

Supplementary Material 1. Material examined.

Coordinates are given in SIRGAS2000. Specimens marked with an asterisk (*) were previously analyzed by one of the authors (TBG), could not be found in their respective collections during the time of writing (18 April 2023), and are likely to be either missing or were destroyed during the Butantan Institute Fire in 2010.

Apostolepis aff. *niceforoi* AMARAL, 1935 (N = 1). BRAZIL: RORAIMA: Caracará, Vila de Caicubi, Rio Jufari, [1.797409°S, -61.143789°W] (MZUSP 19625).

Apostolepis albicollaris LEMA, 2002 (N = 24). BRAZIL: DISTRITO FEDERAL: Brasília, [-15.775247°S, -47.922950°W] (USNM 148789, 148790, MCP 8354, 8355 (holotype of *Apostolepis albicollaris*), 8565, 9188, IBSP 55142*, 55143*, 62498*, 63913*, 20617*, 20618*, 26760*, 63916*, 63917*, CHUNB 23782, 23783); GOIÁS: Alexânia, [-16.073833°S, -48.500497°W] (IBSP 63916), Ipameri, [17.72194°S, 48.15972°W] (IBSP 1822*, 92626, 92627), Minaçu, Cana Brava UHE, [-13.510069°S, -48.209950°W] (MCP 15219 (holotype of *Apostolepis cerradoensis*), IBSP 26712*, AMNH-R 144575).

Apostolepis ambiniger (PETERS, 1869) (N = 21). PARAGUAY: Unknown locality (ZMB 6450 (holotype of *Rhynchonyx ambiniger*), MNRJ 760, 761, 762, NMW 13807, USNM 73458); AMAMBAY: Pedro Juan Caballero, [-22.556997°S, -55.727736°W] (MCZ 47002); CORDILLERA: “Bei” (Eng: “in”) Altos, [-25.264344°S, -57.254242°W] (NMW 20721); DEPARTAMENTO CENTRAL: Unknown locality (MVZ 110991), Areguá, [-25.303760°S, -57.411182°W] (MHNP 5163), Asunción, [-25.272547°S, -57.584233°W] (ZMB 28729, BMNH 1930.11.27.228, 1834.3.14.70, 1834.3.14.71, 1834.3.14.72, 1834.3.14.73, SMF 20340), Villa Hayes, Asunción, [-25.272550°S, -57.584240°W] (ZMB 32144), San Lorenzo, [-25.353124°S, -57.505877°W] (MHNP 3493), Trinidad, [-27.128686°S, -55.706528°W] (UMMZ 108809); PRESIDENTE HAYES: Chacoí, [-25.248977°S, -57.645968°W] (ZMB 32144).

Apostolepis arenaria RODRIGUES, 1993 (N = 5). BRAZIL: BAHIA: Originally given as “Alagoado”, corrected to Casa Nova municipality, [-9.161121°S, -40.983073°W] (MZUSP 10027, 10028, 10029, 10030, 10289).

Apostolepis assimilis (REINHARDT, 1861) (n = 142). BRAZIL: BAHIA: Barreiras, [-12.143650°S, -45.003059°W] (UMMZ 20411), previously reported as from “Trinidad, Paraguay” later redetermined to be from “Unknown locality, Bahia” by Entiauspe-Neto et al. (2022) (UMMZ 108810); DISTRITO FEDERAL: Brasília, [-15.775247°S, -47.922950°W] (CHUNB 24456, 24474, 50311, IBSP 20566, 28734, USNM 148790); GOIÁS: border with Tocantins, Ilha do Bananal, Santa Isabel, [-11.080152°S, -50.636316°W] (IBSP 12324), Jataí, [-17.899968°S, -51.730803°S] (MZUSP 3783), Mineiros, [-17.558692°S, -52.552554°S] (IBSP 55495), Rio Verde, [-17.787982°S, -50.937775°W] (IBSP 10326, 12945, MZUSP 3194), Uruaçu, Cana Brava, [-14.519870°S, -49.150580°W] (IBSP 9154); MINAS GERAIS: Cabo Verde, [-21.475110°S, -46.397057°W] (IBSP 29448), Cambuí, [-22.614916°S, -46.056915°W] (IBSP 44222), Capão dos Porcos, Mariana, [-20.365709°S, -43.407326°W] (ZMUC 63806 (holotype), Caxambu, [-21.98007°S, -44.932633°W] (IBSP 816), Conceição dos Ouros, [-22.412537°S, -45.800055°W] (IBSP 33206), Entre Rios de Minas, [-20.680355°S, -44.089915°W] (FUNED 691), Gonçalves, [-22.658901°S, -45.856063°W] (IBSP 49666, MHNCI 12231, 12232), Ibirité, [-20.012663°S, -44.081203°W] (FUNED 603), Itajubá, [-22.434017°S, -45.467651°W] (IBSP 9115, 9407, 9592), Itamonte, [-22.284305°S, -44.874096°W] (IBSP 22405), Itatiaiuçu, [-20.204767°S, -44.462560°W] (FUNED 510), Jaíba, [-15.345628°S,

