FIRST RECORD AND A NEW SPECIES OF SERIEMA (AVES: RALLIFORMES: CARIAMIDAE) FROM SANTACRUCIAN (EARLY-MIDDLE MIocene) BEDS OF PATAGONIA

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Living seriemas (Ralliformes, Cariamidae) are long-legged cursorial birds that comprise only two very closely related, and perhaps congeneric, species (Gonzaga, 1996): Cariama cristata and Chunga burmeisteri. They are endemic to South America and may represent surviving Neotropical relics of an early ralliform radiation within the suborder Cariamae.

Phorusrhacids, idiornithids, and bathornithids are also extinct components of ralliforma, a large terrestrial stock of predators or scavenger birds, which were abundant during the Tertiary of South and North America, and Europe (Mourer Chauvire, 1981, 1983; Alvarenga and Höffling, 2003). The phylogenetic relationships and paleobiogeographic history of phorusrhacids, idiornithids, and bathornithids are still far from being resolved. Tertiary fossils of the caramid subtaxon Cariamae are scarce and restricted to the questionable record of Riacama caliginosa Ameghino 1899 from the late Oligocene (Deseadan age) of Santa Cruz Province (see Brodkorb, 1967; Tonni, 1980; Tambussi and Noriega, 1996; Agnolin, 2004), and the early-middle Pliocene (Montehermosan age) record of Chunga incerta Tonni (1974) from Buenos Aires Province, both in Argentina.

In this contribution we present new remains of seriema recovered in 2005 by a joint expedition of the Museo de La Plata, Argentina, and Duke University, USA. They come from the middle levels of the Santa Cruz Formation (Upper-middle Miocene) along the Atlantic coast of southernmost continental Patagonia, Argentina, between the Coyle and Gallegos rivers. These localities are situated at about 52 degrees South latitude, about 100 km north to the Magallanes Strait (Fig. 1).

In the mentioned area, the Santa Cruz Formation bears a terrestrial vertebrate fauna exceptional in its richness with over 70 species recorded in about 30 fossiliferous levels (Tauber, 1997a, Tauber 1997b; Tauber et al., 2004) that represents the richest assemblage of pre-Pleistocene mammalian skulls and articulated skeletons known in the continent (Hatcher, 1903). A description of the localities and horizons that produced the fossils reported here is provided in the following section.

Although still far fewer than mammals, these localities have provided quite a number of bird remains. Many of them were described and beautifully figured in the extensive Reports of the Princeton University Expeditions to Patagonia (Sinclair and Farr, 1932). They include Phorusrhacos longissimus Ameghino 1887, Brontornis burmeisteri Moreno and Mercerat 1891, Patagornis marshi Moreno and Mercerat 1891, Psilopterus bachmanni (Moreno and Mercerat 1891), and Psilopterus lemoinei (Moreno and Mercerat 1891), among the Phorusrhacids. Other bird taxa recorded at the Santa Cruz Formation include Tinamidae (Chiappe, 1991), Rheidae (Opipithodactylus patagonicus Ameghino 1891), Pelecanidae (Liptornis hesternus Ameghino 1895), Plataleidae (Protilis crenialis Ameghino 1891), Anatidae (Eoneornis australis Ameghino 1895; Euteulornis patagonicus Ameghino 1895), Aramidae (Anisoleornis excavatus Ameghino 1891), and Falconiformes (Radiostes patagonicus Ameghino 1895; Thegornis debilis Ameghino 1895 and T. musculus Ameghino 1899). Most of these taxa were erected on the basis of very fragmentary and eroded specimens, together with brief and poorly illustrated descriptions, that make difficult to assess their validity (Olson, 1981, 1985; Tonni, 1980; Tambussi and Noriega, 1996). Some of them have been recently revised (Alvarenga and Höffling, 2003; Agnolin, 2004, 2006, 2007).

LOCALITY AND HORIZON

The Santa Cruz Formation is developed over much of the south of Patagonian Argentina, along the Atlantic coast and in adjacent estuaries (Bown and Fleagle, 1993; Tauber, 1997a; Kay et al. in press). Coastal Santa Cruz rocks are a sequence of superimposed mudstones of volcanoclastic origin containing immature paleosoils laid down on a coastal plain with sand bodies and pebbles, representing river channels and some relatively unaltered tuffs (Bown and Fleagle, 1993). Bown and Fleagle (1993) described the lithology of the Santa Cruz Formation at Monte León and Monte Observación, north of Coyle River.

Following Vizcaíno et al. (2006) and Kay et al. (in press), the lithology of the coastal localities of the Santa Cruz Formation south of Coyle river and north of Gallegos river is more complicated than that at Monte León and Monte Observación. Tauber (1997a) and Tauber et al. (2004) recognize two members containing 30 fossiliferous levels. The lower Estancia La Costa Member, very fossiliferous, is characterized by predominance of pyroclastic deposits, claystones and mudstones, and the upper Estancia La Angelina Member, with very few fossils, is chiefly composed of claystones, mudstones and sandstones (Fig. 2). The lithology and fossil content of the Estancia La Costa Member is most similar to that of the Santacrucian rocks at Monte León and Monte Observación (Tauber, 1997a).

At Monte Observación and Monte León, several 40Ar/39Ar dates and a short magnetostatigraphic section bear upon the age of the Santa Cruz Formation (Bown and Fleagle, 1993; Fleagle et al., 1995). It ranges between 16.42 Ma and 16.15 Ma in the lower one-third of the fossiliferous levels at Monte Observación and between 16.56 Ma and 16.28 Ma at Monte León. The dates permit the assignment of bulk of the coastal Santacrucian faunas to an early-middle Miocene age. Fleagle et al. (1995) report a magnetostatigraphy of Santa Cruz rocks that begins with a reversed interval, followed by a normal and a reversed interval at the top, consistent with a relatively short temporal interval obtained from the radiometric dates.

The ages of the stratigraphic units below and above the Santa Cruz Formation are consistent with the proposed early-middle Miocene age for this formation (Vizcaíno et al. 2006). A tuff bed in the underlying Monte León Formation yields a date of 19.33 Ma (Fleagle et al., 1995), a date consistent with an early Miocene age of the molluscan assemblage from that formation (del Río, 2004). Southward towards Cabo Buen Tiempo at the mouth of the estuary of Gallegos river, the Santa Cruz Formation is capped by the Fairweather Formation of Pliocene age.

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