

List of Characters

Character name	character states	
1. Suture between left and right frontal bones	0	smooth (harmonic suture)
	1	serrated
2. Anterior margin of frontal	0	narrower than posterior margin
	1	of similar width or slightly wider than posterior margin
3. Shape of nasal bones	0	flat, approximately rectangular
	1	flat, triangular
	2	tubular but straight
	3	tubular and strongly curved
4. Relationship between left and right nasal bones	0	in contact along the midline
	1	separated
5. Supraoccipital bone	0	absent
	1	present
6. Supraoccipital crest	0	absent or poorly developed
	1	well-developed, spine-like supraoccipital crest
	2	well-developed, high and triangular supraoccipital crest
	3	hypertrophied, forming a pectinate blade
7. Condition of skull roof	0	medioparietal
	1	lateroparietal
8. Relative shape of the extraescapular bone/s	0	quadrangular or semicircular not expanded caudally
	1	tubular shape
	2	approximately triangular, expanded caudally
	3	expanded rostrally
9. Recessus lateralis	0	absent
	1	present
10. Ossified bulla in the prootic bone	0	absent
	1	present
11. Posttemporal fossa	0	absent
	1	present and separated from the fossa Bridgei
	2	present and confluent with the fossa Bridgei
12. Bones participating in the posttemporal fossa	0	epiotic, pterotic and exoccipital
	1	epiotic, pterotic, exoccipital and intercalar
	2	epiotic, pterotic and parietal
13. Position of the foramen for the glossopharyngeal nerve	0	in the prootic bone
	1	in the exoccipital bone
	2	in the basioccipital bone
14. Position of the foramen for the vagus nerve	0	between the intercalar and exoccipital bones
	1	in exoccipital bone
	2	in the basioccipital
	3	between the intercalar and basioccipital bones
15. Foramina in basioccipital for occipital or spinal arteries	0	present
	1	absent
16. Trajectory of the dorsal aorta in relation to the basioccipital	0	passing through an ossified canal formed by the basioccipital
	1	passing through a median groove in the basioccipital
	2	canal or groove in the surface of the basioccipital bone absent
17. Posterior myodome	0	extending in basioccipital
	1	not extending into basioccipital because it is confined to the prootics
	2	absent
18. Ethmopalatine ossifications	0	absent
	1	present
19. Proethmoid ossifications	0	absent
	1	present
20. Independent dermopalatine(s) bone(s)	0	present
	1	absent
21. Autopalatine bone	0	ossifies late in ontogeny
	1	ossifies early in ontogeny
	2	autopalatine bone absent
22. Vomer	0	paired

Character name	character states	
	1	unpaired
23. Basisphenoid	0	present
	1	absent
24. Orbitosphenoid bone	0	reduced or absent
	1	present and large
25. Teeth on parasphenoid	0	absent
	1	present and small
	2	present and large
26. Posterior extent of parasphenoid	0	reaching the anterior margin of the basioccipital
	1	almost reaching the posterior margin of the basioccipital
	2	extending posterior to basioccipital
27. Basipterygoid process of parasphenoid	0	present
	1	absent
28. Separation between olfactory organ and eye	0	narrow
	1	broad
29. Shape of the most anterior infraorbital bone	0	laminar or plate-like
	1	tubular
30. Fourth and fifth infraorbital bones	0	separate
	1	fused
31. Circumorbital ring	0	incompletely closed
	1	completely closed ring, no space left between bones
32. Number of suborbital bone(s)	0	numerous
	1	two or three
	2	one
	3	none
33. Number of supraorbital bone(s)	0	two or more
	1	one
	2	none
34. Shape of the supraorbital bone (or anterior supraorbital bone)	0	not expanded
	1	expanded anteroventrally
35. Dermosphenotic	0	small
	1	large, well-developed bone
36. Independent antorbital bone	0	present
	1	absent
37. Antorbital bone	0	carrying a portion of the infraorbital canal
	1	without sensory canal
38. Shape of antorbital bone	0	approximately triangular
	1	rectangular
	2	tubular and comma-shaped
39. Posterior infraorbital bones	0	small and not overlapping or slightly overlapping the anterior margin of preopercle
	1	expanded posterior infraorbitals overlapping the anterior margin of preopercle
40. Hyomandibular bone with a preopercular process at its posterior margin	0	absent
	1	present
41. Elongation of suspensorium	0	absent
	1	present, due to a lengthening of the symplectic
	2	present, due to the occurrence of a cartilage between symplectic and hyomandibula
	3	present, due to the ventroposterior inclination of the hyomandibula
	4	present, due to the occurrence of the quadratojugal separating quadrate and symplectic
42. Hyomandibular articulation with the neurocranium	0	by means of one articular surface
	1	by means of two distinct articular surfaces
43. Elongate posteroventral process of quadrate	0	absent
	1	present
44. Shape of the dorsal margin of the quadrate	0	convex
	1	straight
	2	concave
	3	sinuous or sigmoid
	4	notched
45. Symplectic	0	articulates with lower jaw
	1	does not articulate with lower jaw

Character name	character states	
46. Covering by orbital ossifications of palatoquadrate area	0	parcially
behind and below the orbit	1	totally
47. Shape of branchiostegal rays	0	variable, including acinaciform and spathiform branchiostegals
	1	uniform, only spathiform branchiostegal rays
48. Beryciform foramen in anterior ceratohyal	0	present
	1	absent
49. Number of hypohyal ossifications	0	one pair
	1	two pairs
50. Trajectory of the hyoidean artery in relation to the hypohyals	0	not piercing hipohyal
	1	piercing both dorsal and ventral hypohyals
	2	piercing only the ventral hypohyal
51. Urohyal formed as an unpaired tendon-bone	0	absent
	1	present
52. Gular plate	0	present
	1	absent
53. Suprapreopercle	0	absent
	1	present
54. Ventroposterior (excluding dorsal limb) region of preopercle	0	narrow or slightly expanded
	1	broadly expanded
55. Shape of preopercle	0	"L" shaped, with tapering ends
	1	crescent-shaped, long and narrow
	2	triangular
56. Interopercle	0	present
	1	absent
57. Anteroventral corner of the opercle	0	of 70°
	1	of more than 70°
58. Relative position of premaxillary bones	0	forming part of the tip of the snout, in contact with each other at the midline
	1	forming part of the tip of the snout but slightly separated by ethmoidal ossifications
	2	constituting the main element of an elongated snout, in contact with each other at the midline
	3	laterally placed and not forming part of the tip of the snout, separated by ethmoidal ossifications
59. Premaxillary ascending process	0	absent
	1	present
60. Maxillary teeth	0	present
	1	absent
61. Ventral margin of maxilla	0	straight or almost straight
	1	slightly convex
	2	slightly concave
62. Shape of the maxilla (excluding articular process)	0	uniformly deep
	1	approximately triangular
	2	bulbous
63. Shape of the posterior border of the maxilla	0	concave
	1	convex or straight
	2	acute
	3	notched
64. Number of supramaxillary bones	0	two
	1	one
	2	none
65. Relative position of supramaxilla(ae)	0	placed dorsal to the dorsal margin of maxilla
	1	placed posterodorsal to the maxilla
66. Quadrate-mandibular articulation	0	posterior to orbit
	1	placed below the posterior half of orbit
	2	placed below anterior half of orbit
	3	anterior to orbit
67. Predentary bone	0	absent
	1	present
68. Independent retroarticular bone	0	present
	1	absent
69. Retroarticular and quadrato-mandibular joint	0	retroarticular included in the joint facet for quadrate
	1	retroarticular excluded from the joint facet for quadrate

Character name	character states	
70. Coronoid bone(s) in lower jaw	0	present
	1	absent
71. Surangular bone in lower jaw	0	present
	1	absent
72. Independent articular bone	0	present
	1	absent, fused with angular
	2	absent, fused with angular and retroarticular
73. Prearticular bone in lower jaw	0	present
	1	absent
74. Postarticular process of lower jaw	0	poorly developed
	1	well developed, extending posterior to the articular facet for quadrate
75. Characteristic notch (so-called leptolepid notch) in the anterodorsal ascending margin of the dentary	0	absent
	1	present
76. Marginal dentition on the jaws	0	uniform
	1	variable
77. Condition of cephalic sensory canals	0	with branched tubules
	1	with simple tubules
78. Cephalic sensory canal components	0	continuous
	1	interrupted between them
79. Middle pit line	0	leaving a groove or pore-line on the parietal and pterotic (or dermopterotic)
	1	leaving a groove or pore-line on the parietal only
	2	leaving no trace on the bones
80. Relative association of the ethmoidal commissure and ossifications of the ethmoidal region	0	not associated, there is no trace of an ethmoidal commissure
	1	the ethmoidal commissure is completely bone-enclosed in a canal
81. Relative position of supratemporal commissure	0	it pierces extrascapular bones
	1	it pierces parietal bones only, or parietals and supraoccipital
82. Parietal portion of supraorbital sensory canal	0	present
	1	absent
83. Composition of preopercular sensory canal	β	four or less, short simple tubules
	1	seven or eight (up to 10), short simple or branched tubules
	2	12 or more long, simple or branched tubules
84. Mandibular canal	0	enclosed in bone along the whole lower jaw
	1	partially running in a tube bone and a groove
85. Endoskeletal basihyal	0	absent
	1	present
86. Covering of basibranchials 1 ? 3 by tooth plates	0	0 not covered, basibranchial tooth plates absent
	1	1 basibranchials overlain by paired distributed tooth plates
	2	2 basibranchials overlain by median tooth plates
87. Tooth plate(s) associated (attached, ankylosed or fused) to pharyngobranchial 1	0	present
	1	absent
88. Tooth plate(s) associated (attached or fused) to pharyngobranchial 2	0	present
	1	absent
89. Tooth plate(s) associated (attached or fused) to pharyngobranchial 3	0	present
	1	absent
90. Types of vertebral centra	0	amphicoelous
	1	opistocoelus
91. Composition of caudal vertebral centra	0	mineralized chordacentrum and arcocentra
	1	chordacentrum and basal part of arcocentra surrounded by autocentrum
	2	basal part of arcocentra surrounded by autocentrum
92. Relative condition of midcaudal vertebrae autocentrum	0	thin and smooth
	1	thick and sculptured
	2	thick and smooth
93. Relationship between autocentrum of midcaudal vertebrae and notochord	0	autocentrum not constricting or slightly constricting the notochord
	1	autocentrum strongly constricting the notochord
94. Relationship between abdominal neural arches and vertebral centra	0	unfused
	1	fused, except for the first five or six
	2	all abdominal neural arches fused
95. Relative condition of the neural arches of the anterior abdominal vertebral centra (3 to 5)	0	separated from each other
	1	in contact, abutting each other

Character name	character states	
96. Number of neural spines in each abdominal vertebra	0	two
	1	one
97. Scaphium	0	absent
	1	present
98. Shape of proximal portion of first pleural rib (on third vertebral centrum)	0	narrow
	1	slightly expanded
	2	greatly expanded, forming the tripus
99. Relative shape of abdominal neural arches (lateral view)	0	tapering distally
	1	distally expanded, hourglass-shaped
100. Number of transitional vertebrae (between abdominal and caudal regions)	0	four or more
	1	three or less
101. Supraneural bones	0	absent
	1	present
102. Epineural bones	0	absent
	1	present
103. Epipleural bones	0	absent
	1	present
104. Position of epipleural bones relative to the column	0	located in anterior caudal region
	1	located in abdominal and anterior caudal region
105. Series of dorsal intermuscular bones in caudal region	0	absent
	1	present
106. Relationship between lateral line system and supracleithrum	0	emerging at its upper half
	1	emerging at its posteroventral margin
	2	lateral line not piercing the supracleithrum
107. Postsupracleithrum	0	absent
	1	present
108. Postcleitra	0	one to three
	1	four or more
	2	none
109. Relative position of coracoid bones	0	separated from each other at the midline
	1	contacting each other forming a midventral coracoid symphysis
110. Relationship between pectoral propterygium and first pectoral ray	0	unfused, propterygium free
	1	fused
111. Number of proximal pectoral radials	0	five or more
	1	four or less
112. Bifurcation pattern of pectoral fin rays	0	symmetric
	1	asymmetric, resulting in two unequal secondary rays
113. Pectoral axillary process	0	absent
	1	present
114. Pelvic axillary process	0	absent
	1	present
115. Fringing fulcra on pectoral fins	0	present
	1	absent
116. Abdominal scutes	0	absent
	1	present
117. Position of dorsal fin origin relative to the origin of the pelvic fin	0	posterior, located above boundary between abdominal and caudal regions
	1	posterior, located above caudal region
	2	anterior
118. Shape of dorsal fin margin	0	straight or slightly convex
	1	concave (acuminate dorsal fin)
119. Condition of first dorsal proximal pterygiophore	0	single structure
	1	bipartite or tripartite
120. Relationship between first dorsal proximal pterygiophore and dorsal fin rays	0	it articulates with dorsal procurrent rays and first dorsal ray
	1	it articulates with procurrent rays only
121. Fringing fulcra on leading margin of dorsal fin	0	present
	1	absent
122. Shape of anal fin margin	0	straight or slightly convex
	1	falcate, concave
123. Relative position of first anal proximal pterygiophore	0	placed anterior to fourth haemal spine in the transitional portion of the column

