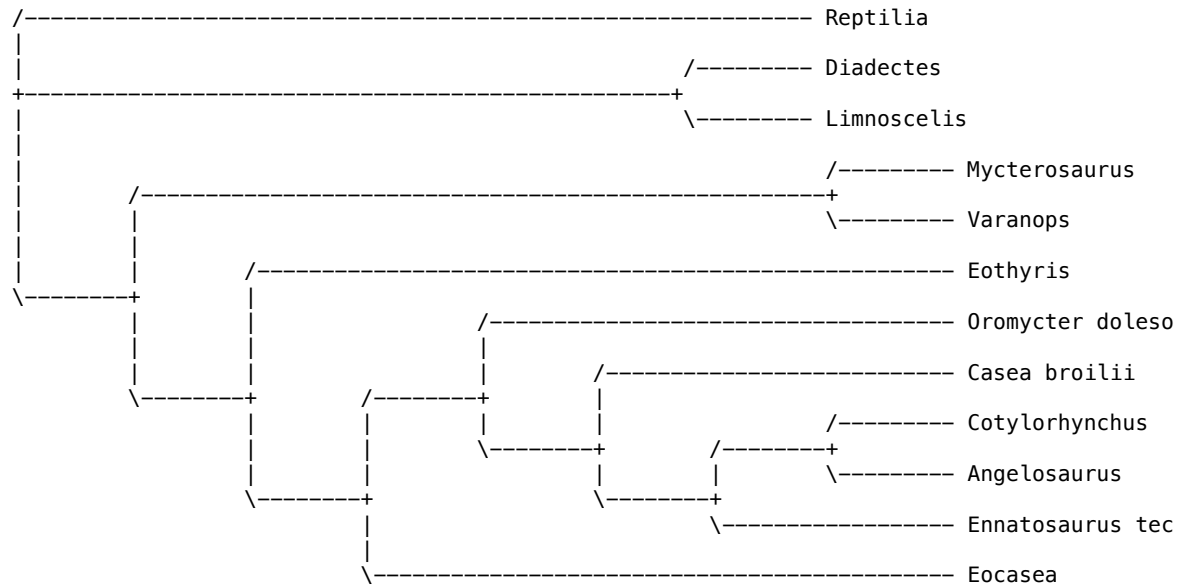


Branch-and-bound search completed:
 Score of best tree found = 196
 Number of trees retained = 1
 Time used = 0.02 sec

Tree number 1 (rooted using user-specified outgroup)



Tree description:

Unrooted tree(s) rooted using outgroup method
 Optimality criterion = parsimony
 Character-status summary:
 106 included characters:
 All characters are of type 'unord'
 All characters have equal weight
 8 characters are parsimony-uninformative
 Number of (included) parsimony-informative characters = 98
 Gaps are treated as "missing"
 Multistate taxa interpreted as polymorphism ("min" values for CI, RI, and RC are minimum-possible character lengths)

Character-state optimization: Accelerated transformation (ACCTRAN)

Tree number 1 (rooted using user-specified outgroup)

Branch lengths and linkages for tree #1 (unrooted)

Node	Connected to node	Assigned branch length	Minimum possible length	Maximum possible length
Reptilia (1)*	25	7	2	12
16	25	14	9	19
Diadectes (2)*	16	11	9	14
Limnoscelis (3)*	16	9	7	11
24	25	22	11	25
17	24	17	8	21
Mycterosaurus (4)	17	4	4	7
Varanops (5)	17	10	7	13
23	24	14	4	25
Eothyris (6)	23	4	4	10
22	23	18	5	32

21	22	11	2	35
Oromycter doleso (7)	21	0	0	0
20	21	4	1	33
Casea broilii (8)	20	3	2	9
19	20	18	14	29
18	19	7	3	12
Cotylorhynchus (10)	18	2	0	8
Angelosaurus (11)	18	1	1	3
Ennatosaurus tec (12)	19	4	2	9
Eocasea (13)	22	2	2	3

Sum		182		

Data matrix and reconstructed states for internal nodes:

	1111111111222222222333333333444444444555555555666666666777
Taxon/Node	12345678901234567890123456789012345678901234567890123456789012

