



Gondwana 12

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A new vertebrate ichnocoenosis from the Triassic of Brazil

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Vertebrate fossils are well known in Triassic rocks from Southern Brazil, mainly in Santa Maria and Caturrita Formations (Ladinian-Norian, Paraná Basin). This paleofauna is composed by therapsids, archosaurs, lepidosaurs, rhynchosaurs and dinosaurs, and most of them consists of medium to large animals represented by skeletons and coprolites. There are few records of small vertebrates in these formations and footprints have not yet been described. Recently, a rich ichnofauna produced by small vertebrates was found in an outcrop of the Caturrita Formation at São João do Polêsine County, Rio Grande do Sul State, Brazil. This study record the occurrence of these footprints and make a preliminary ichnotaxonomic and morphologic analysis. The material was housed at the paleontological collection of Fundação Zoobotânica do Rio Grande do Sul and consists in about 30 slabs with footprints preserved as concave epirelief and convex hyporelief. The ichnofossils occurs in thin layers reddish siltstones-sandstone and mudstones with mud cracks and invertebrate traces. Four morphological kinds of footprints were identified: mammaloid footprints, half-swimming traces and two lacertoid morphotypes. The mammaloid footprints are pentadactyl, plantigrade or semi-plantigrade and mesaxonic; the digit V is smaller than digits I to IV, all of them are straight; the sole-pad can present a posterior projection like in *Dicynodontipus* Rühle von Lilienstern, 1944 or *Gallegosichnus* Casamiquela, 1964; the footprint length is about 0.3 to 0.8 cm; there are no evidence of claws or digital pads. This footprints are very similar to *Ameghinichnus garridoi* Casamiquela, 1964 in walking gait. The half-swimming traces have some recognizable features like elongation of traces, refleture of digits, impression of distal digits, trace lengths excessively variable compared to widths and depth of the mark corresponding to arc of digit. Both the morphotypes of lacertoid footprints are pentadactyl, digitigrade or semi-plantigrade, assymmetric and ectaxonic, with the digits increasing in length from I to IV and the digit V smaller, with a larger digital angle between digits IV and V. They may be attributed to *Rhynchosauroides* Maidwell, 1911, perhaps to new ichnospecies. The first morphotype is smaller than the second and there are trackways showing walking gait, normal pace and a sinuous tail drag; the footprint length is about 0.5 to 0.9 cm; the digits are curved and slender with claw marks; some of this tracks have drag marks of the hands and the feet axis are turned to a lateral-posterior position. The second morphotype are constituted by isolated footprints; the digits are straight and slender, with claw marks; the digits II, III and IV are more depth; the footprint length is about 1.5 cm. The mammaloid footprints were possibly made by early mammals or advanced therapsids (Cynodontia) and are very close to some ichnogenera from Triassic and Jurassic of Argentina, therefore they can become a possible correlation element in gondwanic rocks. The half-swimming traces occurs in the same levels of the others footprints and probably were produced in very shallow water, such as small pools, by floating animals that make progress setting the tips of the fingers against the bottom. The lacertoid footprints can be attributed to sphenodontids, which skeletons are found in Caturrita Formation. The study of this ichnocoenosis can bring a better knowledge about biomechanics and the early evolution of locomotion of mammals and sphenodontids on Gondwana.

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Casamiquela, R.M., 1964, Estudios Icnológicos: Buenos Aires: Colegio Industrial Pio IX, 229 p.

Maidwell, F.T., 1911, Notes on footprints from the Keuper of Runcorn Hill: Proceedings of the Liverpool Geological Society, v. 11, n. 2, p. 140-152.

Rühle von Lilienstern, H., 1944, Eine Dicynodontierfährten aus dem Chirotheriumsandstein von Hessberg: Paläontologische Zeitschrift, v. 23, p. 368-385.