Character name	character states	
	1	placed posterior to fourth haemal spine in the caudal portion of the column
124. Fringing fulcra on leading margin of anal fin	0	present
	1	absent
125. Number of vertebrae (including preural centrum 1)	0	less than 45
	1	45 to 65
	2	more than 65
126. Number of neural spines in each caudal vertebra	0	two
	1	one
127. Shape of neural spines from preural caudal vertebrae 3-5	0	narrow, without outgrowths
	1	distally expanded by anterior and posterior membranous outgrowths
128. Angle formed between neural spine and dorsal margin of third preural vertebral centrum (Pu3)	0	less than 45°
	1	more than 45°
129. Relative length of neural spine on second preural centrum (Pu2)	0	shorter than neural spine on third preural centrum
	1	as long as neural spine on third preural centrum
130. Anterior processes on caudal preural neural and haemal arches	0	absent
	1	present
131. Neural arch on preural centrum 1 (Pu1)	0	present and well developed
	1	absent or greatly reduced
132. Neural spine on preural centrum 1 (Pu1)	0	absent
	1	present and short
	2	present and long, close to, or reaching the dorsal margin of the body
133. Condition of preural haemal arches (excluding centrum Pu1) in relation to their respective centra	0	unfused
	1	laterally fused
	2	medially fused, laterally unfused
134. Relationship between parhypural and centrum Pu1	0	unfused
	1	laterally fused
	2	medially fused, laterally unfused
135. Hypurapophysis	0	absent
	1	present
136. Number of ural centra	0	three or more
	1	two
	2	none
137. Neural arch on first ural centrum	0	present
	1	absent
138. Neural spine on first ural centrum	0	present
	1	absent
139. Uroneural cartilage	0	absent
	1	present
140. Compound cartilaginous neural arch over preural centrum 1 and first ural centrum	0	absent
	1	present
141. Origin of ural centra	0	from an expansion of ventral arcualia (occasionally dorsal arcualia too)
	1	from an expansion of dorsal arcualia only
142. Number of epurals	0	four or more
	1	three
	2	two
	3	one
	4	none
143. Number of uroneurals	0	seven or more
	1	six
	2	five or four
	3	three or less
	4	none
144. Arrangement of uroneural bones	0	forming a uniform horizontally inclined series
	1	forming two series in different angles
145. Anterior extent of first uroneural	0	preural centra 4 or 3
	1	preural centrum 2
	2	preural centrum 1
	3	centra U1 or U2
146. Number of uroneurals extending forward beyond ?second?	0	three or four

Character name	character states	
ural centrum (U2)	1	two
	2	one
147. Relative position of anterior uroneurals in relation to ural and preural centra	0	placed dorsolaterally to the centra, not covering their lateral surface
	1	placed laterally, covering the lateral surface of centra
148. Pleurostyle	0	absent
	1	present
149. Stegural	0	absent
	1	present
150. Uroneural-like bones (modified preural neural arches)	0	absent
	1	present
151. Number of hypurals	0	eight or more
	1	seven
	2	six or less
	3	all hypurals fused in an hypural plate
152. Relationship between H1 and H2, and ural centra	0	first and second hypurals supported by a single centrum
	1	first and second hypurals supported by two different centra
153. Relationship between the first and second hypurals (H1 and H2, respectively) and their corresponding centrum(a)	0	laterally unfused to the centra
	1	only H2 fused
	2	both hypurals laterally fused to the centrum(a)
154. Relationship between H1 and H2	0	independent from each other
	1	fused at their bases only
	2	fused to each other along their length
155. Relationship between centra Pu1 and U1	0	independent from each other
	1	fused, forming a compound centrum
156. A space or diastema between H2 and H3	0	absent
	1	present
157. Number of caudal fin rays articulating with each hypural	0	one
	1	two or more
158. Dorsal scute(s) preceding caudal fin	0	present
	1	absent
159. Epaxial basal fulcra	0	present
	1	absent
160. Hipaxial basal fulcra	0	present
	1	absent
161. Epaxial procurrent rays	0	absent
	1	present
162. Number of fringing fulcra on the first caudal fin ray	0	numerous
	1	one to five
	2	none
163. Number of principal caudal fin rays	0	20 or more
	1	19
	2	18 or less
164. Branched rays on the caudal fin	0	17 or more
	1	16
	2	15 or fewer
165. Number of principal rays in lower lobe of caudal fin	0	ten or more
	1	nine
	2	eight or less
166. Number of caudal fin rays forming the dorsal and ventral leading margin of the fin	0	two or more (branched and unbranched)
	1	one unbranched caudal fin ray
	2	one branched caudal fin ray
167. Arrangement of dorsal principal rays of caudal fin and dorsal hypurals	0	dorsal principal rays located oblique to main axis of hypurals
	1	dorsal principal rays parallel to main axis of hypurals so that no fin-ray overlies more than one hypural
168. Dorsal processes of the bases of innermost principal caudal fin rays of upper lobe	0	absent
	1	present
169. Relative shape of the bases of innermost principal caudal fin rays	0	narrow, with rounded anterior margin
	1	expanded, with crenulated anterior margin
170. Type of segmentation of marginal principal caudal rays	0	Z or step-like
	1	straight

Character name	character states	
171. Relationship between last principal caudal ray and preural haemal spines	0	last principal caudal ray in contact with parhypural
	1	last principal caudal ray in contact with haemal spine of preural centrum 2 (Pu2)
	2	last principal caudal ray in contact with haemal spines of more anterior preural centra
172. Caudal fin margin	0	deeply forked
	1	higher than long and unforked
	2	convexly rounded
173. Urodermals in the caudal fin	0	absent
	1	present
174. Number of ?urodermals?(i.e., tendon-bones), associated with dorsalmost principal caudal rays	0	two
	1	one
	2	none
175. Type of scales	0	ganoid of lepisosteoid type
	1	elasmoid of cycloid type
	2	elasmoid of amioid type
176. Shape of posterior margin of cycloid scales	0	smooth
	1	crenulate
177. Type of ornamentation of cycloid scales	0	circuli or circuli and radii
	1	circuli and transverse lines
	2	circuli and squamulae
178. Leptocephalous larva	0	absent
	1	present

Character matrix

Taxon / Character number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Amia_calva	0	1	0	0	0	-	0	0	0	0	2	?	-	0	0
Amia_pattersoni	0	1	0	1	0	-	0	0	0	0	?	?	-	0	?
Lepisosteus_osseus	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
Obaichthys_decoratus	0	0	0	0	0	-	0	0	0	?	?	?	?	0	?
Aspidorhynchus_acutirostris	?	0	0	1	1	0	0	0	0	0	1	?	0	0	?
Belonostomus_tenuirostris	-	0	0	1	1	0	0	0	0	0	1	?	0	0	?
Hypsocormus_macrodon	0	1	0	1	0	-	1	-	0	0	?	?	0	0	?
Mesturus_verrucosus	-	0	-	-	0	-	1	?	0	?	0	-	0	0	?
Pachycormus_macropterus	0	1	0	1	0	-	1	-	0	?	2	?	0	?	0
Vinctifer_comptoni	0	1	0	1	1	0	0	0	0	0	1	?	0	3	0
Apsopelix_anglicus	0	0	2	1	1	0	0	2	0	?	2	1	1	1	1
Allothrissops_mesogaster	0	0	2	1	1	0	0	0&1	0	?	2	0	1	1	?
Anaethalion_angustus	0	0	2	1	1	0	0	?	0	?	?	?	?	?	?
Anaethalion_knorri	0	0	2	1	1	0	0	0	0	?	?	?	?	?	?
Ascalabos_voithii	?	0	2	1	1	0	0	0	0	?	?	?	?	?	?
Bavarichthys_incognitus	?	0	?	?	1	0	0	2	0	?	?	?	?	?	?
Cavenderichthys_talbragarensis	0	0	2	1	1	0	0	0	0	?	?	?	?	?	?
Brycon_meeki	-	1	2	1	1	1	1	1	0	0	2	2	1	1	1
Chanos_chanos	0	0	2	1	1	3	1	1	0	0	2	2	1	1	1
Chongichthys_dentatus	0	?	?	?	1	0	?	?	0	?	?	?	1	1	?
Crossognathus_sabaudians	0	0	2	1	1	0	0	2	0	?	?	?	?	?	?
Denticeps_clupeoides	0	0	0	0	1	0	1	1	1	1	0	-	1	1	1
Diplomystus_dentatus	0	0	2	1	1	0	0	0&1	0	1	1&2	?	1	1	1
Domeykos_profetaensis	?	0	2	?	1	0	1	2	0	?	?	?	1	?	?
Dorsetichthys_bechei	0	0	0	1	0	-	0	0	0	0	1	?	0	0	0
Engraulis_ringens	?	0	2	?	1	0	1	1	1	1	0	-	1	1	1
Elops_saurus	0	0	2	1	1	0	0	0	0	0	2	0	1	1	1
Erichalcis_arcta	0	0	2	1	1	0	0	0&1	0	1	?	?	?	?	?
Esox_lucius	0	0	?	?	1	?	1	?	0	0	?	?	1	1	1
Eurycormus_speciosus	?	1	?	1	0	-	?	0	?	?	?	?	?	?	?
Gordichthys_conquensis	?	0	0	?	1	0	1	?	0	?	?	?	?	?	?

Taxon / Character number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Goulmimichthys_arambourgi	1	0	2	?	1	1	1	2	0	?	2	1	1	1	?
Hiodon_alosoides	1	1	3	1	1	2	0	3	0	0	?	?	1	1	1
Heterotis_niloticus	0	1	0	0	1	0	0	1	0	0	?	?	1	1	1
Humbertia_operta	0	0	0	1	1	0	0	0&1	0	?	2	2	1	1	1
Leptolepis_coryphaenoides	0	0	2	1	1	0	0	0	0	0	2	0	0	0	0
Leptolepis_koonwarri	0	0	2	1	1	0	0	0	?	?	?	?	?	?	?
Leptolepides_haerteisi	0	0	?	?	?	?	0	1	0	?	?	?	?	?	?
Leptolepides_sprattiformis	0	0	2	1	1	0	0	1	0	?	?	?	1	?	1
Luisichthysvinalaensis	1	0	2	?	1	0	0	2	0	?	2	1	1	1	1
Luisiella_feruglioi	0	0	2	1	1	0	0	0	?	?	?	?	?	?	?
Lycoptera_middendorfi	0	0	2	1	1	0	0	0	0	?	?	?	?	?	?
Megalops_atlanticus	0	0	2	1	1	0	0	0	0	0	2	0	1	1	1
Notelops_brama	1	0	2	1	1	1	0	2	0	?	2	1	1	1	?
Oncorhynchus_mykiss	0	0	2	1	1	0	?	1	0	0	2	2	1	1	1
Opsariichthys_bidens	1	?	0	?	1	0	0	?	0	0	2	2	1	1	1
Orthogonikleithrus_hoelli	?	0	?	?	1	?	0	?	0	?	?	?	?	?	?
Pachythrissops_propterus	?	0	?	?	1	0	?	0	0	?	?	?	?	?	?
Pholidophorus_gervasutti	0	?	0	1	0	-	0	?	?	?	?	?	?	?	?
Pholidophorus_latusculus	?	?	?	1	?	?	0	?	?	?	?	?	?	?	?
Protoclupea_chilensis	0	0	?	1	1	?	0	2	0	?	?	?	?	?	?
Rhacolepis_buccalis	1	0	2	1	1	1	1	2	0	?	2	1	1	1	?
Santanaclupea_silvasantosi	0	0	?	?	1	0	1	?	1	1	?	?	2	2	?
Siemensichthys_macrocephalus	0	0	1	1	1	?	0	?	?	?	1	0	0	0	0
Siemensichthys_siemensii	0	0	?	1	?	?	?	?	?	?	?	?	?	?	?
Tharrhias_araripis_	0	0	2	1	1	3	1	1	0	?	?	?	?	?	?
Tharsis_dubius	0	0	2	1	1	0	0	0	0	0	2	0	1	0	1
Thrissops_formosus	?	0	2	?	1	2	0	1	0	?	?	?	?	?	?
Thymallus_thymallus	0	0	2	1	1	0	0	1	0	0	2	2	1	1	1
Umbra_krameri	0	0	-	-	1	0	1	?	0	0	2	2	1	1	1
Varasichthys_ariasi	0	0	2	1	1	0	0	2	0	?	?	?	1	1	1

