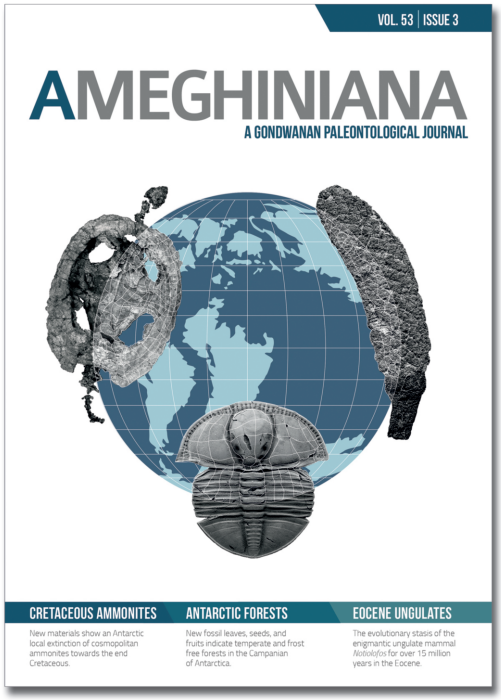
AMEGHINIANA
A GONDWANAN PALEONTOLOGICAL JOURNAL



GONDWANAN PERSPECTIVES: CRETACEOUS–PALEOGENE BIOTA OF WEST ANTARCTICA

MARCELO A. REGUERO[1,2]
EDUARDO B. OLIVERO[3]
DIEGO POL[4]

[1]Instituto Antártico Argentino, Instituto Antártico Argentino, 25 de Mayo 1151 CP 1650, San Martín, Argentina.
[2]División Paleontología Vertebrados, Museo de La Plata, Universidad Nacional de La Plata, Paseo del Bosque s/n., B1900FWA, La Plata, Argentina. CONICET.
[3]Centro Austral de Investigaciones Científicas, Consejo Nacional de Investigaciones Científicas y Técnicas, 9410 Ushuaia, Tierra del Fuego, Argentina. CONICET.
[4]Museo Paleontológico Egidio Feruglio, Trelew 9100, Chubut, Argentina. CONICET.

To cite this article: Marcelo A. Reguero, Eduardo B. Olivero y Diego Pol (2016). Gondwanan perspectives: Cretaceous–Paleogene biota of West Antarctica. *Ameghiniana* 53: 241–244.

To link to this article: http://dx.doi.org/10.5710/AMGH.27.05.2016.3025

ISSN 0002-7014
AMEGHINIANA - 2016 - Volume 53 (3): 241 – 244

GONDWANAN PERSPECTIVES: CRETACEOUS–PALEOGENE BIOTA OF WEST ANTARCTICA

MARCELO A. REGUERO[1,2], EDUARDO B. OLIVERO[3] Y DIEGO POL[4]

[1]Instituto Antártico Argentino, Instituto Antártico Argentino, 25 de Mayo 1151 CP 1650, San Martín, Argentina. *mreguero@dna.gov.ar*

[2]División Paleontología Vertebrados, Museo de La Plata, Universidad Nacional de La Plata, Paseo del Bosque s/n., B1900FWA, La Plata, Argentina. CONICET. *regui@fcnym.unlp.edu.ar*

[3]Centro Austral de Investigaciones Científicas, Consejo Nacional de Investigaciones Científicas y Técnicas, 9410 Ushuaia, Tierra del Fuego, Argentina. CONICET. *emolivero@gmail.com*

[4]Museo Paleontológico Egidio Feruglio, Trelew 9100, Chubut, Argentina. CONICET. *dpol@mef.org.ar*

ANTARCTICA has played a key role connecting all major landmasses of Gondwana, even during periods of their break up through the Cretaceous and Paleogene. The largely ice-covered rocks of Antarctica undoubtedly contain countless clues about the paleogeographic and biotic connections of southern Gondwana. The Antarctic Peninsula is the region that has provided and that likely will provide the most informative fossil remains from the Cretaceous–Paleogene. In particular, during the past two decades, geologic and paleontological explorations of the James Ross Basin, Weddell Sea, have revealed that this basin, located off the northeast tip of the Antarctic Peninsula (West Antarctica) (Fig. 1), contains one of the most important records of Late Cretaceous and early Paleogene life in the Southern Hemisphere.

