

**PALEONTOLOGY OF THE BLAAUWATER 67 and 65 FARMS, SOUTH AFRICA:
TESTING THE *DAPTOCEPHALUS/LYSTROSAURUS* BIOZONE BOUNDARY IN A
STRATIGRAPHIC FRAMEWORK**

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Supplemental Data

Supplemental Data Table 1: Paleontological collections from Old Lootsberg Pass and Tweefontein, curated in The Albany Museum, Grahamstown, South Africa, as provided by R. Prevec. Note that exact GPS coordinates of collection sites have been obscured, leaving only the latitude/longitude and degree data intact. Full coordinate data can be requested from the authors or R. Prevec.

Supplemental Data Table 2: Palynological counts of two prepared slides processed from macrofloral assemblage BUa at Old Lootsberg Pass, Eastern Cape Province, South Africa. Semiquantitative abundance of pollen and spore taxa from the Old Lootsberg Pass locality BUa identified at the generic or species level. Relative frequencies are: R rare, <1%, C common 1-5%, F frequent 5-10%, A abundant 10-25, D dominant 25-100.

Three kmz files in which our GPS waypoints for the base, intermediate, and uppermost sites are provided such that the reader can visualize on GoogleEarth the following.

- OldLootsbergPass_Stratigraphic_Section_W_Paleomag.kmz : These waypoints position the base and top of the measured section presented, herein, along with the locations where samples for magnetostratigraphy and other magnetic property data were collected. Note that 7-12 corings are made in each competent bed used for the analyses (Gastaldo et al., 2015).
- OLP_DeadCow_to_Tweefontein_1_Sst_Upper_Bounding_Surface_Trace.kmz : These are waypoints documenting the physical correlation between the basal thick sandstone body at Old Lootsberg Pass and that at Tweefontein¹ (Figs. 4, 5, 13). Waypoints are marked every 50 or 100 paces, 40 and 80 m distance, respectively. There is little elevational difference between the top surface of the bed at Old Lootsberg Pass and that same surface at Tweefontein¹.
- Tweefontein1_Stratigraphic_Section_W_Paleomag.kmz : These waypoints position the base and near top of the measured section presented, herein, using the locations where samples for magnetostratigraphy and other magnetic property data were collected. Note that 7-12 corings are made in each competent bed used for the analyses.