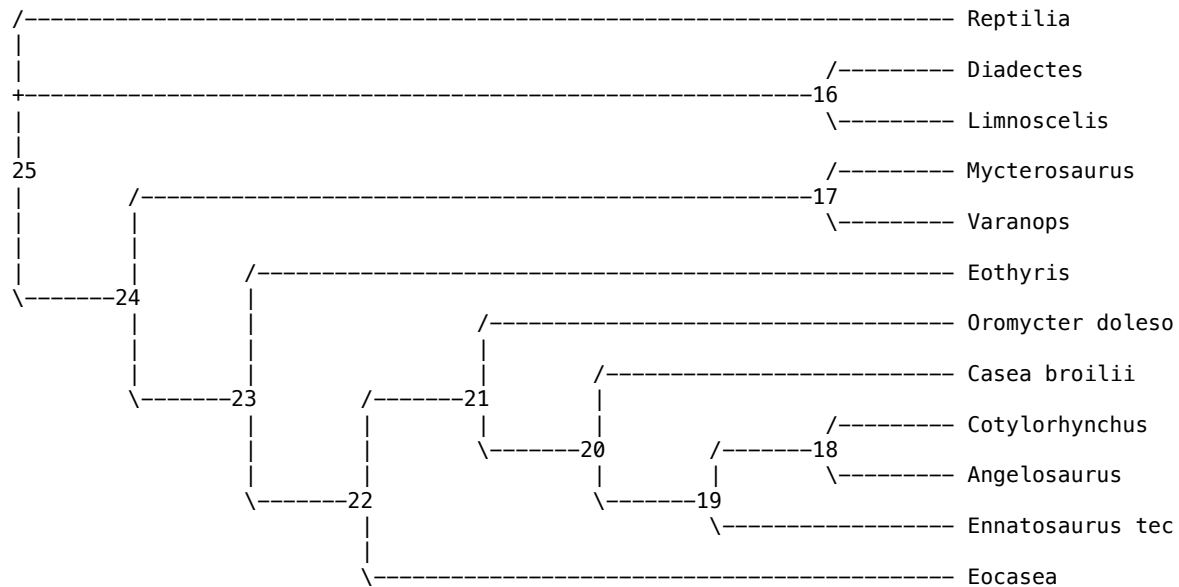
Reptilia	01000000000000001000010002000120000000000000000000000001000102100010000
Diadectes	00000000000000001000101120000020000120101100011000000000101102000010701
Limnoscelis	100000000000000011000001100000?0000020101100000020110101001001000000000
Mycterosaurus	0101000111201011011121110211110110000?0110011001100101000000002120211000
Varanops	010000021120101000102111122121011000000110011100200101011010002120211000
Eothyris	1001000111001000010010010100100?1000001110021001100100000100001011111000
Oromycter doleso	100?000111?000001000?0000???00?000000000?0002??0010000000001000000001
Casea broilii	100200111110100000001001000?1100?10110111111012111010000100010000000111
Cotylorhynchus	1012111221111101100121010002210?2110011111011012311010101100101000000101
Angelosaurus	000?000??0?00000000?0000???100?1100101110?000??00000000000?0?0000201
Ennatosaurus tec	1012111221111101101121110002201?200111111001101231101010010000000000211
Eocasea	000?000??00010000001?0000?02?00?20000?00000?10021?000000000000?0?0?00010
16	000000000000000000001100000110000020000020101100001000000001001002000010000
17	010100011120101001102111021111011000000110011001100101011010002120211000
18	101211122111110110012101000221002110011111011012311010101100101000000201
19	10121112211111011001210100022100211111111011012311010101100100000000211
20	10120111111010001001100100021100211110111101101211101000110000000000111
21	100201011110100010011001000211002111101111011012111010001100001000000011
22	100201011100100010011001000211002111001111011012111010001100001000000010
23	1001010111001000010010010011001000001111011001101100001100001000011000
24	000100011100100001101001010011001000000110011001100100001000002000011000
25	0000000000000000000110000001000002000000010000000100000001000002000010000

Data matrix and reconstructed states for internal nodes (continued):

	1111111
Taxon/Node	77777778888888889999999990000000
	3456789012345678901234567890123456

Reptilia	0000100000011001000010001000110000
Diadectes	01000110000100000000?1111111010000
Limnoscelis	0101010001010000000011111110010000
Mycterosaurus	00001000000000010000?0001001010?0?

Tree length = 196
Consistency index (CI) = 0.7296
Homoplasy index (HI) = 0.3367
CI excluding uninformative characters = 0.7151
HI excluding uninformative characters = 0.2849
Retention index (RI) = 0.7452
Rescaled consistency index (RC) = 0.5437



Branch	Character	Steps	CI	Change
node_25 --> Reptilia	2 (2.)	1	0.500	0 --> 1
	23 (24.)	1	0.333	0 --> 1
	27 (28.)	1	0.667	0 --> 2

