

TABLE S3 | List of the common synapomorphies to all MPT's of the general characters (except myological characters) of the clades recovered in the parsimonious analyzes. Character enumeration follows Tagliacollo *et al.* (2016) and Peixoto *et al.* (2019).

Siluriphysi: Ch. 13: 0>1; Ch. 29: 0>1; Ch. 42: 0>1; Ch. 60: 0>1; Ch. 76: 0>1; Ch. 100: 0>1; Ch. 103: 0>1; Ch. 109: 0>1; Ch. 113: 0>1; Ch. 116: 1>0; Ch. 126: 0>1; Ch. 137: 0>1; Ch. 145: 0>1.

Gymnotiformes: Ch. 3: 0>1; Ch. 14: 0>1; Ch. 72: 0>1; Ch. 84: 0>1; Ch. 106: 0>1; Ch. 107: 0>1; Ch. 108: 0>1; Ch. 110: 0>1; Ch. 111: 0>1; Ch. 112: 0>1; Ch. 120: 0>1; Ch. 121: 0>1; Ch. 125: 0>1; Ch. 127: 0>1; Ch. 148: 0>1; Ch. 169: 0>1; Ch. 170: 0>1; Ch. 185: 0>1; Ch. 193: 0>1; Ch. 214: 0>1; Ch. 215: 0>1.

Gymnotidae: Ch. 64: 0>1; Ch. 74: 0>1; Ch. 79: 0>1.

***Electrophorus electricus*:** Ch. 6: 0>1; Ch. 30: 0>2; Ch. 42: 1>0; Ch. 43: 0>1; Ch. 138: 0>1; Ch. 157: 0>1; Ch. 166: 0>1; Ch. 198: 0>1; Ch. 215: 1>3; Ch. 216: 1>2.

***Gymnotus*:** Ch. 10: 0>1; Ch. 11: 0>1; Ch. 33: 0>1; Ch. 34: 0>1; Ch. 47: 0>2; Ch. 66: 0>1; Ch. 67: 0>1; Ch. 68: 0>1; Ch. 71: 0>1; Ch. 87: 0>1; Ch. 91: 0>1; Ch. 92: 0>1; Ch. 143: 0>1; Ch. 158: 0>1; Ch. 195: 0>1.

***Gymnotus curupira* + *Gymnotus* subgroups^{2,3,4,5,6}:** Ch. 15: 0>1; Ch. 16: 0>2; Ch. 37: 0>2; Ch. 190: 0>1.

***Gymnotus* spp.², *Gymnotus* spp.³, *Gymnotus* spp.⁴, *Gymnotus* spp.⁵ and *Gymnotus* spp.⁶:** Ch. 135: 0>1.

***Gymnotus* spp.³, *Gymnotus* spp.⁴, *Gymnotus* spp.⁵:** Ch. 1: 1>0; Ch. 3: 1>0; Ch. 157: 0>1; Ch. 166: 0>1.

***Gymnotus* spp.⁴:** Ch. 91: 1>0; Ch. 92: 1>0.

***Gymnotus* spp.⁵:** Ch. 56: 0>1.

***Gymnotus* spp.⁶:** Ch. 15: 1>2; Ch. 37: 2>0; Ch. 38: 0>1; Ch. 196: 2>3.

***Gymnotus* spp.⁷:** Ch. 37: 0>1; Ch. 201: 0>1.

Sternopygoidei: Ch. 27: 0>1; Ch. 28: 0>1; Ch. 39: 0>1; Ch. 62: 0>1; Ch. 115: 0>1; Ch. 160: 0>1; Ch. 177: 0>1; Ch. 206: 0>1.

Rhamphichthyoidea: Ch. 36: 0>1; Ch. 66: 0>1; Ch. 81: 0>1; Ch. 95: 0>1; Ch. 98: 0>1; Ch. 99: 0>1; Ch. 128: 0>1; Ch. 134: 0>1; Ch. 137: 1>0.

Hypopomidae: Ch. 96: 0>1; Ch. 114: 0>1; Ch. 157: 0>1; Ch. 207: 0>1; Ch. 209: 0>1.

