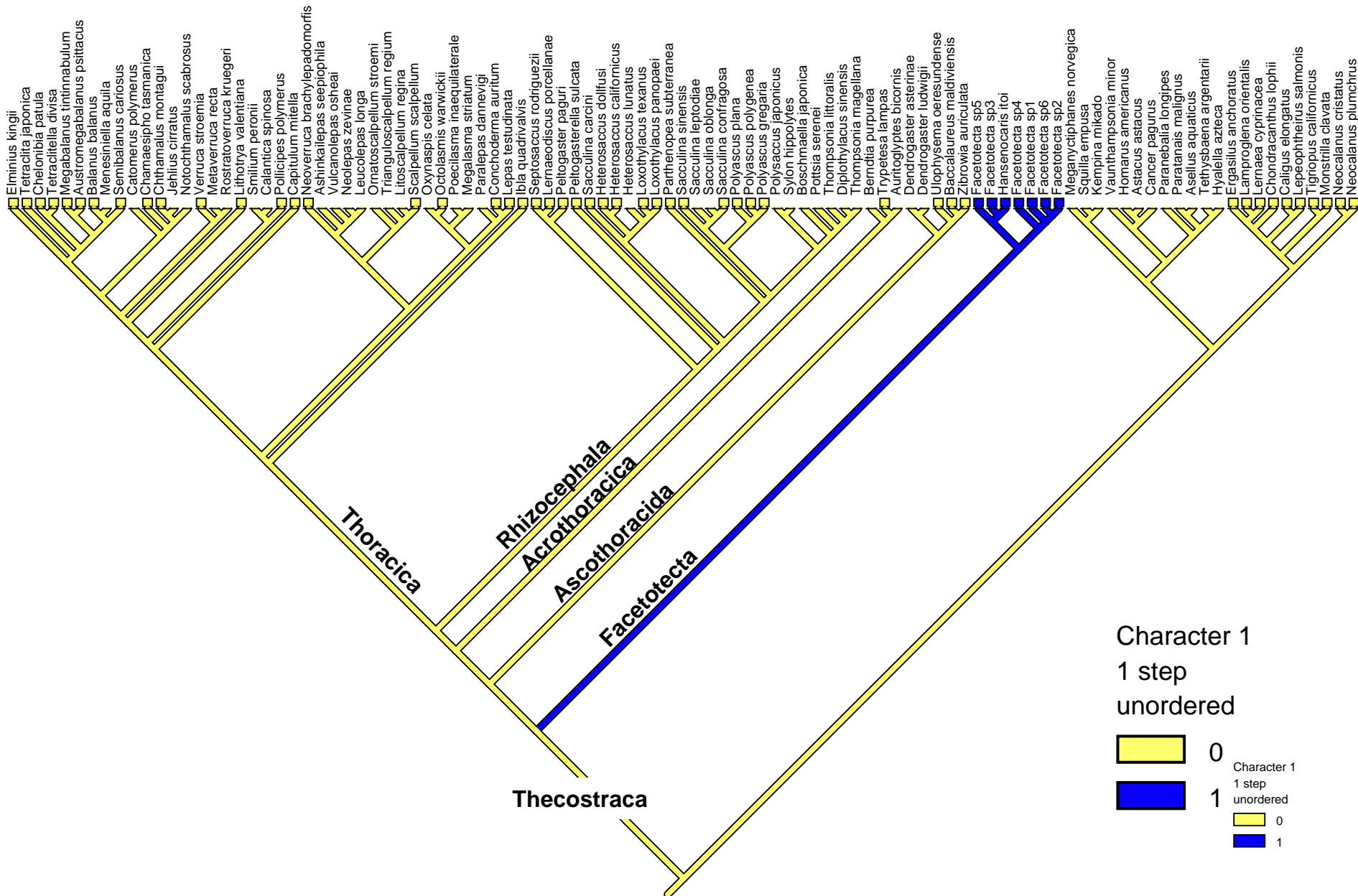
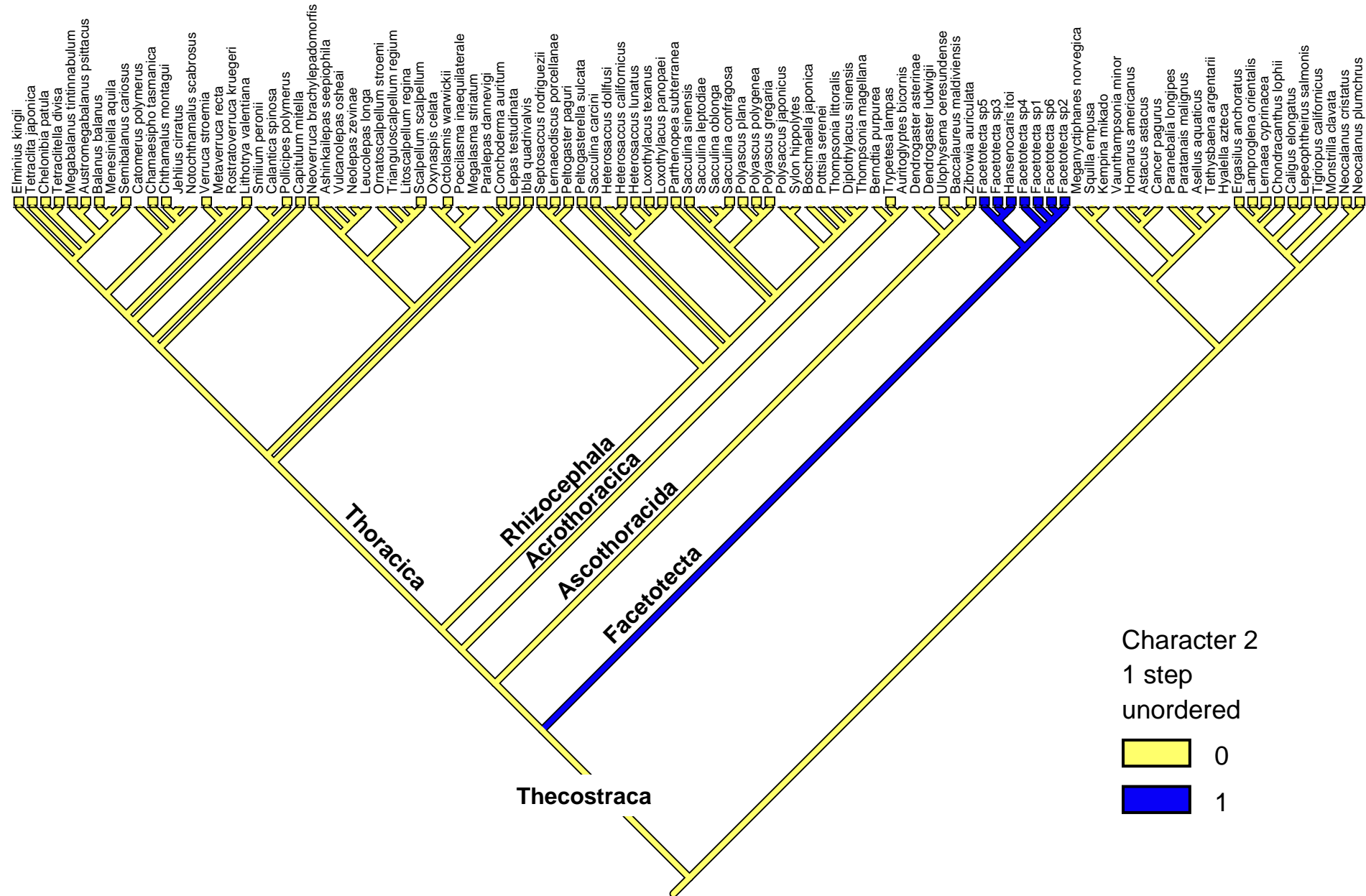


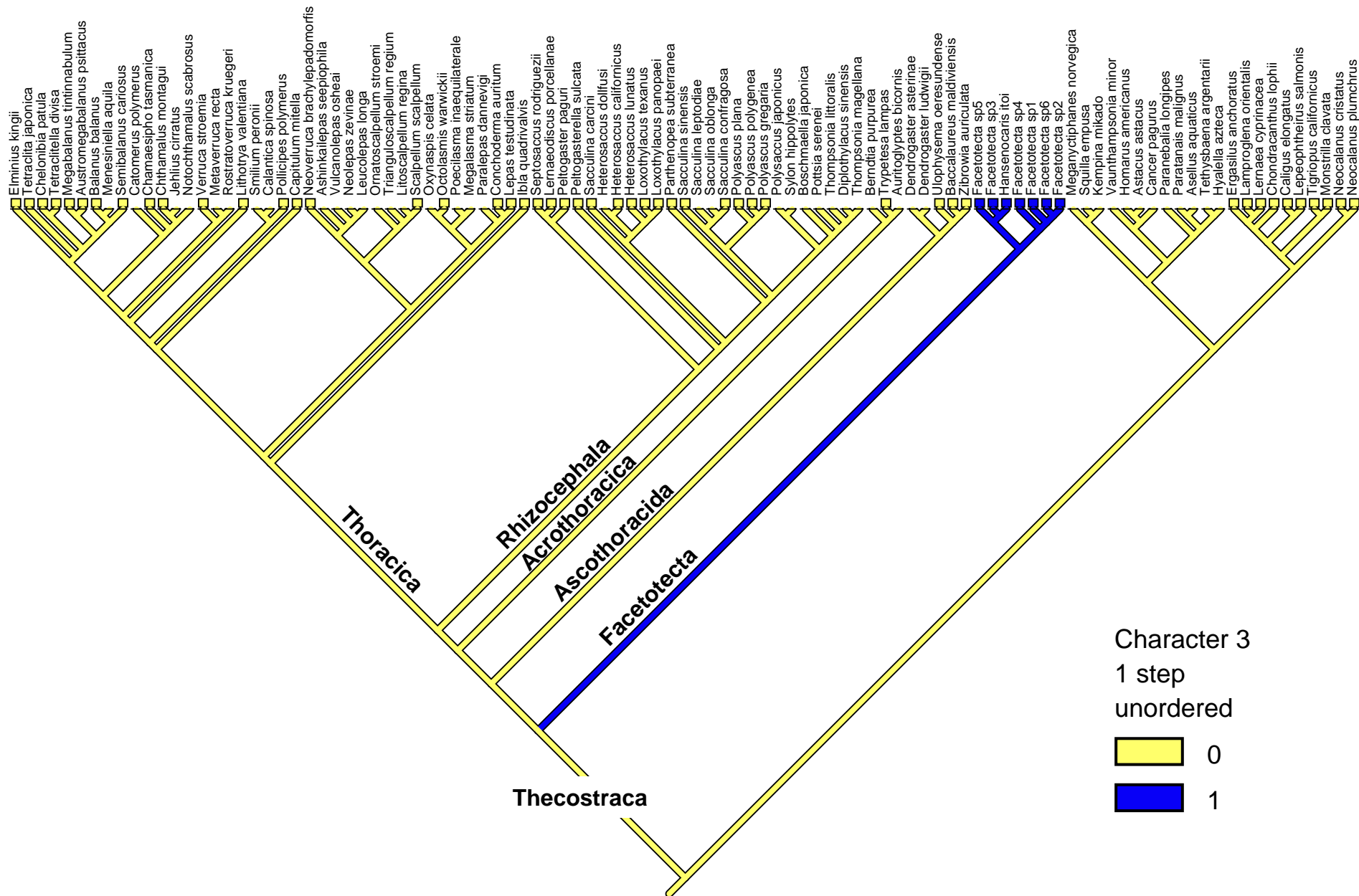
**Character 1.** *Naupliar cephalic shield continuous with free trunk dorsum:* (0) no; (1) yes.



