



THE Dinosaur Report



A QUARTERLY PUBLICATION OF THE DINOSAUR SOCIETY

SUMMER 1996

Sauropod Crossing: The Africa/South America Connection

Fossil Sauropod Evidence Establishes that a Land Bridge Connected South America and Africa During Albian-Cenomanian Times

*by Jorge O. Calvo and Leonardo Salgado
Research Funded by The Dinosaur Society*

Sauropod remains suggest that Africa and South America were probably connected by a land bridge up to the beginning of the Late Cretaceous.

Dinosaur Society grant recipients Jorge O. Calvo and Leonardo Salgado of the Museo de Geología y Paleontología in Neuquén, Argentina, conducted field work during the first half of 1996 to examine the possibility that a land bridge existed between South America and Africa as recently as the early part of the Late Cretaceous, about 97 million years ago. One bonus for the grant recipients was the opportunity to apply some of the grant money to the continuing excavation of Giganotosaurus, the giant theropod from Patagonia. The following midterm project report is a summary of their work to date. Some of these findings were presented in September at the First Annual Conference of IGCP Project 381, South Atlantic Mesozoic Correlations, in Salvador Bahia, Brazil.

Sauropods were the dominant herbivorous fauna during the Mesozoic in Norpatagonia and in Gondwana. Laurasia, on the other hand, was dominated by ornithischian dinosaurs. The stratigraphic sequence of Mesozoic continental outcrops in Norpatagonia is widespread and relatively complete for the Cretaceous Period. The goal of this project has been to conduct extensive field work in the Norpatagonia Cretaceous outcrops and to prospect old and new areas in Neuquén and Rio Negro provinces that have already provided several

(continued on page 4)

*Dinosaur
Society now
on the Web!*

<http://www.dinosociety.org>

Story on page 3...

Highlights of This Issue

Sauropod Crossing: The Africa/South America Connection (J.O. Calvo)	1	Dinosaur Society Luncheon Announced	8
President's Report	2	Society Grants Awarded, 2nd Quarter,	9
Notes From the Executive Director: Society Web Page Announced	3	College Level Programs: An Update	9
Meet Douglas DeFeo, Society Assistant Director	6	Brooding Over Dinosaur Nesting (G.S. Paul)	10
Field Report: Dinosaur Tracks in the Cretaceous of Istria [Croatia] (F.M. Dalla Vecchia)	7	Features of the Society Web Page	12
		SAFE Auction at SVP	13
		Dinosaur Scorecard	14
		Featured Gifts	14
		Membership Information	16



Field jacket of a sauropod hip at the El Chocón locality. (photo: Jorge Calvo)

CONTINUED FROM PAGE 1...

new species. The objective of this work has been to increase our knowledge of the sauropod fauna of Patagonia and its evolution during the Cretaceous.

The strong similarities on the sauropod fauna in Africa and South America are consistent with the presumed proximity of both continents at that time. Both continents were probably connected by a land bridge at least up to Albian-Cenomanian times.

This evidence increases our knowledge on the vertebrate fauna common to both continents during the Albian-Cenomanian times. Up to now the vertebrate fauna present in both continents was composed by the mesosuchian crocodiles *Araripesuchus* from the Aptian of Northeastern Brazil and Niger (Buffetaut and Taquet, 1979); the giant crocodylian *Sarcosuchus* from the Aptian of Brazil and Niger (see references Buffetaut and Taquet, 1977); the araripemyidae turtles from the Aptian of Niger and Brazil (de Broin, 1980) and the coelacanth *Mawsonia* from the Aptian-Albian of Brazil and Africa (Wenz, 1980).

The discovery of sauropods from Lower Cretaceous beds in Africa and South America show that they had a cosmopolitan distribution across this part of Gondwana before the onset of continental fragmentation. Some of the sauropod specimens recorded allow us to infer when Africa and South America split apart.