***Hypopomus*+*Akawaio*:** Ch. 5: 0>1; Ch. 120: 1>0.

***Akawaio penak*:** Ch. 51: 0>1; Ch. 153: 0>1; Ch. 197: 1>0.

***Hypopomus artedi*:** Ch. 122: 0>1.

***Brachyhypopomus*:** Ch. 122: 0>1; Ch. 171: 0>1.

***Brachyhypopomus* spp.³:** Ch. 17: 0>1; Ch. 212: 0>1.

***Brachyhypopomus beebei* + (*Brachyhypopomus draco* + *Brachyhypopomus* spp.²):** Ch. 120: 1>0.

***Brachyhypopomus draco* + *Brachyhypopomus* spp.²:** Ch. 212: 0>1.

***Brachyhypopomus* spp.²:** Ch. 210: 0>2.

***Brachyhypopomus brevirostris*:** Ch. 46: 0>1; Ch. 210: 0>2.

"Rhamphichthyidae" (except *Steatogeninae*): Ch. 5: 0>1; Ch. 9: 0>1; Ch. 33: 0>1; Ch. 59: 0>1; Ch. 61: 0>1; Ch. 116: 0>1; Ch. 124: 0>1; Ch. 129: 0>1; Ch. 130: 0>1; Ch. 178: 0>1; Ch. 190: 0>1.

***Gymnorhamphichthys*:** Ch. 43: 0>1; Ch. 51: 0>1; Ch. 69: 0>1; Ch. 82: 0>1; Ch. 146: 0>1.

Iracema + *Rhamphichthys*: Ch. 17: 0>1; Ch. 34: 0>1; Ch. 56: 0>1; Ch. 122: 0>1; Ch. 156: 0>1.

Iracema caiana: Ch. 73: 0>1; Ch. 139: 1>0; Ch. 197: 1>0.

Rhamphichthys: Ch. 162: 0>1; Ch. 205: 0>1.

Rhamphichthys lineatus: Ch. 17: 1>0.

Steatogeninae: Ch. 3: 1>0; Ch. 4: 0>1; Ch. 54: 0>1; Ch. 55: 0>1; Ch. 71: 0>1; Ch. 73: 0>1; Ch. 86: 0>1; Ch. 140: 1>0; Ch. 149: 0>1; Ch. 153: 0>2; Ch. 162: 0>1; Ch. 188: 23>1; Ch. 197: 1>2; Ch. 220: 0>1.

Steatogenys: Ch. 18: 0>1; Ch. 219: 0>1.

Hypopygus: Ch. 10: 0>1; Ch. 12: 0>1; Ch. 17: 0>1; Ch. 32: 0>1.

Hypopygus spp.: Ch. 139: 1>0.

Hypopygus cryptogenys: Ch. 51: 0>1.

Microsternarchini: Ch. 43: 0>2; Ch. 52: 0>1; Ch. 73: 0>1; Ch. 140: 1>0.

Procerusternarchus pixuna: Ch. 54: 0>1; Ch. 55: 0>1; Ch. 153: 0>2.

Racenisia fimbriipinna: Ch. 196: 0>1; Ch. 210: 0>1.

Sternopygoidea: Ch. 94: 0>1; Ch. 117: 0>1; Ch. 122: 0>1; Ch. 173: 0>1; Ch. 174: 0>1; Ch. 189: 0>1; Ch. 217: 0>1; Ch. 222: 0>1.

Sternopygidae: Ch. 37: 0>1; Ch. 57: 0>1; Ch. 72: 1>0; Ch. 75: 0>1; Ch. 77: 0>1; Ch. 97: 0>1; Ch. 106: 1>0; Ch. 133: 0>1; Ch. 172: 0>1; Ch. 176: 0>1.

Sternopygus: Ch. 14: 1>0; Ch. 20: 0>2; Ch. 27: 1>0; Ch. 68: 0>1; Ch. 125: 1>0; Ch. 189: 1>3.

Sternopygus spp.: Ch. 3: 1>0; Ch. 9: 0>1; Ch. 168: 0>1; Ch. 196: 0>1.

