

Supplementary material

**A South American fossil relative of *Phyllocladus*:
Huncocladus laubenfelsii gen. et sp. nov. (Podocarpaceae),
from the early Eocene of Laguna del Hunco, Patagonia, Argentina**

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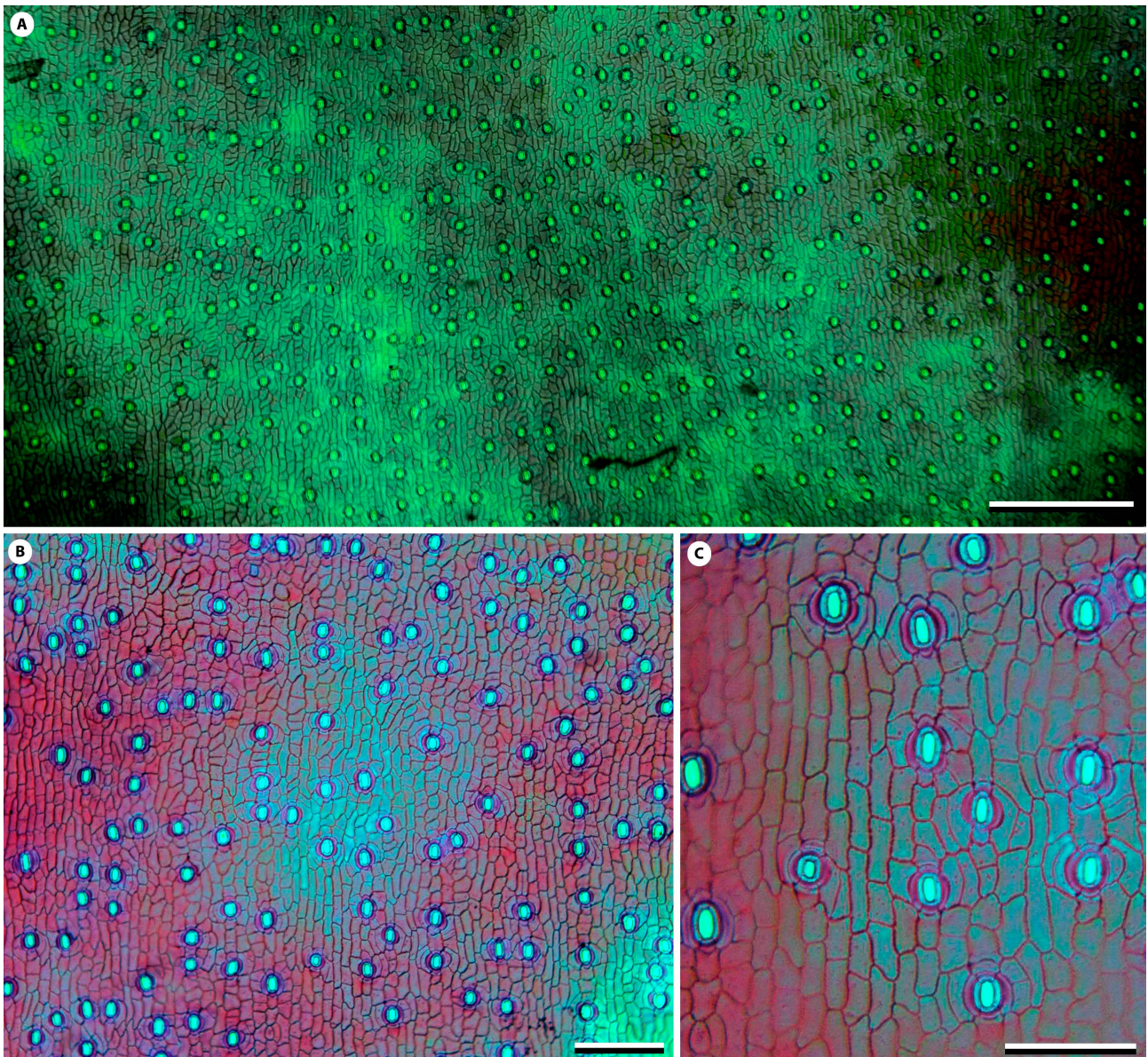


Fig. S1. A–C. Stomatal morphology of the extant species *Phyllocladus aspleniifolius* under light microscopy. A. General view of the cuticle showing the parallel oriented stomata arranged in discontinuous rows. B. Detail of the cuticle, showing rectangular epidermal cells arranged in rows; and the stomatal apparatuses parallel oriented, and arranged in discontinuous rows. C. Detail of a portion of the cuticle, showing stomatal apparatuses with four to six subsidiary cells, both polar and lateral, arranged in clear rings, and the well-developed Florin rings. Images provided by Dr G. J. Jordan. Scale bars: 500 μm (A), 200 μm (B) and 125 μm (C).

Character list

Accession numbers for the DNA markers are the same than for Andruchow-Colombo *et al.* (2019).