Taxon / Character number	16	17	18	19	20	21	22	23	24	25	26	27	28
Amia_calva	2	1	0	0	0	0	0	0	0	1	0	1	0
Amia_pattersoni	?	?	0	0	0	?	0	0	0	1	0	1	0
Lepisosteus_osseus	?	2	0	0	0	2	0	1	0	1	0	1	1
Obaichthys_decoratus	?	1	0	0	?	2	0	1	0	0	0	1	1
Aspidorhynchus_acutirostris	?	1	0	0	?	?	1	0	0	1	0	1	0
Belonostomus_tenuirostris	?	?	0	0	0	?	1	?	?	1	0	1	0
Hypsocormus_macrodon	?	1	0	0	?	?	0	0	1	?	?	1	0
Mesturus_verrucosus	?	?	0	0	1	2	1	0	0	0	1	0	1
Pachycormus_macropterus	1	1	0	0	?	?	0	0	1	1	0	1	0
Vinctifer_comptoni	?	?	0	0	?	?	1	0	0	0	0	1	0
Apsopelix_anglicus	2	?	0	0	1	?	1	0	?	0	2	?	0
Allothrissops_mesogaster	?	0	1	0	1	?	1	?	0	1	0	0	0
Anaethalion_angustus	?	0	0	0	0	0	1	0	0	1	0	1	0
Anaethalion_knorri	?	?	0	0	0	?	1	0	0	?	0	1	0
Ascalabos_voithii	?	?	0	0	?	?	1	?	0	?	0	?	0
Bavarichthys_incognitus	?	?	0	0	?	?	?	?	0	0	?	?	0
Cavenderichthys_talbragarensis	?	?	0	0	?	?	1	?	0	?	?	?	0
Brycon_meeki	2	0	0	0	1	1	1	1	0	0	0	?	0
Chanos_chanos	2	0	0	0	1	1	1	1	0	0	0	?	0
Chongichthys_dentatus	2	?	?	?	?	?	?	0	0	0	0	?	0
Crossognathus_sabaudians	?	?	0	0	1	?	?	0	0	0	?	?	0
Denticeps_clupeoides	2	1	0	0	0	1	1	0	1	0	0	1	0
Diplomystus_dentatus	2	0	0	0	?	?	1	?	0	0	0	0	0
Domeykos_profetaensis	?	?	0	0	?	?	1	?	0	0	0	?	0
Dorsetichthys_bechei	0	0	0	0	0	0	1	0	0	1	0	0	0
Engraulis_ringens	2	0	0	0	0	1	1	0	0	0	0	1	0
Elops_saurus	2	0	0	0	0	0	1	0	0	1	0	1	0
Erichalcis_arcta	?	?	0	0	1	?	1	?	0	0	?	0	0
Esox_lucius	2	0	0	1	0	1	1	0	0	0	0	?	0
Eurycormus_speciosus	?	?	0	0	?	?	1	?	0	0	0	?	0
Gordichthys_conquensis	?	?	0	0	1	?	1	1	0	1	?	?	0

Taxon / Character number	16	17	18	19	20	21	22	23	24	25	26	27	28
Goulmimichthys_arambourgi	2	0	0	0	0	?	1	?	0	0	1	?	0
Hiodon_alosoides	1	0	0	0	0	2	1	0	1	2	0	1	0
Heterotis_niloticus	2	1	0	0	0	2	1	1	0	0	0	0	0
Humbertia_operta	2	0	0	0	0	?	1	0	1	0	0	0	0
Leptolepis_coryphaenoides	0&1	0	0	0	0	0	1	0	0	1	0	0	0
Leptolepis_koonwarri	?	?	0	0	?	?	1	?	0	?	?	?	0
Leptolepides_haerteisi	?	?	0	0	?	?	?	0	1	1	0	?	0
Leptolepides_sprattiformis	2	?	0	0	1	?	1	0	0	1	0	?	0
Luisichthysvinalaensis	2	?	0	0	?	?	1	?	0	?	0	?	0
Luisiella_feruglioi	?	?	0	0	?	?	1	?	0	?	?	?	0
Lycoptera_middendorfi	?	?	0	0	0	?	1	0	0	2	0	1	0
Megalops_atlanticus	2	0	0	0	0	0	1	0	0	1	0	1	0
Notelops_brama	2	0	0	0	0	?	?	0	0	0	1	?	0
Oncorhynchus_mykiss	2	0	0	0	0	1	1	0	1	0	0	?	0
Opsariichthys_bidens	2	0	0	0	1	1	1	1	1	0	0	1	0
Orthogonikleithrus_hoelli	?	?	0	0	1	?	?	0	1	0	0	1	0
Pachythrissops_propterus	?	?	0	0	0	?	?	?	0	1	0	?	0
Pholidophorus_gervasutti	?	?	?	?	?	?	?	?	?	?	?	?	0
Pholidophorus_latiusculus	?	?	?	?	?	?	?	?	?	?	?	?	0
Protoclupea_chilensis	?	?	?	?	?	?	?	?	0	0	0	?	0
Rhacolepis_buccalis	2	0	0	0	1	?	1	0	0	0	1	?	0
Santanaclupea_silvasantosi	?	0	0	0	?	?	1	?	0	0	0	?	0
Siemensichthys_macrocephalus	1	?	0	0	0	0	1	?	0	0	0	?	0
Siemensichthys_siemensii	?	?	0	0	0	?	?	?	?	?	?	?	0
Tharrhias_araripis_	?	?	0	0	?	?	1	1	0	?	?	0	0
Tharsis_dubius	2	0	0	0	0	0	1	0	0	0	0	0	0
Thrissops_formosus	2	?	1	0	?	?	?	0	0	?	0	0	0
Thymallus_thymallus	2	0	0	0	0	1	1	0	?	0	0	1	0
Umbra_krameri	2	0	0	1	0	1	1	?	0	0	0	1	0
Varasichthys_ariasi	2	?	0	0	?	?	?	0	0	0	2	?	0

Taxon / Character number	29	30	31	32	33	34	35	36	37	38	39	40
Amia_calva	0	0&1	0	3	2	-	0	0	0	2	0	0
Amia_pattersoni	0	0	0	3	2	-	0	0	0	?	0	0
Lepisosteus_osseus	0	0	1	0	0	0	0	0	0	2	?	0
Obaichthys_decoratus	0	0	1	0	0	0	0	?	?	?	?	0
Aspidorhynchus_acutirostris	?	0	0	1	1	0	0	0	0	0	1	0
Belonostomus_tenuirostris	?	0	0	1	1	0	0	?	-	-	0	0
Hypsocormus_macrodon	0	0	0	1	2	-	0	0	0&1	1	0	0
Mesturus_verrucosus	?	?	0	3	2	-	0	?	-	-	0	?
Pachycormus_macropterus	0	0	0	1	2	-	0	0	0	1	0	0
Vinctifer_comptoni	?	0	0	1	1	0	0	1	-	-	0	0
Apsopelix_anglicus	?	1	1	3	0&1	1	1	?	?	0	1	?
Allothrissops_mesogaster	?	0	1	3	1	0	1	?	1	0	1	1
Anaethalion_angustus	0	0	0	3	1	0	?	0	0	0	0	?
Anaethalion_knorri	0	0	0	3	1	0	0	0	0	0	0	?
Ascalabos_voithii	?	0	0	3	?	?	0	?	?	?	0	0
Bavarichthys_incognitus	0	1	?	3	1	1	?	1	-	-	1	?
Cavenderichthys_talbragarensis	0	0	0	3	1	0	0	0	0	0	0	1
Brycon_meeki	0	0	0	3	1	0	?	0	1	0	0	0
Chanos_chanos	0	0	0	3	1	0	0	0	1	0	1	0
Chongichthys_dentatus	?	1	?	?	?	?	?	?	?	?	1	0
Crossognathus_sabaudians	0	1	1	3	1	1	1	1	-	-	1	?
Denticeps_clupeoides	?	0	0	3	1	0	0	0	1	0	0	0
Diplomystus_dentatus	?	0	0	3	1	0	0	0	1	0	0	0
Domeykos_profetaensis	?	?	?	?	?	?	?	?	?	?	?	?
Dorsetichthys_bechei	0	0	0	2	0	0	0	0	0	0	0	0
Engraulis_ringens	0	0	0	3	2	-	0	0	1	0	0	0
Elops_saurus	?	0	1	3	1	0	1	0	0	0	1	0
Erichalcis_arcta	?	0	0	3	1	0	0	0	1	2	?	0
Esox_lucius	?	0	0	3	1	0	0	0	1	0	0	0
Eurycormus_speciosus	0	0	0	1&2	0	0	0	0	0	1	0	0
Gordichthys_conquensis	?	0	0	3	1	0	0	0	0	?	0	?

Taxon / Character number	29	30	31	32	33	34	35	36	37	38	39	40
Goulmimichthys_arambourgi	?	0	1	3	1	1	1	1	-	-	1	0
Hiodon_alosoides	1	1	0	3	2	-	0	1	-	-	0	0
Heterotis_niloticus	0	1	0	3	2	-	0	1	-	-	0	0
Humbertia_operta	?	0	0	3	1	0	0	0	1	2	0	0
Leptolepis_coryphaenoides	0	0	0	2	0	0	0	0	0	0	0	1
Leptolepis_koonwarri	0	0	0	3	1	0	0	0	0&1	?	0	1
Leptolepides_haerteisi	0	0	0	3	0	1	0	0	1	2	0	0
Leptolepides_sprattiformis	0	0	0	3	1	1	0	0	1	2	0	0
Luisichthysvinalaensis	?	0	?	?	?	?	?	0	0	?	0	?
Luisiella_feruglioi	0	0	0	3	1	0	0	0	0	0	0	1
Lycoptera_middendorfi	1	0	0	3	2	-	0	0	1	0	0	0
Megalops_atlanticus	?	0	1	3	1	0	0	0	0	0	1	0
Notelops_brama	0	1	1	3	1	1	1	1	-	-	1	0
Oncorhynchus_mykiss	0	0	0	3	1	0	0	0	1	0	0	0
Opsariichthys_bidens	0	0	0	3	1	0	0	0	1	0	0	0
Orthogonikleithrus_hoelli	0	0	0	3	1	?	0	?	?	?	0	0
Pachythrissops_propterus	0	0	?	3	1	0	0	?	?	?	0	?
Pholidophorus_gervasutti	0	0	0	1&2	0&1	?	0	0	0	?	?	0
Pholidophorus_latiusculus	0	0	?	2	0	0	0	?	?	?	0	?
Protoclupea_chilensis	0	0	?	3	?	0	?	0	0	0	0	0
Rhacolepis_buccalis	0	0	1	3	1	1	1	1	-	-	1	0
Santanaclupea_silvasantosi	?	?	?	3	?	?	?	?	?	?	?	0
Siemensichthys_macrocephalus	0	0&1	0	3	1	0	?	?	?	?	0	?
Siemensichthys_siemensii	0	?	?	3	?	?	?	0	0	?	0	?
Tharrhias_araripis_	0	0	0	3	1	0	1	0	1	0	0	0
Tharsis_dubius	?	?	0	3	1	0	0	0	0	0	?	1
Thrissops_formosus	?	0	1	3	1	0	1	0	1	0	0	?
Thymallus_thymallus	?	0	0	3	1	0	0	0	0	0	0	0
Umbra_krameri	?	0	?	3	1	0	0	0	1	-	0	0
Varasichthys_ariasi	?	0	?	2	1	0	?	0	0	0	0	0

Taxon / Character number	41	42	43	44	45	46	47	48	49	50	51	52
Amia_calva	0	0	0	3	0	0	1	1	0	0	0	0
Amia_pattersoni	0	?	0	3	0	0	1	?	0	0	0	0
Lepisosteus_osseus	4	0	0	0	1	1	0	1	0	0	0	1
Obaichthys_decoratus	4	0	0	0	?	1	0	1	0	?	0	1
Aspidorhynchus_acutirostris	0	0	0	0	1	1	1	1	0	0	0	1
Belonostomus_tenuirostris	0	0	0	0	1	1	?	1	0	0	?	1
Hypsocormus_macrodon	0	0	0	0	1	1	1	1	0	?	?	0
Mesturus_verrucosus	?	0	?	0	0	?	1	1	0	?	0	1
Pachycormus_macropterus	0	0	0	0	1	1	1	1	0	?	?	0
Vinctifer_comptoni	0	0	0	0	0	1	?	1	0	0	0	1
Apsopelix_anglicus	0	0	1	1	1	0	?	?	?	?	?	1
Allothrissops_mesogaster	0	0	1	0	1	0	0	0	1	?	1	1
Anaethalion_angustus	0	?	1	3	1	0	0	0	1	?	1	0
Anaethalion_knorri	0	?	1	0	1	0	0	0	?	?	1	?
Ascalabos_voithii	0	0	1	0	1	0	0	0	1	?	1	1
Bavarichthys_incognitus	0	0	?	?	1	0	?	?	?	?	?	1
Cavenderichthys_talbragarensis	0	0	1	0	1	0	0	0	1	?	1	0
Brycon_meeki	1	0	1	4	1	1	1	1	1	?	1	1
Chanos_chanos	1	0	1	0	1	0	?	?	1	2	1	1
Chongichthys_dentatus	0	1	1	0	1	?	0	?	?	?	?	1
Crossognathus_sabaudians	0	?	?	?	1	?	?	?	?	?	?	0&1
Denticeps_clupeoides	0	1	1	3	1	1	0	1	1	2	1	1
Diplomystus_dentatus	0	?	1	?	1	0	0	0	?	?	?	1
Domeykos_profetaensis	0	?	1	1	1	0	?	?	?	?	?	1
Dorsetichthys_bechei	0	?	1	0	1	1	?	1	?	?	-	0
Engraulis_ringens	3	1	1	0	1	0	1	1	1	2	1	1
Elops_saurus	0	1	1	2	1	0	0	1	1	1	1	0
Erichalcis_arcta	0	0	1	0	1	0	0	0	1	?	?	1
Esox_lucius	0	?	1	3	1	?	0	?	1	2	1	1
Eurycormus_speciosus	?	?	1	?	1	0	?	?	?	?	?	0
Gordichthys_conquensis	1	1	1	0	1	0	1	?	?	?	?	1