SUPERLOCALITY	LOCALITY NAME	GPS CO-ORDINATES / elevation; data available on request	DATE FOUND	LOCALITY TYPE (PLANT/ VERTEBRATE)	FOSSIL INVENTORY	LOCALITY DESCRIPTION	FIELD LOCALITY NAME	COLLECTOR
Old Lootsberg Pass; Blaauwater Farm, Nieu Bethesda	Dicynodon skull locality	S 31° 49.**** E 24° 49.**** +/- 5m; 1621 m	Jan-12	vertebrate	<i>Dicynodon</i> sp.	East of Dan/Kody measured section, in siltstone on slope in gully below fence, adjacent to water reservoir		Found: R. Prevec; extracted by B. de Klerk, J. Hepple and R. Prevec
Old Lootsberg Pass; Blaauwater Farm, Nieu Bethesda	Kody's section	S 31° 49.**** E 24° 49.**** +/- 4m; 1544 m	1/7/2013	plant	<i>Paracalamites</i> ; <i>Trizygia</i> (fragments, but attached to stems); possible lycopod axes and possible associated cone; <i>Glossopteris</i> (W1 and also broad-meshed forms, possibly 4 morphotypes); <i>Eretmonia</i> , <i>Lidgetttonia</i> , unidentified dictyopteridoid fructification; insect wing	fossil plant impressions not well preserved, but identifiable; matrix very blocky siltstone, doesn't cleave well; colour on purple end of olive-grey spectrum; fossiliferous zone approximately 30 cm thick, laterally extensive over some 20-30m of outcrop in gully	Lower Blaauwater plant locality (Kody's section)	Found: R. Prevec; collected by R. Prevec, S. Kamo, R.A. (Gastaldo student)
Old Lootsberg Pass; Blaauwater Farm, Nieu Bethesda	John's wood site		1/7/2012	plant	permineralised wood pieces	weathered out (float) adjacent to deep gully where Kody's section was measured		Found: John Geissman (sent to Marion Bamford, BPI, Wits)
Old Lootsberg Pass; Blaauwater Farm, Nieu Bethesda	Tweefontein gully	S 31° 50.**** E 24° 50.**** +/- 7m; 1543m	3/4/2013	plant	<i>Paracalamites</i> and <i>Glossopteris</i> (W1)	poorly preserved plant impressions, in similar lithology to locality in Kody's section (blocky, fine siltstone)	Plant locality Tweefontein Gully	Found: R. Prevec
Old Lootsberg Pass; Blaauwater Farm, Nieu Bethesda	Plant locality Old Lootsberg Pass Roadside 01	S 31° 47.**** E 24° 47.**** +/- 5m; 1648m	3/4/2013	plant	<i>Paracalamites</i> , <i>Glossopteris</i> (3 or 4 morphotypes, including broad-meshed forms known elsewhere to be attached to <i>Plumsteadia</i> and <i>Estcourtia</i>);	low, weathered exposures of olive-grey siltstone on left side of Old Lootsberg Pass when heading up the pass; approximately 6 m below first sandstone with nodular conglomerate at base; well-preserved plant impressions, although scattered and sparse; very patchy occurrence, but good venation detail; a profusion of <i>Paracalamites</i> throughout the exposure, <i>Glossopteris</i> less common; matrix coarse to fine olive-grey siltstone with poor cleavage planes.	Plant locality Old Lootsberg Pass roadside 01 ('Katberg' upper plant site 01)	Found: R. Prevec; collected by R. Prevec, S. Kamo, R.A. Gastaldo, J. Neveling, Andzani-, A. Gotz
Old Lootsberg Pass; Blaauwater Farm, Nieu Bethesda	<i>Lystrasaurus</i> Corner	S 31° 47.**** E 24° 48.**** +/- 6m; 1660m	3/5/2013	vertebrate	probable <i>Lystrasaurus</i> ; caniniform process with tusk	skull fragment in nodule <i>in situ</i> in maroon siltstone sequence	Probable <i>Lystrasaurus</i> in Tweefontein corner	Found: R. Prevec; collected by R. Prevec and J. Neveling
Old Lootsberg Pass; Blaauwater Farm, Nieu Bethesda	<i>Lystrasaurus</i> Corner	S 31° 47.**** E 24° 48.**** +/- 7m; 1666m	3/5/2013	vertebrate	<i>Lystrasaurus</i> sp.	skull in large boulder displaced from higher up in Katberg sandstones	<i>Lystrasaurus</i> in Tweefontein corner	Found: R. Prevec; collected by R. Prevec
Old Lootsberg Pass; Blaauwater Farm, Nieu Bethesda	<i>Lystrasaurus</i> Corner: gully plant site 01	S 31° 47.**** E 24° 48.**** +/- 4m; 1642m	3/5/2013	plant	<i>Glossopteris</i> (W1) and <i>Paracalamites</i>	poorly preserved plant impressions in blocky, fine siltstone; matrix similar in colour to that at Old Lootsberg Pass Roadside 01; fairly small fossiliferous area, 1.5 m lateral exposure, 15 cm thick	<i>Lystrasaurus</i> Corner Gully 01	Found: R. Prevec; collected by R. Prevec
Old Lootsberg Pass; Blaauwater Farm, Nieu Bethesda	<i>Lystrasaurus</i> Corner: gully plant site 02	S 31° 47.**** E 24° 48.**** +/- 4m; 1646m	3/5/2013	plant	<i>Glossopteris</i> (W1) and <i>Paracalamites</i>	poorly preserved plant impressions; lithology as for Gully 01, but more olive-green; <i>Paracalamites</i> abundant, rare <i>Glossopteris</i>	<i>Lystrasaurus</i> Corner Gully 02	Found: R. Prevec; collected by R. Prevec
Old Lootsberg Pass; Blaauwater Farm, Nieu Bethesda	<i>Lystrasaurus</i> Corner: gully plant site 03	S 31° 47.**** E 24° 48.**** +/- 4m; 1641m	3/5/2013	plant	<i>Glossopteris</i> (W1), and obovate, broad-meshed form), <i>Trizygia</i> , possible <i>Rigbya</i> (but may be poorly preserved <i>Trizygia</i> leaf whorl) and <i>Paracalamites</i>	near to Gully plant site 02; similar lithology as for Gully 01, but more olive-green; <i>Paracalamites</i> abundant, rare <i>Glossopteris</i>	<i>Lystrasaurus</i> Corner Gully 03	Found: R. Prevec; collected by R. Prevec
Old Lootsberg Pass; Blaauwater Farm, Nieu Bethesda	Wood - base of Katberg	S 31° 47.**** E 24° 47.**** +/- 4m; 1653	3/5/2013	plant	permineralised tree trunk, and associated chunks of wood; very good preservation, growth rings	wood immediately above first sandstone with basal nodular conglomerate, west of Old Lootsberg Pass, close to Old Lootsberg Pass roadside 01 plant site	wood	Found: J. Neveling; collected J. Neveling, R. Prevec, R.A. Gastaldo, Andzani -
Old Lootsberg Pass; Blaauwater Farm, Nieu Bethesda	Dicynodont in nodular conglomerate	S 31° 47.**** E 24° 47.****; 1658m	3/5/2013	vertebrate	unidentified dicynodont; very large tusk, so almost certainly a Permian beast: probably <i>Lystrasaurus mccaigi</i> or <i>Dicynodon/Daptocephalus</i>	partial skull in nodular conglomerate at base of sandstone (first occurrence of nc in sequence); immediately below and a few meters north of the fossil wood locality.	Dicynodont in nodular conglomerate	Found: R. Prevec; Collected by J. Neveling and R. Prevec
Old Lootsberg Pass; Blaauwater Farm, Nieu Bethesda	Plant locality below wood site	S 31° 47.**** E 24° 47.**** +/- 4m; 1652m	3/22/2013	plant	<i>Glossopteris</i> (W1) (sparse) and abundant, well-preserved <i>Paracalamites</i>	plant locality in gully exposure approximately 10m below fossil wood site, west of Old Lootsberg Pass		Found: R. Prevec
Old Lootsberg Pass; Blaauwater Farm, Nieu Bethesda	small vertebrate skeleton	S 31° 47.**** E 24° 47.**** 1686m	5/8/2013	vertebrate	postcranial skeleton of <i>Lystrasaurus</i> -sized creature; many ribs and vertebral column exposed	adjacent to Bob and Johann's Old Lootsberg Pass section, close to transition from predominantly green to predominantly maroon siltstone; adjacent to fairly large olive-grey siltstone exposure	skeleton	Found: R. Prevec; not excavated
Old Lootsberg Pass; Blaauwater Farm, Nieu Bethesda	Plant locality Old Lootsberg Pass Roadside 02	S 31° 47.**** E 24° 47.**** +/- 5m; 1687m	5/12/2013	plant	woody axes, <i>Paracalamites</i> , possible <i>Trizygia</i> leaves, <i>Glossopteris</i> (mostly W1, but possible broad-meshed fragment)	small outcrop beneath large fallen sandstone boulders, adjacent to sharp bend in Old Lootsberg Pass, just beyond detour past washed-out section; blocky, olive-grey silt, patchy fossil occurrence, becoming coarser laterally	'Katberg' upper plant site 02	Found: R. Prevec; Collected: R. Prevec
Old Lootsberg Pass; Blaauwater Farm, Nieu Bethesda	Plant locality upper measured section	S 31° 47.**** E 24° 47.**** +/- 9m; 1680m	5/12/2013	plant	<i>Paracalamites</i> and <i>Glossopteris</i> (W1)	olive-grey siltstone (but more in the blue end of the spectrum, coarser than at other sites) approximately 3 m below vertebrate skeleton; scattered, sparse leaves, poorly preserved	'Katberg' upper plant site 03	Found: R. Prevec; Collected: R. Prevec