(00) Phyllotaxy of mature leaves: (0) helical; (1) whorled; (2) opposite to subopposite; (3) decussate; (4) opposite decussate. **(01) Mature leaf morphology:** (0) reduced leaves; (1) scaly-like; (2) broad. **(02) Leaf development:** (0) bilaterally flattened; (1) bifacially flattened. **(03) Leaf types:** (0) bilaterally flattened; (1) cuadrangular in section; (2) bifacially flattened. **(04) Abaxial keel:** (0) absent; (1) present. **(05) Mature leaf margin:** (0) entire; (1) serrulate; (2) with marginal frill. **(06) Marginal frill:** (0) discontinuous; (1) continuous. **(07) Leaf base:** (0) decurrent; (1) petiolate. **(08) Leaf scar:** (0) round to subround; (1) linear; (2) rhomboidal; (3) rectangle. **(09) Phylloclades:** (0) absent; (1) present. **(10) Stomata on the adaxial side of the leaf:** (0) absent; (1) present. **(11) Stomata on the abaxial side of the leaf:** (0) absent; (1) present. **(12) Stomata relative concentration I:** (0) higher concentration on the adaxial side; (1) fairly equal concentration in both sides; (2) higher concentration on abaxial side. **(13) Stomata orientation:** (0) mostly parallel; (1) mostly oblique; (2) mostly perpendicular; (3) random. **(14) Stomatal organisation I:** (0) rows; (1) scattered. **(15) Stomatal organisation II:** (0) lateral bands; (1) throughout the width of the leaf; (2) central band. **(16) Polar subsidiary cells:** (0) absent; (1) present. **(17) Epidermal cells disposition:** (0) rows; (1) fairly scattered. **(18) Stomatal polar extensions on subsidiary cells:** (0) absent; (1) present. **(19) Florin ring:** (0) absent; (1) reduced; (2) well developed. **(20) Stomatal plugs:** (0) absent; (1) present. **(21) Epidermal cell shape:** (0) quadrangular; (1) isodiametric; (2) irregular. **(22) Epidermal cell-wall shape I:** (0) sinuous; (1) more or less straight. **(23) Epidermal cell-wall shape II:** (0) pitted; (1) entire. **(24) Buttresses in epidermal cell walls:** (0) absent; (1) present. **(25) Papillae:** (0) absent; (1) present. **(26) Leaf vasculature:** (0) multiple leaf vacular bundles; (1) single leaf vascular bundle. **(27) Ovuliferous cone morphology:** (0) spherical or globose; (1) subspherical or subglobose; (2) cylindrical; (3) irregular. **(28) Ovuliferous cone at maturity:** (0) mostly lignified (woody); (1) mostly coriaceous; (2) mostly fleshy; (3) papery like. **(29) Mature seed-cone size:** (0) very small (up to 1.5 cm long); (1) small (between 2 and 6); median (between 6 and 15); (2) large (between 15 and 30). **(30) Number of ovules per cone:** (0) 1 or 2; (1) between 3 and 20; (2) more than 20. **(31) Basal leaves of ovulate cones:** (0) absent; (1) present. **(32) Receptacle I:** (0) absent; (1) present. **(33) Receptacle II:** (0) larger than the seed covered by the epimatium; (1) smaller than the seed covered by the epimatium. **(34) Receptacle III:** (0) smooth; (1) warty. **(35) Megasporophyll organisation:** (0) tightly imbricated; (1) laxly imbricated. **(36) Ovuliferous complex (OC) phyllotaxis on the cone:** (0) helical; (1) decussate; (2) whorled. **(37) OC position:** (0) at the axil of the fertile bract; (1) at the surface of the fertile bract. **(38) OC basal morphology:** (0) peltate; (1) non-peltate. **(39) OC lateral extensions:** (0) absent; (1) present. **(40) OC lateral extension**

consistency: (0) woody; (1) thin. **(41) Bract–scale fusion at OC:** (0) absent; (1) present. **(42) Bract–scale degree of fusion:** (0) totally fused; (1) bract and scale fused in most of their extension; (2) free scale up to one-third of the OC length; (3) free scale more than one-third of the OC length. **(43) Bract-scale length:** (0) bract longer than scale; (1) bract and scale of approximately equal length; (2) scale longer than bract. **(44) Number of seeds per OC:** (0) 1; (1) 2 or 3; (2) 4 or more. **(45) Seed embedded in ovuliferous scale tissues:** (0) absent; (1) present. **(46) Aril:** (0) absent; (1) present. **(47) Epimatium:** (0) absent; (1) present. **(48) Epimatium shape:** (0) globose; (1) subglobose or ellipsoid; (2) pyriform; (3) cup like. **(49) Epimatium–seed integument fusion:** (0) absent (free); (1) present (fused). **(50) Epimatium size:** (0) mature seed projects from the epimatium; (1) mature seed protected by the epimatium. **(51) Young ovule orientation:** (0) erect; (1) oblique; (2) inverted. **(52) Mature-seed orientation:** (0) erect; (1) oblique; (2) Inverted. **(53) Seed dispersal:** (0) cones disintegrating at maturity; (1) cones not disintegrating at maturity. **(54) Seed abscission:** (0) absent; (1) present. **(55) Diaspore:** (0) seed; (1) ovuliferous complex; (2) cone. **(56) Integumentary seed wings:** (0) absent; (1) present. **(57) Integumentary-seed wing number:** (0) 1; (1) 2; (2) 3. **(58) Integumentary-seed wing symmetry:** (0) asymmetric; (1) symmetric.