The primitive titanosaurs *Andesaurus delgadoi* (Calvo and Bonaparte, 1991), from the Albian-Cenomanian of Argentina, and *Malawisaurus dixeyi* (Jacobs, et al. 1993) from the Lower Cretaceous of Malawi, share undivided

dorsal vertebrae, transversely expanded ischium, anterior procoelous caudal vertebrae, amphiplatyan middle and posterior caudals, and open haemal arches. This combination of characters is only present in these two species.

On the other hand, the primitives Diplodocimorpha (Calvo and Salgado, in press) *Rebbachisaurus garasbae* (Lavocat, 1954), from the Aptian-Albian of Morocco, and *Rebbachisaurus tessonei* (Calvo and Salgado, 1991; in press), from the Albian-Cenomanian of Argentina, share a broad, paddle-like scapular blade and a very high and undivided neural spine on dorsal vertebrae with a deep pleurocoel on the centrum. These characters are seen only in these two species.

Recently, Bonaparte (1995) described a new sauropod, *Rayososaurus agrioensis* from the Aptian of Neuquen, Argentina, based on a scapula and very few other poor fragments; the broad distal scapular blade and the direction of the acromion process (a supposed autapomorphy of *Rebbachisaurus*) closely resemble *Rebbachisaurus tessonei*. The characters used by Bonaparte to erect *Rayososaurus* are, instead, *Rebbachisaurus* apomorphies; we propose to include these materials within *Rebbachisaurus* sp. until more material is discovered. Therefore, we assign *Rayososaurus agrioensis* as its nomen dubia.

Field Notes

A field trip to the El Chocón area was made to explore, and eventually to excavate sauropod dinosaurs.



Moving a large fossil jacket up a hill at the El Chocón locality. (photo: Jorge Calvo)

We began in the area in which Tessone (1987) and Calvo (1988) found specimens of *Rebbachisaurus tessonei*. In 1993, the giant theropod *Giganotosaurus carolinii* was found in the same area. We have now been able to determine that these specimens were found at the same stratigraphic level, which establishes *Rebbachisaurus* as a likely prey of *Giganotosaurus*.

At least four new sauropod specimens were discovered by the project team at El Chocón, as well as an isolated theropod track. Two of the specimens belong to *Rebbachisaurus*, one to *Andesaurus*, and a fourth is yet undetermined but may be a new dinosaur. One of the *Rebbachisaurus* specimens was composed of ischia, pubis, fragmentary ilia, gastric stones, some dorsals and apparently some cervical vertebrae. The specimen belongs to *Rebbachisaurus*. It is the fifth specimen of the genus and the third discovered with gastric stones.

Even though the project is related to sauropod dinosaurs, the *Giganotosaurus* site required some emergency work resulting in the excavation of new material for this giant theropod. The field work was coordinated by Rodolfo Coria and Jorge O. Calvo. The work resulted in some exciting results: the excavation of a nasal, a premaxilla, and five vertebrae among other pieces.

A field locality near the city of Gral Roca in the Rio Negro province yielded an abundance of dinosaur fossils, but no articulated skeletons. In addition to numerous sauropod fossils, partial remains of hadrosaurs were found in great quantities along with some evidence of ankylosaurs. An ankylosaur tooth discovered on the trip is believed to be the first found in South America. Sauropod and possibly hadrosaur eggshells were also found.

The project team explored three additional dinosaur sites in the region, mostly yielding a variety of disarticulated specimens, although an excellent set of titanosaur vertebrae, ribs, and an ilium were obtained in one case. One new fossil site was identified and promises to yield excellent results in the future.

Jorge O. Calvo and Leonardo Salgado are with the Museo de Geología y Paleontología, Universidad Nacional del Comahue, Buenos Aires 1400, (8300) Neuquen, Patagonia, Argentina.



Toilet paper and plaster were used to make the fossil jackets. (photo: Jorge Calvo)

Acknowledgements

This research was funded by The Dinosaur Society and the National University of Comahue, Neuquen, Argentina.

