Preliminary data of paleoflora remains from Escucha Formation (Albian) in Santa María Mine of Ariño (Spain)

Uxue Villanueva-Amadoz[1*], Luis M. Sender[2], Luis Alcalá[3], Denise Pons[4], Rafael Royo-Torres[3], José B. Diez[5]

[1]Departamento de Paleontología, Instituto de Geología, Universidad Nacional Autónoma de México (UNAM), 04510 México D.F., México.
[2]Área y Museo de Paleontología, Departamento de Ciencias de la Tierra, Universidad de Zaragoza, 50009 Zaragoza, Spain.
[3]Fundación Conjunto Paleontológico de Teruel-Dinópolis (Museo Aragonés de Paleontología), 44002 Teruel, Spain.
[4]Université Pierre et Marie Curie, UMR 7207, Muséum national d'Histoire naturelle, Centre de Recherche en Paléobiodiversité et Paléoenvironnements, F-75231 Paris cedex 05, France.
[5]Departamento de Xeociencias Mariñas e Ordenación do Territorio, Facultade de Ciencias do Mar, Universidade de Vigo, 36310 Vigo, Spain.

*uxue@geologia.unam.mx

The deposits corresponding to the Escucha Formation in the Santa Maria Mine of Ariño yielded abundant flora and fauna remains with more than 5,000 bones and remains of six specimens of a new dinosaur of basal iguanodontians (Alcalá et al. 2012; McDonald et al. 2012). This is one of the most important single layer deposit (called AR-1) in the world with a high concentration of fossils including dinosaur remains (bones, egg shell fragments), turtles, crocodiles, fishes, invertebrates (i.e., bivalves, gastropods, ostracods, insects) and plants (i.e., amber, pollen, charophyte oogonia, bacteria, palynomorphs) (Alcalá et al. 2012). The collaboration between the Fundación Conjunto Paleontológico de Teruel- Dinópolis (FCPTD) with Sociedad Anónima Minera Catalano-Aragonesa (SAMCA Group), which has been extracting coal in Ariño (Teruel) since 1919, has allowed the extraction of exceptionally well-preserved fossils.

Plant remains from AR-1 are described in this study for the first time. Messoflora remains include, fragments of axis corresponding to form-genus *Cyparyssidium*, charred wood of abietineus conifer with different stages of fusion of lamellae and charred fern pinnules of *Weichselia*, showing stomata, internal structure of the pinnule and soral clusters of the same taxon. Inside the sori the material has not been affected by the fires showing the massive globular spore concentrations that occupy completely the sorus. These spore masses present the spores in different stages of maturity as previously reported by Diez et al. (2005).

AR-1 level yielded a low diversity, well-preserved and rich palynomorph assemblage that presents a very particular sedimentary depositional environment. This fact is indicated by the numerous taxa indicative of freshwater environments such as *Ovoidites* and other continental algae (Zippi 1998).

The assemblage is mainly constituted by gymnosperm pollen grains represented by the conifer pollen genus *Classopollis* (Family Cheirolepidiaceae), gymnosperm genera *Inaperturopollenites* and *Spheripollenites*, *Araucariacites australis* Cookson ex Couper and *Taxodiaceaepollenites hiatus* (Potonié) Kremp. Moreover, the spores are represented by a rather high percentage of the genera *Cyathidites*, *Deltoidospora* and schizaeacean spores (genera *Plicatella*, *Cicatricosisporites* and *Klukisporites*). The

pollen grains are represented by several monosulcate/monocolpate pollen grains of the genera *Asteropollis*, *Pennipollis*, *Retimonocolpites* and *Transitoripollis*.

Acknowledgements: SAMCA Group, Departamento Educación, Universidad, Cultura y Deporte, Gobierno de Aragón (projects exp. 201/2010, 201/10-2011, 201/10-11-2012); Fundación Conjunto Paleontológico de Teruel-Dinópolis; FOCONTUR (Grupo de Investigación Consolidado E-62, Departamento de Industria e Innovación, Gobierno de Aragón and Fondo Social Europeo); Ministerio de Ciencia e Innovación/FEDER (project DINOSARAGÓN CGL2009–07792), and Instituto Aragonés de Fomento.

References

Alcalá L, Espílez E, Mampel L, Kirkland JI, Ortiga M, Rubio D, González A, Ayala D, Cobos A, Royo-Torres R, Gascó F, Pesquero MD. 2012. A New Lower Cretaceous Vertebrate Bonebed Near Ariño (Teruel, Aragón, Spain); Found and Managed in a Joint Collaboration Between a Mining Company and a Palaeontological Park. Geoheritage 4:275-286.

Diez JB, Sender LM, Villanueva-Amadoz U, Ferrer J, Rubio C. 2005. New data regarding *Weichselia reticulata*: soral clusters and the spore developmental process. Rev Palaeobot Palyno. 135:99-107.

McDonald AT, Espílez E, Mampel L, Kirkland JI, Alcalá L. 2012. An unusual new basal iguanodont (Dinosauria: Ornithopoda) from the Lower Cretaceous of Teruel, Spain. Zootaxa. 3595:61-76.

Zippi PA. 1998. Freshwater algae from the Mattagami Formation (Albian), Ontario: Paleoecology, botanical affinities and systematic taxonomy. Micropaleontology 44:7-78.

ARIÑO 2013

"A Congress in the Countryside"

Agora Paleobotanica

9-13/7/2013, Ariño (Teruel, Spain)

DINÓPOLIS

Grupo SAMCA

DINÓPOLIS TERUEL FUNDACIÓN

1542 Universidad Zaragoza

Universidade Vigo

Diputación de Teruel

paleoymás

CAJA RURAL DE TERUEL

Ipcena Instituto Pirenaico de Ecología en Ciencias Ambientales de Aragón Universidad Zaragoza

A M A P

PARQUE CULTURAL RIO MARTIN