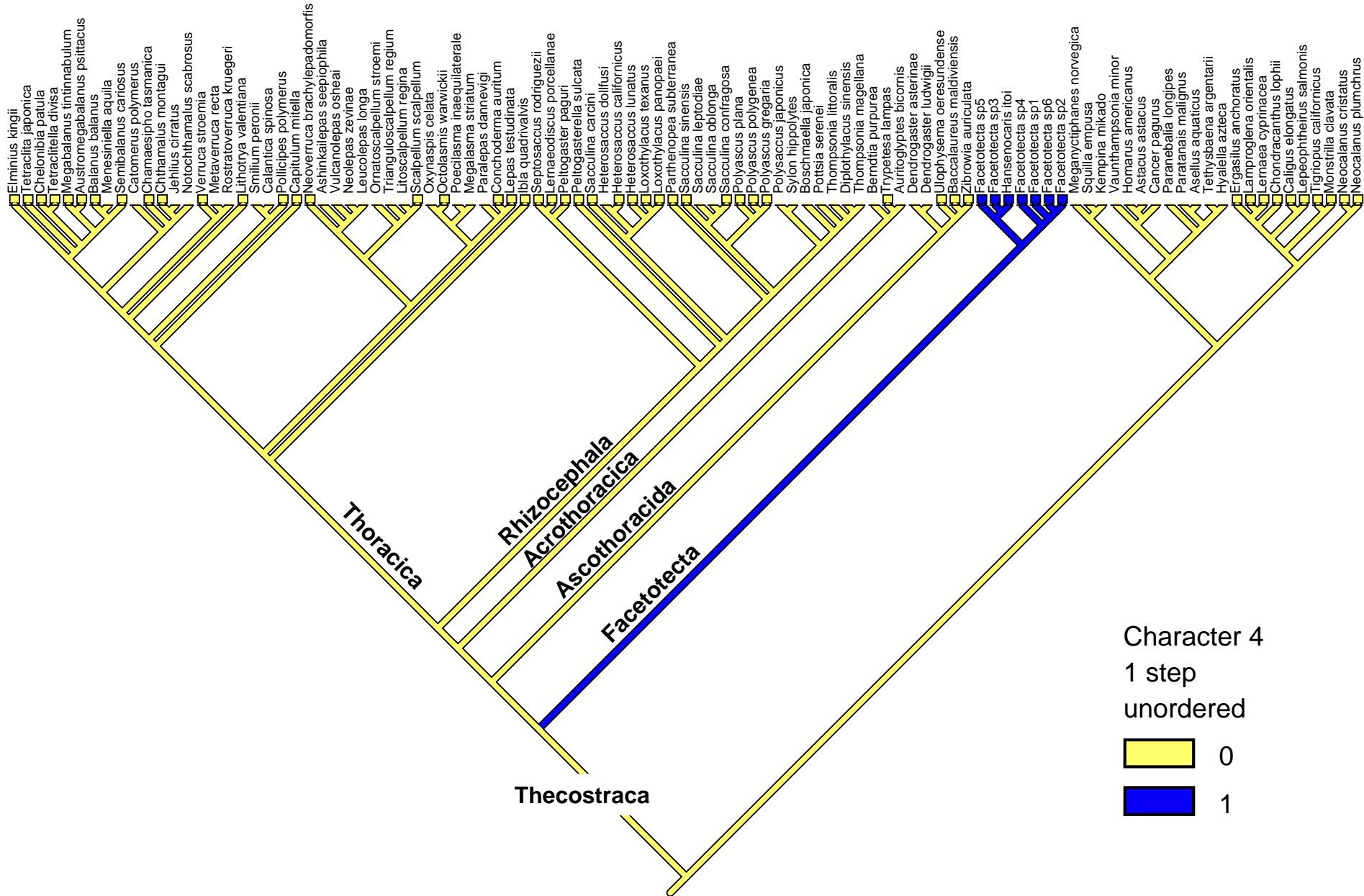
**Character 2. Naupliar cephalic shield ridges of common (facetotectan) plan: (0) no; (1) yes.**