The first documented collection of fossils from Antarctica was made by the Norwegian whaling captain C.A. Larsen on Seymour (=Marambio) Island (Fig. 1) during the austral summer of 1892–1893 (Sharman and Newton, 1894). The early explorer and scientist Otto Nordenskjöld (1905, p. 252, Fig. 2), leader of the Swedish South Polar Expedition, envisioned the paleontological and biogeographic importance of this basin *"... where, maybe, many animals and plants were first developed that afterwards found their way as far as to northern lands"*. The Swedish South Polar Expedition was one of the most scientifically successful expeditions in the history of Antarctic exploration (Nordenskjöld, 1905; Wiman, 1905; Dusén, 1908; Gothan, 1908; Wilckens, 1911; Halle, 1913). These discoveries not only provided new insights into the geologic history of Antarctica, but also answers to questions about life in Southern Hemisphere that have puzzled naturalists since Charles Darwin's voyage on HMS Beagle.

The sedimentary sequence exposed in the James Ross Basin comprises a thick section of Coniacian, Turonian, Campanian, Maastrichtian, Paleocene, Eocene, and probably earliest Oligocene. This sequence is outstanding in that it represents the only marine sequence of this age interval that crops out in Antarctica. Furthermore, the high-latitude fossil biota contained in both the Cretaceous and Paleogene beds is unusually rich and diverse, rivaled only by those from New Zealand and southeastern Australia.

One of the puzzling aspects of history of explorations in the James Ross Basin is the failure to fully recognize the scientific potential of this basin by the paleontological community for nearly 70 years. After the Swedish South Polar Expedition (1901–1903), more than 40 years passed before the basin was scientifically visited again, this time by members of the Falkland islands Dependencies Survey (now the British Antarctic Survey).

The establishment of the Argentine station Marambio on Seymour (= Marambio) Island in 1969 initiated the modern phase of geologic and paleontological studies in the James Ross Basin. Argentine participation began in 1970 with GEOANTAR project, geologists of this project found the first Mesozoic vertebrates (marine reptiles) of Antarc-

tica in 1977. There have been many subsequent Argentine expeditions, funded by *Instituto Antártico Argentino* as part of the *Programa Antártico Argentino*.

This issue of *Ameghiniana* gathers 8 scientific contributions on the Antarctic fossil record, focused on different geologic times and areas of the James Ross Basin (Fig. 1) and derived from papers presented at a symposium in the *4th International Paleontological Congress (IPC)* in Mendoza, Argentina (September 28th–October 3rd, 2014). These studies present a survey of recent paleontological research on the marine deposits adjoining the K/Pg boundary in the James Ross Basin (Antarctic Peninsula), covering a broad range of topics such as micropaleontology, invertebrate and vertebrate paleontology, paleobotany, biostratigraphy, and paleoecology.

Mesozoic marine reptiles are important components of the Cretaceous marine deposits in the James Ross Basin and are treated in the contribution by O'Gorman (2016-this