	31 (32.)	1	0.500	0	=> 1
	61 (62.)	1	0.333	0	--> 1
	64 (65.)	1	0.500	0	--> 1
node_25 --> node_16	95 (96.)	1	0.500	1	=> 0
	25 (26.)	1	0.500	0	=> 1
	38 (39.)	1	1.000	0	=> 2
	42 (43.)	1	0.500	0	--> 1
	43 (44.)	1	0.500	0	=> 1
	60 (61.)	1	1.000	0	=> 1
	74 (75.)	1	1.000	0	--> 1
	77 (78.)	1	0.500	1	--> 0
	85 (86.)	1	1.000	1	=> 0
	88 (89.)	1	1.000	1	=> 0
	94 (95.)	1	0.500	0	=> 1
	96 (97.)	1	0.500	0	--> 1
	98 (99.)	1	1.000	0	=> 1
	99 (100.)	1	1.000	0	--> 1
node_16 --> Diadectes	101 (102.)	1	1.000	1	=> 0
	22 (23.)	1	0.333	0	=> 1
	24 (25.)	1	0.500	0	--> 1
	26 (27.)	1	0.750	1	=> 2
	37 (38.)	1	0.333	0	=> 1
	47 (48.)	1	0.500	0	=> 1
	57 (58.)	1	0.500	1	=> 0
	58 (59.)	1	0.500	0	=> 1
	61 (62.)	1	0.333	0	--> 1
	72 (73.)	1	0.500	0	=> 1
	79 (80.)	1	0.500	0	=> 1
node_16 --> Limnoscelis	100 (101.)	1	0.667	0	=> 1
	1 (1.)	1	0.500	0	=> 1
	48 (49.)	1	0.750	1	=> 0
	50 (51.)	1	1.000	0	=> 2
	52 (53.)	1	0.333	0	--> 1
	53 (54.)	1	0.500	0	=> 1
	55 (56.)	1	0.500	0	=> 1
	63 (64.)	1	0.500	2	=> 1
	68 (69.)	1	0.500	1	=> 0
node_25 --> node_24	76 (77.)	1	0.500	0	--> 1
	4 (5.)	1	0.667	0	--> 1
	8 (9.)	1	0.667	0	=> 1
	9 (10.)	1	1.000	0	=> 1
	10 (11.)	1	0.500	0	=> 1
	13 (14.)	1	1.000	0	=> 1
	21 (22.)	1	0.667	0	--> 1
	24 (25.)	1	0.500	0	--> 1
	29 (30.)	1	0.667	0	=> 1
	30 (31.)	1	1.000	0	=> 1
	32 (33.)	1	1.000	2	--> 0
	33 (34.)	1	1.000	0	=> 1
	41 (42.)	1	1.000	0	=> 1
	44 (45.)	1	1.000	0	=> 1
	45 (46.)	1	1.000	0	=> 1
	49 (50.)	1	1.000	0	=> 1
	52 (53.)	1	0.333	0	--> 1
	69 (70.)	1	0.667	0	--> 1
	76 (77.)	1	0.500	0	--> 1
	84 (85.)	1	0.500	1	--> 0
	89 (90.)	1	1.000	0	--> 1
	90 (91.)	1	1.000	0	--> 1
node_24 --> node_17	91 (92.)	1	1.000	0	--> 1
	2 (2.)	1	0.500	0	--> 1
	11 (12.)	1	1.000	0	=> 2
	15 (16.)	1	1.000	0	=> 1
	21 (22.)	1	0.667	1	--> 2
	22 (23.)	1	0.333	0	=> 1
	23 (24.)	1	0.333	0	--> 1
	26 (27.)	1	0.750	1	=> 2
	27 (28.)	1	0.667	0	--> 1