**Character 3. Nauplius with dorsal window plate in common position: (0) no; (1) yes.**

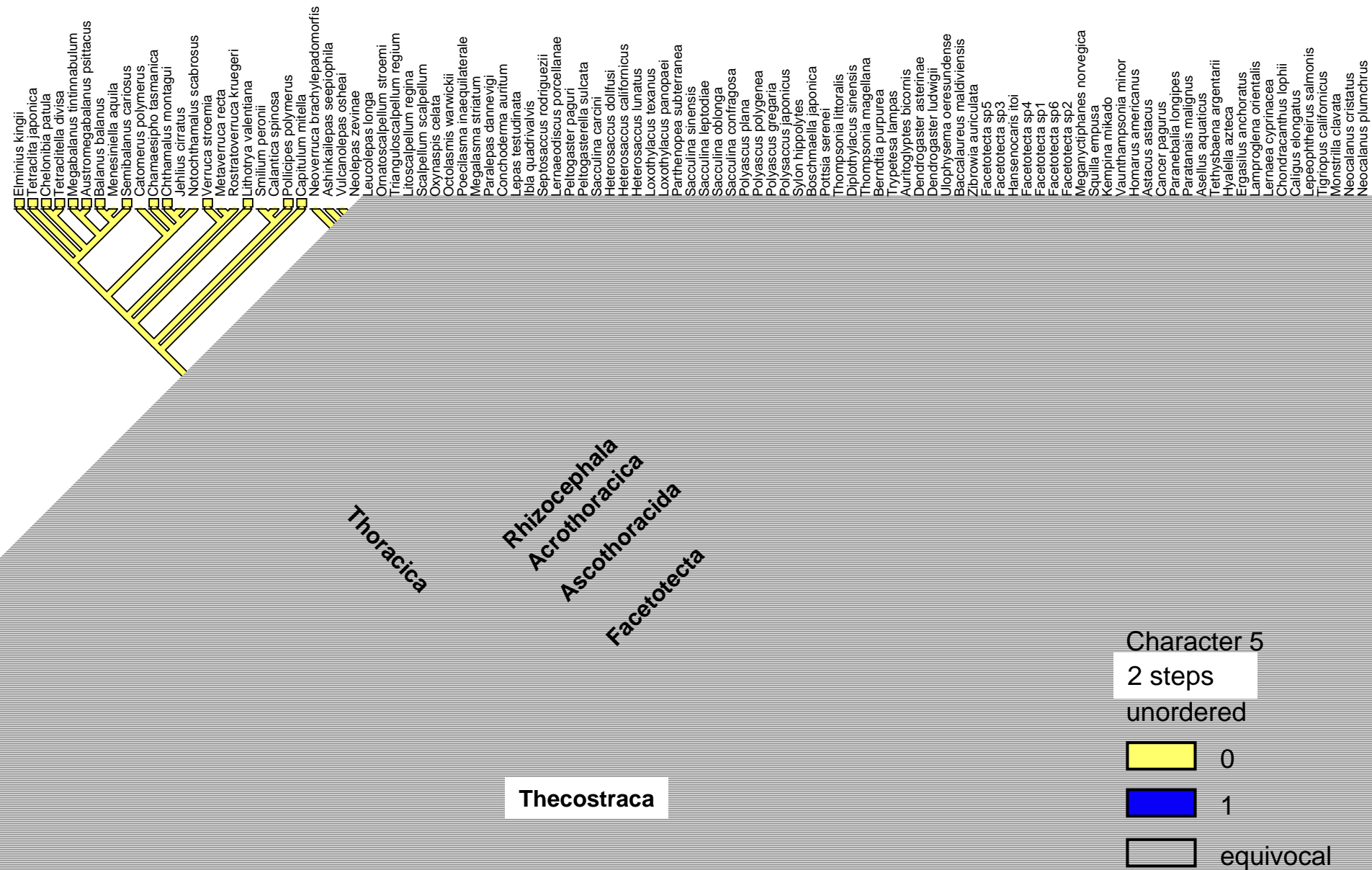


**Character 4.** *Nauplius with ventral side of cephalic region flat, round and with wide rim:* (0) no; (1) yes.

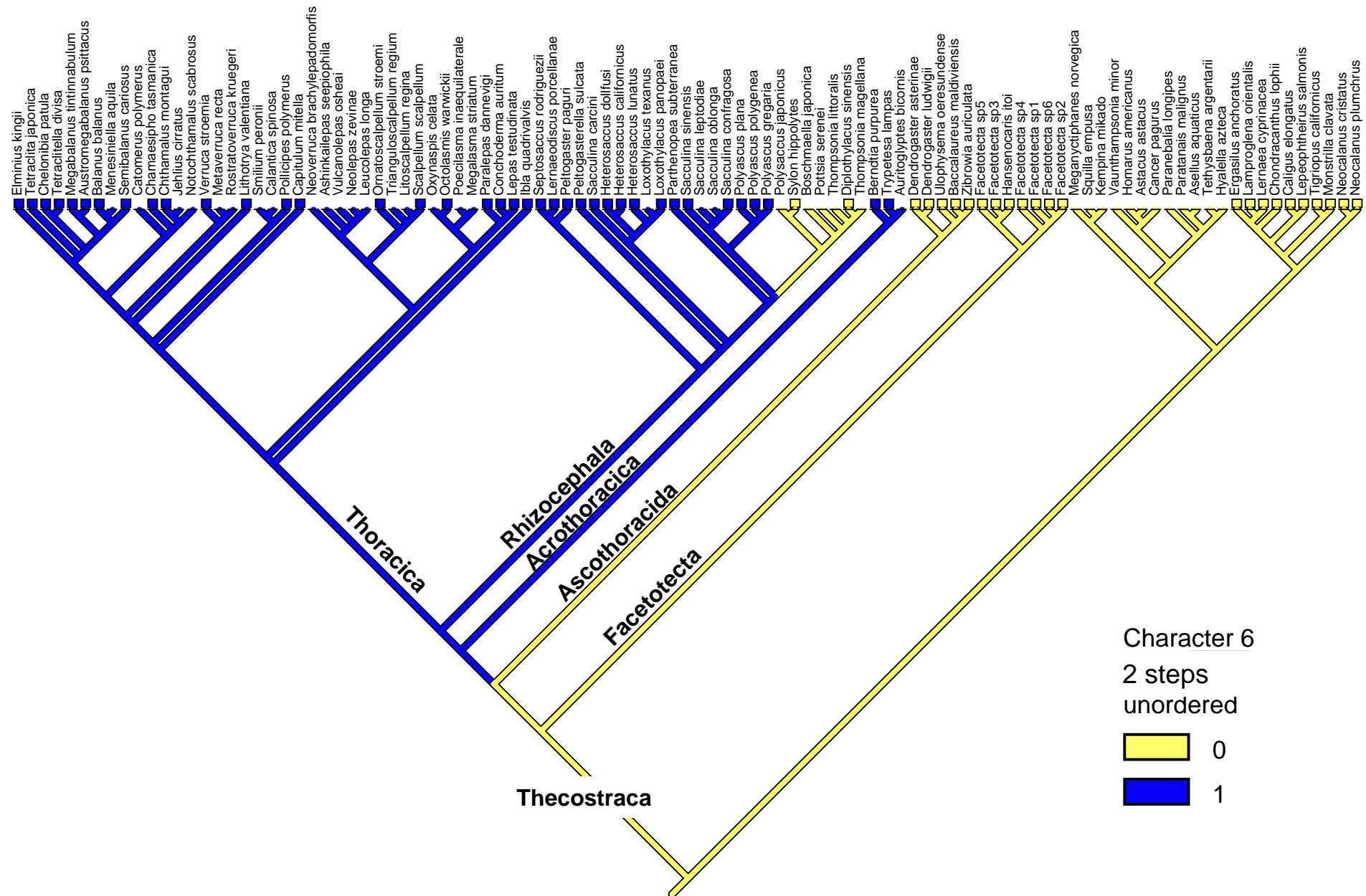


# Character 5. Nauplius with furcal setae; excluding furcal spines, which apparently all taxa can have:

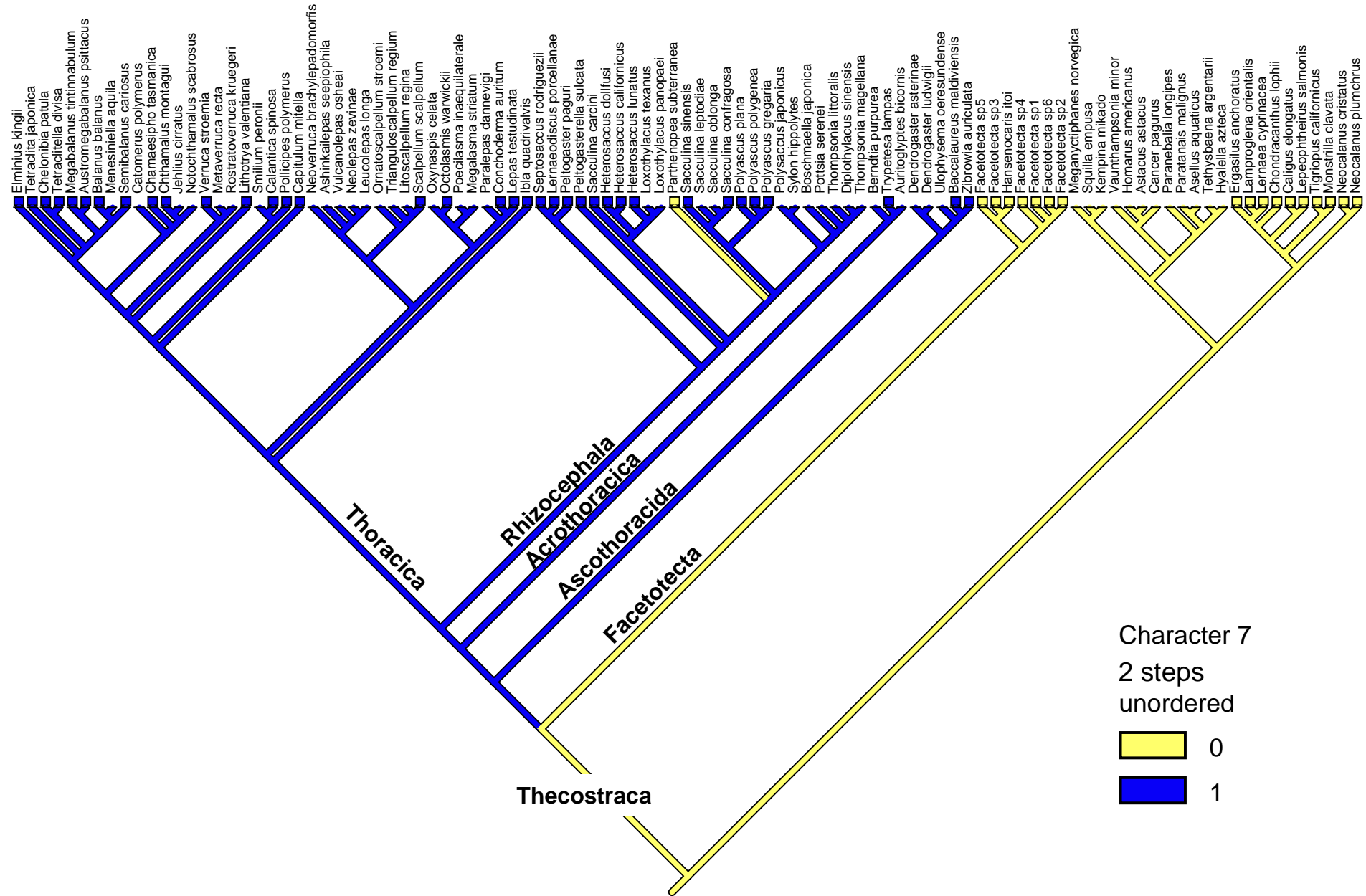