Taxon / Character number	41	42	43	44	45	46	47	48	49	50	51	52
Goulmimichthys_arambourgi	0	0	1	2	1	0	0	0	?	?	1	1
Hiodon_alosoides	0	1	1	3	1	0	0	1	1	1	1	1
Heterotis_niloticus	0	1	1	0	1	1	0	1	0	1	1	1
Humbertia_operta	0	0	1	0	1	0	0	0	1	?	1	1
Leptolepis_coryphaenoides	0	0	1	?	1	0	?	?	1	?	1	0
Leptolepis_koonwarri	0	0	1	0	1	0	0	0	0&1	?	?	0
Leptolepides_haerteisi	2	0	1	0	?	0	?	?	?	?	?	0
Leptolepides_sprattiformis	2	0	1	0	1	0	0	0	1	?	1	0
Luisichthysvinalaensis	0	?	1	?	1	?	?	?	?	?	?	0
Luisiella_feruglioi	0	0	1	0	1	0	0	0	1	1&2	1	0
Lycoptera_middendorfi	0	0	1	?	1	0	0	1	0&1	?	?	0
Megalops_atlanticus	0	0	1	1	1	0	?	1	1	1	1	0
Notelops_brama	0	0	1	2	1	1	0	0	1	?	1	0
Oncorhynchus_mykiss	0	1	1	0	1	?	0	?	1	2	1	1
Opsariichthys_bidens	1	1	1	4	1	?	?	?	1	2	1	1
Orthogonikleithrus_hoelli	2	0	1	0	1	0	0	0	1	?	1	1
Pachythrissops_properus	0	0	1	0	1	?	?	0	1	?	?	0
Pholidophorus_gervasutti	?	0	0	0	0&1	?	?	1	0	?	?	0
Pholidophorus_latiusculus	0	?	?	?	?	?	?	?	?	?	?	0
Protoclupea_chilensis	0	0	1	0	1	0	?	?	?	?	?	1
Rhacolepis_buccalis	0	0	1	1	1	0	?	0	1	?	1	1
Santanaclupea_silvasantosi	3	1	1	1	1	?	?	0	1	2	1	1
Siemensichthys_macrocephalus	0	?	1	?	1	?	?	1	1	?	?	0
Siemensichthys_siemensii	0	?	1	0	1	?	?	?	?	?	?	0
Tharrhias_araripis_	1	1	1	3	1	0	?	?	1	?	1	?
Tharsis_dubius	0	0	1	0	1	0	0	0	1	?	1	0
Thrissops_formosus	0	0	1	0	1	0	0	0	1	?	1	1
Thymallus_thymallus	0	1	1	0	1	?	0	?	1	2	1	1
Umbra_krameri	0	0	1	0	1	0	1	1	1	2	1	1
Varasichthys_ariasi	0	?	1	?	1	0	?	?	1	?	?	0

Taxon / Character number	53	54	55	56	57	58	59	60	61	62	63	64
Amia_calva	0	0	1	0	1	0	0	0	0	1	3	1
Amia_pattersoni	0	0	1	0	1	0	0	0	0	1	3	1
Lepisosteus_osseus	0	0	0	1	1	2	0	0	-	-	-	1
Obaichthys_decoratus	0	0	0	0	1	2	?	0	-	-	-	?
Aspidorhynchus_acutirostris	0	0	2	0	1	2	?	0	2	1	1	1
Belonostomus_tenuirostris	0	0	2	1	1	2	?	0	0	1	1	1
Hypsocormus_macrodon	0	0	0	0	?	3	-	0	0	1	0&1	1
Mesturus_verrucosus	0	0	2	1	0	0	?	1	2	0	0&1	2
Pachycormus_macropterus	0	0	0	0	?	3	-	0	0	1	0&1	1
Vinctifer_comptoni	0	0	2	1	1	2	?	0	2	1	1	2
Apsopelix_anglicus	0	1	0	0	0	0	?	0	0	0	1	0
Allothrissops_mesogaster	0	1	0	0	0	0	1	0	1	0	1	0
Anaethalion_angustus	0	0	0	0	0	0	0	0	1	0	1	0
Anaethalion_knorri	0	0	0	0	0	0	?	0	1	0	1	0
Ascalabos_voithii	0	0	0	0	0	0	0&1	0	1	0	1	0
Bavarichthys_incognitus	0	0	2	0	0	0	0	0	2	0	1	0
Cavenderichthys_talbragarensis	0	0	0	0	0	0	?	0	1	0	1	0
Brycon_meeki	0	0	0	0	?	0	0&1	1	0	0	1	2
Chanos_chanos	1	0	0	0	1	0	0	1	1	2	1	2
Chongichthys_dentatus	0	0	?	0	?	?	?	0	0	0	1	?
Crossognathus_sabaudians	0	1	0	0	0	0	0	0	0	0	1	?
Denticeps_clupeoides	0	0	0	0	0	0	?	0	?	1	2	2
Diplomystus_dentatus	0	0	0	0	0	0	0&1	0	1	0	1	0
Domeykos_profetaensis	0	1	2	0	0	?	?	0	1	0	1	0
Dorsetichthys_bechei	0	0	2	0	0	0	0	0	1	0	1	0
Engraulis_ringens	0	0	1	0	?	?	?	0	0	0	1	0
Elops_saurus	0	0	0	0	1	0	1	0	0	0	1	0
Erichalcis_arcta	0	0	0	0	0	0	0	0	1	0	1	0
Esox_lucius	0	0	1	0	0	0	0	1	0	1	1	1
Eurycormus_speciosus	?	0	2	0	1	0	?	0	1	0	1	0
Gordichthys_conquensis	1	1	0	0	0	0	1	1	1	1	1	2

Taxon / Character number	53	54	55	56	57	58	59	60	61	62	63	64
Goulmimichthys_arambourgi	0	1	?	0	0	0	?	0	0	0	1	1
Hiodon_alosoides	0	0	0	0	1	0	0	0	0	1	1&2	2
Heterotis_niloticus	0	0	0	0	1	1	0	0	0	1	1	2
Humbertia_operta	0	0	0	0	0	0	1	0	1	0	1&2	0
Leptolepis_coryphaenoides	0&1	0	0	0	0	0	0	0	1	0	1	0
Leptolepis_koonwarri	0	0	0	0	0	0	?	1	1	0	1	0
Leptolepides_haerteisi	0	0	0	0	0	0	?	0	1	0	1	0
Leptolepides_sprattiformis	0	0	0	0	0	0	0	0	1	0	1	0
Luisichthysvinalaensis	0	1	2	0	0	0	0	0	1	0	1	0
Luisiella_feruglioi	0	0	0	0	0	0	?	0	1	0	1	0
Lycoptera_middendorfi	0	0	2	0	1	0	0	0	0	0	1	1
Megalops_atlanticus	0	0	0	0	0	0	?	0	1	0	1	0
Notelops_brama	0	0	2	0	0	0	?	0	0	0	2	1
Oncorhynchus_mykiss	1	0	0	0	1	0	0	0	2	0	1	1
Opsariichthys_bidens	0	0	0	0	0	0	1	1	1	0	0	2
Orthogonikleithrus_hoelli	0	0	0	0	0	0	?	0	1	0	1	0
Pachythrissops_properus	?	0	?	0	?	0	?	0	1	?	1	0
Pholidophorus_gervasutti	?	0	2	0	0	?	0	0	1	0	1&3	0
Pholidophorus_latiusculus	?	0	2	0	0	?	?	?	1	0	?	0
Protoclupea_chilensis	0	1	2	0	0	?	?	0	1	0	?	?
Rhacolepis_buccalis	0	1	2	0	0	0	0	0	0	0	2	1
Santanaclupea_silvasantosi	0	?	?	0	1	0	?	0	?	?	1	?
Siemensichthys_macrocephalus	?	0	2	0	0	?	1	0	1	0	2	1
Siemensichthys_siemensii	?	0	2	0	?	0	1	0	1	0	1	1
Tharrhias_araripis_	1	0	0	0	1	0	1	1	?	2	1	2
Tharsis_dubius	0	0	0	0	0	0	?	0	1	0	1	0
Thrissops_formosus	0	0	0	0	0	0	0	0	0&1	0	1	0
Thymallus_thymallus	1	0	0	0	1	0	0	0	1	0	1	?
Umbra_krameri	0	0	0	0	0	0	0	1	0	0	1	2
Varasichthys_ariasi	0	1	2	0	0	0	0	0	1	0	1	1

Taxon / Character number	65	66	67	68	69	70	71	72	73	74	75	76
Amia_calva	0	0	0	0	1	0	0	0	0	0	0	1
Amia_pattersoni	0	0	0	0	1	0	0	0	0	0	0	1
Lepisosteus_osseus	0	3	0	0	1	0	0	0	0	0	0	0
Obaichthys_decoratus	?	3	0	0	1	0	0	0	0	0	0	0
Aspidorhynchus_acutirostris	1	0	1	1	-	?	0	?	?	0	0	1
Belonostomus_tenuirostris	1	0	1	1	-	?	0	?	?	0	0	1
Hypsocormus_macrodon	?	0	0	1	-	?	?	?	0	0	0	0
Mesturus_verrucosus	-	1&2	0	1	-	1	?	?	0	0	0	?
Pachycormus_macropterus	1	0	0	1	-	0	0	0	0	0	0	0
Vinctifer_comptoni	-	0	1	0	0	?	0	0	?	0	0	1
Apsopelix_anglicus	0	2	0	0	?	1	1	1	1	1	0	0
Allothrissops_mesogaster	0	1	0	0	0	1	1	0	1	1	0	0
Anaethalion_angustus	0	1	0	1	-	1	1	1	1	1	0	0
Anaethalion_knorri	0	1	0	1	-	1	1	1	1	1	0	0
Ascalabos_voithii	0	1	0	1	-	1	1	1	1	1	1	0
Bavarichthys_incognitus	0	0	0	0	1	1	1	1	1	1	0	0
Cavenderichthys_talbragarensis	0	1&2	0	0	0	1	1	1	1	1	0	0
Brycon_meeki	-	2	0	0	1	1	1	1	1	0	0	1
Chanos_chanos	-	3	0	0	0&1	1	1	1	1	0	1	-
Chongichthys_dentatus	0	0	?	1	-	1	1	0	1	1	0	?
Crossognathus_sabaudians	0	1	0	?	?	1	1	1	1	0	0	0
Denticeps_clupeoides	-	2	0	0	1	1	1	1	1	1	0	0
Diplomystus_dentatus	0	1	0	0	1	1	1	1	1	1	?	0
Domeykos_profetaensis	0	1	0	1	-	1	1	0	1	1	?	?
Dorsetichthys_bechei	0	0	0	1	-	1	0	2	?	0	0	0
Engraulis_ringens	0	0	0	0	1	1	1	1	1	1	0	0
Elops_saurus	0	0	0	1	-	1	1	2	1	1	0	1
Erichalcis_arcta	0	1	0	0	1	1	1	1	1	1	0	0
Esox_lucius	0	0	0	0	1	1	1	1	1	1	0	1
Eurycormus_speciosus	0	1	0	?	?	?	?	?	?	0	0	1
Gordichthys_conquensis	-	3	0	0	1	1	1	1	1	0	1	?

