

## Appendix S2

**Appendix S2.** Outcrop area and sampled diversity of Karoo Basin theropcephalians and cynodonts.

<b>Karoo Biozone</b>	<b>Base (Ma)</b>	<b>Top (Ma)</b>	<b>Duration (Myr)</b>	<b>Outcrop area (total) (km<sup>2</sup>)</b>	<b>Outcrop area (productive) (km<sup>2</sup>)</b>	<b>#theroceph genera</b>	<b># cyno genera</b>
<i>Cynognathus</i> AZ	248	241.2	6.8	11,196	5,488	2	8
<i>Lystrosaurus</i> AZ	252.3	248	4.3	76,550	48,358	7	4
<i>Dicynodon</i> AZ	255	252.3	2.7	41,113	20,322	11	3
<i>Cistecephalus</i> AZ	257	255	2.0	41,082	31,360	8	2
<i>Tropidostoma</i> AZ	259.5	257	2.5	17,718	14,739	6	2
<i>Pristerognathus</i> AZ	262	259.5	2.5	3,857	3,857	5	--
<i>Tapinocephalus</i> AZ	265.8	262	3.8	21,043	15,806	7	--
<i>Eodicynodon</i> AZ	268	265.8	2.2	1,286	1,066	2	--

Ma, millions of years ago (mega-annum); Myr, million years; dates are estimates based on Abdala and Ribeiro (2010), Smith et al. (2012), and Rubidge et al. (2013); AZ, Assemblage Zone;

Outcrop area estimates from King (1991);

References: Abdala F, Ribeiro AM (2010) Distribution and diversity patterns of Triassic cynodonts (Therapsida, Cynodontia) in Gondwana. *Palaeogeogr Palaeoclimatol Palaeoecol* 286:202–217; Smith RMH, Rubidge BS, van der Walt M (2012) Therapsid biodiversity patterns and paleoenvironments of the Karoo Basin, South Africa. In: Chinsamy-Turan A, editor. *Forerunners of Mammals: Radiation, Histology, Biology*. Bloomington: Indiana University Press. pp. 31–62; Rubidge BS, Erwin DH, Ramezani J, Bowring SA, de Klerk WJ (2013) High-precision temporal calibration of Late Permian biostratigraphy: U-Pb constraints from the Karoo Supergroup, South Africa. *Geology* 41:363–366; King G (1991). Terrestrial tetrapods and the end Permian event: a comparison of analyses. *Hist Biol* 5:239–255.