(0) absent; (1) present.



**Character 6. Frontolateral pores and glands: (0) absent; (1) present.**

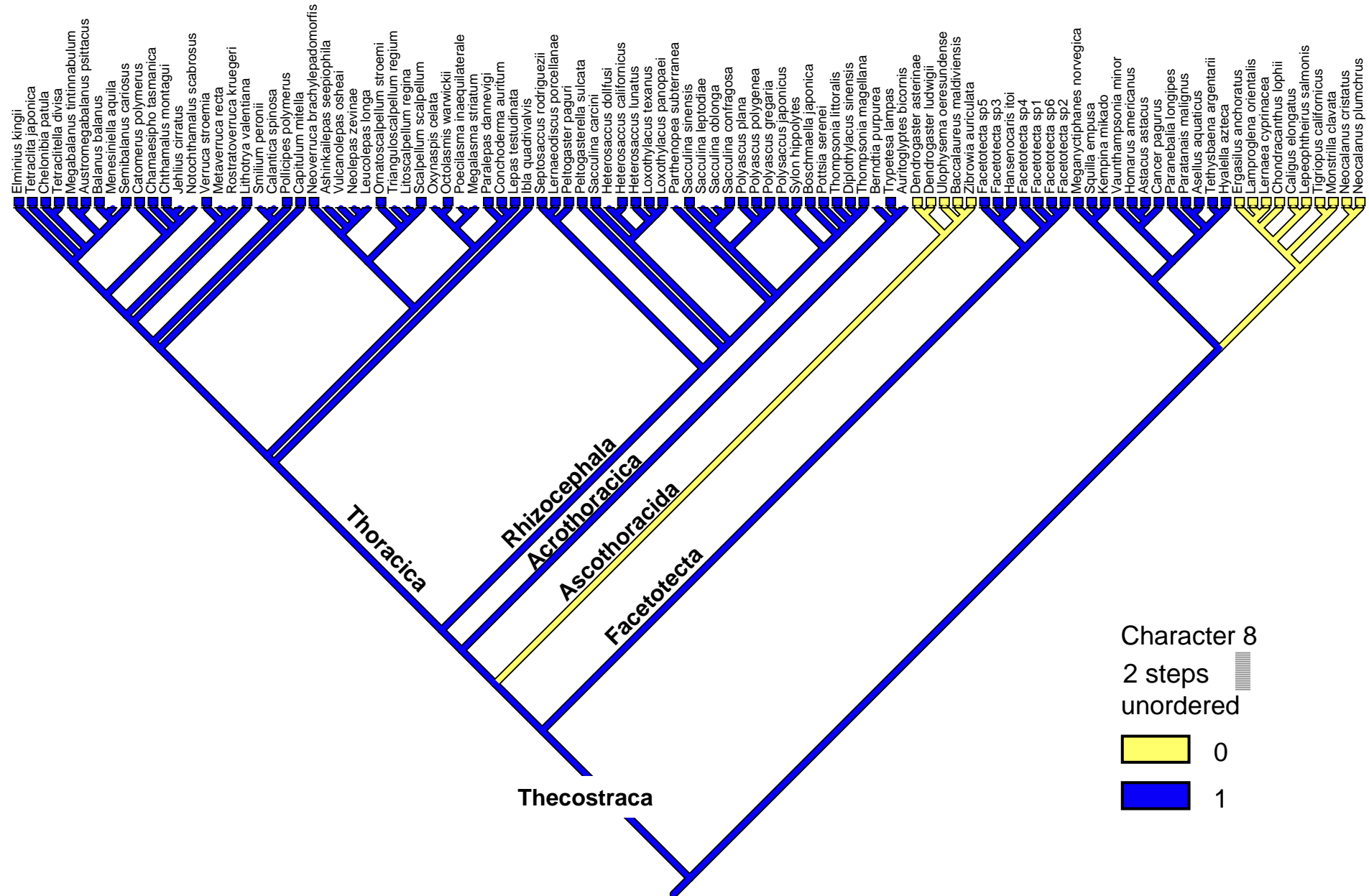


**Character 7. Frontal filaments in nauplius: (0) absent; (1) present.**



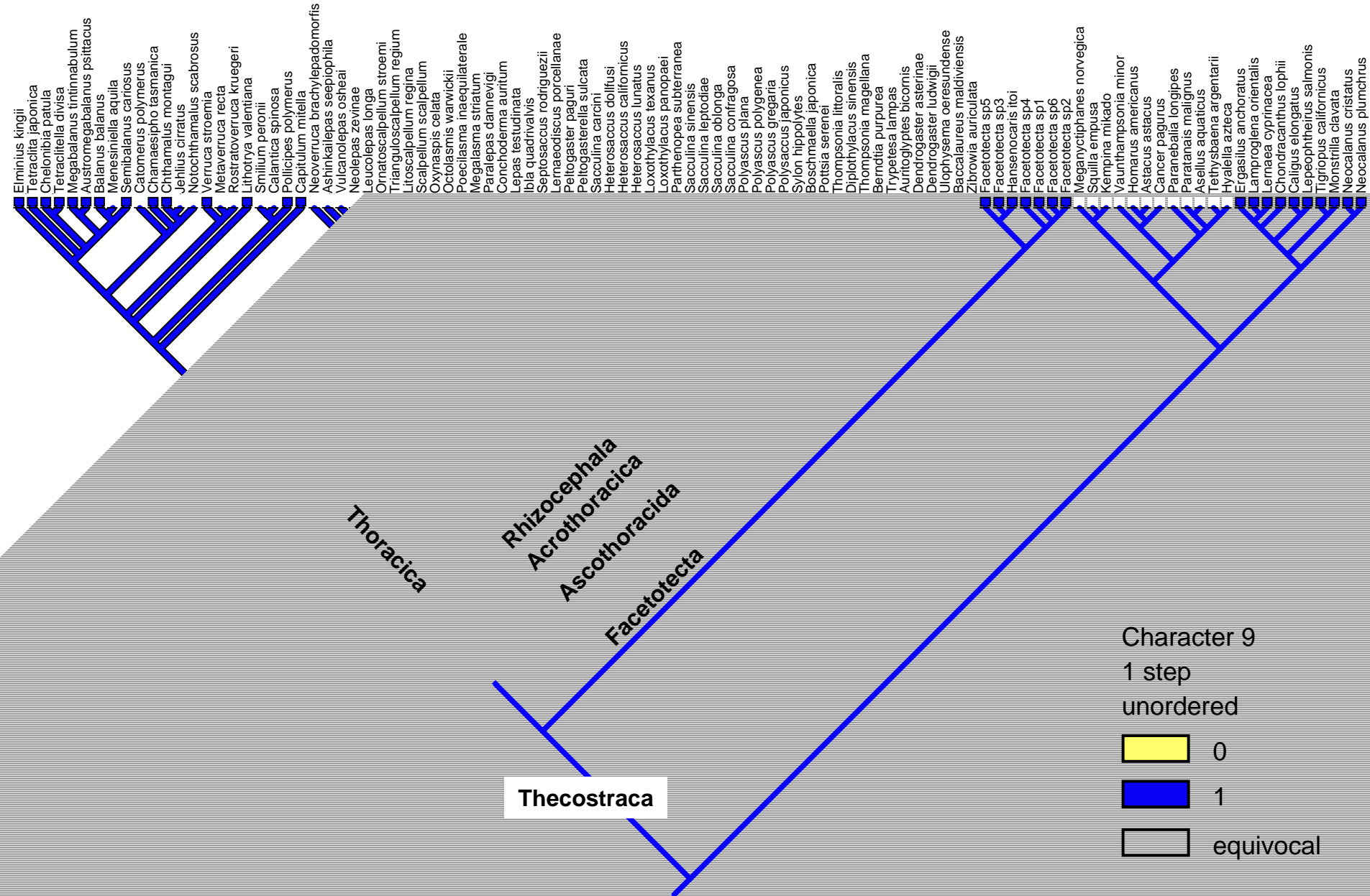
# Character 8. Antennular segment number expressed in entire life cycle:

(0) 8 or more; (1) less than 8.



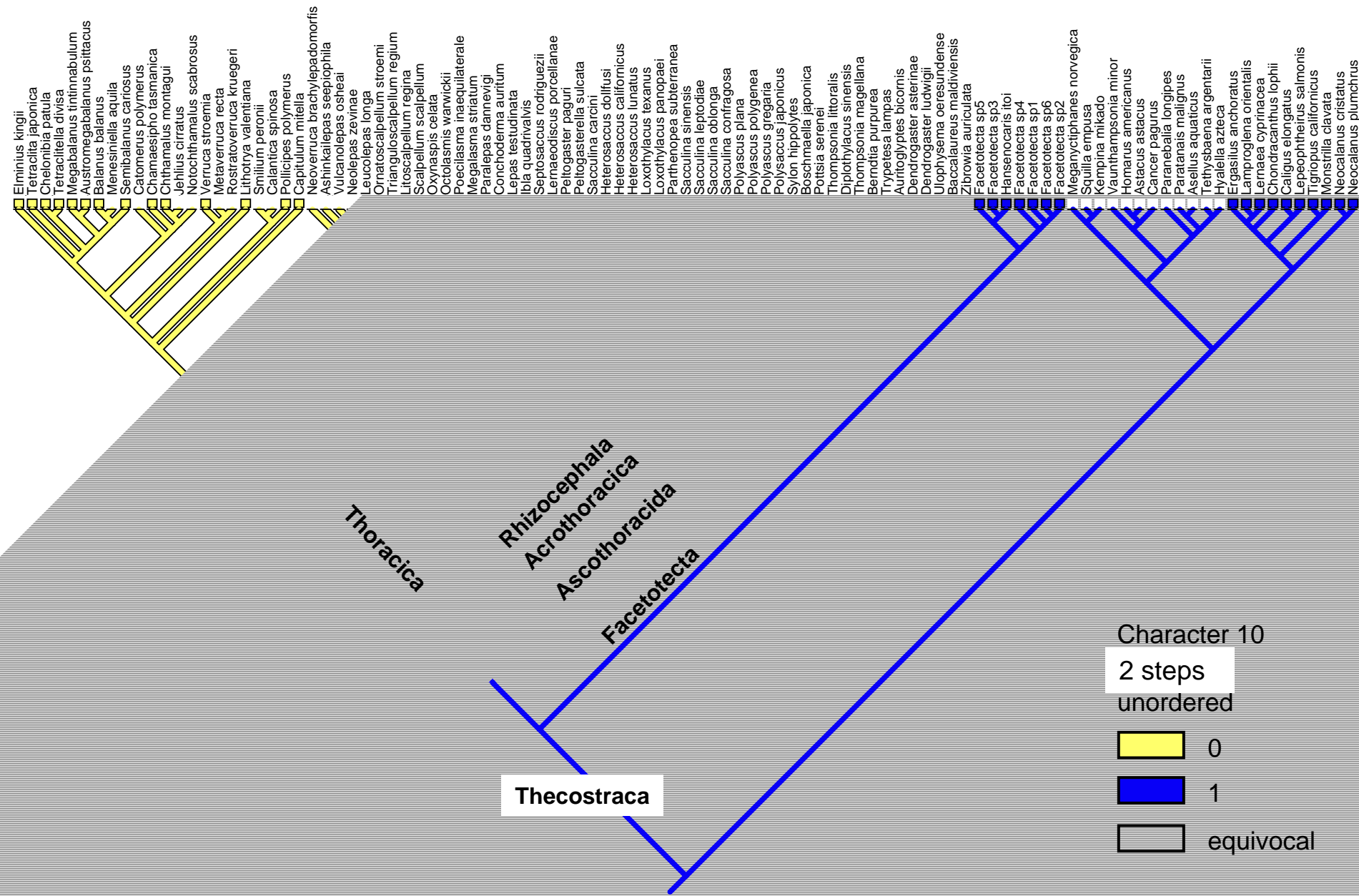


**Character 9. Antennular segments in stage 1 nauplii:** (0) more than 3; (1) 3 or fewer.

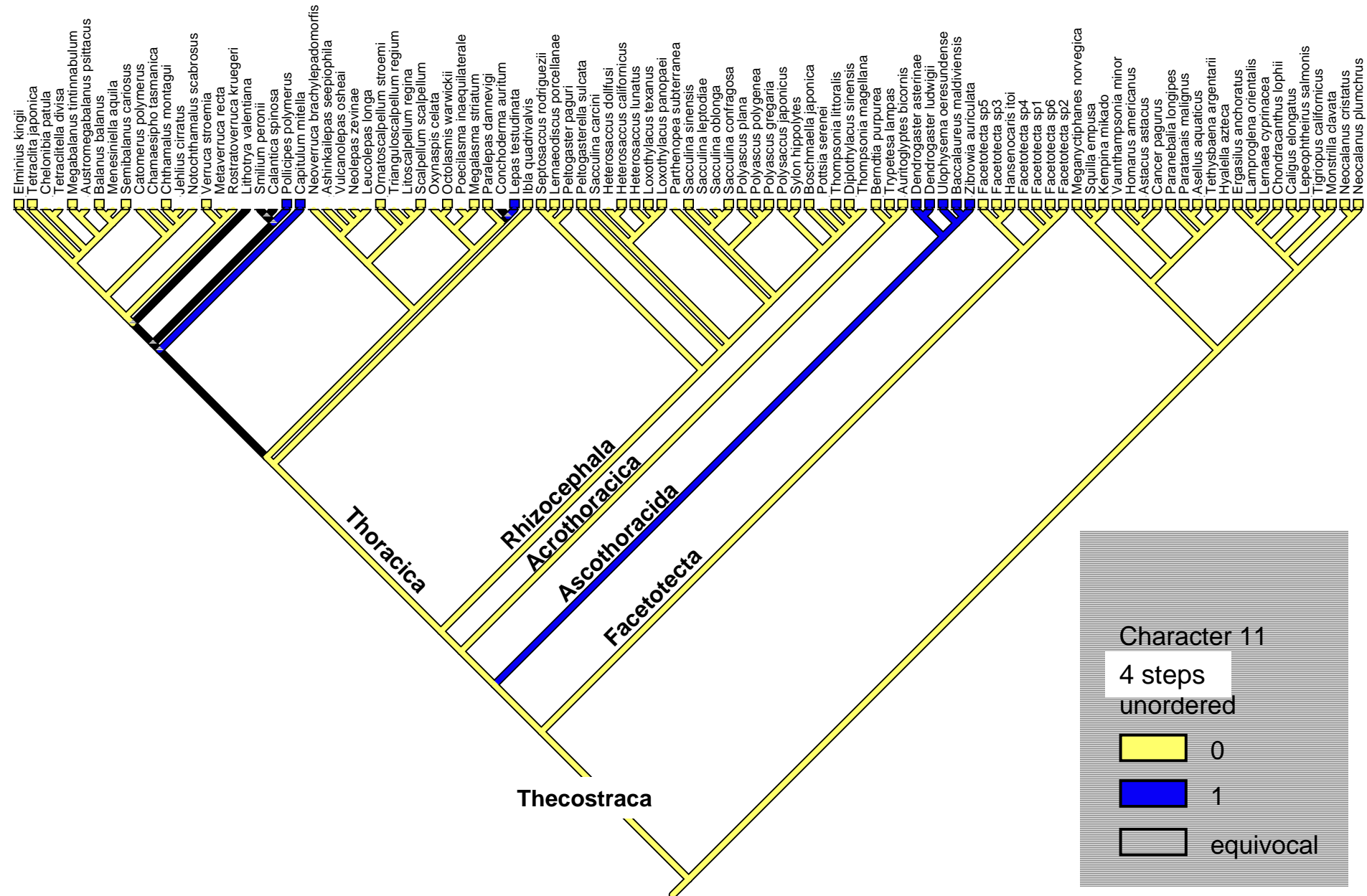


# Character 10. Nauplii with at most two segments in naupliar endopods of antennae and mandibles:

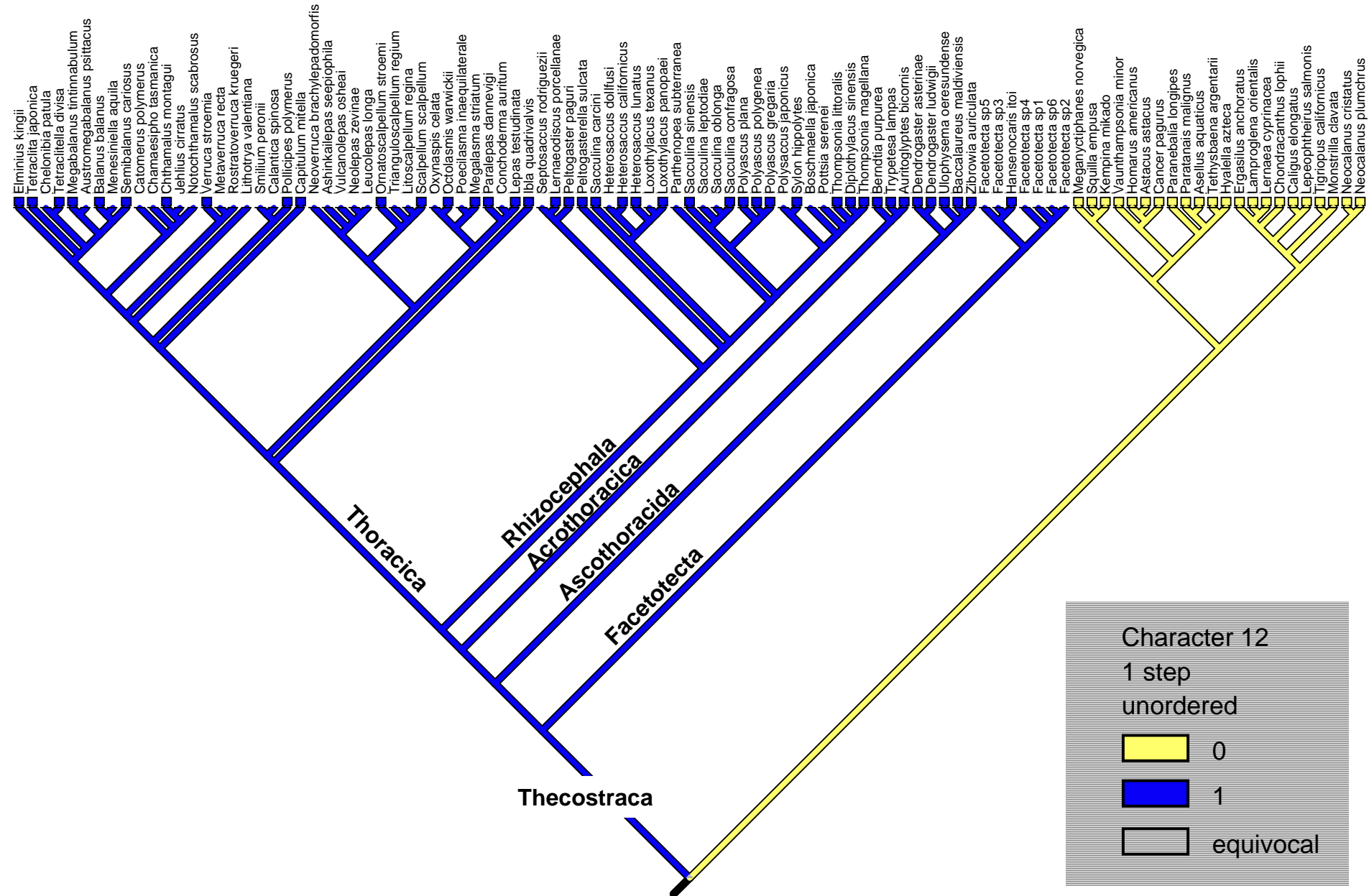
(0) no; (1) yes.



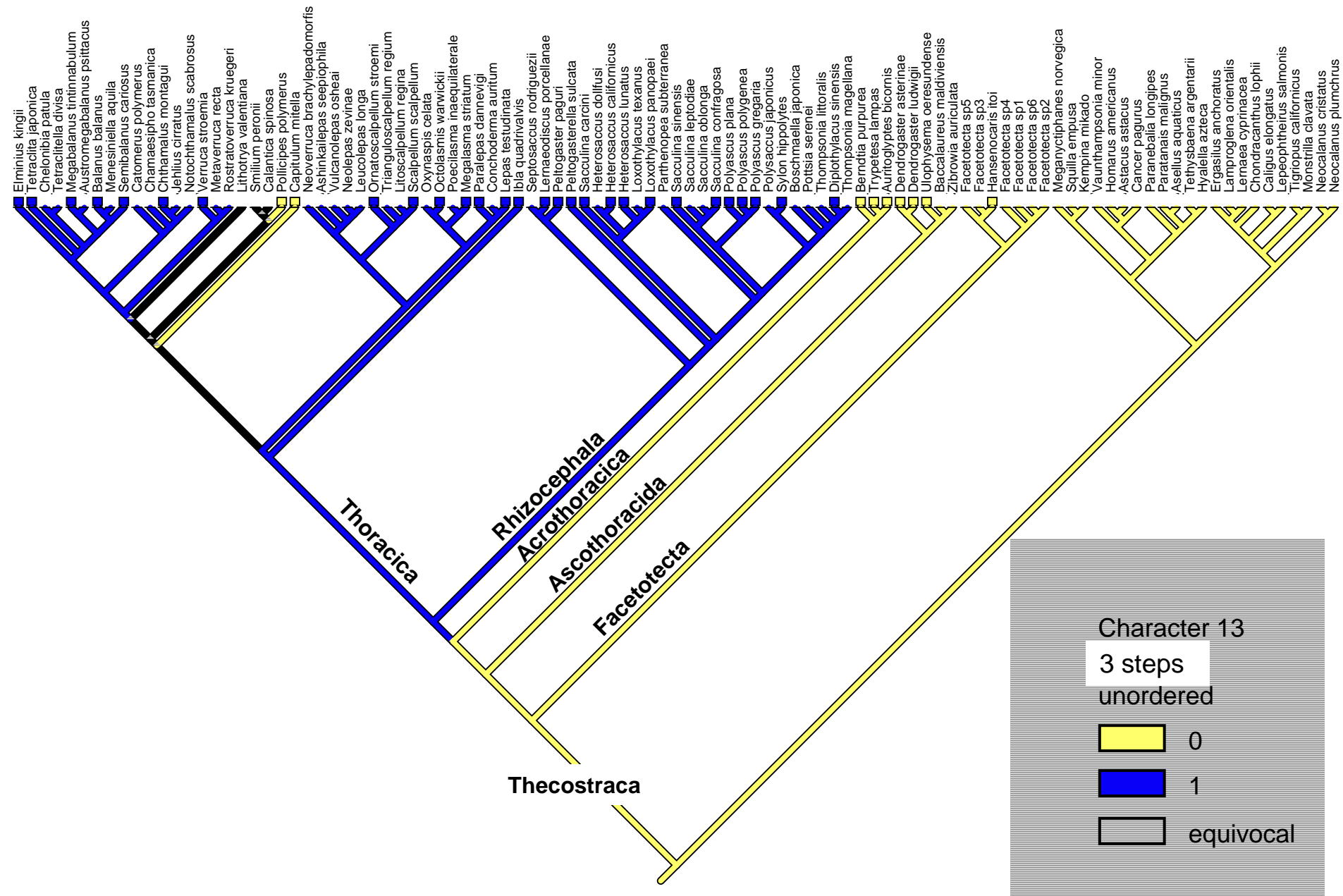
**Character 11.** *Head shield with distinct hinge line:* (0) absent; (1) present.



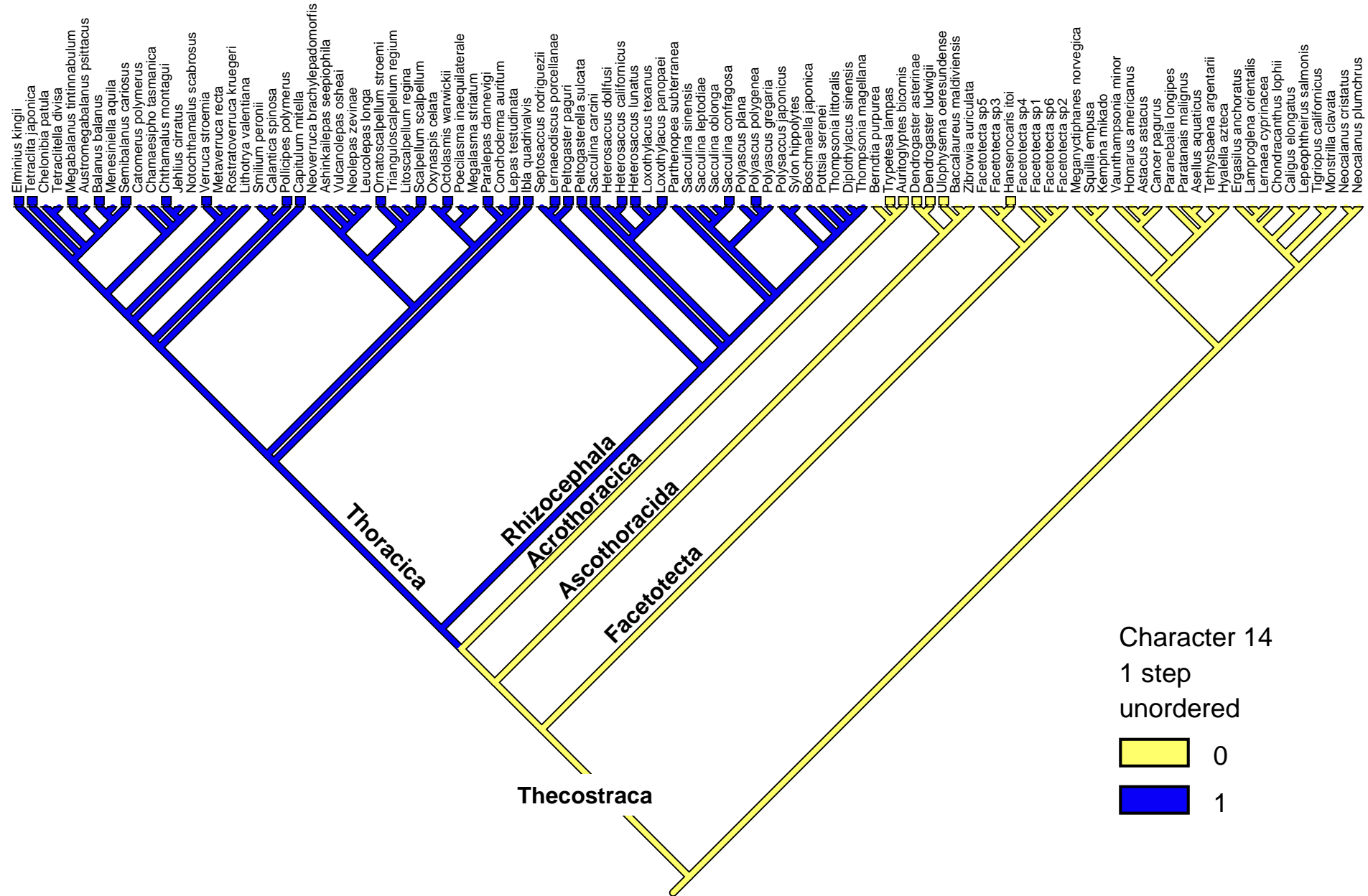
# Character 12. Lattice organs: (0) absent; (1) present.