Table 1:
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Trilete spore indet.	R
<i>Columnnisorites</i> sp. cf. <i>C. peppersii</i> Alpern et Doubinger 1973	R
(cf.) <i>Laevigatosporites</i> sp. Ibrahim 1933	D
<i>Alisporites</i> sp. cf. <i>A. potoniei</i> (Lakhanpal, Sah et Dube) Somers 1968	R
<i>Alisporites tenuicarpus</i> Balme 1970	R
<i>Lueckisporites virkkiae</i> Potonié et Klaus 1954	R
<i>Guttulapollenites hannonicus</i> Goubin 1965	R
<i>Lunatisporites</i> sp. Leschik <i>emend.</i> Mädler 1964	C
<i>Lunatisporites noviaulensis</i> (Leschik) Foster 1979	R
<i>Protohaploxypinus</i> sp. Samoilovich <i>emend.</i> Morbey 1975	C
<i>Protohaploxypinus diagonalis</i> Balme 1970	R
<i>Protohaploxypinus limpidus</i> (Balme et Hennelly) Balme et Playford 1967	R
<i>Protohaploxypinus rugatus</i> Segroves 1969	R
<i>Striatoabieites multistriatus</i> (Balme et Hennelly) Hart 1964	R
<i>Weylandites lucifer</i> (Bharadwaj et Salujha) Foster 1975	R