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NEW DATA ON THE ANATOMY AND BIOGEOGRAPHY OF THE DREPANOSAURIDAE

Drepanosaurids are a group of Late Triassic diapsid reptiles, all sharing adaptations to scansorial (arboreal?) life. The family Drepanosauridae was erected by Olsen and Sues in 1986 but a formal diagnosis was given by Berman & Reisz in 1992 and emended by Renesto (2000). The family Drepanosauridae includes the genera *Drepanosaurus* (Pinna, 1980) and *Megalancosaurus* (Renesto, 1994a) from Northern Italy, *Dolabrosaurus* (Berman & Reisz, 1992) from the Dockum Formation (USA). Recently Colbert and Olsen (2001) showed that *Hypuronector*, the small tetrapod from the Newark Supergroup that for many years was informally known as the "Deep Tailed Swimmer" (Olsen, 1980), is a drepanosaurid. Another undescribed small reptile (labelled as MCSNB 4751) from the Late Triassic Calcare di Zorzino (Northern Italy), is undoubtedly a drepanosaurid (Renesto, 2000) distinct from *Drepanosaurus* and *Megalancosaurus*. Also an isolated shoulder girdle from Chinle Formation has been attributed to drepanosaurids (Harris & Down, 2002).

The basic morphology is similar in all known drepanosaurid genera (Berman & Reisz, 1992; Renesto, 1994a, b; Renesto, 2000; Colbert & Olsen, 2001). All are small to medium sized (10 –50 cm) diapsid reptiles sharing the following characters: barrel shaped trunk followed by a long, deep, laterally compressed "leaf"-like tail; dorsal vertebrae with high neural spines (in some taxa the anterior dorsal vertebrae are anteroposteriorly expanded at their distal end); zygapophyses lying very close to midline; caudal vertebrae with very deep haemal spines and with prezygapophyses overlapping nearly half the length of the preceding centra; ribs mostly holocephalous, slender and triangular in section; gastralia absent; shoulder girdle with a very high, narrow, rod-like scapula, gently bent anteriorly; coracoid flat, somewhat expanded posteriorly; pelvic girdle with a high iliac blade, a rather narrow pubis and an ischium that is elongate posteriorly; femoral shaft lacking sigmoid curvature, tarsus and carpus modified to allow high mobility of both manus and pes (Renesto 1994a, b, 2000); fifth metatarsal straight; narrow, very long ungual with well developed flexor processes.

More recently, new studies increased substantially the knowledge about drepanosaurid anatomy and biogeography.

An investigation of the holotype of *Megalancosaurus* provided new data about the pattern of the skull (so far undescribed) of this specimen, which, along with yet known data from the other *Megalancosaurus* specimen with cranial elements preserved, allowed to attempt a much more informative reconstruction of the skull of this genus (Renesto & Dalla Vecchia, work in progress). *Megalancosaurus* skull shows premaxillae with a very elongate dorsal projection which fit among elongate nasals, the

quadrate is also elongate and rod-like. This pattern recalls basal pterosaur. No antorbital fenestra is present, however.

The geographical distribution of drepanosaurids has been further increased by the recognizing some isolated cervical vertebrae and a maxilla from the Late Triassic Fissure Fillings from Cromhall UK, which were considered of uncertain affinities, can now be attributed with confidence to a drepanosaurid. As previously noted by Fraser (1988) the Cromhall vertebra, AUP 11362, shares some similarities with the cervical vertebrae of pterodactyloid pterosaurs, but there are some important morphological differences. By contrast, when compared with the cervical vertebrae of *Megalancosaurus* and *Drepanosaurus* the similarity is much closer.

It is also probable that the isolated maxilla AUP 11293 from Cromhall belongs to a drepanosaurid, its morphology is nearly identical to that of specimen MCSNB 4751.

REFERENCES

- BERMAN D. S. & REISZ R., 1992 - *Dolabrosaurus aquatilis*, a small lepidosauromorph reptile from the Upper Triassic Chinle Formation of North central New Mexico. *Journal of Paleontology*, 66: 1001-1009.
- COLBERT E. H. & OLSEN P. E., 2001 - A New and Unusual Aquatic Reptile from the Lockatong Formation of New Jersey (Late Triassic, Newark Supergroup). *Novitates No. 3334*: p. 1-24
- FRASER N. C., 1988 - Rare tetrapods remains from the late Triassic Fissure Infillings of Cromhall Quarry, Avon. *Paleontology* 31:567-576
- HARRIS J.D. & DOWNS A., 2002 - A drepanourid pectoral girdle from the Ghost Ranch (Whitaker) *Coelophysis* Quarry (Chinle Group, Rock Point Formation, Rhaetian), New Mexico. *Journal of Vertebrate Paleontology* 22: 70-75.
- OLSEN P. E., 1980 - A comparison of the Vertebrate Assemblages from the Newark and Hatford basins (Early Mesozoic, Newark Supergroup) of eastern North America. pp. 35-53 in Jacobs L. L. (ed.) *Aspects of Vertebrate History: Essays in Honour of Edwin Harris Colbert*. Museum of Northern Arizona Press, Flagstaff.
- PINNA G., 1980 - *Drepanosaurus unguicaudatus*, nuovo genere e nuova specie di Lepidosauro del trias alpino. *Atti Soc. It. Sc. Nat.*, v. 121: pp.181-192, Milano.
- RENESTO S., 1994a - A reinterpretation of the shoulder girdle and anterior limb of *Drepanosaurus unguicaudatus* (Reptilia, Diapsida). *Zoological Journal of the Linnean Society* 111: 247-264.
- RENESTO S., 1994b - *Megalancosaurus preonensis*, a possibly arboreal archosauromorph from the Norian (Late Triassic) of Northern Italy. *Journal of Vertebrate Palaeontology* 14: 38-52.
- RENESTO S., 2000 - Bird-like head on a chameleon body: new specimens of the enigmatic diapsid reptile *Megalancosaurus* from the Late Triassic of Northern Italy, *Rivista Italiana di Paleontologia e Stratigrafia* 106:157-180.

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