Table S1. Vegetative characters: (a) 0&1&2; (b) 0&1; (c) 1&2; (d) 0&2

Taxa	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
<i>Cryptomeria japonica</i>	0	1	?	2	1	0	-	0	2	0	1	1	?	?	1	0	?	?	?	?	?	?	?	?	?	?	1	
<i>Wollemia nobilis</i>	a	2	?	2	0	0	-	0	2	0	1	1	?	1	?	?	1	?	?	c	?	?	?	?	?	?	0	
<i>Agathis australis</i>	2	2	?	2	0	0	-	1	0	0	b	1	?	b	?	?	1	?	?	0	?	?	?	?	?	?	0	
<i>Agathis montana</i>	2	2	?	2	0	0	-	1	0	0	b	1	?	0	?	?	1	?	?	0	?	?	?	?	?	?	0	
<i>Agathis ovata</i>	2	2	?	2	0	0	-	1	0	0	1	1	?	c	?	?	1	?	?	0	?	?	?	?	?	?	0	
<i>Agathis moorei</i>	2	2	?	2	0	0	-	1	0	0	1	1	?	c	?	?	1	?	?	0	?	?	?	?	?	?	0	
<i>Agathis lanceolata</i>	2	2	?	2	0	0	-	1	0	0	1	1	?	c	?	?	1	?	?	0	?	?	?	?	?	?	0	
<i>Agathis dammara</i>	2	2	?	2	0	0	-	1	0	0	1	1	?	?	?	?	1	?	?	0	?	?	?	?	?	?	0	
<i>Agathis borneensis</i>	2	2	?	2	0	0	-	1	0	0	1	1	?	c	?	?	1	?	?	0	?	?	?	?	?	?	0	
<i>Agathis macrophylla</i>	2	2	?	2	0	0	-	1	0	0	1	1	?	c	?	?	1	?	?	0	?	?	?	?	?	?	0	
<i>Agathis robusta</i>	2	2	?	2	0	0	-	1	0	0	1	1	?	1	?	?	1	?	?	0	?	?	?	?	?	?	0	
<i>Agathis atropurpurea</i>	2	2	?	2	0	0	-	1	0	0	1	1	?	a	?	?	1	?	?	0	?	?	?	?	?	?	0	
<i>Agathis microstachya</i>	2	2	?	2	0	0	-	1	0	0	1	1	?	1	?	?	1	?	?	0	?	?	?	?	?	?	0	
<i>Araucaria cunninghamii</i>	0	1	?	1	1	0	-	0	2	0	1	1	?	1	0	0	1	?	?	c	?	?	?	?	?	?	1	
<i>Araucaria heterophylla</i>	0	1	?	1	1	1	-	0	2	0	1	1	?	1	0	0	1	?	?	c	?	?	?	?	?	?	1	
<i>Araucaria muelleri</i>	0	1	?	1	1	0	-	0	2	0	1	1	?	2	0	0	1	?	?	c	?	?	?	?	?	?	1	
<i>Araucaria humboldtensis</i>	0	1	?	1	1	0	-	0	2	0	1	1	?	1	0	0	1	?	?	c	?	?	?	?	?	?	1	
<i>Araucaria scopulorum</i>	0	1	?	1	1	0	-	0	2	0	1	1	?	1	0	0	1	?	?	c	?	?	?	?	?	?	1	
<i>Araucaria bernieri</i>	0	1	?	1	1	0	-	0	2	0	1	1	?	1	0	0	1	?	?	c	?	?	?	?	?	?	1	
<i>Araucaria schmidii</i>	0	1	?	1	1	0	-	0	2	0	1	1	?	2	0	0	1	?	?	c	?	?	?	?	?	?	1	
<i>Araucaria subulata</i>	0	1	?	1	1	0	-	0	2	0	1	1	?	1	0	0	1	?	?	c	?	?	?	?	?	?	1	
<i>Araucaria biramulata</i>	0	1	?	1	1	1	-	0	2	0	?	1	?	2	0	0	1	?	?	c	?	?	?	?	?	?	1	
<i>Araucaria rulei</i>	0	1	?	1	1	1	-	0	2	0	1	1	?	1	0	0	1	?	?	c	?	?	?	?	?	?	1	
<i>Araucaria montana</i>	0	1	?	1	1	1	-	0	2	0	1	1	?	1	0	0	1	?	?	c	?	?	?	?	?	?	1	