Taxon / Character number	65	66	67	68	69	70	71	72	73	74	75	76
Goulmimichthys_arambourgi	0	0	0	?	?	1	1	1	1	1	0	0
Hiodon_alosoides	-	1	0	1	-	1	1	0	1	1	0	1
Heterotis_niloticus	-	2	0	0	0&1	1	1	0	1	1	0	0
Humbertia_operta	0	1	0	0	1	1	1	1	1	1	0	0
Leptolepis_coryphaenoides	0	1	0	0&1	-	1	1	1	1	0	1	0
Leptolepis_koonwarri	0	1	0	1	-	1	1	1	1	1	1	0
Leptolepides_haerteisi	0	2	0	0	?	?	1	1	1	1	?	0
Leptolepides_sprattiformis	0	2	0	0	0	1	1	1	1	1	0	?
Luisichthysvinalaensis	0	1	0	?	?	1	1	?	?	1	?	0
Luisiella_feruglioi	0	1	0	1	-	1	1	1	1	1	0	0
Lycoptera_middendorfi	0	1	0	?	?	1	1	?	?	1	0	0
Megalops_atlanticus	0	0	0	1	-	1	1	2	1	1	0	0
Notelops_brama	0	0	0	0	1	1	1	0	1	1	0	0
Oncorhynchus_mykiss	0	0	0	0	1	1	1	1	1	1	0	?
Opsariichthys_bidens	-	2	0	0	1	1	1	1	1	1	0	-
Orthogonikleithrus_hoelli	0	1	0	0	1	1	1	1	1	0	0	?
Pachythrissops_properus	0	1	0	1	-	?	1	1	1	1	0	1
Pholidophorus_gervasutti	0	0&1	0	1	-	?	0	?	?	0	1	0
Pholidophorus_latiusculus	0	0	0	?	?	?	?	?	?	0	?	?
Protoclupea_chilensis	0	1	0	1	-	1	1	0	1	1	1	?
Rhacolepis_buccalis	0	0	0	0	1	1	1	1	1	1	0	0
Santanaclupea_silvasantosi	0	0	0	?	?	1	1	?	1	1	0	?
Siemensichthys_macrocephalus	0	0	0	1	-	?	0	2	?	0	0	0
Siemensichthys_siemensii	0	0	0	?	?	?	0	2	0	0	0	?
Tharrhias_araripis_	-	3	0	0	1	1	1	0	1	0	0	-
Tharsis_dubius	0	1	0	0	0	1	1	1	1	1	1	0
Thrissops_formosus	0	1	0	0	1	1	1	0	1	1	0	0
Thymallus_thymallus	0	1	0	0	1	1	1	1	1	1	0	?
Umbra_krameri	-	2	0	0	1	1	1	1	1	0	0	0
Varasichthys_ariasi	0	1	0	0	1	1	1	1	1	0	1	0

Taxon / Character number	77	78	79	80	81	82	83	84	85	86	87	88	89
Amia_calva	0	0	0	1	0	0	0	0	0	0	0	0	0
Amia_pattersoni	?	0	?	?	?	0	0	0	0	?	?	?	?
Lepisosteus_osseus	0	0	0	1	0	?	0	0	0	1	0	0	0
Obaichthys_decoratus	?	0	?	?	?	?	?	0	?	?	?	?	?
Aspidorhynchus_acutirostris	0	0	0	?	0	?	?	0	?	?	?	?	?
Belonostomus_tenuirostris	0	0	0	?	0	?	?	0	?	?	?	?	?
Hypsocormus_macrodon	0	0	?	1	-	0	?	0	0	2	?	?	?
Mesturus_verrucosus	1	0	?	0	1	?	0	?	0	?	?	?	?
Pachycormus_macropterus	0	0	0	1	-	0	-	0	0	2	?	?	?
Vinctifer_comptoni	0	0	0	1	0	1	1	0	?	?	?	?	?
Apsopelix_anglicus	1	0	1	0	0	?	1	0	1	?	?	?	?
Allothrissops_mesogaster	1	0	1	0	0	0	1	0	?	?	?	?	?
Anaethalion_angustus	1	0	?	1	?	0	1	0	?	?	?	?	?
Anaethalion_knorri	1	0	?	1	0	0	1	0	?	?	?	?	?
Ascalabos_voithii	1	0	?	0	?	0	1	0	?	?	?	?	?
Bavarichthys_incognitus	?	?	?	?	?	?	0	0	?	?	?	?	?
Cavenderichthys_talbragarensis	1	0	?	0	0	0	0	0	?	?	?	?	?
Brycon_meeki	1	0	1	0	1	0&1	0	0	1	0	1	1	1
Chanos_chanos	1	0	1	0	1	1	1	0	1	2	1	1	1
Chongichthys_dentatus	1	0	1	?	?	0	0	0	?	?	?	?	?
Crossognathus_sabaudians	1	0	1	0	0	0	1	0	?	?	?	?	?
Denticeps_clupeoides	1	0	1	?	1	?	?	0	1	2	1	1	1
Diplomystus_dentatus	1	0	1	0	1	0&1	0	0	?	2	?	?	?
Domeykos_profetaensis	1	0	1	?	0	?	2	0	?	?	?	?	?
Dorsetichthys_bechei	0	0	0	1	0	0	2	0	?	?	?	?	?
Engraulis_ringens	0	0	1	0	1	?	?	0	1	2	1	1	1
Elops_saurus	0	0	2	1	0	1	1	0	1	2	0	?	0
Erichalcis_arcta	1	0	1	0	1	0	1	0	?	?	?	?	?
Esox_lucius	1	1	2	0	?	?	0	1	1	2	1	0	0
Eurycormus_speciosus	0	0	0	1	0	?	2	0	?	?	?	?	?
Gordichthys_conquensis	1	0	1	?	?	1	?	0	?	?	?	?	?

Taxon / Character number	77	78	79	80	81	82	83	84	85	86	87	88	89
Goulmimichthys_arambourgi	?	?	1	?	0	?	?	0	?	?	?	?	?
Hiodon_alosoides	1	0	2	0	0	0&1	1	0	1	2	1	1	0
Heterotis_niloticus	1	0	1	0	1	1	0	0	1	2	1	?	1
Humbertia_operta	1	0	1	0	1	1	1	0	?	?	?	?	?
Leptolepis_coryphaenoides	0&1	0	0	1	0	0	2	0	?	?	?	?	?
Leptolepis_koonwarri	1	0	?	?	0	0	0	0	?	?	?	?	?
Leptolepides_haerteisi	1	0	0	0	?	1	0	0	?	?	?	?	?
Leptolepides_sprattiformis	1	0	1	0	0	0	0	0	1	?	?	?	?
Luisichthysvinalaensis	1	?	1	0	?	?	2	0	?	?	?	?	?
Luisiella_feruglioi	1	0	0	0	0	0	1	0	?	?	?	?	?
Lycoptera_middendorfi	1	0	0	0	0	0	0	0	?	?	?	?	?
Megalops_atlanticus	0	0	1	1	-	?	1	0	1	2	0	0	0
Notelops_brama	?	0	1	1	0	1	0	0	?	?	?	?	?
Oncorhynchus_mykiss	1	0	1	0	0	1	0	0	1	2	1	1	1
Opsariichthys_bidens	1	0	1	0	?	1	0	0	1	0	1	1	1
Orthogonikleithrus_hoelli	1	0	1	0	?	1	0	0	?	?	?	?	?
Pachythrissops_propterus	1	0	?	0	?	?	?	0	?	?	?	?	?
Pholidophorus_gervasutti	0	?	0	1	0	?	?	0	?	?	?	?	?
Pholidophorus_latiusculus	0	0	1	?	?	0	2	0	?	?	?	?	?
Protoclupea_chilensis	1	0	0	?	0	0	2	0	?	?	?	?	?
Rhacolepis_buccalis	?	0	1	0	0	1	1	0	?	2	?	?	?
Santanaclupea_silvasantosi	?	0	1	?	1	0	0&1	0	?	?	?	?	?
Siemensichthys_macrocephalus	0	0	?	?	?	0	2	0	?	?	?	?	?
Siemensichthys_siemensii	0	0	?	?	?	?	2	0	?	?	?	?	?
Tharrhias_araripis_	1	0	?	0	1	1	?	0	?	?	?	?	?
Tharsis_dubius	0	0	1	1	0	0	2	0	?	?	?	?	?
Thrissops_formosus	1	0	1	0	0	0	1	0	?	?	?	?	?
Thymallus_thymallus	1	0	1	0	0	1	0	0	1	2	1	1	1
Umbra_krameri	1	1	1	0	?	1	0	1	1	2	1	1	1
Varasichthys_ariasi	1	0	0	0	0	0	2	0	?	?	?	?	?

Taxon / Character number	90	91	92	93	94	95	96	97	98	99	100	101	102
Amia_calva	0	?	?	?	0	0	0	0	0	0	0	1	0
Amia_pattersoni	0	?	?	?	0	0	0	0	0	0	0	?	0
Lepisosteus_osseus	1	0	-	-	2	0	0	0	0	?	0	1	0
Obaichthys_decoratus	1	0	-	-	2	0	?	0	0	0	?	1	0
Aspidorhynchus_acutirostris	0	0	-	-	0	0	?	0	0	?	?	?	0
Belonostomus_tenuirostris	0	0	-	-	0	0	?	0	0	?	?	?	0
Hypsocormus_macrodon	0	0	-	-	0	0	?	0	0	?	1	1	0
Mesturus_verrucosus	0	0	-	-	0	?	0	0	0	?	?	0	0
Pachycormus_macropterus	0	0	-	-	0	0	?	0	0	0	1	1	0
Vinctifer_comptoni	0	0	-	-	0	0	?	0	0	?	?	?	0
Apsopelix_anglicus	0	1	1	1	0	?	0	0	0	0	?	0	1
Allothrissops_mesogaster	0	1	1	1	0	0	0	0	0	?	1	1	1
Anaethalion_angustus	0	1	1	1	0	0	0	0	0	0	?	1	1
Anaethalion_knorri	0	1	1	1	0	0	0	0	0	0	1	1	1
Ascalabos_voithii	0	1	1	1	0	0	0	0	0	1	1	1	1
Bavarichthys_incognitus	0	1	1	1	0	0	0	0	0	1	1	1	1
Cavenderichthys_talbragarensis	0	1	0	0	?	0	0	0	0	0	1	1	1
Brycon_meeki	0	?	1	1	1	0	1	1	2	0	1	1	1
Chanos_chanos	0	1	1	1	0	1	1	0	1	1	?	1	1
Chongichthys_dentatus	0	1	1	1	0	0	0	0	0	0	0&1	1	1
Crossognathus_sabaudians	0	1	1	1	0	?	0	0	0	?	1	1	1
Denticeps_clupeoides	0	2	1	1	1	0	1	0	0	0	?	0	?
Diplomystus_dentatus	0	1	1	1	1	0	0	0	0	0	?	1	1
Domeykos_profetaensis	0	1	1	1	0	0	0	0	0	1	?	0	1
Dorsetichthys_bechei	0	0	-	-	0	0	0	0	0	?	?	?	1
Engraulis_ringens	0	2	1	1	1	0	1	0	0	?	?	1	1
Elops_saurus	0	1	1	1	0	0	0	0	0	0	?	1	1
Erichalcis_arcta	0	1	1	1	0	0	1	0	0	?	?	?	?
Esox_lucius	0	1	1	1	0	0	0	0	0	0	1	1	1
Eurycormus_speciosus	0	0	-	-	?	0	0	0	0	1	?	1	1
Gordichthys_conquensis	0	1	1	1	0	1	0	0	1	?	1	1	1

Taxon / Character number	90	91	92	93	94	95	96	97	98	99	100	101	102
Goulmimichthys_arambourgi	0	1	1	1	0	0	0	0	0	?	?	?	1
Hiodon_alosoides	0	1	1	1	0	0	1	0	0	1	0	1	1
Heterotis_niloticus	0	1	0	1	1	0	1	0	0	0	?	1	1
Humbertia_operta	0	1	1	1	0	0	0	0	0	0	?	1	1
Leptolepis_coryphaenoides	0	1	0	0	0	0	0	0	0	?	?	1	1
Leptolepis_koonwarri	0	1	?	0	0	0	0	0	0	?	1	1	1
Leptolepides_haerteisi	0	1	2	1	0	0	0	0	0	0	1	1	1
Leptolepides_sprattiformis	0	1	2	1	0	0	0	0	0	0	1	1	1
Luisichthysvinalaensis	0	1	1	1	0	0	0	0	0	?	?	1	1
Luisiella_feruglioi	0	1	0&1	1	0	0	0	0	0	1	1	1	1
Lycoptera_middendorfi	0	1	1	1	0	0	0	0	0	?	?	1	1
Megalops_atlanticus	0	1	1	1	0	0	0	0	0	?	?	?	1
Notelops_brama	0	1	1	1	0	0	0	0	0	1	0	1	1
Oncorhynchus_mykiss	0	1	1	1	0	0	0	0	0	1	?	1	1
Opsariichthys_bidens	0	1	2	1	1	0	1	1	2	0	?	1	1
Orthogonikleithrus_hoelli	0	1	1	1	0	0	0	0	0	1	1	1	1
Pachythrissops_propterus	0	1	1	1	0	0	0	0	0	0	?	1	1
Pholidophorus_gervasutti	0	0	-	-	?	?	?	?	?	?	?	?	?
Pholidophorus_latiusculus	0	0	-	-	?	?	?	?	?	?	?	?	?
Protoclupea_chilensis	0	1	1	1	0	0	0	0	0	?	1	?	1
Rhacolepis_buccalis	0	1	1	1	0	0	0	0	0	1	0	0	1
Santanaclupea_silvasantosi	0	?	1	1	0	?	0	0	0	0	?	1	1
Siemensichthys_macrocephalus	0	0	-	-	?	?	?	?	?	?	?	?	1
Siemensichthys_siemensii	0	?	?	?	?	?	?	?	?	?	?	?	?
Tharrhias_araripis_	0	1	1	1	0	1	1	0	1	1	0	1	?
Tharsis_dubius	0	1	1	1	0	0	0	0	0	0	1	?	1
Thrissops_formosus	0	1	1	1	0	0	0	0	0	0	1	1	1
Thymallus_thymallus	0	1	1	1	0	0	0	0	0	1	?	1	1
Umbra_krameri	0	1	1	1	1	0	0	0	0	0	1	1	?
Varasichthys_ariasi	0	1	1	1	0	0	0	0	0	?	1	0	1