-43.686232°W] (FUNED 1465), Maria da Fé, [-22.307992°S, -45.378278°W] (IBSP 5597), Moeda, [-20.330538°S, -44.055868°W] (FUNED 02), Nova Lima, [-20.004714°S, -43.871471°W] (FUNED 550), Ouro Fino, [-22.278276°S, -46.374551°W] (IBSP 34306), Munhoz, [-22.278276°S, -46.374551°W] (IBSP 66376), Passa Quatro, [-22.389193°S, -44.972256°W] (IBSP 3264, 3274, 34306), Poços de Caldas, [-21.812489°S, -46.588499°W] (IBSP 45737, 23985, 14256), Pouso Alegre, [-22.246732°S, -45.927618°W] (IBSP 42162, 44597, 49942), Santa Rosa da Serra, [-19.530423°S, -45.967855°W] (IBSP 46088), Serra do Cipó, [-19.370279°S, -43.585560°W] (MZUSP 7595), Uberabinha, border with São Paulo, [-20.016022°S, -47.793120°W] (IBSP 888), Uberlândia, [-19.133733°S, -48.333231°W] (IBSP 3841, 3845, 6388, 3841), Vespasiano, [-19.734960°S, -43.939672°W] (FUNED 04); MATO GROSSO DO SUL: Amambai, [-23.11955°S, -55.230187°W] (IBSP 41163), Campo Grande, [-20.494551°S, -54.610826°W] (IBSP 42978, 57222, MHNCI 6719, MZUSP 10155), Nova Andradina, [-22.002500°S, -53.491960°W] (IBSP 27489, 27489), Paranaíba, [-19.671986°S, -51.191663°W] (IBSP 45615), Ponta Porã, [-22.512971°S, -55.713606°W] (IBSP 44065); MATO GROSSO: Buriti, [-17.973681°S, -53.554398°W] (IBSP 5346), Cuiabá, [-15.426759°S, -55.943251°W] (MNRJ 2031); PARANÁ: Londrina, [-23.322525°S, -51.176065°W] (IBSP 37462, 40008); SANTA CATARINA: Florianópolis (previously BGSS 5344, currently ZFMK 102120, locality in error, see Entiauspe-Neto et al. 2020d); SÃO PAULO: Araçariguama, [-23.441586°S, -47.069288°W] (IBSP 83132), Barueri, [-23.515768°S, -46.882181°W] (IBSP 23206), Bauri, [-22.327818°S, -49.107726°W] (MHNCI 4790), Cabreúva, [-23.316678°S, -47.082624°W] (IBSP 26565), Caieiras, [-23.374820°S, -46.735134°W] (IBSP 40320), Caixa d'Água, coordinates unknown (IBSP 6659), Carapicuíba, [-23.540539°S, -46.846607°W] (IBSP 87769, 82260), Cajamar, [-23.348228°S, -46.877875°W] (IBSP 30408, 87083, 3186), Campo Largo, [-25.463235°S, -49.537514°W] (IBSP 4498), Campo Limpo, [-23.635070°S, -46.754990°W] (IBSP 6532), Campos do Jordão, [-22.735380°S, -45.583899°W] (IBSP 26796, UMMZ 204112), Carapicuíba, [-23.54919°S, -46.844454°W] (IBSP 72970), Cotia, [-23.636020°S, -46.956576°W] (IBSP 24588), Ibiúna, [-23.662839°S, -47.213951°W] (IBSP 32672, 79312, 78900), Itapevi, [-23.554159°S, -46.978074°W] (IBSP 30436, 86908, 79489), Itatiba, [-22.993786°S, -46.824113°W] (IBSP 5703), Itu, [-23.297557°S, -47.301031°W] (IBSP 4180, 6606, 82230, MHNCI 6969, MZUSP 4180, 6606), Jaguara, [-23.512151°S, -46.742029°W] (IBSP 70356), Jandira, [-23.543093°S, -46.900625°W] (IBSP 31694, 40493), Jarinu, [-23.116928°S, -46.716730°W] (IBSP 30019), Jundiá, [-23.203436°S, -46.939945°W] (IBSP 16688), Mairinque, [-23.539455°S, -47.185860°W] (IBSP 41065, 89049), Osasco, [-23.540895°S, -46.795779°W] (IBSP 23889, 40480, 6141, 62362, 78442, MCP 64, MHNCI 11365), Pirituba, [-23.474910°S, -46.743881°W] (IBSP 70351, 78948), “Rio Grande”, coordinates unknown (IBSP 40008), Santana de Parnaíba, [-23.457582°S, -46.918621°W] (IBSP 61761, 81066), São Caetano do Sul, [-23.626138°S, -46.565080°W] (IBSP 81238), São Paulo, [-23.534933°S, -46.609078°W] (IBSP 318, 348, 6401, 6558, 8040, 8945, 21993, 22221, 24180, 24548, 24873, 27598, 30153, 30586, 31716, 32441, 33316, 84949, 78948), São Roque, [-23.528545°S, -47.141170°W] (IBSP 23548, 78641, 79658, MHNCI 4495), Sorocaba, [-23.481770°S, -47.455341°W] (IBSP 15760, 40008, MHNCI 6970).

Apostolepis breviceps HARVEY, GONZALES, & SCROCCHI, 2001 (N = 1). BOLIVIA: CORDILLERA: Kaa-Iya del Gran Chaco National Park and Integrated Management Natural Area, [-19.106448°S, -61.700736°W] (MNKR 3920).

Apostolepis cearensis GOMES, 1915 (N = 151). BRAZIL: ALAGOAS: Piranhas, [-9.607967°S, -37.768092°W] (CHUFS 3217, 3365, MUFAL 1315); BAHIA: Brumado, [-14.207125°S, -41.675605°W] (IBSP 33651, 33685), Camaçari, [-12.706750°S, -38.331172°W] (MZUEFS 371), Capim Grosso, [-11.381030°S, -40.010385°W] (MZUEFS 294), Feira de Santana, [-12.223937°S, -38.990827°W] (MZUEFS 12, 19, 70, 71, 74, 86, 130, 162, 166, 203, 277, 310, 315, 429, 434, 463, 464, 505, 515, 615, 624, 637, 669, 672, 689, 771, 804, 836, 841, 895, 927, 1007, 1040, 1053, 1067, 1069, 1070, 1071, 1077, 1080, 1110, 1146, 1157, 1158, 1195, 1196, 1208, 1209, 1210, 1236, 1240, 1241, 1244, 1260, 1302, 1310, 1313, 1369, 1377, 1405, 1445, 1446, 1477, 1478, 1479, 1499, 1539, 1559, 1570, 1587, 1604, 1611, 1622, 1629, 1645, 1673, 1674), Poções, [-14.526737°S, -40.366499°W] (MZUFBA 1595, 1796, 1805, 1813, 1826, 1827), São Gonçalo dos Campos, [-12.435848°S, -38.952627°W] (MZUEFS 73, 825), Jaguarari, [-10.258500°S, -40.194672°W] (IBSP 26203); CEARÁ: Aquiraz, [-3.910332°S, -38.383874°W] (CHUFC 1185), Beberibe, [-4.183106°S, -38.131271°W] (CHUFC 1628), Crateús, [-5.174963°S, -40.675624°W] (CHUFC 2238), Crato, [-7.244635°S, -39.448914°W] (IBSP 20385), Fortaleza, [-3.76337°S, -38.527876°W] (CHUFC 208, 826, 1240, 1242, 1243, 1524, 1525, 1526, 1527, 1528, 1529, 1531, 1539, 1620, 1621, 1622, 1623, 1624, 1625, 1626, 1627, 1629, 2001, 2236, 2287, 2243, 2633, IBSP 20020, 40262, 55318, 18219, 18220), Icó, [-6.400202°S, -38.860449°W] (IBSP 12106), Juazeiro do Norte, [-7.228342°S, -39.314310°W] (IBSP 20164), Limoeiro do Norte, [-5.140528°S, -38.071232°W] (IBSP 12775), Maranguape, [-3.889587°S, -38.678660°W] (CHUFC 2235), Quixadá, [-4.969875°S, -39.017092°W] (CHUFC 1221), São Benedito, [-4.045633°S, -40.865595°W] (CHUFC 2114, 2147), Tianguá, [-3.727411°S, -40.997394°W] (IBSP 77109), Ubajara, [-3.865421°S, -40.980188°W] (IBSP 75855, 77101), Viçosa do Ceará, [-3.566272°S, -41.110413°W] (IBSP 77509); PARAÍBA: Cabaceiras, [-7.490668°S, -36.288036°W] (MZUSP 9013), Campina Grande, [-7.230571°S, -35.892641°W] (IBSP 9050), Lagoa de Dentro, [-6.673537°S, -35.377482°W] (MNRJ 17055); PERNAMBUCO: Tacaratu [-9.10561°S, -38.14997°W] (MHNCL 14985, 14991, 14989, 14986, 14988); PIAUÍ: Teresina, [5.052687°S, 42.764437°W] (IBSP 49743), Redenção do Gurguéia, [-9.488261°S, -44.583311°W] (IBSP 80942).

Apostolepis christineae LEMA, 2002 (N = 2). BOLIVIA: SANTA CRUZ: Puerto Suarez, German Busch, [-18.970739°S, -57.816239°W] (BMNH 1907.10.31.62). BRAZIL: MATO GROSSO: Cáceres, [-16.076427°S, -57.675286°W] (MCP 12515 (holotype of *Apostolepis christineae*)).