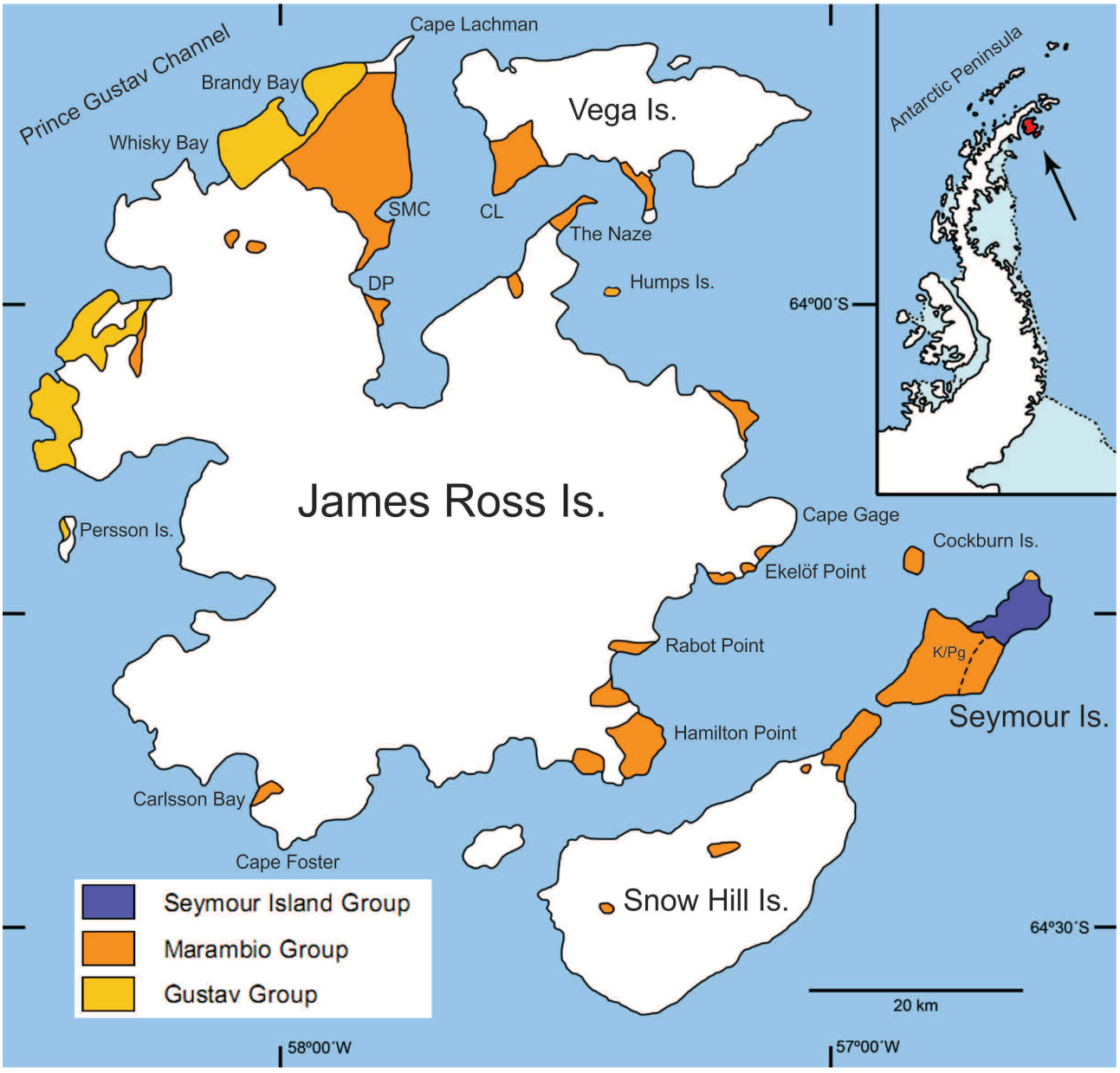


Figure 1. Schematic geological map of the James Ross Basin, Weddell Sea, north-eastern Antarctic Peninsula. White areas are either the James Ross Island Volcanic Group or snow/ice cover. Locality key: DP, Dreadnought Point; BB, Brandy Bay; CL, Cape Lamb; SMC, Santa Marta Cove. Position of the Cretaceous-Paleogene boundary on Seymour Island indicated by the symbol K/Pg.