Taxon / Character number	103	104	105	106	107	108	109	110	111	112	113
Amia_calva	0	-	0	0	0	0	0	0	0	0	0
Amia_pattersoni	0	-	0	0	0	0	0	0	?	0	0
Lepisosteus_osseus	0	-	0	0	0	0	0	0	0	0	0
Obaichthys_decoratus	0	-	0	0	0	0	0	0	0	0	0
Aspidorhynchus_acutirostris	?	?	0	0	0	?	0	0	?	1	0
Belonostomus_tenuirostris	?	?	0	?	0	2	0	?	?	0	0
Hypsocormus_macrodon	?	?	0	0	0	?	0	?	1	1	0
Mesturus_verrucosus	0	-	0	?	0	?	0	?	0	0	0
Pachycormus_macropterus	?	?	0	0	0	0	0	1	1	1	0
Vinctifer_comptoni	?	?	0	0	0	2	0	0	1	0	0
Apsopelix_anglicus	1	1	1	?	0	?	1	?	1	0	?
Allothrissops_mesogaster	0	-	0	0	0	0	1	1	1	0	0
Anaethalion_angustus	1	1	0	?	0	?	0	1	1	0	0
Anaethalion_knorri	?	?	0	1	0	?	0	?	?	0	0
Ascalabos_voithii	1	0	0	0	0	0	0	1	1	0	0
Bavarichthys_incognitus	1	1	1	?	0	0	0	?	?	0	?
Cavenderichthys_talbragarensis	1	0	0	?	0	0	0	1	1	0	?
Brycon_meeki	1	1	1	0	0	0	0	1	1	0	0
Chanos_chanos	1	1	1	0	0	2	0	1	1	0	1
Chongichthys_dentatus	1	0	0	?	0	?	0	?	?	0	?
Crossognathus_sabaudians	1	1	1	0	0	?	0	?	?	0	?
Denticeps_clupeoides	1	1	1	0	1	0	0	1	1	0	0
Diplomystus_dentatus	1	1	1	0	?	0	0	?	1	0	0
Domeykos_profetaensis	1	0	0	1	0	1	0	1	?	0	1
Dorsetichthys_bechei	0	-	0	?	0	0	0	?	?	0	0
Engraulis_ringens	1	1	1	0	1	0	0	1	1	0	1
Elops_saurus	1	1	1	0	0	1	0	1	1	0	1
Erichalcis_arcta	?	?	?	0	0	0	0	?	?	0	0
Esox_lucius	1	1	1	0	0	0	0	1	1	0	0
Eurycormus_speciosus	0	-	0	0	0	0	?	1	1	0	0
Gordichthys_conquensis	1	0	0	0	0	0	0	?	1	0	?

Taxon / Character number	103	104	105	106	107	108	109	110	111	112	113
Goulmimichthys_arambourgi	?	?	0	?	0	?	0	?	?	0	?
Hiodon_alosoides	-	?	0	0	0	0	1	1	1	0	1
Heterotis_niloticus	1	1	0	2	0	0	0	1	1	0	?
Humbertia_operta	1	1	1	?	0	0	0	1	1	0	0
Leptolepis_coryphaenoides	0	-	0	1	0	0	0	1	1	0	0
Leptolepis_koonwarri	0	-	?	0	0	?	0	1	1	0	?
Leptolepides_haerteisi	1	1	0	?	0	0	0	?	?	0	0
Leptolepides_sprattiformis	1	0	0	0	0	0	0	1	1	0	0
Luisichthysvinalaensis	1	0	0	?	0	1	0	?	?	0	?
Luisiella_feruglioi	0	-	0	0	0	0	0	1	1	0	0
Lycoptera_middendorfi	0	-	0	0	0	0	0	?	?	0	?
Megalops_atlanticus	?	?	1	0	0	1	0	1	1	0	1
Notelops_brama	0	-	0	0	0	0	0	?	?	0	?
Oncorhynchus_mykiss	1	0	0	0	0	1	0	1	1	0	0
Opsariichthys_bidens	?	?	1	0	0	0	0	1	1	0	0
Orthogonikleithrus_hoelli	?	?	0	?	0	0	0	?	1	0	?
Pachythrissops_properus	1	1	0	?	0	?	1	1	?	0	0
Pholidophorus_gervasutti	?	?	?	0	?	0	?	0	?	?	1
Pholidophorus_latiusculus	?	?	?	?	?	0	?	?	?	0	?
Protoclupea_chilensis	?	?	0	1	0	1	0	?	?	0	1
Rhacolepis_buccalis	0	-	0	1	0	0	0	?	?	0	?
Santanaclupea_silvasantosi	?	?	0	?	0	0	?	?	?	0	?
Siemensichthys_macrocephalus	?	?	?	0	?	0	?	1	?	0	0
Siemensichthys_siemensii	?	?	?	?	?	0	?	?	?	0	?
Tharrhias_araripis_	0	-	0	?	0	0	0	1	1	0	?
Tharsis_dubius	1	0	0	0	0	0	0	1	1	0	0
Thrissops_formosus	0	-	0	?	0	0	1	1	?	0	0
Thymallus_thymallus	1	0	0	0	0	0	0	1	1	0	0
Umbra_krameri	1	1	?	1	0	0	0	1	1	0	0
Varasichthys_ariasi	1	0	0	1	1	1	0	0	?	0	1

Taxon / Character number	114	115	116	117	118	119	120	121	122	123	124
Amia_calva	0	1	0	0	0	0	1	1	0	0	1
Amia_pattersoni	0	1	0	0	0	0	1	1	0	0	1
Lepisosteus_osseus	0	0	0	1	0	0	1	0	0	0	0
Obaichthys_decoratus	0	0	0	1	0	?	?	0	0	0	0
Aspidorhynchus_acutirostris	0	1	0	1	0	?	?	0	0	0	0
Belonostomus_tenuirostris	0	1	0	1	0	?	?	0	0	0	0
Hypsocormus_macrodon	0	0	0	0	1	?	?	?	0	?	?
Mesturus_verrucosus	0	?	1	1	?	0	1	?	0	0	?
Pachycormus_macropterus	0	0	0	0	0	0	1	?	0	0	?
Vinctifer_comptoni	0	?	0	1	0	?	?	0	0	0	0
Apsopelix_anglicus	?	1	0	2	1	0	0	1	0	0	1
Allothrissops_mesogaster	0	1	0	1	1	1	0	1	1	0	1
Anaethalion_angustus	?	1	0	0	0	1	0	1	0	0	1
Anaethalion_knorri	0	1	0	0	0	1	0	1	0	0	1
Ascalabos_voithii	0	1	0	0	1	1	0	1	0	0	1
Bavarichthys_incognitus	?	1	0	0	1	1	1	1	0	0	1
Cavenderichthys_talbragarensis	?	1	0	0	0	1	1	1	0	0	1
Brycon_meeki	?	1	0	?	?	0	1	1	0	0	1
Chanos_chanos	1	1	0	0	0	0	?	1	0	0	1
Chongichthys_dentatus	0	1	0	0	1	0	1	1	0	0	1
Crossognathus_sabaudians	0	1	0	2	?	?	1	1	0	0	1
Denticeps_clupeoides	0	1	1	1	0	1	0	1	0	0	1
Diplomystus_dentatus	0	1	1	0	0	0	0	1	0	0	1
Domeykos_profetaensis	1	1	0	0	?	?	?	1	0	0	1
Dorsetichthys_bechei	0	0	0	0	0	?	?	0	0	0	0
Engraulis_ringens	?	1	1	0	0	1	0	1	0	0	1
Elops_saurus	1	1	0	0	1	0	1	1	0	0	1
Erichalcis_arcta	0	1	0	?	?	?	?	1	0	1	1
Esox_lucius	0	1	0	1	0	0&1	0	1	0	0	1
Eurycormus_speciosus	0	0	0	0	0	?	?	0	1	0	0
Gordichthys_conquensis	?	1	0	0	0	0	1	1	0	0	1

Taxon / Character number	114	115	116	117	118	119	120	121	122	123	124
Goulmimichthys_arambourgi	0	1	0	2	?	0	0	1	0	0	1
Hiodon_alosoides	1	1	0	1	1	0	1	1	0	0	1
Heterotis_niloticus	?	1	0	1	0	1	0	1	0	0	1
Humbertia_operta	?	1	0	0	0	1	1	1	0	1	1
Leptolepis_coryphaenoides	1	1	0	0	0	?	0	1	0	0	1
Leptolepis_koonwarri	?	1	0	0	0	?	?	1	0	0	1
Leptolepides_haerteisi	0	1	0	2	0	1	1	1	0	1	1
Leptolepides_sprattiformis	0	1	0	2	0	1	1	1	0	1	1
Luisichthysvinalaensis	?	1	0	?	?	?	?	1	0	0	1
Luisiella_feruglioi	?	1	0	0	0	1	0&1	1	0	0	1
Lycoptera_middendorfi	?	1	0	1	0	0	?	1	0	0	1
Megalops_atlanticus	1	1	0	0	1	?	?	1	0	0	1
Notelops_brama	0	1	0	2	1	1	0	1	0	0	1
Oncorhynchus_mykiss	1	1	0	0	0	0	?	1	0	0	1
Opsariichthys_bidens	1	1	0	0	0	?	?	1	0	0	1
Orthogonikleithrus_hoelli	?	1	0	2	0	1	1	1	0	1	1
Pachythrissops_propterus	0	1	0	1	1	1	1	1	1	0	1
Pholidophorus_gervasutti	1	0	?	0	0	?	?	0	?	?	?
Pholidophorus_latiusculus	?	0	?	0	?	?	?	0	?	?	0
Protoclupea_chilensis	1	1	0	0	0	?	0	1	0	0	1
Rhacolepis_buccalis	0	1	0	2	?	1	?	1	0	0	1
Santanaclupea_silvasantosi	?	1	1	0	0	1	0	1	0	0	1
Siemensichthys_macrocephalus	?	0	0	0	?	?	?	0	?	?	0
Siemensichthys_siemensii	?	0	0	0	?	?	?	0	?	?	?
Tharrhias_araripis_	?	1	0	2	0	?	?	1	0	0	1
Tharsis_dubius	0	1	0	0	0	1	?	1	0	0	1
Thrissops_formosus	0	1	0	1	1	1	1	1	1	0	1
Thymallus_thymallus	1	1	0	0	0	0	?	1	0	0	1
Umbra_krameri	0	1	0	1	0	0	1	1	0	0	1
Varasichthys_ariasi	1	1	0	0	1	1	1	1	0	0	1

Taxon / Character number	125	126	127	128	129	130	131	132	133	134
Amia_calva	2	1	0	0	1	0	0	2	0	0
Amia_pattersoni	2	1	0	0	1	0	?	?	0	0
Lepisosteus_osseus	1	0	0	0	0&1	0	0	2	0	0
Obaichthys_decoratus	?	?	?	?	?	?	0	?	0	0
Aspidorhynchus_acutirostris	?	1	0	0	1	0	0	?	0	0
Belonostomus_tenuirostris	2	1	0	0	?	0	0	0	0	0
Hypsocormus_macrodon	?	0	0	?	1	0	0	1	0	0
Mesturus_verrucosus	0	1	?	?	?	0	?	?	0	0
Pachycormus_macropterus	?	0	0	1	1	0	0	1	0	0
Vinctifer_comptoni	2	1	?	0	1	0	0	2	0	0
Apsopelix_anglicus	0	1	0	0	0	0	0	1	1	1
Allothrissops_mesogaster	1	1	0	0	1	1	0	1	2	2
Anaethalion_angustus	1	1	0	0	0&1	0	?	1	1	?
Anaethalion_knorri	1	1	0	0	0	0	0	1	1	1
Ascalabos_voithii	0	1	0	0	0	1	0	1	1	1
Bavarichthys_incognitus	1	1	0	0	?	1	0	1	1	1
Cavenderichthys_talbragarensis	0	1	0	0	0&1	1	0	1	0	0
Brycon_meeki	1	1	0	?	1	0	0	1	1	1
Chanos_chanos	?	1	0	0	1	0	0	0	1&2	2
Chongichthys_dentatus	1	1	?	?	?	?	?	?	?	?
Crossognathus_sabaudians	0	1	0	0	0	0	0	1	1	1
Denticeps_clupeoides	0	1	0	0	1	0	0	1	1	1
Diplomystus_dentatus	0	1	0	1	1	0	0	1	1	1
Domeykos_profetaensis	1	1	0	0	1	1	0	1	1	1
Dorsetichthys_bechei	?	1	0	0	0	0	0	1	0	0
Engraulis_ringens	?	1	0	?	?	0	0	1	1	2
Elops_saurus	2	1	0	0	0	0	0	1	2	2
Erichalcis_arcta	0&1	1	1	0	1	0	0	0	2	2
Esox_lucius	1&2	1	0	0	1	0	1	0	2	2
Eurycormus_speciosus	1	1	0	0	?	0	1	0	0	0
Gordichthys_conquensis	0	1	0	0	1	0	0	1	?	1

