

## Supplemental material

Apomorphy lists:

Branch	Character	Steps	CI	Change
-----				
node_18 --> node_17	7	1	0.333	0 --> 1
	21	1	0.400	0 --> 1
	50	1	0.333	0 --> 1
node_17 --> node_16	13	1	0.500	0 --> 1
	22	1	0.200	0 --> 1
	35	1	0.400	0 --> 1
	39	1	1.000	0 --> 1
	40	1	1.000	0 --> 1
	48	1	0.333	0 --> 1
	51	1	1.000	0 --> 1
	53	1	0.333	0 --> 1
	54	1	1.000	0 --> 1
	57	1	0.333	0 --> 1
	60	1	1.000	0 --> 1
node_16 --> node_15	20	1	0.400	0 --> 1
	21	1	0.400	1 --> 0
	43	1	0.250	0 --> 1
node_15 --> node_14	5	1	0.500	0 --> 1
	7	1	0.333	1 --> 0
	9	1	0.200	0 --> 1
	27	1	0.286	0 --> 2
	31	1	0.667	1 --> 2
	32	1	0.400	0 --> 1
	38	1	1.000	0 --> 2
	42	1	0.200	1 --> 0

	50	1 0.333 1 --> 0
node_14 --> node_13	8	1 0.333 2 --> 1
	11	1 0.250 0 --> 1
	15	1 0.333 0 --> 1
	24	1 0.286 2 --> 1
	33	1 0.286 0 --> 2
	53	1 0.333 1 --> 0
	65	1 0.500 0 --> 1
node_13 --> node_7	32	1 0.400 1 --> 2
	43	1 0.250 1 --> 0
	55	1 0.500 0 --> 1
	58	1 0.333 1 --> 0
	66	1 1.000 0 --> 1
	68	1 0.250 1 --> 0
	69	1 0.333 1 --> 0
node_7 --> <i>Angusaurus</i> spp. 3	1	0.333 2 --> 1
	4	1 0.250 0 --> 1
	19	1 0.250 1 --> 0
	21	1 0.400 0 ==> 1
	22	1 0.200 1 --> 0
	24	1 0.286 1 --> 2
	27	1 0.286 2 ==> 1
	32	1 0.400 2 --> 1
	45	1 0.500 0 --> 1
node_7 --> node_6	3	1 0.333 2 --> 0
	4	1 0.250 0 --> 1
	9	1 0.200 1 ==> 0
	20	1 0.400 1 ==> 2
	41	1 0.200 0 ==> 1
	45	1 0.500 0 --> 1

	48	1 0.333 1 --> 0
	53	1 0.333 0 ==> 1
	61	1 0.500 0 --> 1
node_6 --> node_5	8	1 0.333 1 ==> 0
	19	1 0.250 1 --> 0
	22	1 0.200 1 --> 0
	24	1 0.286 1 --> 2
	35	1 0.400 1 ==> 0
	49	1 0.333 0 --> 1
	52	1 1.000 0 --> 1
	57	1 0.333 1 --> 0
	59	1 0.333 0 --> 1
	64	1 0.500 0 --> 1
node_5 --> node_4	12	1 0.500 0 ==> 1
	21	1 0.400 0 ==> 1
	29	1 0.333 1 --> 0
	33	1 0.250 2 ==> 1
node_4 --> node_3	20	1 0.400 2 --> 0
	27	1 0.286 2 ==> 1
	45	1 0.500 1 ==> 0
	56	1 1.000 1 --> 0
node_3 --> node_2	3	1 0.333 0 ==> 1
	20	1 0.400 0 --> 1
	35	1 0.333 0 → 1
	55	1 0.500 1 --> 0
node_2 --> <i>Inflectosaurus amplius</i> 5		1 0.500 1 ==> 0
	22	1 0.200 0 ==> 1
	33	1 0.286 1 ==> 2
node_2 --> <i>Platystega depressa</i> 35		1 0.333 1 --> 0
	36	1 0.250 0 ==> 1

	44	1 0.250 0 ==> 1
node 3 → <i>Microposaurus casei</i>	2	1 0.500 0 ==> 1
	8	1 0.333 0 ==> 2
	25	1 0.500 0 ==> 1
	27	1 0.250 1 ==> 2
	33	1 0.250 1 ==> 0
node_3 --> <i>Tertrema acuta</i>	8	1 0.333 0 ==> 2
	9	1 0.200 0 ==> 1
	19	1 0.250 0 ==> 1
	29	1 0.333 0 --> 1
	37	1 0.500 0 ==> 1
	47	1 0.500 0 ==> 1
node_4 --> <i>Lyrocephaliscus euri</i>	1	1 0.500 1 ==> 0
	4	1 0.250 1 ==> 0
	11	1 0.250 1 ==> 0
	24	1 0.286 2 ==> 0
	41	1 0.200 1 ==> 0
	42	1 0.200 0 ==> 1
	43	1 0.250 0 ==> 1
	48	1 0.333 0 --> 1
	55	1 0.500 1 ==> 2
	68	1 0.250 0 ==> 1
node_5 --> <i>Trematosuchus sobeyi</i>	6	1 0.500 1 ==> 0
	13	1 0.500 1 ==> 0
	14	1 0.500 0 ==> 1
	17	1 1.000 0 ==> 1
	34	1 0.333 1 ==> 0
node_6 --> <i>Trematosaurus brauni</i>	32	1 0.400 2 --> 0
node_13 --> <i>Thoosuchus yakovlevi</i>	19	1 0.250 1 --> 0
	22	1 0.200 1 --> 0