References

- Bonaparte, J.F. 1995. Dinosaurios de América del Sur. *Mus. Arg. Cs. Nat.* 175 pp.
 Buffetaut, E. & Taquet, P. 1977. The giant crocodylian *Sarcosuchts* in the Early Cretaceous of Brazil

THE DINOSAUR REPORT

©1996 by The Dinosaur Society, Inc., a not-for-profit corporation supporting dinosaur science and education. *The Dinosaur Report* is a quarterly publication discussing current dinosaur science and activities of The Society.

Publications Director & Editor .. Thom Holmes
 Editor Laurie Holmes
 Contributing Editor Joseph M. Ramirez
 Scientific Advisor Peter Dodson, Ph.D.
 President Steven H. Gittelmann, Ph.D.
 Executive Director Thomas A. Lesser, Ed.D.
 Society Logo Art Donna Braginetz

Published by The Dinosaur Society, Inc.
 200 Carleton Avenue, East Islip, NY 11730 (516) 277-7855

Membership Information:

1-800-346-6366

E-Mail the Editors: dsociety@aol.com



The crew prepares to extract the rib of a giant sauropod (photo: Jorge Calvo)

and Niger. *Paleontology* 20: 203-208.

Calvo, J.O., & Bonaparte, J.F. 1991. *Andesaurus delgadoi* gen.et.sp.nov. (Saurischia-Sauropoda), dinosaurio Titanosauridae de la Formacion Rio Limay (AlbianoCenomaniano), Neuquen, Argentina. *Ameghiniana* 28(3-4): 303-310

Calvo, J.O., & Salgado, L. 1991. Posible registro de *Rebbachisaurus* Lavocat (Sauropoda) en el Cretacico medio de Patagonia. *Ameghiniana* 28: 404. La Rioja

Calvo, J.O., & Salgado, L., in press. *Rebbachisaurus tessonei*, a new Sauropoda from the Albian-Cenomanian of Argentina; new evidence on the origin of the Diplodocidae—*GAI*A

De Broin, F. 1980. Les tortues de Gadoufaoua (Aptian du Niger) apercu sue le paleobiogeographie des Pelomedusida (Pleurodira) *Memoirs de la Societe Geologique de France*. N.S.' 139: 39-46.

Jacobs, L.L., Winkler, D.A., Downs, W.R., & Gomani, E.M. 1993. New material of an Early Cretaceous titanosaurid sauropod dinosaur from Malawi. *Paleontology* 36(3): 523-534.

Lavocat, R. 1954. Sur les Dinosauriens du continental intercalaire des Kern Kern de la Daoura. *C.R. 19th Internat. Geol. Congr. 1952*, 3: 65-68.

Wenz, S. 1980. A propos du genre *Mawsonia*, Coelacanthé geant du Cretace inferieur d'Afrique et du Brasil. *Memoirs de la Societe Geologique de France*. N.S. 139: 187-190.

Meet Douglas DeFeo

The Society's Assistant Director

The Dinosaur Society is pleased to advise you that its new Assistant Director, Douglas DeFeo, joined its staff on June 10, 1996. Mr. DeFeo, who holds a Law degree from Georgetown University and a Bachelor's degree from Fordham University, has been involved with non-profit organizations for over five years. From July of 1992 until June of this year, he was a Trustee of the Okeanos Ocean Research Foundation, located on Long Island, New York, which conducts research and education projects regarding marine wildlife.

His involvement with Okeanos has included working with local government and federal officials concerning the foundation's projects, grant applications, editorial work for publications and assisting staff and volunteers with fundraising campaigns. He has written an article about the

foundation's work, which was published in the Suffolk County Bar Association's monthly newspaper last year. As an active volunteer, he has participated in the foundation's environmental education programs and a program involving the rescue and rehabilitation of stranded marine wildlife. He was also Vice President of the foundation.

As an attorney, Mr. DeFeo has dealt with various matters including contract preparation and negotiation, litigation and other general civil matters, as well as doing occasional pro-bono work for local non-profit organizations. He is an active member of his local bar association, and applied for the Assistant Director position with The Dinosaur Society out of interest in working more closely for the public benefit, rather than focusing on the private sector.