<i>Araucaria laubenfelsii</i>	0	1	?	1	1	1	-	0	2	0	1	1	?	2	0	0	1	?	?	c	?	?	?	?	?	?	1	
<i>Araucaria nemorosa</i>	0	1	?	1	1	0	-	0	2	0	1	1	?	2	0	0	1	?	?	c	?	?	?	?	?	?	1	
<i>Araucaria luxurians</i>	0	1	?	1	1	1	-	0	2	0	1	1	?	1	0	0	1	?	?	c	?	?	?	?	?	?	1	
<i>Araucaria columnaris</i>	0	1	?	1	1	0	-	0	2	0	1	1	?	2	0	0	1	?	?	c	?	?	?	?	?	?	1	
<i>Araucaria bidwillii</i>	0	2	?	2	1	0	-	0	1	0	1	1	?	0	0	1	1	?	?	c	?	?	?	?	?	?	0	
<i>Araucaria hunsteini</i>	0	2	?	2	1	0	-	0	1	0	1	1	?	0	0	1	1	?	?	c	?	?	?	?	?	?	0	
<i>Araucaria angustifolia</i>	0	2	?	2	1	0	-	0	1	0	1	1	?	0	0	1	1	?	?	c	?	?	?	?	?	?	0	
<i>Araucaria araucana</i>	0	2	?	2	1	0	-	0	1	0	1	1	?	0	0	1	1	?	?	c	?	?	?	?	?	?	0	
<i>Acmopyle pancheri</i>	2	2	0	0	1	0	-	0	2	0	1	1	-	0	0	1	1	0	?	0	?	2	1	b	0	0	1	
<i>Acmopyle sahniana</i>	2	2	0	0	1	0	-	0	2	0	1	1	-	?	?	0	1	1	0	?	0	?	?	?	?	?	0	1
<i>Afrocarpus falcatus</i>	0	2	1	?	1	?	?	1	0	0	1	1	1	0	0	1	1	0	1	1	b	0	1	1	0	0	1	
<i>Afrocarpus gracilior</i>	0	2	1	?	1	?	?	1	0	0	1	1	1	0	0	1	1	0	1	1	b	0	1	1	0	0	1	
<i>Afrocarpus manni</i>	0	2	1	?	1	?	?	1	0	0	1	1	1	0	0	1	1	0	1	1	b	0	1	1	0	0	1	
<i>Dacrycarpus cinctus</i>	0	1	?	2	1	0	-	0	2	0	1	1	0	0	0	1	0	1	0	1	b	1	0	1	1	0	0	1
<i>Dacrycarpus compactus</i>	0	1	?	2	1	0	-	0	2	0	1	1	0	0	0	0	1	0	1	2	?	0	1	1	0	0	1	
<i>Dacrycarpus cumingii</i>	0	c	?	0	1	0	-	0	2	0	1	1	1	0	0	0	1	0	1	b	?	0	1	1	0	0	1	
<i>Dacrycarpus dacrydioides</i>	0	1	?	2	1	0	-	0	2	0	1	1	0	0	0	0	1	0	1	2	?	0	1	1	1	0	1	
<i>Dacrycarpus expansus</i>	0	1	?	2	1	0	-	0	2	0	1	1	1	0	0	0	1	0	1	b	?	0	1	1	0	0	1	
<i>Dacrycarpus vieillardii</i>	0	1	?	?	1	0	-	0	?	0	1	1	1	0	0	0	1	0	1	2	?	0	1	1	0	0	1	
<i>Dacrydium araucarioides</i>	0	1	?	2	1	2	1	0	2	0	1	1	0	0	0	0	0	0	1	0	1	0	1	1	1	0	1	
<i>Dacrydium balansae</i>	0	1	?	1	1	0	?	0	2	0	1	1	0	0	0	0	0	0	1	b	1	0	1	1	1	0	1	
<i>Dacrydium beccarii</i>	0	1	?	2	1	0	?	0	3	0	1	1	1	0	0	0	0	0	1	0	?	0	1	1	1	0	1	
<i>Dacrydium comosum</i>	0	1	?	2	1	0	?	0	3	0	1	1	1	0	0	0	0	0	1	0	?	?	0	?	?	?	0	1
<i>Dacrydium cupressinum</i>	0	1	?	2	1	0	?	0	2	0	1	1	0	0	0	0	0	0	1	0	?	?	0	?	?	?	0	1
<i>Falcatifolium papuanum</i>	0	c	0	0	1	0	?	1	3	0	1	1	1	0	0	?	0	0	1	c	1	0	1	2	0	0	1	

