

PRIMITIVE HERBACEOUS LYCHOPHYTES RECORD AT THE RIO SECO DE LOS CASTAÑOS FORMATION, SAN RAFAEL BLOCK, MENDOZA PROVINCE, ARGENTINA

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The San Rafael or Sierra Pintada Block is situated at the central-western of the Mendoza province and shows diverse igneous, metamorphic and sedimentary units of Mesoproterozoic to Paleozoic age, known generally as ‘pre-Carboniferous’ due to they are clearly separated by a regional unconformity. One of these units is the Río Seco de los Castaños Formation (González Díaz, 1972; 1981) that was initially considered as a part of the La Horqueta low-grade metamorphic ‘Serie’ (Dessanti, 1956) and was later distinguished because of its marine sedimentary characteristics and assigned to the Devonian because of a coral record (*Pleurodictium*) carried out by Di Persia (1972). In other contributions, Nuñez (1976) and Criado Roque and Ibañez (1979) have described several sedimentary and structural features of this unit. Later works (Poiré et al., 2002 and Manassero et al., 2005, for example), have recognized trace fossils associations in the Agua del Blanco locality, improving the interpretation of different sub-environments of deposition within a wide siliciclastic marine platform with gravity flow deposits developed in deeper sectors.

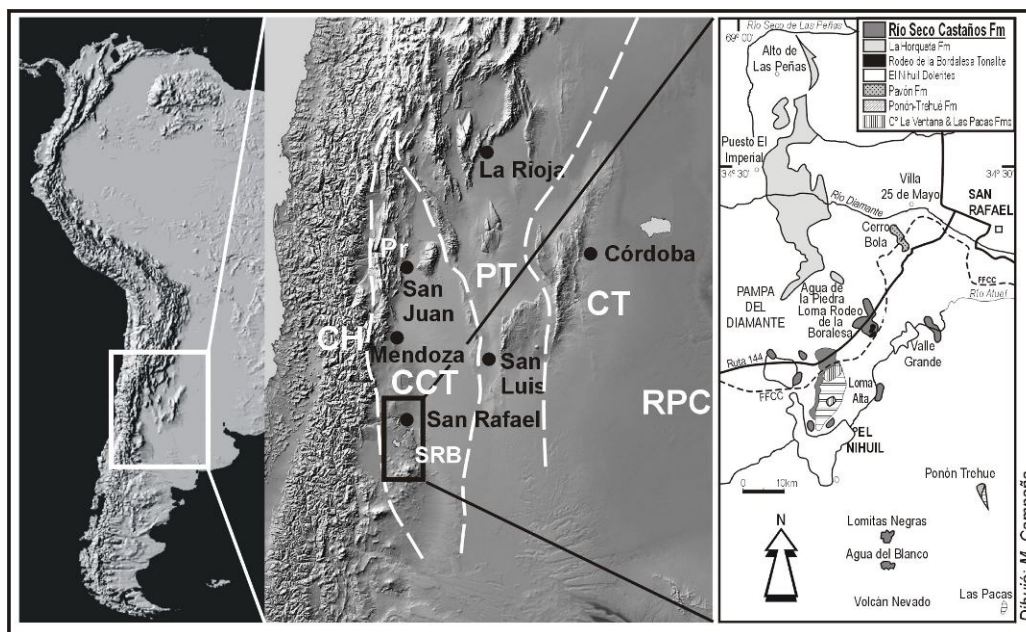
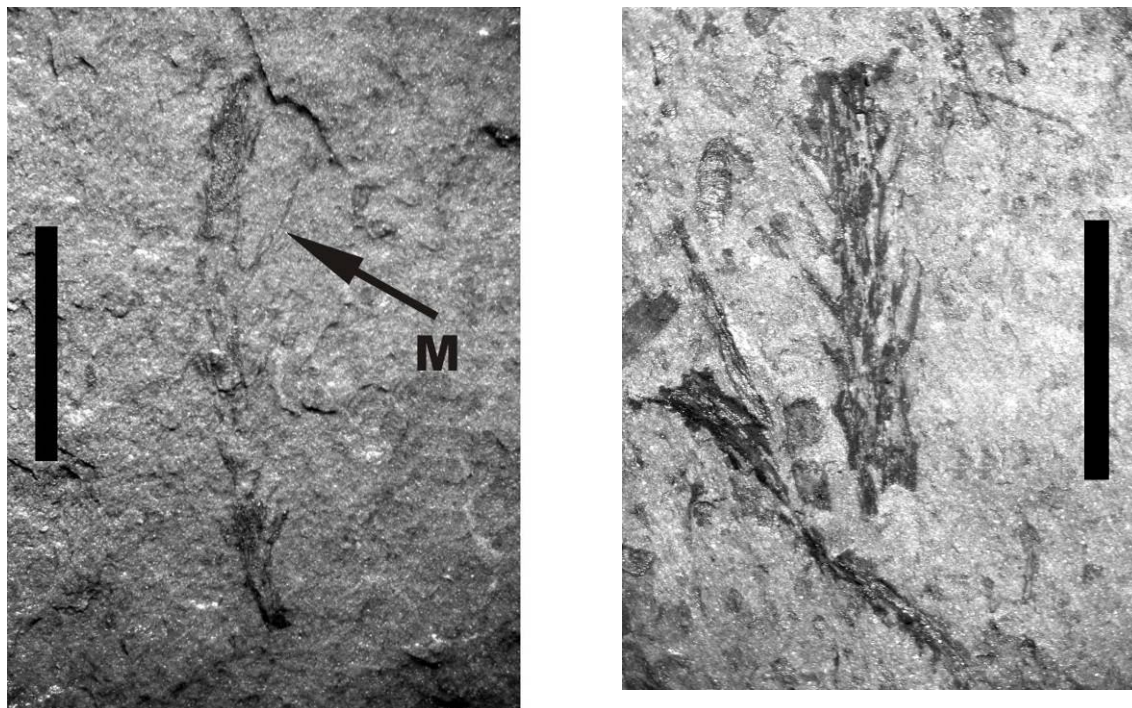