Sternopygus astrabes: Ch. 18: 0>1.

Sternopygus dariensis: Ch. 48: 1>0.

Eigenmanniinae: Ch. 164: 0>1.

Japigny kirschbaum: Ch. 4: 0>1; Ch. 18: 0>1.

Eigenmanniinae (except Japigny): Ch. 261: 1>0.

Archolaemus blax: Ch. 9: 0>1; Ch. 14: 1>0; Ch. 125: 1>0.

(Distocyclus + (Rhabdolichops + Eigenmannia)): Ch. 26: 0>1; Ch. 199: 0>1.

Distocyclus conirostris: Ch. 153: 0>2.

Rhabdolichops + Eigenmannia: Ch. 4: 0>1; Ch. 63: 0>1; Ch. 148: 1>0; Ch. 180: 1>0; Ch. 188: 3>2.

Rhabdolichops: Ch. 30: 0>1; Ch. 43: 1>0; Ch. 46: 0>1; Ch. 86: 0>1; Ch. 87: 0>1; Ch. 88: 0>1; Ch. 182: 0>1; Ch. 190: 0>1.

Rhabdolichops (except R. caviceps): Ch. 269: 0>1; Ch. 270: 3>1.

Rhabdolichops jegui, Rhabdolichops stewarti: Ch. 142: 0>1.

Rhabdolichops caviceps: Ch. 8: 0>1.

Eigenmannia macrops: Ch. 8: 0>2.

Eigenmannia virescens + Eigenmannia vicentespelaea: Ch. 20: 0>1.

Apterotonidae: Ch. 131: 0>1; Ch. 136: 0>1; Ch. 149: 0>1; Ch. 156: 0>1; Ch. 183: 0>1; Ch. 190: 0>1; Ch. 201: 0>1; Ch. 213:1>0; Ch. 221: 0>1.

Adontosternarchus: Ch. 4: 0>1; Ch. 36: 0>1; Ch. 40: 0>1; Ch. 47: 0>2; Ch. 71: 0>1; Ch. 81: 0>1; Ch. 85: 0>1.

Adontosternarchus spp.: Ch. 203: 0>1.

Adontosternarchus sachsi: Ch. 197: 1>2.

Megadontognathus + Apteronotus s.s.: Ch. 21: 0>1; Ch. 58: 0>1.

Megadontognathus cuyuniense: Ch. 55: 0>1.

Apteronotus s.s.: Ch. 23: 0>1; Ch. 154: 0>1.

Apteronotus cuchillejo + Apteronotus spp.¹: Ch. 22: 0>1.

Apteronotus spp.¹: Ch. 49: 0>1.

Apteronotus cuchillejo: Ch. 6: 1>0; Ch. 40: 0>1; Ch. 50: 0>1; Ch. 73: 0>1; Ch. 161: 0>1; Ch. 166: 0>1.

Apteronotus spp.²+ Apteronotus spp.³: Ch. 5: 0>1; Ch. 80: 0>1.

Apteronotus spp.²: Ch. 6: 1>0; Ch. 25: 0>1; Ch. 122: 1>0; Ch. 123: 0>1.

Apteronotus spp.³: Ch. 55: 0>1.

((Porotergus+Sternarchogiton) + (Compsaraia + "Apteronotus" gr. bonapartii)): Ch. 26: 0>1; Ch. 30: 0>2; Ch. 31: 0>1; Ch. 45: 0>1; Ch. 101: 0>1.

Porotergus gimbelli: Ch. 241: 1>0; Ch. 244: 1>0.

Compsaraia + "Apteronotus" gr. bonapartii: Ch. 9: 0>1; Ch. 49: 0>1; Ch. 154: 0>1; Ch. 159: 0>1.

Compsaraia spp.: Ch. 5: 0>1; Ch. 24: 0>1; Ch. 78: 0>1; Ch. 102: 0>1; Ch. 133: 0>1.

"Apteronotus" gr. bonapartii: Ch. 30: 2>1; Ch. 47: 0>1; Ch. 84: 1>0.