Taxa	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
<i>Falcatifolium taxoides</i>	0	c	0	0	1	0	?	1	3	0	1	1	1	0	0	?	0	0	1	c	1	0	1	0	0	0	1	
<i>Halocarpus bidwillii</i>	0	1	1	2	1	2	1	0	2	0	1	1	2	3	1	0	1	0	1	c	1	1	1	0	0	0	1	
<i>Halocarpus biformis</i>	0	1	1	2	1	2	1	0	2	0	1	1	?	3	1	0	1	0	1	c	1	1	1	0	0	0	1	
<i>Halocarpus kirkii</i>	0	1	1	2	1	2	1	0	2	0	1	1	?	3	1	0	1	0	1	c	1	1	1	0	0	0	1	
<i>Lagarostrobos franklinii</i>	0	1	1	2	1	2	0	0	2	0	1	1	2	3	1	0	1	0	1	b	1	1	1	b	0	0	1	
<i>Lepidothamnus fonkii</i>	0	1	1	2	1	2	1	0	2	0	1	1	1	0	0	0	1	0	0	2	1	b	1	b	0	0	1	
<i>Lepidothamnus intermedius</i>	0	1	1	2	1	2	-	0	2	0	1	1	?	0	0	0	1	0	1	2	1	1	1	1	0	0	1	
<i>Lepidothamnus laxifolius</i>	0	1	1	2	1	0	1	0	2	0	1	1	?	0	0	0	1	0	1	2	1	b	1	1	0	0	1	
<i>Manoao colensoi</i>	0	1	1	2	1	2	1	0	2	0	1	1	?	3	1	0	1	0	1	2	?	1	1	b	0	0	1	
<i>Microcachrys tetragona</i>	4	1	1	1	1	2	1	0	1	0	1	0	?	0	0	?	1	0	1	2	?	0	1	b	0	0	1	
<i>Nageia nagi</i>	3	2	1	2	0	0	?	1	0	0	0	1	?	0	0	?	b	0	1	2	1	0	1	b	1	0	0	
<i>Nageia wallichiana</i>	3	2	1	2	0	0	?	1	0	0	1	1	?	0	0	?	b	0	1	2	1	0	1	b	1	0	0	
<i>Nageia formosensis</i>	3	2	1	2	0	0	?	1	0	0	0	1	?	0	0	?	b	0	1	2	1	0	1	b	1	0	0	
<i>Parasitaxus ustus</i>	0	1	1	2	1	2	1	0	1	0	1	1	?	3	1	?	1	b	0	2	0	2	1	1	0	0	1	
<i>Pherosphaera fitzgeraldii</i>	0	1	1	0	1	2	1	0	2	0	1	0	?	0	0	2	1	0	1	2	?	0	1	0	0	0	1	
<i>Pherosphaera hookeriana</i>	0	1	1	2	1	?	?	0	2	0	1	0	?	0	0	2	1	0	1	2	?	0	1	0	0	0	1	
<i>Phyllocladus aspleniifolius</i>	1	0	1	2	0	-	-	0	1	1	-	-	-	0	0	?	1	?	1	2	1	0	?	?	?	?	1	
<i>Phyllocladus hypophyllus</i>	1	0	1	2	0	-	-	0	1	1	-	-	-	0	0	?	1	?	1	2	1	0	?	?	?	?	1	
<i>Phyllocladus toatoa</i>	1	0	1	2	0	-	-	0	1	1	-	-	-	0	0	?	1	?	1	2	1	0	?	?	?	?	1	
<i>Phyllocladus trichomanoides</i>	1	0	1	2	0	-	-	0	1	1	-	-	-	0	0	?	1	?	1	2	1	0	?	?	?	?	1	
<i>Eophyllocladus sudamericanus</i>	0	0	?	?	?	?	?	0	?	1	-	-	?	3	?	?	0	0	?	2	?	0	?	?	?	?	1	1
<i>Podocarpus archboldii</i>	0	2	?	2	0	0	-	1	0	0	0	1	-	?	0	0	?	?	?	?	?	?	?	?	?	?	1	
<i>Podocarpus insularis</i>	0	2	?	2	0	0	-	1	0	0	0	1	-	?	0	0	?	?	?	?	?	?	?	?	?	?	1	
<i>Podocarpus dispermus</i>	0	2	?	2	0	0	-	1	0	0	0	1	-	?	0	0	?	?	?	?	?	?	?	?	?	?	1	
<i>Podocarpus gnidioides</i>	0	2	?	2	0	0	-	1	0	0	0	1	-	?	0	0	?	?	?	?	?	?	?	?	?	?	1	
<i>Podocarpus nubigenus</i>	0	2	?	2	0	0	-	1	0	0	0	1	-	?	0	0	?	?	?	?	?	?	?	?	?	?	1	
<i>Podocarpus parlatorei</i>	0	2	?	2	0	0	-	1	0	0	0	1	-	?	0	?	?	?	?	?	?	?	?	?	?	?	1	
<i>Podocarpus salignus</i>	0	2	?	2	0	0	-	1	0	0	0	1	-	0	0	?	0	0	1	?	?	0	1	1	1	?	1	
<i>Prumnopitys andina</i>	0	2	1	2	0	0	-	1	3	0	b	1	2	0	0	0	1	0	1	2	1	0	0	1	0	1	1	
<i>Prumnopitys ferruginoides</i>	0	2	1	2	0	0	-	1	3	0	1	1	?	0	0	?	b	0	1	2	1	0	1	1	0	0	1	
<i>Prumnopitys montana</i>	0	2	1	2	0	0	-	1	3	0	0	1	?	0	0	?	b	0	1	2	1	0	d	1	0	b	1	
<i>Prumnopitys taxifolia</i>	0	2	?	2	0	0	-	1	3	0	0	1	?	0	0	?	1	0	1	c	1	0	0	1	1	0	1	
<i>Retrophyllum comptonii</i>	3	2	1	2	0	0	-	1	3	0	1	1	?	0	0	?	1	0	1	2	1	d	1	1	0	0	1	
<i>Retrophyllum minus</i>	?	2	1	2	0	0	-	1	3	0	1	1	0	0	0	?	1	0	1	2	1	d	1	1	0	0	1	
<i>Retrophyllum rospigliosii</i>	2	2	?	2	0	0	-	1	3	0	1	1	?	0	0	?	1	0	1	2	?	0	1	?	?	0	1	
<i>Saxegothea conspicua</i>	0	2	1	2	0	0	-	1	0	0	0	1	-	0	0	0	0	0	1	2	0	0	0	1	1	0	1	
<i>Prumnopitys amara</i>	0	2	1	2	0	0	-	1	3	0	0	1	-	?	0	0	1	0	0	c	1	0	0	1	0	0	1	