Apostolepis dimidiata (JAN, 1862) (N = 22). UNKNOWN LOCALITY: (IBSP 77875). BRAZIL: MATO GROSSO: Unknown locality (AMNH 7245, 102252, FMNH 69934, MCZ 27661, USNM 76369, 76370, ZUEC 936, 2277, 0884, 947), Águas de Santa Bárbara [-22.869149°S, -49.238608°W] (IBSP 89746), Angatuba, [-23.40000°S, -48.41300°W] (IBSP 87366), Bragança Paulista [-22.956896°S, -46.542333°W] (IBSP 85890), Corumbatá [-22.218997°S, -47.626610°W] (IBSP 425), Cerqueira César [-23.034797°S, -49.165330°W] (IBSP 93070), Itapetinginga, [-23.59200°S -48.05300°W] (IBSP 90035, 81522, 89747, 90432, 90806), Limeira, [-22.56500°S, -47.40200°W] (IBSP 77178).

Apostolepis dorbignyi (SCHLEGEL, 1837 [sensu lato]) (N = 31). “AMÉRIQUE MÉRIDIONALE”: Unknown locality (MHNH 3664 (holotype of *Calamaria d'Orbignyi*)). BOLIVIA: COCHA-BAMBA: Mizque, Viña Perdida [-17.907°S, -65.3435°W] (MHNCR 3014); TARIJA: Aguiarenda, [-21.4839°S, -64.7601°W] (MZUT 963); SANTA CRUZ: Cabezas [-18.8086°S, -63.3095°W] (MNKR 4531), Mataral, [-18.1308°S, -64.207°W] (MNKR 2537, 1486, 1313), San Juan del Portrero, [-17.93933°S, -64.287183°W]

(ZFMK 66375 (paratype of *Apostolepis multicineta*)), Santa Rosa de Lima, [Unknown coordinates] (MNKR 2374), Florida, [-18.0997°S, -63.9131°W] (ZFMK 75025, 75026, MNKR 2742, 2060, 1462, 3333, 3886, 3301, 2345, 2743, 3383, 5362, 2501, 1461, 1369, 2106, 1733, 1675), Pampagrande, Florida, Santa Cruz, [-18.088233°S, -64.117892°W] (MNKR 729 (holotype of *Apostolepis multicineta*)), 878 (paratype of *Apostolepis multicineta*), MHNCR 480), Valle Grande, Nancahuasú, Saladillo [-18.046464°S, -64.282014°W] (PMM 54).

Apostolepis flavotorquata (DUMÉRIL, BIBRON, & DUMÉRIL, 1854) (N = 6). BRAZIL: BAHIA: Unknown locality (UMMZ 108808); MATO GROSSO: Unknown locality (AMNH 93559, 93569, 93561, SMS voucher unavailable); DISTRITO FEDERAL: Brasília, [-15.775247°S, -47.922950°W] (IBSP 81159)

Apostolepis gaboi RODRIGUES, 1993 (N = 34). BRAZIL: BAHIA: Ibiraba, Barra, [-10.787131°S, -42.823709°W] (MZUFBA 1673, 1674, 1675, 1676, 1677, 1678, 1679, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1697, 1698, 1699, 1700, 1701, 1702, 1702, 1704), Icatú Barra, [-10.787140°S, -42.823790°W] (MZUEFS 981), Queimadas, [-11.042418°S, -39.699621°W] (MZUSP 10290).

Apostolepis goiasensis PRADO, 1942 (N = 4). BRAZIL: GOIÁS: Rio Verde, [-17.79720°S, -50.917500°W] (IBSP 10260* (holotype of *Apostolepis goiasensis*)); MINAS GERAIS: Três Lagoas, [-20.788371°S, -51.706916°W] (CHFURG 1344, IBSP 90238, 90239).

Apostolepis intermedia KOSLOWSKY, 1898 (N = 3). BRAZIL: MINAS GERAIS: Três Lagoas, [-20.788371°S, -51.706916°W] (IBSP 90237). PARAGUAY: SAN PEDRO: Laguna Blanca, [-23.808604°S, -56.283731°W] (MHNP 11533, 11636).

Apostolepis kikoi SANTOS, ENTIAUSPE-NETO, SILVA-ARAÚJO, SOUZA, LEMA, STRÜSSMANN & ALBUQUERQUE, 2018 (N = 5). BRAZIL: MATO GROSSO: APM Manso, Chapada dos Guimarães, [-15.090012°S, -55.712671°W] (MCP 11372, 12096 (holotype of *Apostolepis kikoi*)), 14524, 14525, UFMTR 1933 (paratypes of *Apostolepis kikoi*)).

Apostolepis lineata COPE, 1887 (N = 1). BRAZIL: MATO GROSSO: Chapada dos Guimarães, [-15.090012°S, -55.712671°W] (ANSP 11211 (syntype of *Apostolepis erythronotus lineatus*)).

Apostolepis longicaudata GOMES, 1921 (N = 1). BRAZIL: TOCANTINS: Estação Ecológica Serra Geral, [-10.856603°S, -46.696670°W] (MZUSP 14122).

Apostolepis nelsonjorgei LEMA & RENNER, 2004 (N = 2). BRAZIL: GOIÁS: Campinaçu, [-13.787851°S, -48.571293°W] (MZUSP 20636); TOCANTINS: Estação Ecológica Serra Geral, [-10.856603°S, -46.696670°W] (MZUSP 17615).

Apostolepis niceforoi AMARAL, 1935 (N = 1). COLOMBIA: CAQUETÁ: Florencia, [1.614836°S, -75.608047°W] (ICN 10422).

Apostolepis nigrolineata (PETERS, 1869) (N = 207). SOUTH AMERICA (ZMB 6447 (holotype of *Elapomorphus nigrolineatus*)). BRAZIL: Unknown locality (BMNH 1946.1.9.82 (holotype of *Apostolepis pyymi*)); MARANHÃO: Paruá, BR 316, [-2.509304°S, -45.785033°W] (MPEG 10835, 13641, 14352); MARANHÃO/PARÁ BORDER: BR 316, km 74, unknown coordinates (MPEG 1064, 1084, 3581, 8192, 10851); MATO GROSSO: Paranaita, [-9.673178°S, -56.473624°W] (MZUSP 22344); PARÁ: Acará, [-1.954775°S, -48.198985°W] (MPEG 10939), Ananindeua, [-1.363090°S, -48.383168°W] (MPEG 6943, 9459), Apeú, [-1.300842°S, -47.988234°W] (MPEG 586, 587, 696, 1174, 1476, 1479, 2657, 2666, 3331, 3332, 3334, 3335, 5718, 6916, 6919, MCP 11317), Augusto Correa, [-1.096654°S, -46.524358°W] (MPEG 3905, 3954, 5399, 6712, 6713, 6721, 6724, 6737, 8999, 9937, 10764, 12450, 13074), Baião, [-2.791305°S, -49.669744°W] (MPEG 1596, 1600, 1605, 1891, 1897, 2101, 2422, 2423, 2560, 2822, 2826, 2864,