	28 (29.)	1	1.000	0 ==>	1
	32 (33.)	1	1.000	0 -->	1
	54 (55.)	1	1.000	0 ==>	1
	56 (57.)	1	1.000	0 -->	1
	59 (60.)	1	1.000	0 -->	1
	64 (65.)	1	0.500	0 -->	1
	65 (66.)	1	1.000	0 ==>	2
	67 (68.)	1	1.000	0 ==>	2
	93 (94.)	1	1.000	1 -->	2
node_17 --> Mycterosaurus	16 (17.)	1	0.500	0 ==>	1
	20 (21.)	1	0.333	0 ==>	1
	95 (96.)	1	0.500	1 ==>	0
	100 (101.)	1	0.667	0 ==>	1
node_17 --> Varanops	4 (5.)	1	0.667	1 -->	0
	8 (9.)	1	0.667	1 ==>	2
	18 (19.)	1	0.500	1 ==>	0
	25 (26.)	1	0.500	0 ==>	1
	27 (28.)	1	0.667	1 -->	2
	29 (30.)	1	0.667	1 ==>	2
	46 (47.)	1	1.000	0 ==>	1
	48 (49.)	1	0.750	1 ==>	0
	49 (50.)	1	1.000	1 ==>	2
	84 (85.)	1	0.500	0 -->	1
node_24 --> node_23	1 (1.)	1	0.500	0 ==>	1
	6 (7.)	1	1.000	0 -->	1
	19 (20.)	1	0.500	1 -->	0
	39 (40.)	1	1.000	0 ==>	1
	42 (43.)	1	0.500	0 -->	1
	51 (52.)	1	1.000	0 -->	1
	58 (59.)	1	0.500	0 ==>	1
	63 (64.)	1	0.500	2 ==>	1
	80 (81.)	1	1.000	0 -->	1
	81 (82.)	1	1.000	0 -->	1
	83 (84.)	1	1.000	0 -->	1
	92 (93.)	1	1.000	0 -->	1
	96 (97.)	1	0.500	0 -->	1
	102 (103.)	1	1.000	1 -->	0
node_23 --> Eothyris	44 (45.)	1	1.000	1 ==>	2
	65 (66.)	1	1.000	0 ==>	1
	66 (67.)	1	1.000	0 ==>	1
	67 (68.)	1	1.000	0 ==>	1
node_23 --> node_22	4 (5.)	1	0.667	1 -->	2
	17 (18.)	1	1.000	0 -->	1
	18 (19.)	1	0.500	1 ==>	0
	20 (21.)	1	0.333	0 -->	1
	26 (27.)	1	0.750	1 -->	0
	28 (29.)	1	1.000	0 ==>	2
	33 (34.)	1	1.000	1 ==>	2
	34 (35.)	1	1.000	0 -->	1
	35 (36.)	1	1.000	0 -->	1
	36 (37.)	1	0.500	0 -->	1
	47 (48.)	1	0.500	0 -->	1
	48 (49.)	1	0.750	1 ==>	2
	50 (51.)	1	1.000	0 -->	1
	52 (53.)	1	0.333	1 -->	0
	53 (54.)	1	0.500	0 -->	1
	68 (69.)	1	0.500	1 -->	0
	69 (70.)	1	0.667	1 -->	0
	71 (72.)	1	0.500	0 ==>	1
node_22 --> node_21	11 (12.)	1	1.000	0 -->	1
	37 (38.)	1	0.333	0 -->	1
	72 (73.)	1	0.500	0 ==>	1
	73 (74.)	1	1.000	0 ==>	1
	75 (76.)	1	1.000	0 -->	1
	77 (78.)	1	0.500	1 -->	0
	79 (80.)	1	0.500	0 -->	1
	103 (104.)	1	1.000	0 -->	1
	104 (105.)	1	1.000	0 -->	1

	105 (106.)	1	1.000	0	-->	1
	106 (107.)	1	0.667	0	-->	1
node_21 --> node_20	3 (4.)	1	1.000	0	-->	1
	7 (8.)	1	1.000	0	=>	1
	63 (64.)	1	0.500	1	-->	0
	70 (71.)	1	0.667	0	-->	1
node_20 --> Casea broilii	20 (21.)	1	0.333	1	-->	0
	43 (44.)	1	0.500	0	=>	1
	62 (63.)	1	1.000	0	=>	1
node_20 --> node_19	5 (6.)	1	1.000	0	=>	1
	8 (9.)	1	0.667	1	=>	2
	9 (10.)	1	1.000	1	=>	2
	12 (13.)	1	1.000	0	=>	1
	14 (15.)	1	1.000	0	=>	1
	16 (17.)	1	0.500	0	=>	1
	21 (22.)	1	0.667	1	-->	2
	22 (23.)	1	0.333	0	=>	1
	29 (30.)	1	0.667	1	=>	2
	38 (39.)	1	1.000	0	=>	1
	49 (50.)	1	1.000	1	=>	3
	55 (56.)	1	0.500	0	=>	1
	61 (62.)	1	0.333	0	-->	1
	70 (71.)	1	0.667	1	-->	2
	93 (94.)	1	1.000	1	=>	0
	94 (95.)	1	0.500	0	=>	1
	97 (98.)	1	1.000	1	=>	0
	106 (107.)	1	0.667	1	-->	2
node_19 --> node_18	36 (37.)	1	0.500	1	-->	0
	37 (38.)	1	0.333	1	-->	0
	63 (64.)	1	0.500	0	-->	1
	71 (72.)	1	0.500	1	-->	0
	82 (83.)	1	1.000	1	=>	0
	86 (87.)	1	1.000	0	=>	1
	87 (88.)	1	1.000	0	=>	1
node_18 --> Cotylorhynchus	70 (71.)	1	0.667	2	-->	1
	106 (107.)	1	0.667	2	-->	1
node_18 --> Angelosaurus	104 (105.)	1	1.000	1	=>	2
node_19 --> Ennatosaurus tec	19 (20.)	1	0.500	0	-->	1
	23 (24.)	1	0.333	0	-->	1
	31 (32.)	1	0.500	0	=>	1
	57 (58.)	1	0.500	1	=>	0
node_22 --> Eocasea	10 (11.)	1	0.500	1	=>	0
	40 (41.)	1	1.000	1	=>	0