Figure 2. Members of the *South Polar Swedish Expedition* on their departure from Buenos Aires, Argentina onboard of the Antarctic.

issue) that analyzes body size and biogeography of different plesiosaurs from Antarctica and South America. The James Ross Basin contains key information for understanding the early evolution of penguins during the Paleogene, and the two papers by Acosta Hospitaleche (2016a and 2016b-this issue) tackle palaeobiological and taphonomical aspects of the Antarctic Sphenisciformes birds. Paleogene mammals of the James Ross Basin include both marine and terrestrial groups and are the focus of the papers by Gelfo (2016-this issue) and Buono *et al.* (2016-this issue). Gelfo (2016-this issue) shows the importance of discussing evolutionary stasis of an Antarctic taxon of Litopterna. Buono *et al.* (2016-this issue) address Cenozoic evolution of primitive whales in the southern oceans. The contribution by Caramés *et al.* (2016-this issue) integrates stratigraphy and analysis of foraminifera and palynomorphs from Late Cretaceous deposits of the James Ross Basin. The paper by Iglesias (2016-this issue) reports on a new Late Cretaceous (Campanian) flora from the James Ross Island (James Ross Basin). Finally, Raffi and Olivero (2016-this issue) address systematic and biostratigraphy of a Cretaceous ammonite taxon.

Obviously, although this special issue presents new information on multiple aspects of paleontological research from the James Ross Basin, it will not the last word on these subjects. Rather, this issue highlights a significant amount of recent discoveries and hypotheses and underscores the tremendous potential of new paleontological data that remain for future research on the Cretaceous–Paleogene Antarctic biota of the James Ross Basin.

ACKNOWLEDGMENTS

Assembling and editing this volume requires the input and cooperation of many people. First, we thank all of the authors for their significant contributions. Second, we thank the reviewers of the papers for their valuable contributions that ensured the high quality of the technical content of this volume. Third, we thank the editors of Ameghiniana for their support in the production of this special issue. The authors especially acknowledge the *Instituto Antártico Argentino,* which provided support for our participation in the Antarctic fieldwork.

REFERENCES

del Valle, R., Medina, F. y Brandoni, Z. 1977. Nota preliminar sobre los hallazgos de reptiles fósiles marinos del suborden Plesiosauria, en las islas James Ross y Vega, Antártida. *Contribuciones del Instituto Antártico Argentino* 212: 1–13.

Dusén, P. 1908. Über Die Tertiare Flora der Seymour Insel. *In Wissenschaftliche Ergebnisse der Schwedischen Südpolar–Expedition 1901–1903, Geologie und Paläontologie.* Nordenskjöld, O., ed., Norstedt & Söner, Stockholm, 3, 3: 1–27, 4 pls.

Gothan, W. Die fossilen Holzer von der Seymour und Snow Hill–Insel. *In Wissenschaftliche Ergebnisse der Schwedischen Südpolar–Expedition 1901–1903, Geologie und Paläontologie.* Nordenskjöld, O., ed., Norstedt & Söner, Stockholm, 3, 8: 1–33.

Halle, T.G. 1913. The Mesozoic flora of Graham Land. *Wissenschaftliche Ergebnisse der Schwedischen Südpolar Expedition 1901–1903*, 3: 1–123.

Nordenskjöld, O. 1905. *Antarctica: or two years amongst the ice of the South Pole*, 608 pp., Macmillan Co., Londres

Sharman, G., and Newton, E.T. 1894. Notes on some fossils from Seymour Island, in the Antarctic regions obtained by Dr. Donald. *Transactions of the Royal Society of Edinburgh*, 37, part 3, 30: 707–709.

Wilckens, O. 1911. Die Mollusken der antarktischen Tertiarformation. *Wissentschaftliche Ergebnisse der Swedischen Sudpolarexpedition 1901-1903*, 3, 13: 1–62.

Wiman, C. 1905. Über die alttertiären Vertebraten der Seymourinsel. In: *Wissentschaftliche Ergebnisse der Swedischen Sudpolarexpedition 1901-1903*, 3, 1, 35 pp.

doi: 10.5710/AMGH.27.05.2016.3025