2866, 3386, 3387, 3389, 3390, 3448, 3949, 3950, 3951, 4086, 4094, 4801, 4802, 4807, 4808, 4811, 4813, 4817, 4828, 4858, 8187), Belém, [-1.255141°S, -48.457572°W] (IBSP 3033, 3034, 54152, KU 127256, 127257, 140153, 140154, MPEG 12769, 12770, 12771), Benevides, Genipaula Road, Pratinha, [-1.363915°S, -48.253507°W] (MPEG 7570, 8399, 8615, 8631, 12575, 14285, 15476), Cachoeira do Piriá, [-1.760485°S, -46.546425°W] (MPEG 2174, 2970, 5160, 7821, 7827, 9546, 9558, 9818, 9829, 11486, 11488, 11933, 11937, 12882, 12883, 15060, 15063, 15863), Castanhal, [-1.289674°S, -47.932947°W] (MPEG 5878, 7163, 7173, 10912, 10913, 11794, 12693), Gurupá, [-1.000374°S, -51.464640°W] (MPEG 16324), IgarapéAçu, [-1.137108°S, -47.619212°W] (MPEG 868, 869, 870, 871, 910, 912, 913, 924, 925), Inhangabi, [-1.431096°S, -47.910219°W] (MPEG 1464, 1568, 1571), Marabá, [-5.345396°S, -49.118178°W] (MPEG 17304), Ilha de Outeiro, [-1.259871°S, -48.445750°W] (MCP 10718), Ourém, [-1.551101°S, -47.117504°W] (MPEG 4224, 5004, 5005, 5012, 7016, 7019), Santa Bárbara do Pará, [-1.189924°S, -48.257630°W] (MPEG 1855, 2608, 3952), Santarém, [-2.445930°S, -54.730186°W] (MPEG 8011), Santarém Novo, [-0.908698°S, -47.348546°W] (MPEG 1841, 1977, 3251, 4154, 4796, 7081), Santo Antônio do Tauá, [-1.081319°S, -48.161660°W] (MPEG 1000, 1453, 1872, 1873, 1879, 2375, 2376, 2643, 3306, 3940, 4718, 4720, 4721, 4723, 4730, 6958, 7557), Serra dos Carajás, [-6.277626°S, -50.581624°W] (MZUFV 1071), Serra de Kukoinhokren (herein inferred as Ourilandia do Norte), [-6.753257°S, -51.079484°W] (MZUSP 1068485), Uruá, [-4.544668°S, -56.311443°W] (IBSP 7285, MZUSP 7287), Utinga, unknown coordinates (KU 128094), Viseu, [-1.575437°S, -46.570213°W] (MPEG 1735, 1787, 2292, 2293, 2323, 2349, 3714, 3953, 4458, 5239, 5249, 5320, 5321, 5324, 5325, 5327, 5329, 6633, 7291, 7325, 7338, 7701, 8959, 10010, 10884, 10886, 10887, 11267, 11268, 13260, 15126, 15127, 17279, 314243); RONDÔNIA: Machadinho do Oeste, [-9.349686°S, -61.981843°W] (MZUSP 21888); MATO GROSSO: Pontes e Lacerda, [-15.232549°S, -59.333494°W] (MPEG 2500).

Apostolepis nigroterminata BOULENGER, 1896 [sensu lato] (N = 16). BOLIVIA: Unknown locality (USNM 280371); SANTA CRUZ: Unknown locality (BMNH 1927.8.1.180, 1927.8.1.181, 1927.8.1.182, CM 2909, MNKR 472, 942, UMMZ 60773, 67962, 67963, UTA 44687). BRAZIL: ACRE: Km-80 da BR-317, Fazenda da Patroa, near Boca do Acre, [-9.604718°S, -67.320209°W] (UFAC 383, 504); MATO GROSSO: Comodoro, [-13.657177°S, -59.795470°W] (MPEG 26500), Vila Bela da Santíssima Trindade, [-15.005081°S, -59.948396°W] (MZUSP 6408). PERU: Cayaria (considered as Pucallpa), [-8.360497°S, -74.585841°W] (BMNH 1946.1.9.77 (holotype of *Apostolepis nigroterminata*)).

Apostolepis quinquelineata BOULENGER, 1896 (N = 2). GUYANA: Georgetown, [6.79002°S, 58.156512°W] (BMNH 89.9.30.12 (holotype of *Apostolepis quinquelineata*)). BRAZIL: AMAZONAS: Presidente Figueiredo, [-1.61590°S, -60.31621°W] (INPAH 31440).

Apostolepis quirogai GIRAUDO & SCROCCHI, 1998 (N = 8). ARGENTINA: MISIONES: Garupá [-27.455901°S, -55.861002°W] (LGE 1771), Posadas [-27.365077°S, -55.923487°W] (FML 6000, holotype of *Apostolepis quirogai*, FML 6001, paratype of *Apostolepis quirogai*). BRAZIL: RIO GRANDE DO SUL: Eugênio de Castro [-28.526822°S, -54.150768°W] (UFRGS 5668), Garruchos [-28.191112°S, -55.637373°W] (IBSP 93624), Mato Queimado [-28.256608°S, -54.617067°W] (UFRGS 6676), Santo Ângelo, Campús URI, [-28.277008°S, -54.270656°W] (MCP 12185), Santo Antônio das Missões [-28.508860°S, -55.225757°W] (UFRGS 7834).

Apostolepis rondoni AMARAL, 1925 (N = 2). BRAZIL: RONDÔNIA: Porto Velho, [-8.758575°S, -63.883062°W] (UFRO-H 228, 229).

Apostolepis sanctaeritae WERNER, 1924 (N = 55). BRAZIL: BAHIA: Unknown locality (MCP 8442, IBSP 71470, 71471), Barreiras, [-12.148516°S, -44.997395°W] (MHNCI 18688), Cocos, [-14.181859°S, -44.537064°W] (IBSP 61525, CHUNB 23715, 51360), Correntina, [-13.571514°S, -45.303100°W] (CHUNB 39079, MHNCI 18690), Santa Rita de Cássia, Ibipetuba, [-10.866069°S, -44.610886°W] (NMW 23452 (holotype of *Apostolepis sanctaeritae*), MZUFBA 728 (topotype)); DISTRITO FEDERAL: Brasília, [-15.775247°S, -47.922950°W] (IBSP 49363, CHUNB 16183, 62376, 9444); GOIÁS: Unknown locality (IBSP 15723), Alto Paraíso de Goiás [-14.134902°S, -47.514615°W] (CHUNB 59061), Catalão [-18.168802°S, -47.944005°W] (CHUNB 52399), Cavalcante [-13.794714°S, -47.459120°W] (CHUNB 59483), Flores de Goiás [-14.456764°S, -47.039876°W] (CHUNB 38443), Minaçu, [-13.510069°S, -48.209950°W] (IBSP 40478, AMNH-R 144574, CHUNB 49141), São Domingos, [-13.401192°S, -46.322214°W] (IBSP 62593, 67392, CHUNB 43816); MATO GROSSO: Nova Xavantina, [-14.662802°S, -52.362981°W] (MCP 8002), Nobres, [-14.718912°S, -56.335690°W] (MHNCI 12546), (Ribeirão Cascalheira, [-12.939072°S, -51.828372°S] (MCP 19481, CHUNB 77925), São Félix do Araguaia, [-11.617427°S, -50.666608°W] (IBSP 15723); MINAS GERAIS: Betim, [-19.925915°S, -44.222527°W] (FUNED 03), Curvelo, [-18.762770°S, -44.440999°W] (IBSP 22410), Jaboticatubas [-19.522289°S, -43.747334°W] (IBSP 73421), Pirapora, [-17.353695°S, -44.889140°W] (MPEG 18347), Serra do Cipó, [-19.370279°S, -43.585560°W] (MZUSP 7595), Três Marias, [-18.218011°S, -45.239204°W] (FUNED, Without voucher), Vazante, [-17.989087°S, -46.899214°W] (IBSP 48041); TOCANTINS: Figueirópolis [-12.133974°S, -49.170723°W] (CHUNB 62802), Gurupi, [-11.729458°S, -49.074318°W] (MZUSP 8007), Lajeado, [-9.839862°S, -48.321855°W] (IBSP 64533, 64534, 65571, 65680, 65681), Paranã [-12.620481°S, -47.884084°W] (IBSP 74373), Palmas, [-10.283001°S, -48.342440°W] (IBSP 65267* (holotype of *Apostolepis ammodites*), CHUNB 22069), Porto Nacional, [-10.683005°S, -48.377269°W] (IBSP 65682, 65683, 66166), Peixe [-12.033649°S, -48.540193°W] (CHUNB 52513), Taguatinga [-12.396142°S, -46.438732°W] (IBSP 89032), Santa Isabel, [-11.384446°S, -48.073970°W] (IBSP 12324); PIAUÍ: Gilbués [-9.834570°S, -45.346920°W] (IBSP 90720).