Taxon / Character number	125	126	127	128	129	130	131	132	133	134
Goulmimichthys_arambourgi	1	1	0	0	?	?	0	?	1	1
Hiodon_alosoides	1	1	0	0	1	1	0	2	1	1&2
Heterotis_niloticus	1&2	1	0	0	1	0	0	2	1	2
Humbertia_operta	0	1	0	0	0	0	1	0	2	2
Leptolepis_coryphaenoides	0	1	0	0	0	1	0	1	1	1
Leptolepis_koonwarri	1	1	0	0	1	1	0	1	0	0
Leptolepides_haerteisi	1	1	1	0	?	1	0	1	1	1
Leptolepides_sprattiformis	1	1	1	0	0&1	1	0	1	1	1
Luisichthysvinalaensis	?	1	0	0	0	0	0	1	2	2
Luisiella_feruglioi	0	1	0	0	0	1	0	1	0	0
Lycoptera_middendorfi	1	1	0	0	1	0	0	2	1	1&2
Megalops_atlanticus	1	1	0	0	1	?	0	1	1	2
Notelops_brama	1	1	0	0	0	1	0	1	2	1
Oncorhynchus_mykiss	2	1	1	1	1	0	1	0	1&2	2
Opsariichthys_bidens	0&1	1	0	0	1	0	0	1	1	2
Orthogonikleithrus_hoelli	0	1	1	1	1&2	1	0	1	1	2
Pachythrissops_propterus	1	1	0	0	1	1	0	2	1	2
Pholidophorus_gervasutti	?	1	?	?	?	?	?	?	?	?
Pholidophorus_latiusculus	?	?	?	?	?	?	?	?	?	?
Protoclupea_chilensis	1	1	0	0	0	1	0	1	2	2
Rhacolepis_buccalis	1	1	0	0	0	0	0	1	1	1
Santanaclupea_silvasantosi	0	1	0	0	1	0	0	1	1	1
Siemensichthys_macrocephalus	?	1	?	?	?	?	?	?	0	0
Siemensichthys_siemensii	?	?	?	?	?	?	?	?	?	?
Tharrhias_araripis_	1	1	0	0	1	0	0	?	0&2	0&2
Tharsis_dubius	1	1	0	0	0	1	0	1	2	2
Thrissops_formosus	1	1	0	0	0&1	1	0	1	2	2
Thymallus_thymallus	2	1	0	1	0	0	1	0	2	2
Umbra_krameri	0	1	0	0	1	0	0	0	1	2
Varasichthys_ariasi	1	1	?	0	1	0	0	2	1	2

Taxon / Character number	135	136	137	138	139	140	141	142	143	144
Amia_calva	0	0	0	0	1	0	0	1	4	-
Amia_pattersoni	0	0	0	0	1	0	0	1	4	-
Lepisosteus_osseus	0	0	0	0	0	0	1	0	4	-
Obaichthys_decoratus	0	0	0	?	0	0	1	?	4	-
Aspidorhynchus_acutirostris	0	0	1	1	0	0	0	4	3	0
Belonostomus_tenuirostris	0	0	1	1	0	0	0	4	3	0
Hypsocormus_macrodon	0	2	-	0	0	0	?	0	4	-
Mesturus_verrucosus	0	0	?	?	0	0	-	?	4	-
Pachycormus_macropterus	0	2	-	0	0	0	?	0	4	-
Vinctifer_comptoni	0	0	0	0	?	0	0	4	3	0
Apsopelix_anglicus	0	1	0	1	0	0	?	2&3	1	0
Allothrissops_mesogaster	0	1	0	0&1	0	0	0	1	0	0
Anaethalion_angustus	0	1	0	0	0	1	0	?	2	0
Anaethalion_knorri	0	1	?	1	0	?	0	1	2	?
Ascalabos_voithii	0	1	0	0	0	0	0	1	0	0
Bavarichthys_incognitus	0	1	0	1	0	0	0	1	2	0
Cavenderichthys_talbragarensis	0	1	0	0	0	0	0	1	1&2	0
Brycon_meeki	0	1	1	?	0	0	0	1	3	1
Chanos_chanos	1	1	0	?	0	0	0	3	3	?
Chongichthys_dentatus	?	?	?	?	0	?	?	?	?	?
Crossognathus_sabaudians	0	1	0	1	0	0	?	2&3	1	0
Denticeps_clupeoides	0	1	0	1	0	0	0	2	3	?
Diplomystus_dentatus	0	1	0	1	0	0	0	1	2	0
Domeykos_profetaensis	0	1	0	0	0	0	0	0	2	0
Dorsetichthys_bechei	0	?	0	0	0	0	0	0	0&1	0
Engraulis_ringens	1	1	1	0&1	0	0	0	2	3	1
Elops_saurus	1	1	0	0	0	1	0	1	3	0
Erichalcis_arcta	?	1	1	1	0	0	0	1	3	?
Esox_lucius	0	1	1	1	0	0	0	2	3	1
Eurycormus_speciosus	0	0	1	1	0	0	?	0	0	0
Gordichthys_conquensis	0	1	0	0	0	0	0	2	3	?

Taxon / Character number	135	136	137	138	139	140	141	142	143	144
Goulmimichthys_arambourgi	1	1	?	?	0	0	?	?	?	?
Hiodon_alosoides	0	1	0	0	0	0	0	3	3	0
Heterotis_niloticus	0	1	0	0	0	0	0	4	4	-
Humbertia_operta	1	1	1	1	0	0	0	1	2	1
Leptolepis_coryphaenoides	0	1	0	0	0	0	0	0&1	0	0
Leptolepis_koonwarri	0	1	?	?	0	0	0	1	1	0
Leptolepides_haerteisi	0	1	0	0	0	0	0	1	2	1
Leptolepides_sprattiformis	0	1	0	0	0	0	0	1	2	1
Luisichthysvinalaensis	0	1	0	0	0	0	0	1	2	0
Luisiella_feruglioi	0	1	0	?	0	0	0	1	1&2	0
Lycoptera_middendorfi	0	0&1	0	0	0	0	0	1	1	0
Megalops_atlanticus	1	1	0	0	0	1	0	1	3	0
Notelops_brama	0	1	1	1	0	0	0	2	?	?
Oncorhynchus_mykiss	1	1	1	1	0	0	0	1	3	1
Opsariichthys_bidens	1	1	0	0	0	0	0	3	3	1
Orthogonikleithrus_hoelli	0	1	1	1	0	0	0	1	3	1
Pachythrissops_properus	0	1	0	0	0	0	0	1&2	1	0
Pholidophorus_gervasutti	?	?	?	?	?	?	?	?	?	?
Pholidophorus_latiusculus	?	?	?	?	?	?	?	?	?	?
Protoclupea_chilensis	0	1	0	?	0	0	0	1	1	0
Rhacolepis_buccalis	1	1	0	1	0	0	?	2	?	?
Santanaclupea_silvasantosi	?	1	1	1	0	0	?	?	?	?
Siemensichthys_macrocephalus	?	?	?	?	?	?	?	?	?	?
Siemensichthys_siemensii	?	?	?	?	?	?	?	?	?	?
Tharrhias_araripis_	0	1	?	?	0	0	0	2	3	0
Tharsis_dubius	1	1	0	0	0	0	0	1	0	1
Thrissops_formosus	0	1	0	0	0	0	0	1	0	0
Thymallus_thymallus	1	1	1	1	0	0	0	1	3	1
Umbra_krameri	0	1	1	1	?	0	0	2	3	1
Varasichthys_ariasi	0	1	0	?	?	0	0	3	0	0

Taxon / Character number	145	146	147	148	149	150	151	152	153	154
Amia_calva	-	-	-	-	-	0	0	1	0	0
Amia_pattersoni	-	-	-	-	-	0	0	1	0	0
Lepisosteus_osseus	-	-	-	-	-	0	0	1	0	0
Obaichthys_decoratus	-	-	-	-	-	0	?	-	-	0
Aspidorhynchus_acutirostris	2&3	0	0	0	0	1	2	1	0	0
Belonostomus_tenuirostris	1&3	0	0	0	0	1	2	1	0	0
Hypsocormus_macrodon	-	-	-	-	-	1	3	1	-	-
Mesturus_verrucosus	-	-	-	-	-	0	?	?	?	0
Pachycormus_macropterus	-	-	-	-	-	1	3	1	-	-
Vinctifer_comptoni	-	1	0	?	0	?	2	1	0	1
Apsopelix_anglicus	0	0	1	0	0	0	0	0	?	2
Allothrissops_mesogaster	0	1	1	0	0	0	0	0	0	0
Anaethalion_angustus	?	1	0	0	0	?	0&1	0	0	1
Anaethalion_knorri	1	1	0	0	0	0	?	0	0	1
Ascalabos_voithii	0	0	0	0	0	0	0	0	0&2	1
Bavarichthys_incognitus	1	1	0	0	0	0	2	0	2	2
Cavenderichthys_talbragarensis	1	0	0	0	0	0	0	0	0	1
Brycon_meeki	2	?	0	1	0	0	2	0	0	0
Chanos_chanos	2	?	0	1	0	0	2	0	0	0
Chongichthys_dentatus	?	?	?	?	?	?	?	0	?	?
Crossognathus_sabaudians	0	0	1	0	0	0	0	0	2	2
Denticeps_clupeoides	2	2	0	0	0	0	2	0	1	0
Diplomystus_dentatus	2	2	0	0	0	0	1	0	1	0
Domeykos_profetaensis	0	0	0	0	0	0	0	0	2	1
Dorsetichthys_bechei	3	?	0	0	0	0	0	1	0	0
Engraulis_ringens	2	2	0	1	0	0	?	0	1	0
Elops_saurus	1	1	0	0	0	0	1	0	0	0
Erichalcis_arcta	1	2	0	0	1	0	2	0	0	1
Esox_lucius	2	2	0	0	1	0	2	0	0	0
Eurycormus_speciosus	0&1	?	0	0	0	1	0	1	0	0
Gordichthys_conquensis	1	2	0	0	0	0	2	0	0	0

Taxon / Character number	145	146	147	148	149	150	151	152	153	154
Goulmimichthys_arambourgi	0	1	?	0	0	?	2	0	0	2
Hiodon_alosoides	1	1	0	0	0	0	1	0	0	0
Heterotis_niloticus	-	-	-	-	-	0	2	0	0	0
Humbertia_operta	1	1	0	0	1	0	2	0	0	0
Leptolepis_coryphaenoides	0	0	0	0	0	0	0	0	2	1
Leptolepis_koonwarri	1&2	1	0	0	0	0	0	0	0&2	0
Leptolepides_haerteisi	1	1	0	0	1	0	?	0	0&2	1
Leptolepides_sprattiformis	1	1	0	0	1	0	0&1	0	0	1
Luisichthysvinalaensis	0	1	0	0	0	0	0	0	1	?
Luisiella_feruglioi	1	0	0	0	0	0	0	0	0	0&1
Lycoptera_middendorfi	1	0	0	0	0	0	1	0&1	0	0
Megalops_atlanticus	1	1	0	0	0	0	1	0	?	0
Notelops_brama	2	1	0	0	0	0	?	0	2	2
Oncorhynchus_mykiss	1	2	0	0	1	0	2	0	0	0
Opsariichthys_bidens	2	2	0	1	0	0	2	0	?	0
Orthogonikleithrus_hoelli	1	1	0	0	1	0	2	0	0	1
Pachythrissops_propterus	1	0	0	0	0	0	0	0	0	0&1
Pholidophorus_gervasutti	?	?	?	?	?	?	?	?	?	?
Pholidophorus_latiusculus	?	?	?	?	?	?	?	?	?	?
Protoclupea_chilensis	0	1	0	0	0	0	0	0	0	?
Rhacolepis_buccalis	2	1	0	0	0	0	?	0	2	0&2
Santanaclupea_silvasantosi	2	2	0	0	0	0	2	0	1	0
Siemensichthys_macrocephalus	?	?	?	?	?	?	?	?	?	?
Siemensichthys_siemensii	?	?	?	?	?	?	?	?	?	?
Tharrhias_araripis_	1	2	0	0	0	0	2	0	?	0
Tharsis_dubius	0	0	0	0	0	0	0	0	0	1
Thrissops_formosus	0	0	1	?	0	0	0	0	0	0
Thymallus_thymallus	1	2	0	?	1	0	2	0	0	0
Umbra_krameri	2	2	0	?	1	0	2	0	0	0
Varasichthys_ariasi	0	0	0	?	0	0	?	0	0	0