Pariosternarchus + Sternarchella: Ch. 26: 0>1; Ch. 30: 0>2; Ch. 31: 0>1; Ch. 51: 0>1; Ch. 89: 0>1; Ch. 124: 0>1; Ch. 142: 0>1; Ch. 150: 0>1.

Pariosternarchus amazonensis: Ch. 45: 0>1; Ch. 101: 0>1; Ch. 133: 0>1; Ch. 241: 1>0; Ch. 244: 1>0; Ch. 248: 2>1; Ch. 255: 1>0; Ch. 267: 2>0.

Sternarchella: Ch. 4: 0>1; Ch. 39: 1>0; Ch. 43: 1>0; Ch. 44: 0>1; Ch. 63: 1>0; Ch. 65: 0>1; Ch. 67: 1>2; Ch. 72: 1>0; Ch. 155: 0>1.

Sternarchella calhamazon: Ch. 134: 0>1.

Sternarchella ducius + Sternarchella raptor: Ch. 7: 1>0; Ch. 30: 2>1; Ch. 81: 0>1; Ch. 84: 1>0; Ch. 142: 1>0; Ch. 161: 0>1.

Sternarchella raptor: Ch. 4: 1>0; Ch. 5: 0>1; Ch. 6: 0>1; Ch. 43: 0>1; Ch. 44: 1>0; Ch. 45: 0>1; Ch. 47: 0>1.

Parapteronotus: Ch. 5: 0>1; Ch. 180: 1>0.

Porotergus + (Sternarchogiton, Tenebrosternarchus): Ch. 40: 0>1; Ch. 74: 0>1; Ch. 81: 0>1; Ch. 85: 0>1; Ch. 191: 0>1.

Sternarchogiton, Tenebrosternarchus: Ch. 4: 0>1; Ch. 6: 1>0; Ch. 7: 0>1; Ch. 47: 0>1; Ch. 50: 0>1; Ch. 93: 0>1; Ch. 197: 1>2.

Sternarchorhynchinae: Ch. 5: 0>1; Ch. 61: 0>1; Ch. 68: 0>1; Ch. 122: 1>0; Ch. 123: 0>1; Ch. 128: 0>1; Ch. 187: 1>2; Ch. 191: 0>1.

Orthosternarchus + Sternarchorhamphus: Ch. 30: 0>1; Ch. 63: 1>0; Ch. 74: 0>1; Ch. 78: 0>1; Ch. 105: 0>1; Ch. 165: 1>0; Ch. 184: 0>1; Ch. 189: 1>3

Ch. 192: 0>1; Ch. 201: 1>0; Ch. 203: 0>1; Ch. 223: 0>1.

Orthosternarchus tamandua: Ch. 46: 0>1; Ch. 163: 1>0; Ch. 197: 1>0.

Platyurosternarchus + *Sternarchorhynchus*: Ch. 40: 0>1; Ch. 43: 1>0; Ch. 59: 0>1; Ch. 73: 0>1; Ch. 84: 1>0; Ch. 92: 1>0.

Platyurosternarchus: Ch. 6: 0>1; Ch. 7: 1>0; Ch. 125: 1>0.

Sternarchorhynchus: Ch. 23: 0>1; Ch. 53: 0>1; Ch. 81: 0>1; Ch. 94: 1>0; Ch. 139: 0>1; Ch. 146: 1>0.

Tembeassu marauna: Ch. 5: 0>1; Ch. 9: 0>1; Ch. 44: 0>1; Ch. 74: 0>1; Ch. 126: 1>0; Ch. 138: 1>2.

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HOW TO CITE THIS ARTICLE

- Peixoto LAW, de Pinna M. Patterns of diversification and phylogenetic structure in the dorsolateral head musculature of Neotropical electric eels (Ostariophysi: Gymnotiformes), with a myological synonymy. Neotrop Ichthyol. 2022; 20(1):e210009. <https://doi.org/10.1590/1982-0224-2021-0009>

Neotropical Ichthyology

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Official Journal of the Sociedade Brasileira de Ictiologia