Apostolepis tenuis RUTHVEN, 1927 (N = 2). BOLIVIA: BENI: Guayaramirín, [-10.827529°S, -65.363502°W] (USNM 123973); SANTA CRUZ: Buena Vista, Ichilo, [-16.888852°S, -64.189732°W] (UMMZ 64436 (holotype of *Apostolepis tenuis*)).

Apostolepis thalesdelemai BORGES-NOJOSA, LIMA, BEZERRA & JAMES, 2016 (N = 35). BRAZIL: CEARÁ: Guarimiranga, [-4.261648°S, -38.932367°W] (CHUFCA 1950, 2067, 2353, 2371), Ibiapina, [-3.925965°S, -40.888903°W] (CHUFCA 2337, 2340, 2342, 2343, 2351, 2437), Maranguape, [-4.008095°S, -38.818735°W] (CHUFCA 2102, 2208, 2212, 2213, 2218, 2339, 2347, IBSP 80734), Pacoti, [4.226994°S, 38.921911°W] (CHUFCA 2344, 2346, 2463, 2731, 2841), São Benedito, [-4.047003°S, -40.866281°W] (CHUFCA 2338), Ubajara, [-3.859255°S, -40.926629°W] (CHUFCA 1349, 2085, 2110, 2137, 2154, 2341, 2350, 2769, 2954, IBSP 80735, ZUEC 3384).

Apostolepis vittata (COPE, 1887) (N = 5). BRAZIL: MATO GROSSO: Chapada dos Guimarães, [-15.090012°S, -55.712671°W] (ANSP 11293 (holotype of *Rhynchonyx ambiniger vittatus*), CHUNB 30656), Parque Nacional Chapada dos Guimarães, [-15.090012°S, -55.712671°W] (UFMTR 12259), Rio da Casca, [-15.359774°S, -55.458283°W] (MCP 13283), Serra do Roncador, [-11.182283°S, -52.098213°W] (BMNH 1972.429, holotype of *Apostolepis roncadori*).

Supplementary Material 2. Parsimony based morphological character analysis and NEXUS input file.

State ‘o’ for qualitative characters corresponds to the presumed ancestral condition for *Apostolepis* terminals. Character authorship and matrix modified from FERRAREZZI et al. (2005).

- o. Light snout blotch color: (o) cream or white; (1) red or orange.
1. Light snout blotch shape: (o) moderate sized irregularly edged blotch(es), confined to prefrontals dorsally; (1) broad regular blotch covering all of the snout, reaching frontal and supraoculars.
2. White supralabial blotch size: (o) moderate sized, exceeding 4th supralabial, or covering more than three scales; (1) small, not exceeding 4th supralabial, or covering more than a single scale.
3. Ventral head coloration: (o) immaculate cream or white; (1) irregular black blotches present; (2) uniformly black.
4. White nuchal collar size: (o) small, up to 2 scales wide, or absent; (1) moderately sized, up to four scales wide; (2) large, up to six scales wide.
5. Black nuchal collar size: (o) small, up to 1 scale wide, or absent; (1) moderately sized, up to three scales wide; (2) large, up to five scales wide; (3) very large, up to eight scales wide.
6. Anterior indentation of black nuchal collar, on vertebral row: (o) absent; (1) present.
7. Black gular collar: (o) absent; (1) present.
8. Number of white nuchal collars: (o) one; (1) two.
9. Terminal scale coloration: (o) terminal scale conspicuously white on ventral surface; (1) terminal scale uniformly black on ventral surface.
10. Rostral scale size and shape: (o) short, rounded; (1) projected, rounded; (2) projected, pointed.
11. Temporal scales: (o) temporals o+1; (1) temporals o+o.
12. Infralabials contacting anterior pair of chinshields: (o) infralabials 1–4; (1) infralabials 1–3.
13. Ventral scales, approximate mean range: (o) medium range [ventrals 217–232 in males, 227–248 in females]; (1) high range [ventrals 241–261 or more in males, 254–280 or more in females]; (2) lower range [ventrals 163–170 in males, 174–179 in females].
14. Subcaudal scales, approximate mean range: (o) high range [subcaudals 32–36 in females, 37–41 in males]; (1) medium range [subcaudals 27–31 in females, 32–36 in males]; (2) lower range [subcaudals 23–26 or fewer in females, 23–31 or fewer in males].
15. Number of pterygoid teeth: (o) pterygoid teeth 3–4; (1) pterygoid teeth 5 or more.
16. Number of dentary teeth: (o) dentary teeth 7–8; (1) dentary teeth 9–10.
17. Dentary bone shape: (o) nearly straight; (1) conspicuously curved.
18. Prearticular crest of compound bone: (o) higher than surangular crest posteriorly; (1) same height as surangular crest.
19. Shape of mentonian foramen: (o) elongate groove; (1) rounded.
20. Shape of premaxilla: (o) roughly T-shaped, with a distinct ascending process; (1) stoutly enlarged, without a distinct ascending process, but not projected; (2) strongly enlarged and prominently projected.
21. Septomaxillary process of premaxilla: (o) short and widely separated from each other; (1) moderately long and close to each other; (2) long and closer to each other.

22. Contact between premaxilla and maxilla: (o) distantly separated; (1) separated, close; (2) contacting each other.
23. Width of facial segment of skull: (o) wider, conferring a larger palatine-ectopterygoid distance; (1) narrower.
24. Ectopterygoid shape: (o) wider, flat; (1) narrow, subcylindrical.
25. Contact between dorsal laminae of nasals and frontals: (o) absent; (1) present, forming a transverse suture.
26. Fronto-parietal suture shape, dorsal view: (o) U-shaped, no parietal indentation between frontals; (1) W-shaped, with an antero-medial parietal indentation between frontals.
27. Relative width of fronto-parietal suture: (o) short and wide; (1) narrower and longer.
28. Contact between nasal and prefrontal: (o) absent; (1) present dorsally; (2) present laterally.
29. Habitat type. (o) non-sandy soils; (1) sandy soil.
30. Habitat physiognomy. (o) mesophytic forests; (1) mesic savannas; (2) semiarid caatingas.