Taxon / Character number	155	156	157	158	159	160	161	162	163	164
Amia_calva	-	0	0	1	1	1	1	2	1&2	0
Amia_pattersoni	-	0	0	1	1	1	1	2	2	0
Lepisosteus_osseus	-	0	0	1	0	0	0	0	2	2
Obaichthys_decoratus	-	0	?	1	?	0	0	0	?	?
Aspidorhynchus_acutirostris	-	0	1	0	0	0	0&1	0	0&2	0
Belonostomus_tenuirostris	-	1	1	0	0	0	0	0	1&2	2
Hypsocormus_macrodon	-	-	-	0	0	0	0	0	0	0
Mesturus_verrucosus	-	?	1	1	?	1	0	2	0	0
Pachycormus_macropterus	-	-	-	0	0	0	0	0	0	0
Vinctifer_comptoni	-	0	1	0	0	1	1	?	0	0
Apsopelix_anglicus	0	0	?	1	1	1	1	?	1	0
Allothrissops_mesogaster	0	1	1	0	1	1	1	2	1	0
Anaethalion_angustus	?	1	1	0	1	1	0	1	1	0
Anaethalion_knorri	0	1	1	0	1	1	0	1	1	0
Ascalabos_voithii	0	1	1	0	0	1	1	2	1	0
Bavarichthys_incognitus	0	1	1	0	1	1	0	1	1	0
Cavenderichthys_talbragarensis	0	1	1	0	0	1	0	1	1	0
Brycon_meeki	1	1	1	0	1	1	1	2	1	0
Chanos_chanos	1	1	1	0	1	?	1	2	1	0
Chongichthys_dentatus	?	?	?	?	?	1	?	?	?	?
Crossognathus_sabaudians	0	0	1	0	1	1	1	?	1	0
Denticeps_clupeoides	0	1	1	1	1	?	1	2	2	0
Diplomystus_dentatus	0	1	1	0	1	1	1	2	1	0
Domeykos_profetaensis	0	1	1	?	0	1	1	?	0	0
Dorsetichthys_bechei	0	0	1	0	0	0	0	0	0	0
Engraulis_ringens	0	1	1	1	1	1	1	2	1	0
Elops_saurus	0	1	1	0	1	?	1	2	1	0
Erichalcis_arcta	0	0	1	0	1	1	1	2	1	0
Esox_lucius	0	1	1	1	1	?	1	2	1	0
Eurycormus_speciosus	0	1	1	0	0	0	0	0	0	0
Gordichthys_conquensis	0	1	1	1	1	1	1	2	1	0

Taxon / Character number	155	156	157	158	159	160	161	162	163	164
Goulmimichthys_arambourgi	0	1	1	0	?	1	?	?	?	?
Hiodon_alosoides	0	1	1	1	1	1	1	2	2	1
Heterotis_niloticus	0	1	1	1	1	1	1	2	2	2
Humbertia_operta	1	1	1	0	1	?	1	2	1	0
Leptolepis_coryphaenoides	0	0	1	0	0	1	0	0	1	0
Leptolepis_koonwarri	0	0	1	0	0	1	?	?	1	0
Leptolepides_haerteisi	0	0	1	0	1	1	1	2	1	0
Leptolepides_sprattiformis	0	0	1	0	1	1	1	2	1	0
Luisichthysvinalaensis	0	1	1	0	0	?	1	1	0	0
Luisiella_feruglioi	0	0	1	0	0	1	0	1	1	0
Lycoptera_middendorfi	0	1	1	1	1	1	1	?	2	1
Megalops_atlanticus	0	1	1	0	1	?	1	?	1	0
Notelops_brama	0	0	1	0	1	1	1	2	1	0
Oncorhynchus_mykiss	0	1	1	1	1	1	1	2	1	0
Opsariichthys_bidens	1	1	1	0	1	1	1	2	1	0
Orthogonikleithrus_hoelli	0	0	1	0	1	1	1	2	1	0
Pachythrissops_propterus	0	1	1	0	0	1	0	0	1	0
Pholidophorus_gervasutti	?	?	?	0	0	0	0	0	0	0
Pholidophorus_latiusculus	?	?	?	0	0	0	0	0	0	0
Protoclupea_chilensis	0	1	1	0	1	1	1	2	0	0
Rhacolepis_buccalis	0	0	1	0	1	1	1	2	1	0
Santanaclupea_silvasantosi	0	1	1	0	1	1	1	2	1	0
Siemensichthys_macrocephalus	?	?	?	0	0	0	0	?	?	?
Siemensichthys_siemensii	?	?	?	0	?	0	0	0	0	0
Tharrhias_araripis_	0	1	1	0	?	1	?	?	1	?
Tharsis_dubius	0	0	1	0	0	1	0	1	1	0
Thrissops_formosus	?	1	1	0	1	1	1	2	1	0
Thymallus_thymallus	?	1	1	1	1	?	1	2	1	0
Umbra_krameri	?	1	1	0	1	?	1	2	2	2
Varasichthys_ariasi	?	1	1	0	0	1	1	1	0	0

Taxon / Character number	165	166	167	168	169	170	171	172	173	174
Amia_calva	-	0	1	0	0	1	2	1	0	2
Amia_pattersoni	-	0	1	0	0	1	2	1	0	2
Lepisosteus_osseus	-	2	1	0	0	1	2	1	0	2
Obaichthys_decoratus	-	?	1	?	?	1	2	1	?	2
Aspidorhynchus_acutirostris	0&2	0	0	0	0	0	1	0	0	2
Belonostomus_tenuirostris	?	0	0	0	0	0	1	0	0	2
Hypsocormus_macrodon	0	0	-	1	?	0	?	0	0	2
Mesturus_verrucosus	0	1	?	?	?	0	?	0	?	?
Pachycormus_macropterus	0	0	-	1	0	0	?	0	0	2
Vinctifer_comptoni	0	0	0	0	0	0	1	0	0	2
Apsopelix_anglicus	1	1	1	1	1	0	1	0	0	0
Allothrissops_mesogaster	1	1	0	1	1	0	1	0	0	0&1
Anaethalion_angustus	1	1	1	0	0	0	1	0	0	1
Anaethalion_knorri	1	1	1	0	0	0	1	0	0	1
Ascalabos_voithii	1	1	0	1	1	0	1	0	0	0
Bavarichthys_incognitus	1	1	0	0	0	0	1	0	0	0
Cavenderichthys_talbragarensis	1	1	0	1	1	0	1	0	0	0
Brycon_meeki	1	1	1	0	?	1	?	0	0	2
Chanos_chanos	1	1	0	0	?	0	?	0	0	2
Chongichthys_dentatus	?	?	?	?	?	?	1	0	?	?
Crossognathus_sabaudians	1	1	1	1	1	0	1	0	0	0
Denticeps_clupeoides	1	1	1	0	0	1	?	0	0	2
Diplomystus_dentatus	1	1	1	0	0	?	1	0	0	2
Domeykos_profetaensis	0	1	0	1	1	0	1	0	0	?
Dorsetichthys_bechei	0	0	0	1	1	0	1	0	0	2
Engraulis_ringens	1	1	1	0	?	1	?	0	0	2
Elops_saurus	1	1	1	0	1	0	1	0	0	1
Erichalcis_arcta	1	1	1	1	?	1	?	0	0	1
Esox_lucius	1	1	1	0	0	1	1	0	0	2
Eurycormus_speciosus	0	0	0	1	?	0	?	0	1	2
Gordichthys_conquensis	1	1	0	?	?	1	?	0	0	2

Taxon / Character number	165	166	167	168	169	170	171	172	173	174
Goulmimichthys_arambourgi	?	?	?	?	?	?	1	0	0	?
Hiodon_alosoides	2	1	1	0	0	0	1	0	0	2
Heterotis_niloticus	2	1	1	0	?	1	?	0	0	2
Humbertia_operta	1	1	1	0	0	1	1	0	0	1
Leptolepis_coryphaenoides	1	1	0	1	1	0	1	0	0	0
Leptolepis_koonwarri	1	1	0	?	?	0	1	0	0	?
Leptolepides_haerteisi	1	1	1	1	0	1	1	0	0	1
Leptolepides_sprattiformis	1	1	0	1	0	1	1	0	0	1
Luisichthysvinalaensis	0	1	0	?	1	0	1	0	0	?
Luisiella_feruglioi	1	1	0	1	1	0	1	0	0	0
Lycoptera_middendorfi	2	1	1	0	0	0	1	0	0	2
Megalops_atlanticus	1	1	1	0	?	0	?	0	0	1
Notelops_brama	1	1	0	?	0	0	0	0	0	?
Oncorhynchus_mykiss	1	1	1	0	0	1	1	0	0	2
Opsariichthys_bidens	1	1	1	0	?	0	?	0	0	2
Orthogonikleithrus_hoelli	1	1	1	0	1	1	1	0	0	1
Pachythrissops_propterus	1	1	0	1	1	0	1	0	0	1
Pholidophorus_gervasutti	0	0	?	0	?	1	?	0	0	2
Pholidophorus_latiusculus	?	0	?	0	?	1	?	0	?	2
Protoclupea_chilensis	0	1	?	?	0	0	1	0	?	?
Rhacolepis_buccalis	1	1	1	?	1	0	0	0	0	?
Santanaclupea_silvasantosi	1	1	1	?	0	?	0	0	0	?
Siemensichthys_macrocephalus	?	?	?	?	?	0	?	0	?	?
Siemensichthys_siemensii	?	?	?	?	0	0	?	0	?	?
Tharrhias_araripis_	1	1	?	?	?	0	0	0	0	?
Tharsis_dubius	1	1	0	1	1	0	1	0	0	0
Thrissops_formosus	1	1	0	1	1	0	1	0	0	1
Thymallus_thymallus	1	1	1	0	?	1	?	0	0	2
Umbra_krameri	2	1	1	0	?	1	1	1	0	2
Varasichthys_ariasi	0	1	0	?	1	0	1	0	0	0

Taxon / Character number	175	176	177	178
Amia_calva	2	-	-	0
Amia_pattersoni	2	-	-	?
Lepisosteus_osseus	0	-	-	0
Obaichthys_decoratus	0	-	-	?
Aspidorhynchus_acutirostris	0	-	-	?
Belonostomus_tenuirostris	0	-	-	?
Hypsocormus_macrodon	2	-	-	?
Mesturus_verrucosus	0	-	-	0
Pachycormus_macropterus	2	-	-	?
Vinctifer_comptoni	0	-	-	?
Apsopelix_anglicus	1	?	0	?
Allothrissops_mesogaster	1	0	1	0
Anaethalion_angustus	1	1	0	1
Anaethalion_knorri	1	1	0	1
Ascalabos_voithii	1	0	0	0
Bavarichthys_incognitus	?	?	?	?
Cavenderichthys_talbragarensis	1	0	0	?
Brycon_meeki	1	0	0	0
Chanos_chanos	1	1	0	0
Chongichthys_dentatus	1	0	0	?
Crossognathus_sabaudians	1	0	0	?
Denticeps_clupeoides	1	?	0	0
Diplomystus_dentatus	1	0	0	0
Domeykos_profetaensis	1	1	1	?
Dorsetichthys_bechei	0	-	-	?
Engraulis_ringens	1	0	0	0
Elops_saurus	1	1	0	1
Erichalcis_arcta	?	0	0	?
Esox_lucius	1	0	0	0
Eurycormus_speciosus	2	1	0	?
Gordichthys_conquensis	1	?	0	0

Taxon / Character number	175	176	177	178
Goulmimichthys_arambourgi	1	?	0	?
Hiodon_alosoides	1	0	2	0
Heterotis_niloticus	1	0	2	0
Humbertia_operta	1	0	0	0
Leptolepis_coryphaenoides	1	0	0	0
Leptolepis_koonwarri	1	?	0	?
Leptolepides_haerteisi	1	?	0	?
Leptolepides_sprattiformis	1	1	0	0
Luisichthysvinalaensis	1	1	1	?
Luisiella_feruglioi	1	0	0	?
Lycoptera_middendorfi	1	0	2	0
Megalops_atlanticus	1	1	0	1
Notelops_brama	1	0	0	?
Oncorhynchus_mykiss	1	0	0	0
Opsariichthys_bidens	1	1	0	0
Orthogonikleithrus_hoelli	?	?	?	?
Pachythrissops_propterus	1	1	0	?
Pholidophorus_gervasutti	0	-	-	?
Pholidophorus_latiusculus	0	-	-	?
Protoclupea_chilensis	1	1	1	?
Rhacolepis_buccalis	1	?	1	?
Santanaclupea_silvasantosi	1	?	0	?
Siemensichthys_macrocephalus	0	-	-	?
Siemensichthys_siemensii	0	-	-	?
Tharrhias_araripis_	1	0	0	?
Tharsis_dubius	1	0	0	0
Thrissops_formosus	1	?	0	0
Thymallus_thymallus	1	0	0	0
Umbra_krameri	1	0	0	0
Varasichthys_ariasi	1	1	1	0

