Table S2. Seed-cone characters: (a) 0&1&2; (b) 0&1; (c) 1&2; (d) 0&2; (e) 2&3

Taxa	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	
<i>Cryptomeria japonica</i>	0	0	b	2	0	0	-	-	0	0	0	0	0	-	1	0	0	2	0	0	0	-	-	-	?	?	1	1	0	1	1	0	
<i>Wollemia nobilis</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	0	1	0	0	0	0	-	-	-	2	2	?	1	0	1	0	1	
<i>Agathis australis</i>	b	0	e	2	0	0	-	-	0	0	1	1	1	1	1	0	1	0	0	0	0	-	-	-	2	2	0	1	0	1	0	0	
<i>Agathis montana</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	0	1	0	0	0	0	-	-	-	2	2	0	1	0	1	0	0	
<i>Agathis ovata</i>	b	0	1	2	0	0	-	-	0	0	1	1	1	1	1	0	1	0	0	0	0	-	-	-	2	2	0	1	0	1	0	0	
<i>Agathis moorei</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	0	1	0	0	0	0	-	-	-	2	2	0	1	0	1	0	0	
<i>Agathis lanceolata</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	0	1	0	0	0	0	-	-	-	2	2	0	1	0	1	0	0	
<i>Agathis dammara</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	0	1	0	0	0	0	-	-	-	2	2	0	1	0	1	0	0	
<i>Agathis borneensis</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	0	1	0	0	0	0	-	-	-	2	2	0	1	0	1	0	0	
<i>Agathis macrophylla</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	0	1	0	0	0	0	-	-	-	2	2	0	1	0	1	0	0	
<i>Agathis robusta</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	0	1	0	0	0	0	-	-	-	2	2	0	1	0	1	0	0	
<i>Agathis atropurpurea</i>	b	0	1	2	0	0	-	-	0	0	1	1	1	1	1	0	1	0	0	0	0	-	-	-	2	2	0	1	0	1	0	0	
<i>Agathis microstachya</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	0	1	0	0	0	0	-	-	-	2	2	0	1	0	1	0	0	
<i>Araucaria cunninghamii</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	2	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Araucaria heterophylla</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	2	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Araucaria muelleri</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	2	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Araucaria humboldtensis</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	2	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Araucaria scopulorum</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	2	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Araucaria bernieri</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	2	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Araucaria schmidii</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	2	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Araucaria subulata</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	2	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Araucaria biramulata</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	2	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Araucaria rulei</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	2	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Araucaria montana</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	2	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Araucaria laubenfelsii</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	2	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Araucaria nemorosa</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	2	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Araucaria luxurians</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	2	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Araucaria columnaris</i>	b	0	2	2	0	0	-	-	0	0	1	1	1	1	1	2	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Araucaria bidwillii</i>	b	0	3	2	0	0	-	-	0	0	1	1	1	1	0	1	2	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-
<i>Araucaria hunsteinii</i>	b	0	3	2	0	0	-	-	0	0	1	1	1	1	1	2	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Araucaria angustifolia</i>	1	0	2	2	0	0	-	-	0	0	1	1	1	1	1	1	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Araucaria araucana</i>	1	0	3	2	0	0	-	-	0	0	1	1	1	1	1	1	0	0	1	0	0	-	-	-	2	2	0	0	1	0	-	-	
<i>Acmopyle pancheri</i>	3	2	1	0	0	1	0	1	?	0	?	?	1	0	-	?	?	2	0	1	0	1	0	1	0	1	1	?	0	2	0	-	-
<i>Acmopyle sahiana</i>	3	2	1	0	0	1	0	1	?	0	?	?	1	0	-	?	?	2	0	1	0	1	0	1	1	1	1	?	0	2	0	-	-
<i>Afrocarpus falcatus</i>	3	2	0	0	0	0	-	-	?	?	?	?	1	0	-	?	?	2	0	1	0	1	0	?	1	?	?	?	0	1	0	-	-
<i>Afrocarpus gracilior</i>	3	2	0	0	0	0	-	-	?	?	?	?	1	0	-	?	?	2	0	1	0	1	a	?	1	?	?	?	0	1	0	-	-
<i>Afrocarpus mannii</i>	3	2	?	0	0	0	-	1	?	?	?	?	1	0	-	?	?	2	0	1	0	1	2	?	1	?	?	?	0	1	0	-	-
<i>Dacrycarpus cinctus</i>	3	2	0	0	0	1	1	1	?	?	?	?	1	0	-	1	1	2	0	1	0	1	0	?	1	2	2	1	0	2	0	-	-
<i>Dacrycarpus compactus</i>	3	2	0	0	0	1	1	1	?	?	?	?	1	0	-	1	1	2	0	1	0	1	0	?	1	2	2	1	0	2	0	-	-
<i>Dacrycarpus cumingii</i>	3	2	0	0	0	1	1	1	?	?	?	?	1	0	-	1	1	2	0	1	0	1	1	?	1	2	2	1	0	2	0	-	-
<i>Dacrycarpus dacrydioides</i>	3	2	0	0	0	1	0	1	?	?	?	?	1	0	-	1	1	2	0	1	0	1	b	?	1	2	2	1	0	2	0	-	-
<i>Dacrycarpus expansus</i>	3	2	0	0	0	1	0	1	?	?	?	?	1	0	-	1	1	2	0	1	0	1	?	?	1	2	2	1	0	2	0	-	-
<i>Dacrycarpus vieillardii</i>	3	2	0	0	0	1	1	1	?	?	?	?	1	0	-	1	1	2	0	1	0	1	?	?	1	2	2	1	0	2	0	-	-
<i>Dacrydium araucarioides</i>	3	2	0	0	0	0	-	-	?	?	?	?	1	0	-	?	?	?	0	1	0	1	?	0	0	1	?	?	?	?	0	-	-
<i>Dacrydium balansae</i>	3	2	0	0	0	0	-	-	?	?	?	?	1	0	-	?	?	?	0	1	0	1	?	0	0	1	1	?	?	?	0	-	-
<i>Dacrydium beccarii</i>	3	2	0	0	0	0	-	-	?	?	?	?	1	0	-	?	?	?	0	1	0	1	?	0	0	1	1	?	?	?	0	-	-
<i>Dacrydium comosum</i>	3	2	0	0	0	0	-	-	?	?	?	?	1	0	-	?	?	?	0	1	0	1	?	0	0	1	?	?	?	?	0	-	-
<i>Dacrydium cupressinum</i>	3	2	0	0	0	0	-	-	?	?	?	?	1	0	-	?	?	?	0	1	0	1	?	0	0	1	1	?	?	?	0	-	-
<i>Falcatifolium papuanum</i>	3	2	0	0	0	1	0	0	0	0	?	?	1	0	-	?	?	2	0	1	0	1	3	?	0	2	1	1	0	2	0	-	-