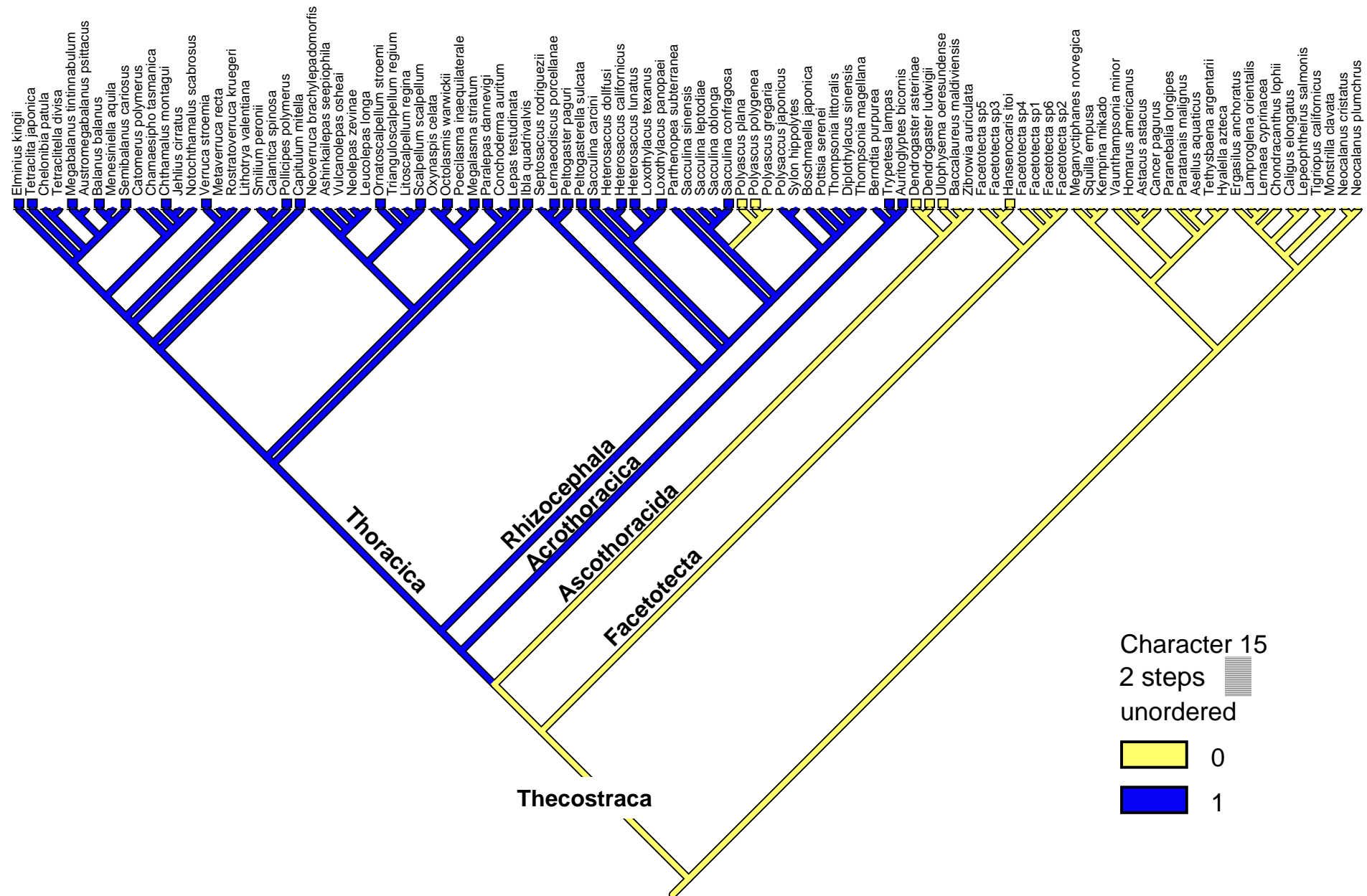
**Character 13. Lattice organs (Lo) shape:** (0) with more or less distinct crest in trough; (1) no distinct crest.



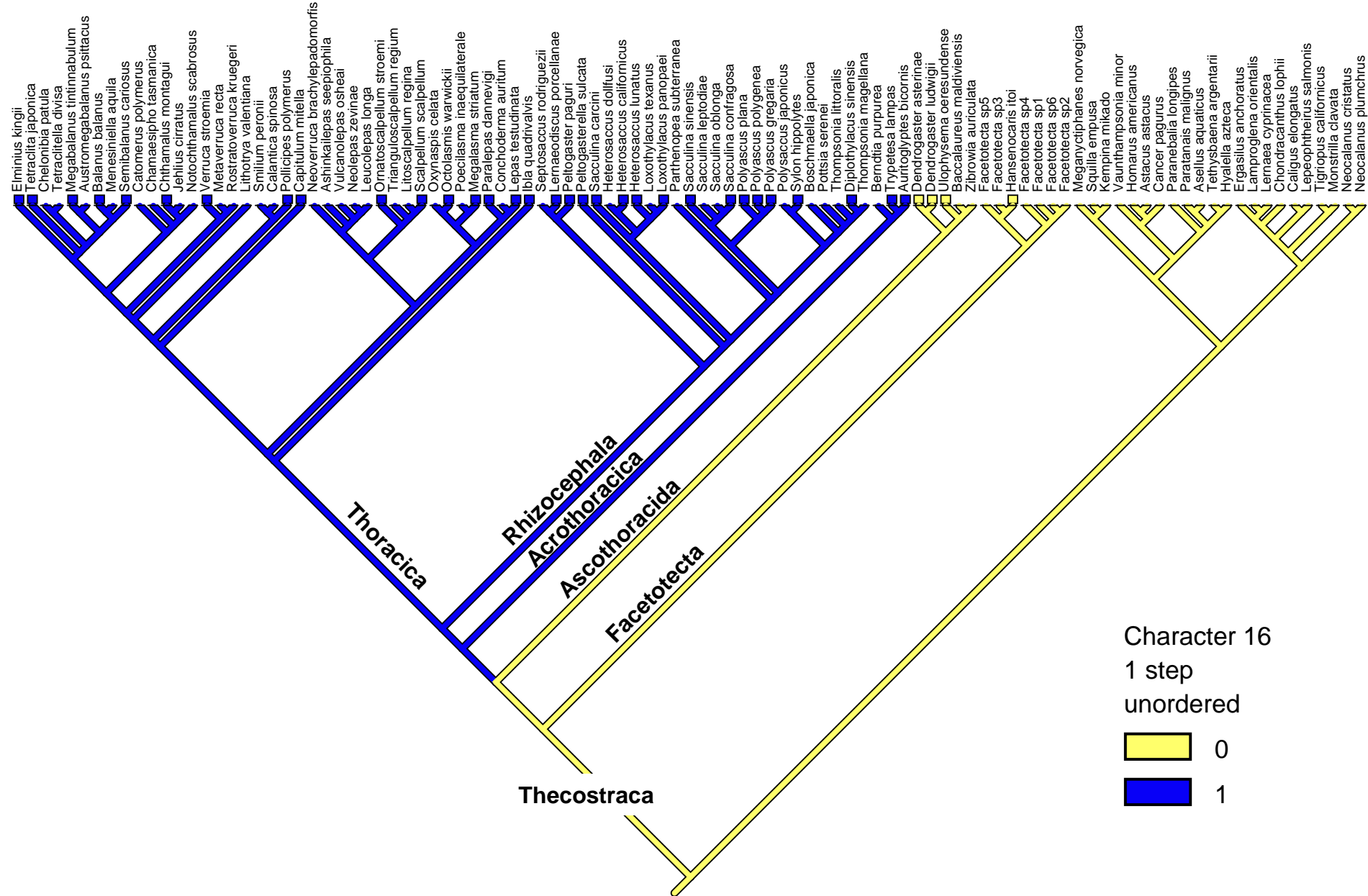
**Character 14.** *Lattice organ pair 1 (Lo1) large terminal pore position:* (0) posterior; (1) anterior.