Supplementary Material 3. Taxon and character matrix used in morphological analysis, in Phylip format.

```

NTAX = 7; NCHAR = 31
Apostolepis_flavotorquata
0000000000000100000?10000?000
Apostolepis_assimilis
101110001000110000100100000000
Apostolepis_sanctaeritae 1112231111100010110111211111211
Apostolepis_cearensis 1112221001200021001022011010112
Apostolepis_gaboi 011021010120001000???001???12
Apostolepis_arenaria 111021100120022????????????12
Apostolepis_quirogai
110110001000120011100100000001

```

Supplementary Material 4. Putative morphological synapomorphies identified by YBYRÁ software.

Synapomorphies common to 1 tree (Node numbers refer to nodes in consensus).

```

A_flavotorquata :
All trees:
No autapomorphies:
A_assimilis :
All trees:
Char. 3: 0 --> 1
A_sanctaeritae :
All trees:
Char. 5: 1 --> 3
Char. 7: 0 --> 1
Char. 8: 0 --> 1
Char. 16: 0 --> 1
Char. 17: 0 --> 1
Char. 25: 0 --> 1
Char. 27: 0 --> 1
A_cearensis :
All trees:
Char. 5: 1 --> 2
Char. 15: 0 --> 1

```

A_gaboi :
All trees:
Char. 0: 1 --> 0
Char. 6: 1 --> 0
Char. 7: 0 --> 1

A_arenaria :
All trees:
Char. 13: 0 --> 2

A_quirogai :
All trees:
Char. 14: 1 --> 2
Char. 17: 0 --> 1
Char. 18: 0 --> 1

Node 8 :
All trees:
Char. 13: 0 --> 1

Node 9 :
All trees:
No synapomorphies

Node 10 :
All trees:
Char. 0: 0 --> 1
Char. 6: 0 --> 1
Char. 24: 0 --> 1
Char. 26: 0 --> 1
Char. 29: 0 --> 1

Tree 0:

```

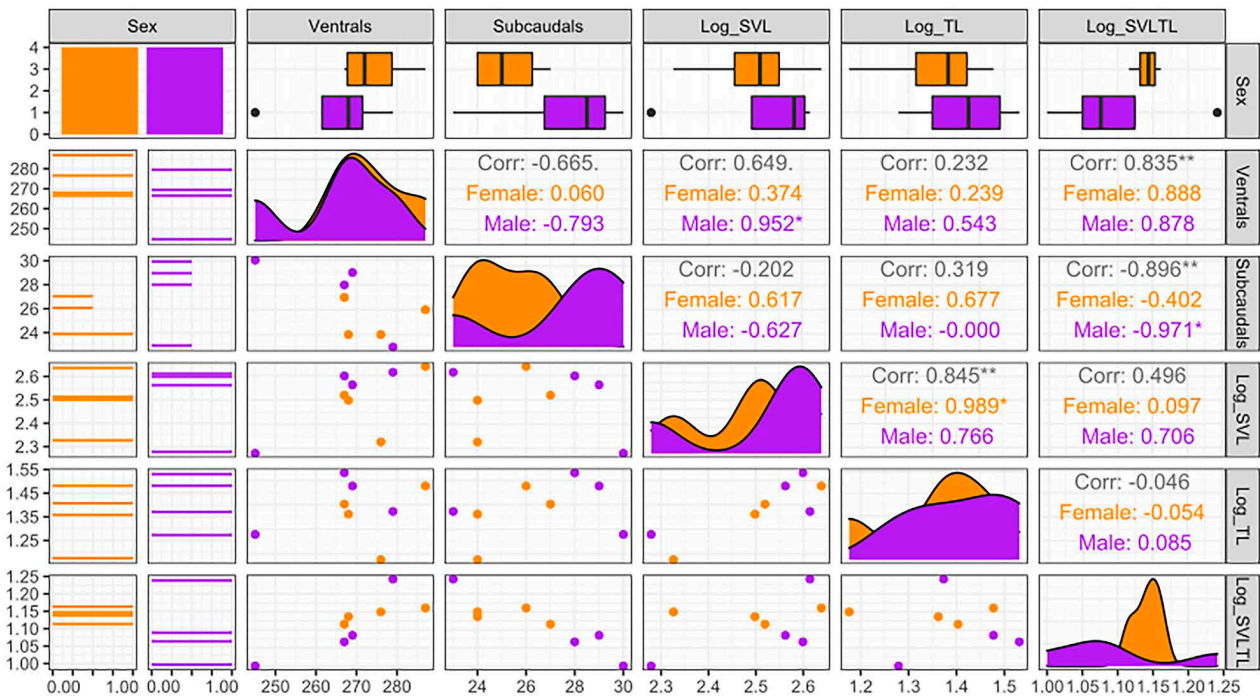
      ,--0 A_flavotorquata
      |
      | ,--6 A_quirogai
|--7| ,--8---1 A_assimilis
      |
      | `--9| ,--2 A_sanctaeritae
      | `--10| ,--3 A_cearensis
      | `--11| ,--5 A_arenaria
      | `--12---4 A_gaboi
    
```

Supplementary Table 1. Primers used in this study to amplify gene fragments.