Taxa	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
<i>Falcatifolium taxoides</i>	3	2	1	0	0	1	0	0	0	?	1	0	-	?	?	2	0	1	0	1	3	?	0	2	1	1	0	2	0	-	-	
<i>Halocarpus bidwillii</i>	3	2	0	b	0	0	-	-	?	?	0	1	0	-	?	?	2	0	1	0	1	4	?	1	2	2	?	?	?	0	-	-
<i>Halocarpus biformis</i>	3	2	0	b	0	0	-	-	?	?	0	1	0	-	?	?	2	0	1	0	1	4	?	1	2	2	?	?	?	0	-	-
<i>Halocarpus kirkii</i>	3	2	0	b	0	0	-	-	?	?	0	1	0	-	?	?	2	0	1	0	1	4	?	1	2	2	?	?	?	0	-	-
<i>Lagarostrobos franklinii</i>	3	e	?	1	0	0	-	-	1	?	1	1	0	-	?	?	2	0	1	0	1	3	?	0	1	0	0	1	0	0	-	-
<i>Lepidothamnus fonkii</i>	3	e	?	0	0	b	?	?	?	?	0	1	0	-	?	?	2	0	1	0	1	3	?	0	1	0	?	?	?	0	-	-
<i>Lepidothamnus intermedius</i>	3	e	?	0	0	b	?	?	?	?	0	1	0	-	?	?	2	0	1	0	1	3	?	0	1	0	?	?	?	0	-	-
<i>Lepidothamnus laxifolius</i>	3	e	?	0	0	1	?	?	?	?	0	1	0	-	?	?	2	0	1	0	1	3	?	0	1	0	?	?	?	0	-	-
<i>Manoao colensoi</i>	3	2	?	0	0	0	-	-	1	?	1	1	0	-	?	?	2	0	1	0	1	?	?	0	1	0	?	?	?	0	-	-
<i>Microcachrys tetragona</i>	1	2	0	1	0	0	-	-	0	0	?	1	0	-	?	?	2	0	1	0	1	0	?	1	2	2	1	0	2	0	-	-
<i>Nageia nagi</i>	3	2	b	0	0	0	-	-	?	?	?	1	0	-	?	?	2	0	1	0	1	0	?	1	2	2	?	0	2	0	-	-
<i>Nageia wallichiana</i>	3	2	1	0	0	1	1	0	?	?	?	1	0	-	?	?	2	0	1	0	1	0	?	1	2	2	?	0	2	0	-	-
<i>Nageia formosensis</i>	3	2	?	?	?	?	?	?	?	?	?	1	0	-	?	?	2	0	1	0	1	0	?	1	?	2	?	0	?	0	-	-
<i>Parasitaxus ustus</i>	3	2	0	0	0	0	-	-	?	?	?	1	0	?	?	?	2	0	1	0	?	0	?	?	2	?	?	?	?	0	-	-
<i>Pherosphaera fitzgeraldii</i>	b	1	0	1	0	0	-	-	0	0	1	1	0	-	?	?	?	0	1	0	?	?	?	?	?	0	?	?	?	0	-	-
<i>Pherosphaera hookeriana</i>	b	1	0	1	0	0	-	-	?	?	1	1	0	-	?	?	?	0	1	0	?	?	?	?	?	0	?	?	?	0	-	-
<i>Phyllocladus asplenifolius</i>	1	2	0	1	0	0	-	-	0	0	0	1	0	-	?	?	?	0	1	1	0	-	-	-	0	0	?	?	2	0	-	-
<i>Phyllocladus hypophyllum</i>	1	2	0	b	0	0	-	-	?	?	0	1	0	-	?	?	?	0	1	1	0	-	-	-	0	0	?	?	2	0	-	-
<i>Phyllocladus toatoa</i>	1	2	0	1	0	0	-	-	?	?	0	1	0	-	?	?	?	0	1	1	0	-	-	-	0	0	?	?	2	0	-	-
<i>Phyllocladus trichomanoides</i>	1	2	0	b	0	0	-	-	?	?	0	1	0	-	?	?	?	0	1	1	0	-	-	-	0	0	?	?	2	0	-	-