**Character 15.** *Lattice organ pair 2 (Lo2) large terminal pore position:* (0) posterior; (1) anterior.

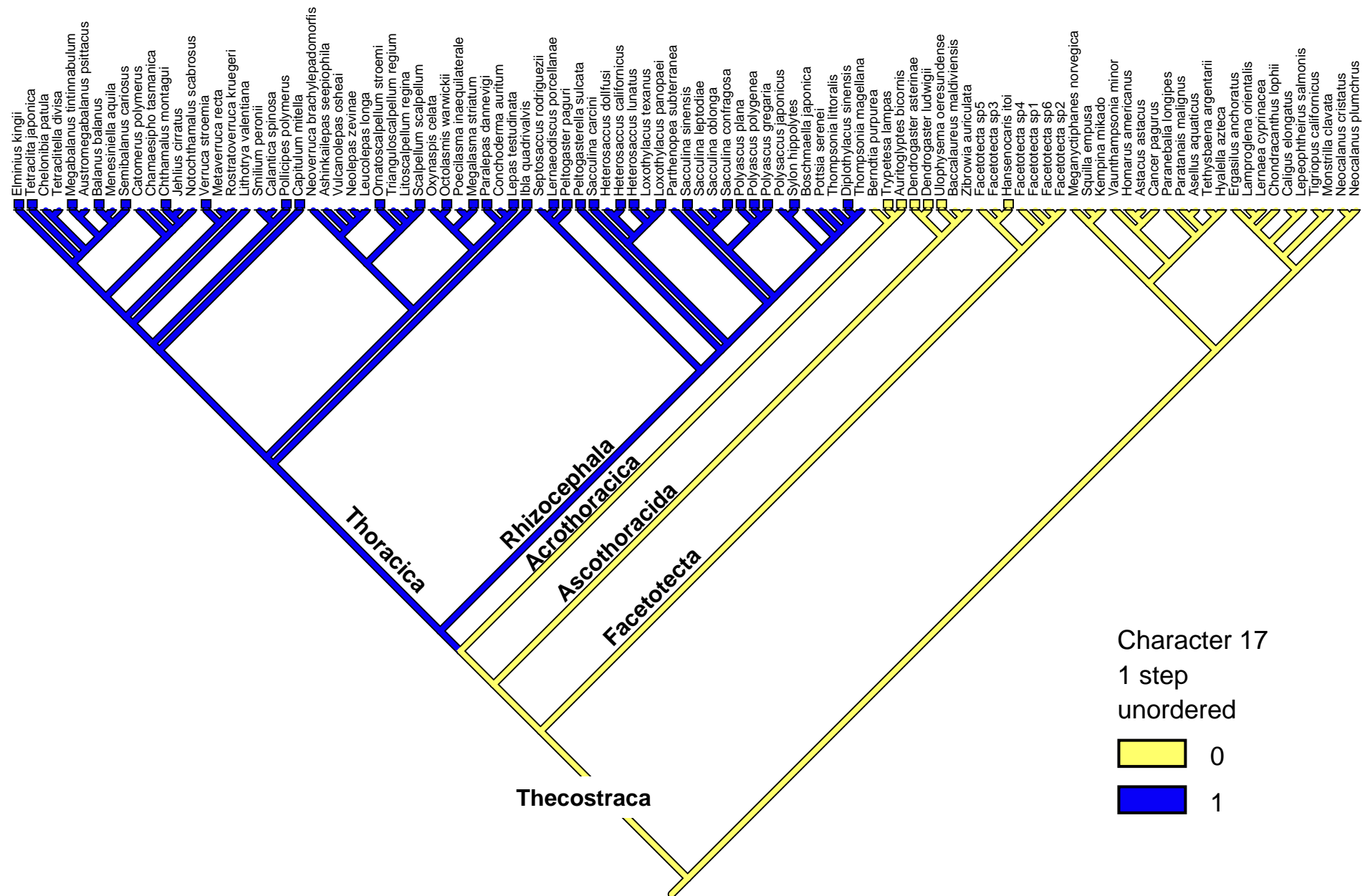


**Character 16.** *Lattice organs with pores (large or small):* (0) absent; (1) present.





**Character 17. Lattice organs with large deep pores (pits):** (0) absent; (1) present.



# Character 18. Frontal filaments in cypridoid larva: (0) absent; (1) present.

Elminius kingii  
 Terracita japonica  
 Chelonibia patula  
 Terracitella divisa  
 Megabalanus tintinnabulum  
 Austromegabalanus psittacus  
 Balanus balanus  
 Menesimella aquila  
 Semibalanus cariosus  
 Chamerus polymerus  
 Chamaespho tasmanica  
 Chthamalus montagu  
 Jehlius cirratus  
 Notochthamalus scabrosus  
 Verruca stroemia  
 Metaverruca recta  
 Rostatroverruca kruegeri  
 Lithotrya valentiana  
 Smilium peronii  
 Calamita spinosa  
 Pollicipes polymerus  
 Capitulum miteila  
 Neoverruca brachylepadomorhis  
 Ashinkailepas seephiophila  
 Vulcanolepas osheai  
 Neolepas zeviniae  
 Leucolepas longa  
 Ornatoscalpellum stroemi  
 Trianguloscalpellum regium  
 Litoscalpellum regina  
 Scalpellum scalpellum  
 Olynaspis celata  
 Octolasmis warwickii  
 Poecilasma inaequilaterale  
 Megalasma striatum  
 Paralepas dannevirgi  
 Conchoderma auritum  
 Lepas testudinata  
 Ibla quadrivalvis  
 Septosaccus rodriguezii  
 Lernaediscus porcellanae  
 Peltogaster paguri  
 Peltogasterella sulcata  
 Sacculina carcini  
 Heterosaccus dollfusi  
 Heterosaccus californicus  
 Heterosaccus lunatus  
 Loxothylacus texanus  
 Loxothylacus panopaei  
 Parthenopea subterranea  
 Sacculina sinensis  
 Sacculina leptodidae  
 Sacculina oblonga  
 Sacculina confragosa  
 Polyascus plana  
 Polyascus polygenea  
 Polyascus gregaria  
 Polyascus japonicus  
 Sydon hippolytes  
 Boschmaella japonica  
 Pottisia serenei  
 Thompsonia littoralis  
 Diplothylacus sinensis  
 Thompsonia magellana  
 Thompsonia purpurea  
 Berndia purpurea  
 Trypetesa lampas  
 Auritogyptes bicornis  
 Dendrogaster asterinae  
 Dendrogaster ludwigii  
 Ulophysema oeresundense  
 Baccalareus maldiviensis  
 Zibrowia auriculata  
 Facetotecta sp5  
 Facetotecta sp3  
 Facetotecta sp4  
 Facetotecta sp1  
 Facetotecta sp6  
 Facetotecta sp2  
 Meganyctiphanes norvegica  
 Squilla empusa  
 Kempina mikado  
 Vaunthamponia minor  
 Homarus americanus  
 Astacus astacus  
 Cancer pagurus  
 Paranebatia longipes  
 Paratanais malignus  
 Aseilus aquaticus  
 Tethysbaena argentarii  
 Hylaella azteca  
 Ergasilus anchoratus  
 Lamproglana orientalis  
 Lernaea cyprinacea  
 Chondracanthus lophii  
 Caligus elongatus  
 Lepeophtheirus salmonis  
 Tigrionus californicus  
 Monstrilla clavata  
 Neocalanus cristatus  
 Neocalanus plumchrus