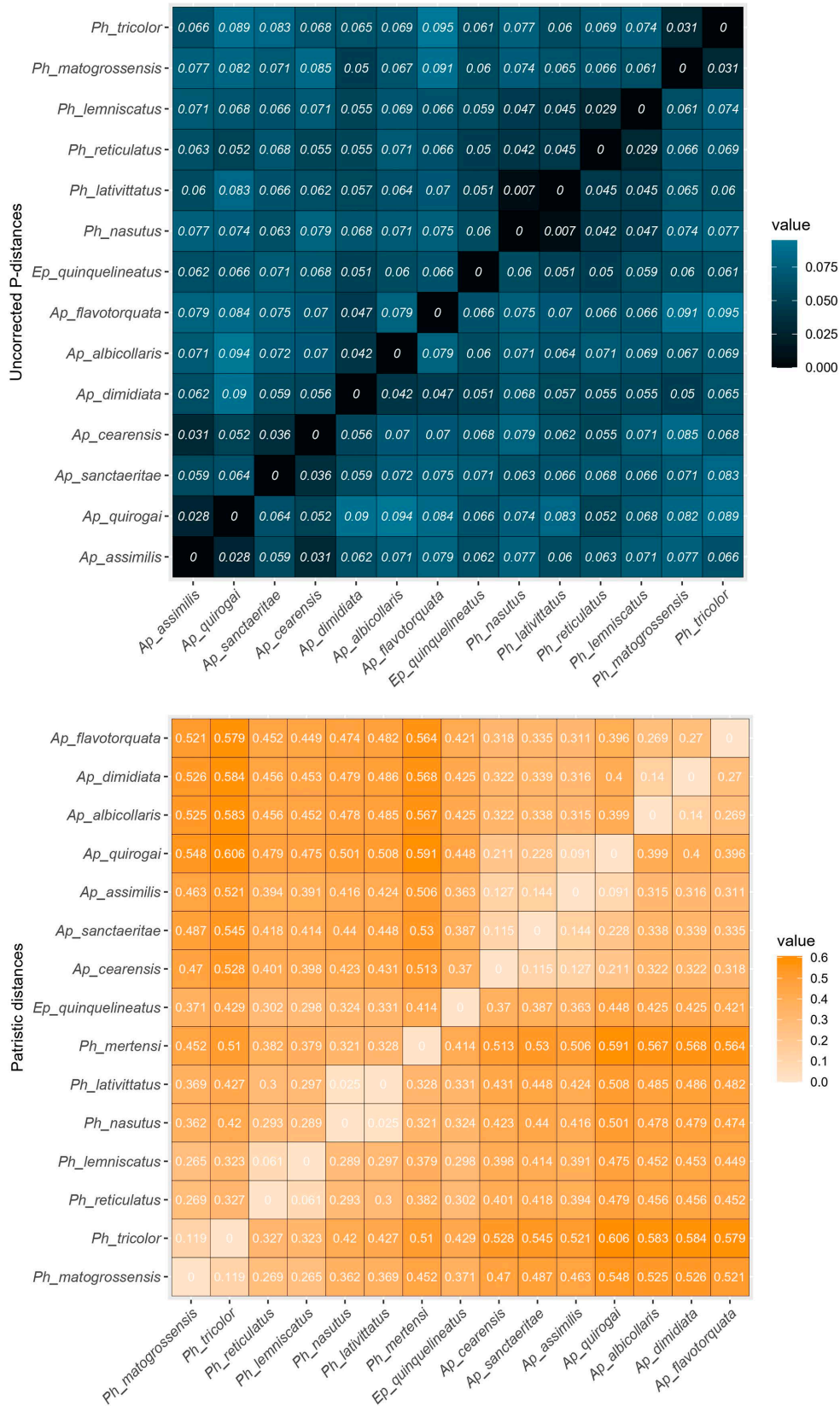
Gene	Primer	Sequences	Reference
12S rRNA (12S ribosomal RNA)	L1091mod	5' CAAACTAGGATTAGATACCCTACTAT 3'	KOCHER et al. (1989)
	H1557mod	5' GTACRCTTACCWGTGTTACGACTT 3'	KNIGHT & MINDELL (1994)
16S rRNA (16S ribosomal RNA)	L2510mod(16sar)	5' CCGACTGTTTAMCAAAAACA 3'	PALUMBI et al. (1991)
	H3056mod(16Sbr)	5' CTCCGGTCTGAACTCAGATCACGTRGG 3'	PALUMBI et al. (1991)
<i>Cytb</i> (Cytochrome b)	703Botp.mod	5' TCAAAYATCTCAACCTGATGAAAYTTYGG 3'	POOK et al. (2000)
	MVZ16p.mod	5' GGCAAATAGGAAGTATCAYTCTGGYTT 3'	POOK et al. (2000)
<i>CoxI</i> (Cytochrome c oxidase subunit 1)	MLepF1.mod	5' GCATTYCCACGAATAAATAAYATRAG 3'	HAJIBABAEI et al. (2006)
	COI_r928	5' CCTGTTGGAAAYTGCRATRATTAT 3'	ZAHER et al. (2019)
<i>C-mos</i> (Oocyte maturation factor Mos)	S77	5' CATGGACTGGGATCAGTTATG 3'	LAWSON et al. (2005)
	S78	5' CCTTGGGTGTGATTTTCTCACCT 3'	LAWSON et al. (2005)
<i>Bdnf</i> (Brain-derived neurotrophic factor)	Bdnff	5' GACCATCCTTTTCTKACTATGGT-TATTTTCATACTT 3	NOONAN & CHIPPINDALE (2006)
	Bdnfr	5' CTATCTTCCCCTTTTAATGGTCAGTGTA-CAAAC 3'	NOONAN & CHIPPINDALE (2006)
<i>Nt3</i> (Neurotrophin-3)	NT3F3	5' ATATTTCTGGCTTTTCTCTGTGGC 3'	NOONAN & CHIPPINDALE (2006)
	NT3F4	5' GCGTTTCATAAAAAATATTGTTTGACCGG 3	NOONAN & CHIPPINDALE (2006)

Supplementary Table 2. Best-fit partitions and models for PartitionFinder 2 concatenated analysis.

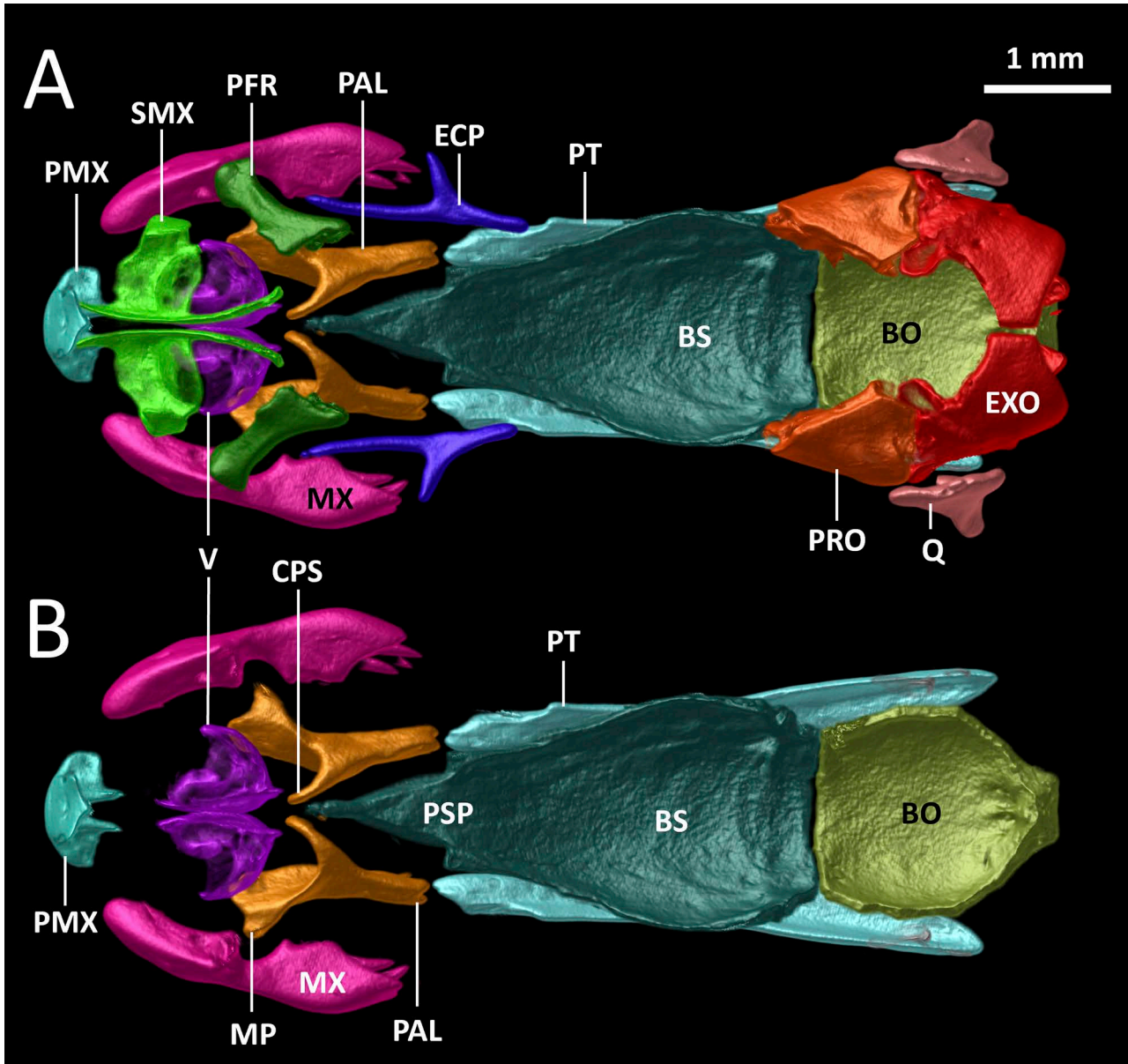
No.	Best Model	Partition Name	Subset Sites
1	GTR + GAMMA	mtDNA_12S, mtDNA_CYTB_1	1-526, 1759-2851\3
2	GTR + GAMMA	mtDNA_16S	527-1117
3	GTR + GAMMA	mtDNA_COX1_1	1118-1758\3
4	GTR + GAMMA	mtDNA_COX1_2	1119-1758\3
5	GTR + GAMMA	mtDNA_COX1_3	1120-1758\3
6	GTR + GAMMA	mtDNA_CYTB_2	1760-2851\3
7	GTR + GAMMA	mtDNA_CYTB_3	1761-2851\3
8	GTR + GAMMA	ncDNA_BDNF_1, ncDNA_BDNF_3	2852-3621\3, 2854-3621\3
9	GTR + GAMMA	ncDNA_BDNF_2	2853-3621\3
10	GTR + GAMMA	ncDNA_CMOS_1	3622-4202\3
11	GTR + GAMMA	ncDNA_CMOS_2, ncDNA_CMOS_3	3623-4202\3, 3624-4202\3
12	GTR + GAMMA	ncDNA_NT3_1	4203-4730\3
13	GTR + GAMMA	ncDNA_NT3_2	4204-4730\3
14	GTR + GAMMA	ncDNA_NT3_3	4205-4730\3



