are needed to establish their proper identification.

Dinosauria are represented by an anchisaurid prosauropod, a small theropod, and one or more small ornithischians. The anchisaurid is documented by an incomplete skeleton, which includes parts of the skull and a set of well-polished pebbles that possibly represent the remains of a gastric mill. The ornithischians are known from very distinctive teeth and from fragmentary postcranial elements.

The tetrapods from the McCoy Brook Formation are of considerable paleobiogeographic interest. The tritheledontid synapsid Pachygenelus is known from the upper Stormberg Group of southern Africa. [A record of this genus from the Late Triassic Dockum Formation of Texas (CHATTERJEE 1983) requires further corroboration.] The sphenodontids are extremely similar to Sigmala sigmala and Pelecymala robustus from fissure-filling assemblages of south Gloucestershire, England (FRASER 1986). Representatives of Anchisauridae, Protosuchidae, and Sphenosuchidae are known from every continent except Australia and Antarctica. The new material provides further evidence for

faunal homogeneity of terrestrial tetrapod communities across Pangea during the Early Jurassic (see OLSEN and SUES 1986).

The new discoveries strongly support a "sudden" major extinction event at the Triassic-Jurassic boundary that affected terrestrial biota (OLSEN & SUES 1986; OLSEN et al., MS.). Earliest Jurassic faunas are characterized only by the absence of tetrapod taxa characteristic of the preceding Norian stage.

Acknowledgments: We are indebted to the Government of Canada and to the authorities of the Nova Scotia Museum (Halifax), especially R. OGILVIE and R. GRANTHAM, for permission to collect in Nova Scotia and to the latter for continuing assistance. Field-work was supported by the National Geographic Society (Grant #3107-85).

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