	26	1 0.500 0 ==> 1
	27	1 0.286 2 ==> 0
	32	1 0.400 1 --> 2
	42	1 0.200 0 ==> 1
	43	1 0.250 1 --> 0
	55	1 0.500 0 --> 1
	57	1 0.333 1 ==> 0
	58	1 0.333 1 --> 0
	68	1 0.250 1 --> 0
	69	1 0.333 1 --> 0
node_14 --> <i>Trematolestes hagdorni</i> 2		1 1.000 0 ==> 1
	3	1 0.333 2 --> 0
	8	1 0.333 2 --> 1
	11	1 0.250 0 --> 1
	12	1 0.500 0 ==> 1
	15	1 0.333 0 --> 1
	24	1 0.286 2 --> 1
	33	1 0.286 0 ==> 1
	34	1 0.333 1 ==> 0
	36	1 0.250 0 ==> 1
	41	1 0.200 0 ==> 1
	53	1 0.333 1 --> 0
	59	1 0.333 0 ==> 1
	65	1 0.500 0 --> 1
node_15 --> node_12	5	1 0.500 0 --> 1
	9	1 0.200 0 --> 1
	23	1 1.000 0 --> 1
	25	1 1.000 0 ==> 1
	27	1 0.286 0 --> 1
	31	1 0.667 1 --> 0

	38	1 1.000 0 --> 2
	42	1 0.200 1 --> 0
	47	1 0.500 0 --> 1
	55	1 0.500 0 --> 1
node_12 --> node_11	35	1 0.400 1 ==> 2
node_11 --> node_10	4	1 0.250 0 ==> 1
	7	1 0.333 1 --> 0
	15	1 0.333 0 ==> 1
	21	1 0.400 0 --> 2
	27	1 0.286 1 --> 2
	33	1 0.286 0 --> 2
	36	1 0.250 0 --> 1
	41	1 0.200 0 --> 1
	42	1 0.200 0 --> 1
	49	1 0.333 0 --> 1
	64	1 0.500 0 --> 1
	65	1 0.500 0 --> 1
node_10 --> node_9	8	1 0.333 2 --> 1
	44	1 0.250 0 ==> 1
node_9 --> node_8	9	1 0.200 1 --> 0
	18	1 1.000 0 ==> 1
	24	1 0.286 2 --> 1
node_8 --> <i>Aphaneramma rostratum</i> 27	1	0.250 2 ==> 1
node_8 --> <i>Aphaneramma kokeni</i> 33	1	0.250 2 ==> 0
node_11 --> <i>Wantzosaurus elongatus</i> 11	1	0.250 0 ==> 1
	20	1 0.400 1 ==> 2
	22	1 0.200 1 ==> 0
	30	1 0.500 0 ==> 1
	31	1 0.667 0 --> 2
	50	1 0.333 1 --> 0

node\_12 --> *Stoschiosaurus nielseni* 37 1 0.500 0 ==> 1

node\_16 --> *Benthosuchus sushkini* 7 1 0.333 1 --> 0

8 1 0.286 2 --> 1

20 1 0.400 0 --> 1

21 1 0.400 1 --> 0

30 1 0.500 0 ==> 1

32 1 0.400 0 --> 1

33 1 0.250 0 --> 2

43 1 0.250 0 --> 1

44 1 0.250 0 ==> 1

50 1 0.333 1 --> 0

58 1 0.333 1 ==> 0

61 1 0.500 0 ==> 1

66 1 1.000 0 --> 1

68 1 0.250 1 ==> 0

69 1 0.333 1 ==> 0

node\_17 --> *Edingerella madagascariensis* 3 1 0.333 2 ==> 1

9 1 0.200 0 --> 1

13 1 0.500 0 --> 1

16 1 1.000 0 ==> 1

22 1 0.200 0 --> 1

24 1 0.286 2 ==> 1

26 1 0.500 0 ==> 1

33 1 0.286 0 --> 1

35 1 0.400 0 --> 1

39 1 1.000 0 --> 1

40 1 1.000 0 --> 1

41 1 0.200 0 ==> 1

48 1 0.333 0 --> 1

51 1 1.000 0 --> 1

53	1 0.333 0 --> 1
54	1 1.000 0 --> 1
57	1 0.333 0 --> 1
59	1 0.333 0 ==> 1
60	1 1.000 0 --> 1
63	1 1.000 0 ==> 1
67	1 1.000 0 ==> 1
node_18 --> <i>Archegosaurus decheni</i> 4	1 0.250 0 ==> 1
7	1 0.333 0 --> 1
11	1 0.250 0 ==> 1
14	1 0.500 0 ==> 1
21	1 0.400 0 --> 1
27	1 0.250 0 ==> 1
35	1 0.333 0 --> 2
43	1 0.250 0 --> 1
44	1 0.250 0 ==> 1
49	1 0.333 0 ==> 1
50	1 0.333 0 --> 1
node_18 --> <i>Onchiodon frossardi</i> 1	1 0.500 1 ==> 0
3	1 0.333 2 ==> 0
6	1 0.500 1 ==> 0
8	1 0.286 2 ==> 0
19	1 0.250 1 ==> 0
24	1 0.286 2 ==> 0
28	1 1.000 1 ==> 0
29	1 0.333 1 ==> 0
31	1 0.667 1 ==> 0
34	1 0.333 1 ==> 0
42	1 0.200 1 ==> 0
46	1 1.000 1 ==> 0



58        1 0.333 1 ==> 0

62        1 1.000 1 ==> 0

68        1 0.250 1 ==> 0

69        1 0.333 1 ==> 0