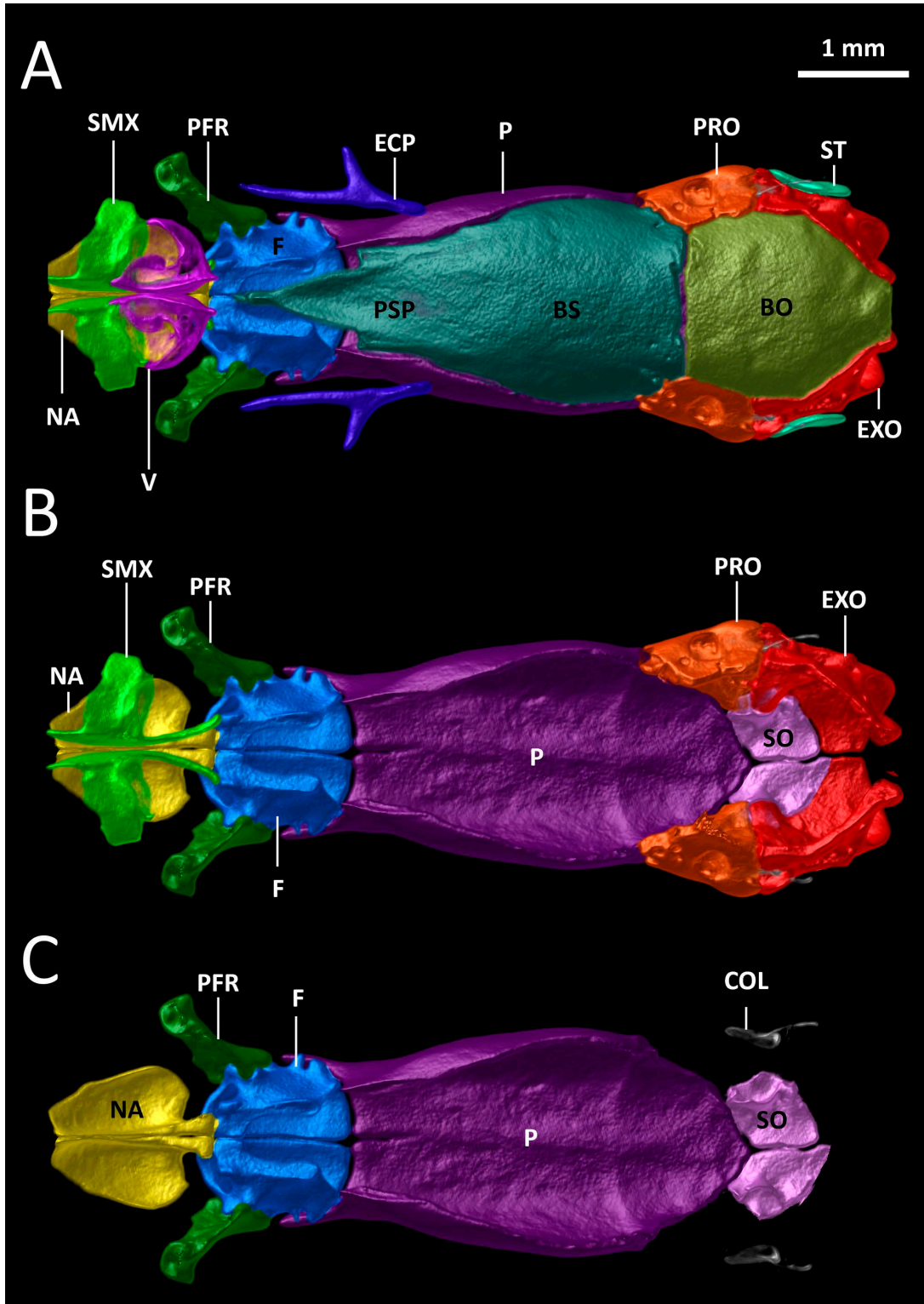
Supplementary Figure 1. Boxplots, scatterplots, histograms, density plots, and pairwise comparison of selected characters of external morphology in males (purple) and females (orange) of *Apostolepis quirogai*. Outliers are indicated as black circles. Pearson correlation (Corr) values: * = 0.05; ** = 0.01; *** = 0.001.



Supplementary Figure 2. Molecular distance analyses for *Apostolepis* terminals. A) Uncorrected p-distances for the 16S rRNA gene fragment; B) patristic distances based on the Maximum Likelihood tree.



Supplementary Figure 3. Micro-CT images of the skull without mandibles of *Apostolepis quirogai* (UFRGS 6676) in dorsal view: (A) nasals, frontals, parietals, supraoccipitals, and supratemporals digitally removed; (B) the aforementioned bones and septomaxillae, prefrontals, ectopterygoids, prootics, exoccipitals, and quadrates digitally removed; BO (basioccipital); BS (basisphenoid); CPS (conchal process of septomaxilla); ECP (ectopterygoid); EXO (exoccipital); MP (maxillary process of palatine); MX (maxilla); PAL (palatine); PFR (prefrontal); PMX (premaxilla); PRO (prootic); PSP (parasphenoid rostrum); PT (pterygoid); Q (quadrate); SMX (septomaxilla); V (vomer). Scale bar = 1 mm.



Supplementary Figure 4. Micro-CT images of the skull without mandibles of *Apostolepis quirogai* (UFRGS 6676) in ventral view: (A) premaxilla, maxillae, palatines, pterygoids, and quadrates digitally removed; (B) the aforementioned bones and vomers, ectopterygoids, parabasisphenoid, basioccipital, and supratemporals digitally removed; (C) the aforementioned bones and septomaxillae, prootics, and exoccipitals digitally removed; BO (basioccipital); BS (basisphenoid); COL (columella); ECP (ectopterygoid); EXO (exoccipital); F (frontal); NA (nasal); P (parietal); PFR (prefrontal); PRO (prootic); PSP (parasphenoid rostrum); SMX (septomaxilla); SO (supraoccipital); ST (supratemporal); V (vomer). Scale bar = 1 mm.