Fig 1. Location of the San Rafael Block within the pre-Andean region. **RPC:** Río de la Plata Craton, **CT:** Córdoba terrane, **PT:** Pampean terrane, **CCT:** Cuyania Composite terrane, **CH:** Chilena terrane. On the right, outcrops of the pre-Carboniferous units in the San Rafael Block (SRB): Cerro La Ventana/Las Pacas (Mesoproterozoic basement); Ponón-Trehué Fm (Ordovician carbonates and siliciclastics); Pavón Fm (Upper Ordovician siliciclastics); El Nihuil Dolerites (Ordovician, MORB signature); Rodeo de la Bordalesa Tonalite (Lower Devonian); La Horqueta Fm (Low-grade metamorphic rocks with unknown age); Río Seco de los Castaños Fm (Upper Silurian-Lower Devonian)

Río Seco de los Castaños Formation type section is placed at the Atuel Creek, between the Valle Grande and the Nihuil area. Other outcropping areas are: Agua del Blanco, Lomitas Negras, Road 144 and Rodeo de la Bordalesa. It is important to be mentioned that Rubinstein (1997)

described Upper Silurian microfossils (acritarchs), other authors cited trace fossils of *Nereites facies* and Cingolani et al. (2003) pointed out the presence of an igneous intrusive tonalite body dated in 401±3 Ma by precise U-Pb method made on zircon minerals (Lower Devonian). At Atuel Creek the unit comprises 600 m of tabular, green sandstones and mudstones with defined contacts. At this locality Manassero et al. (2005) found the shallower lithofacies, interpreted as the top of transgressive wave dominated by delta systems, with charcoal beds considered as abandonment facies. The beds are folded and sometimes have a 50° to 70° dip; trace fossils like *Nereites* have also been described in them, indicate low energy conditions and abundance of organic material. All these data suggest an Upper Silurian-Lower Devonian age for the sedimentary sequence.

In recent field works, we have found a small number of primitive plant debris at Río Seco de los Castaños Formation type section (Atuel Creek). They are fragmentary dichotomous small branches, 11 to 12 mm long and 0.5-0.7 mm wide. They present enations with a helicoidal phyllotaxis. These enations are 5 mm long and show expanded bases proximally decurrent, these corresponding to the surface ridging. Apices are usually truncated. All these primitive plants resemble the material described by Edwards et al. (2001, plate I, figs.6, 7, 8 & 9) for the Villavencio Formation exposed at the San Isidro Creek, Mendoza Province. These fossil plants probably represent a new lycophyte taxon. The age could be Lower Devonian (Lochkovian-Pragian).



Herbaceous lycophytes stems. Scale bar 0.5 cm. M: microphyllous

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