<i>Eophyllocladus sudamericanus</i>	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
<i>Podocarpus archboldii</i>	3	2	0	0	1	1	1	0	?	?	0	1	0	-	?	?	2	0	1	0	1	1	?	1	?	2	1	0	2	0	-	-
<i>Podocarpus insularis</i>	3	2	b	0	?	1	1	?	?	?	0	1	0	-	?	?	2	0	1	0	1	1	?	1	?	2	1	0	2	0	-	-
<i>Podocarpus dispersus</i>	3	2	1	0	1	1	0	0	?	?	0	1	0	-	?	?	2	0	1	0	1	1	?	1	?	2	1	0	2	0	-	-
<i>Podocarpus gnidioides</i>	3	2	0	0	?	1	b	?	?	?	0	1	0	-	?	?	2	0	1	0	1	1	?	1	?	2	1	0	2	0	-	-
<i>Podocarpus nubigenus</i>	3	2	0	0	?	1	1	0	?	0	0	1	0	-	?	?	2	0	1	0	1	1	?	1	0	2	1	0	2	0	-	-
<i>Podocarpus parlatorei</i>	3	2	0	0	?	1	1	0	?	0	0	1	0	-	?	?	2	0	1	0	1	1	?	1	0	2	1	0	2	0	-	-
<i>Podocarpus salignus</i>	3	2	0	0	?	1	1	0	?	?	0	1	0	-	?	?	2	0	1	0	1	1	?	1	?	2	1	0	2	0	-	-
<i>Prumnopitys andina</i>	3	2	1	0	0	0	-	-	?	?	0	1	0	-	?	?	2	0	1	0	1	b	?	1	2	?	1	0	c	0	-	-
<i>Prumnopitys ferruginoides</i>	3	2	0	0	0	0	-	-	?	?	0	1	0	-	?	?	2	0	1	0	1	1	?	1	2	?	1	0	c	0	-	-
<i>Prumnopitys montana</i>	3	2	0	0	0	0	-	-	?	?	0	1	0	-	?	?	2	0	1	0	1	1	?	1	2	?	1	0	c	0	-	-
<i>Prumnopitys taxifolia</i>	3	2	0	0	0	0	-	-	?	?	0	1	0	-	?	?	2	0	1	0	1	0	?	1	2	?	1	0	c	0	-	-
<i>Retrophyllum comptonii</i>	3	2	1	0	0	1	1	0	1	1	0	1	0	-	0	-	2	0	1	0	1	2	?	1	2	2	1	0	c	0	-	-
<i>Retrophyllum minus</i>	3	2	1	0	0	1	1	0	1	1	0	1	0	-	0	-	2	0	1	0	1	2	?	1	2	2	0	0	1	0	-	-
<i>Retrophyllum rospigliosii</i>	3	2	1	0	0	1	1	0	1	1	0	1	0	-	1	3	2	0	1	0	1	1	?	1	2	2	1	0	2	0	-	-
<i>Saxegothea conspicua</i>	0	2	2	1	0	0	-	-	0	0	1	1	1	?	1	0	0	0	1	0	1	?	?	-	2	2	1	0	2	0	-	-
<i>Prumnopitys amara</i>	3	2	1	0	0	0	-	-	?	?	0	1	0	-	0	-	2	0	1	0	1	b	?	1	?	2	1	0	c	0	-	-

Reference

Andruchow-Colombo A, Escapa IH, Carpenter RJ, Hill RS, Iglesias A, Abarzua AM, Wilf P (2019) Oldest record of the scale-leaved clade of Podocarpaceae, early Paleocene of Patagonia, Argentina. *Alcheringa* **43**, 127–145. doi:10.1080/03115518.2018.1517222