Thoracica

Rhizocephala  
Acrothoracica

Ascothoracida

Facetotecta

Thecostraca

Character 18

2 steps

unordered



0

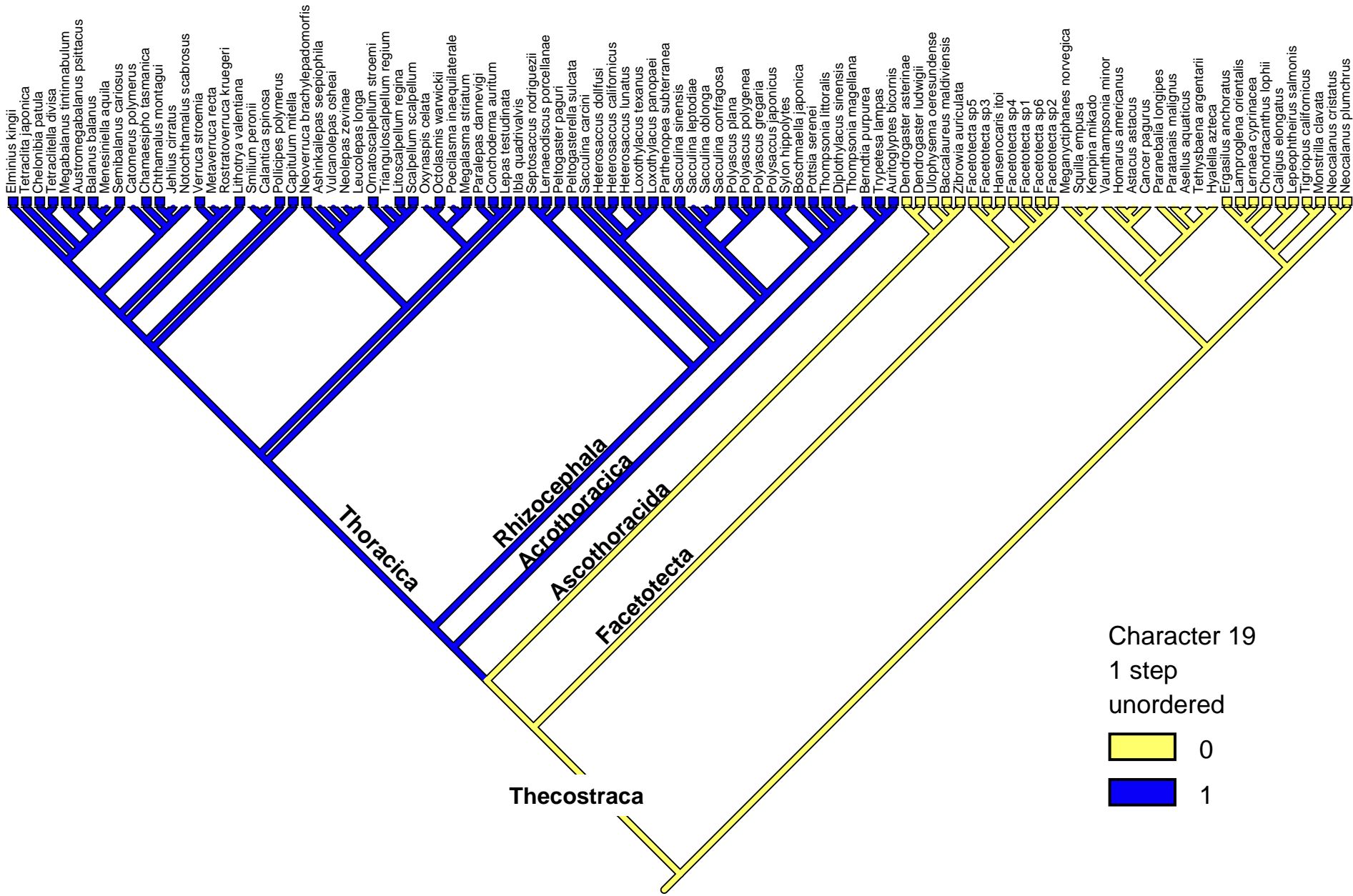


1



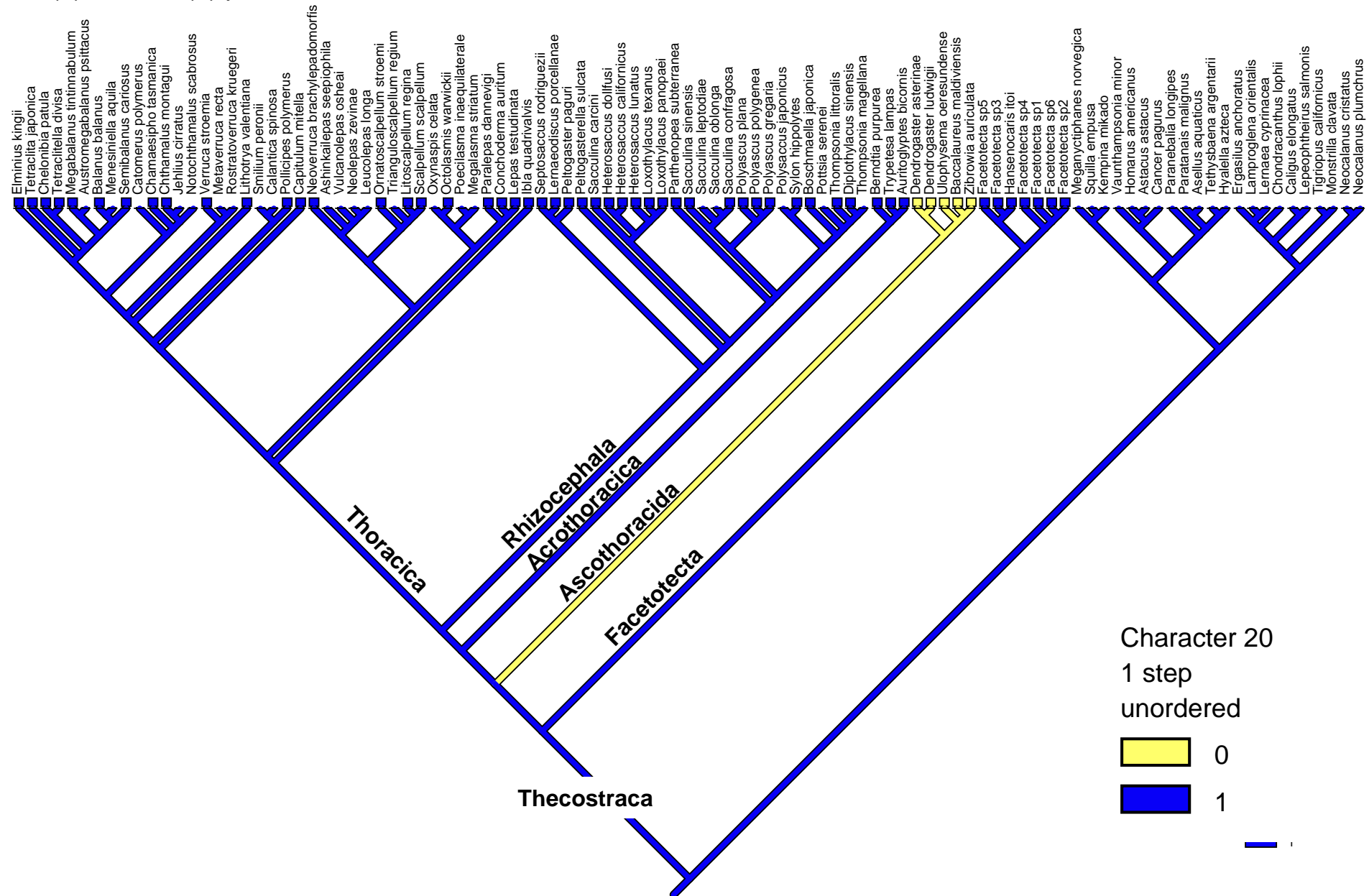
equivocal

**Character 19.** Basal part of antennule consisting of a Y-rod U-plate system: (0) absent; (1) present.

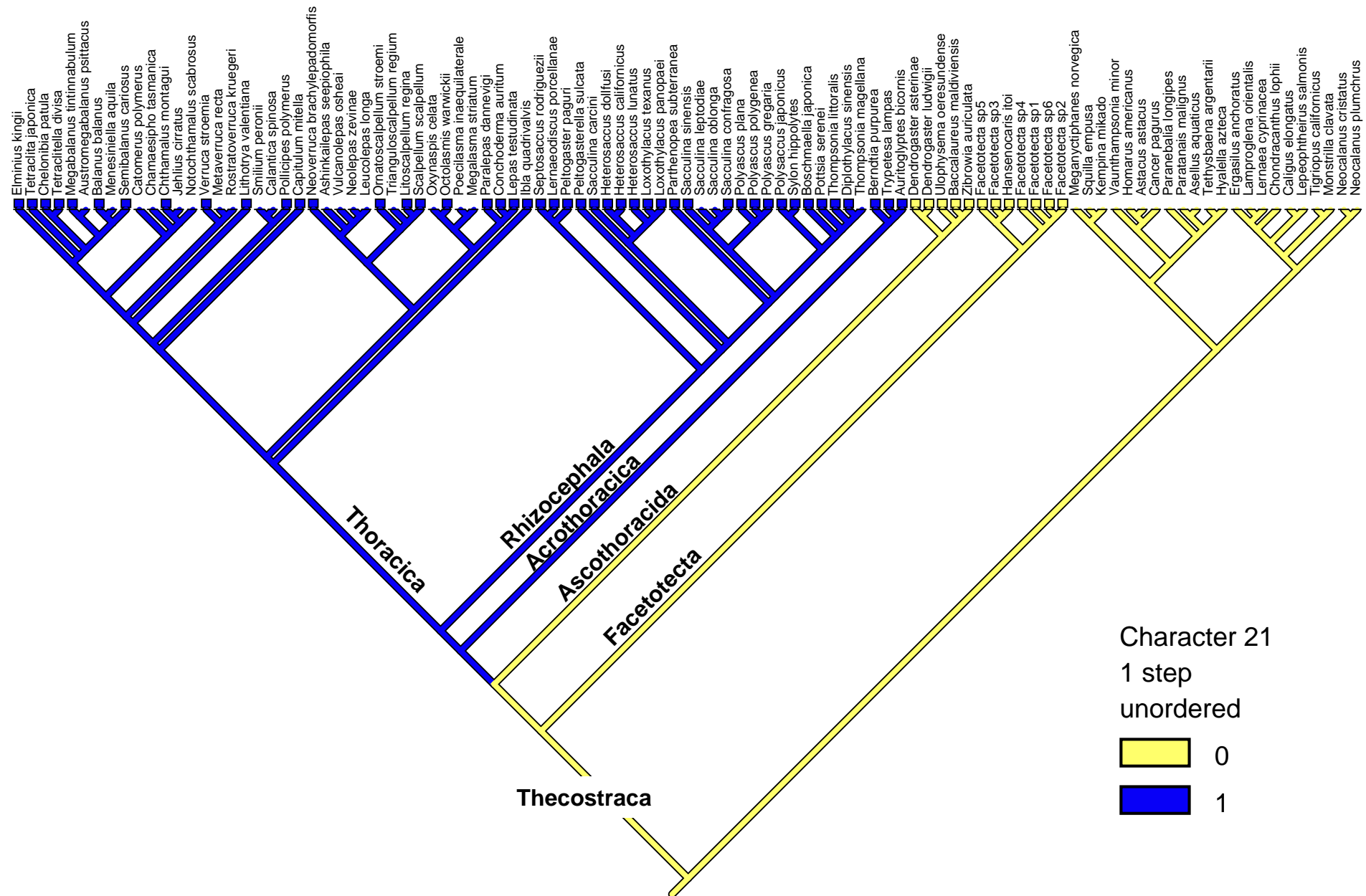


**Character 20.** A hand, hoof or bell shaped antennular segment (with disc or claw for attachment):

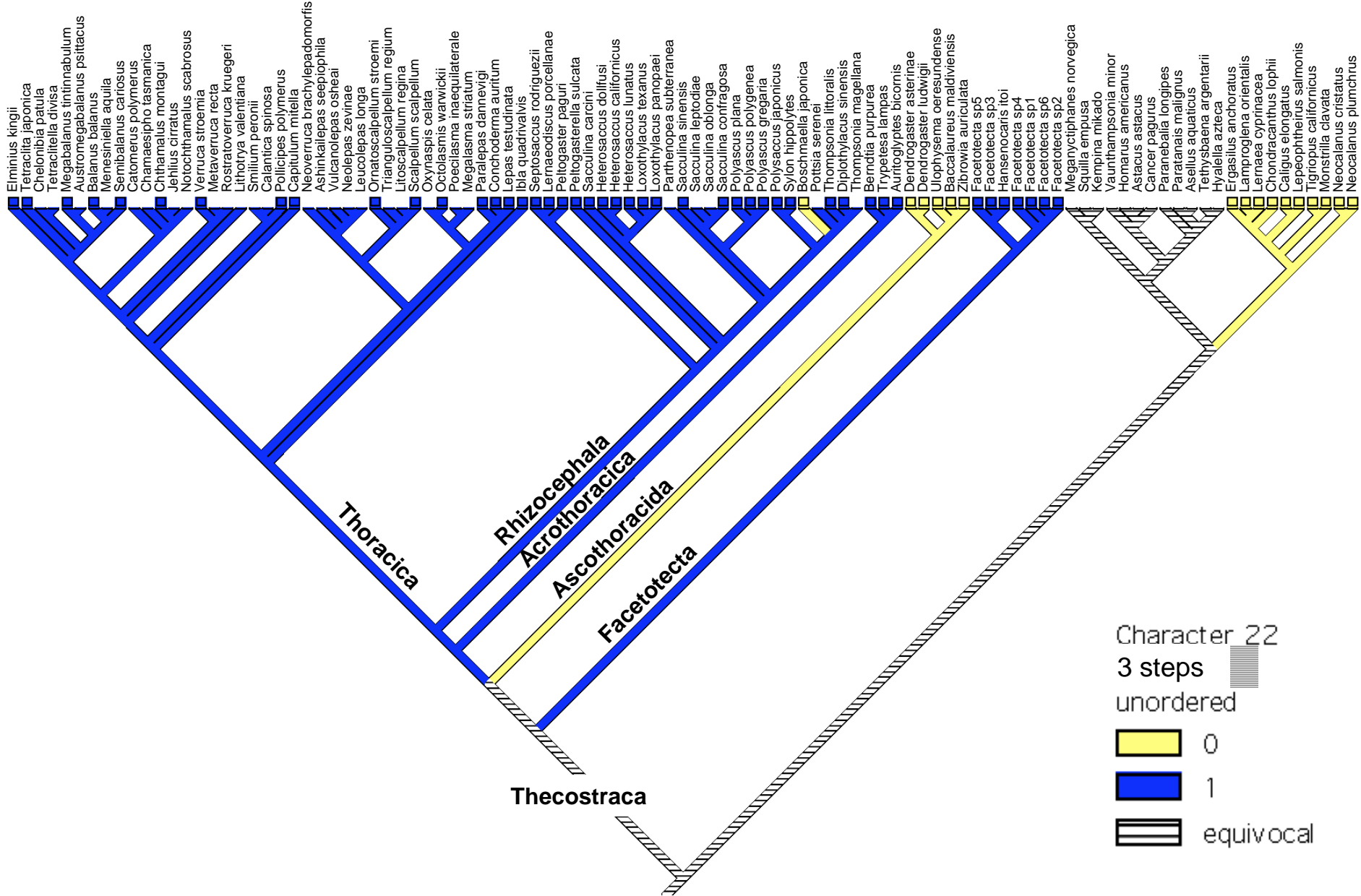
(0) absent; (1) present.



**Character 21. Antennule with an attachment disc covered with cuticular villi: (0) absent; (1) present.**



**Character 22.** *Distal element of antennule as a cylindrical, movable sensory “palp”*  
 (from two segments or two fused segments): (0) absent; (1) present.



# Character 23. Antennular sensory palp undivided (segments fused): (0) no; (1) yes.

Elminius kingii  
 Tetractia japonica  
 Chelonia patula  
 Tetractella divisa  
 Megabalanus tintinnabulum  
 Austromegabalanus psittacus  
 Balanus balanus  
 Menesiniella aquila  
 Semibalanus carosus  
 Catomerus polymerus  
 Chamaesipho tasmanica  
 Chthamalus montagu  
 Jehlius cirratus  
 Notochthamalus scabrosus  
 Verruca stroemia  
 Metaverruca recta  
 Rostroverruca kruegeri  
 Lithotrya valentiana  
 Smilium peronii  
 Calantica spinosa  
 Pollicipes polymerus  
 Capitulum mitella  
 Neoverrucia brachylepdomorphis  
 Ashinkallepas seeiophila  
 Vulcanolepas osheai  
 Neolepas zeviniae  
 Leoclepas longa  
 Ornatoscalpeillum stroemi  
 Trianguloscalpeillum regium  
 Litoscalpeillum regina  
 Scalpeillum scalpeillum  
 Oxynaspis celata  
 Oculasmus warwickii  
 Poeciasma inaequilaterale  
 Megalasma striatum  
 Paralepas dannevigii  
 Conchoderma auritum  
 Lepas testudinata  
 Ibia quadrivalvis  
 Seposaccus rodriguezii  
 Lerneodiscus porcellanae  
 Peitogaster paguri  
 Peitogasterella sulcata  
 Sacculina carcini  
 Heterosaccus dollfusi  
 Heterosaccus californicus  
 Heterosaccus lunatus  
 Loxothylacus texanus  
 Loxothylacus panopaei  
 Parthenopea subterranea  
 Sacculina sinensis  
 Sacculina leptodidae  
 Sacculina oblonga  
 Sacculina contragosa  
 Polyascus plana  
 Polyascus polygenea  
 Polyascus gregaria  
 Polyascus japonicus  
 Sylon hippolytes  
 Boschmaella japonica  
 Pottsia serenei  
 Thompsonia littoralis  
 Diplothyacus sinensis  
 Thompsonia magellana  
 Bermdia purpurea  
 Trypetesa lampas  
 Auritoglyptes bicornis  
 Dendrogaster asterinae  
 Dendrogaster ludwigii  
 Ulophysema oeresundense  
 Baccalareus maldiviensis  
 Zibrowia auriculata  
 Facetotecta sp5  
 Facetotecta sp3  
 Hansenocaris itoi  
 Facetotecta sp4  
 Facetotecta sp1  
 Facetotecta sp6  
 Facetotecta sp2  
 Meganyctiphanes norvegica  
 Squilla empusa  
 Kempina mikado  
 Vauithamptonia minor  
 Homarus americanus  
 Astacus astacus  
 Cancer pagurus  
 Paranebaila longipes  
 Paratanais malignus  
 Asellus aquaticus  
 Tethysbaena argentarii  
 Hyalella azteca  
 Ergasilus anchoratus  
 Lamproglana orientalis  
 Lernaean cyprinacea  
 Chondracanthus lophii  
 Caligus elongatus  
 Lepeophtheirus salmonis  
 Tigriopus californicus  
 Monstrilla clavata  
 Neocalanus cristatus  
 Neocalanus plumchtrus

Thoracica

Rhizocephala  
Acrothoracica

Ascothoracida

Facetotecta

Thecostraca

Character 23

1 step

unordered



0

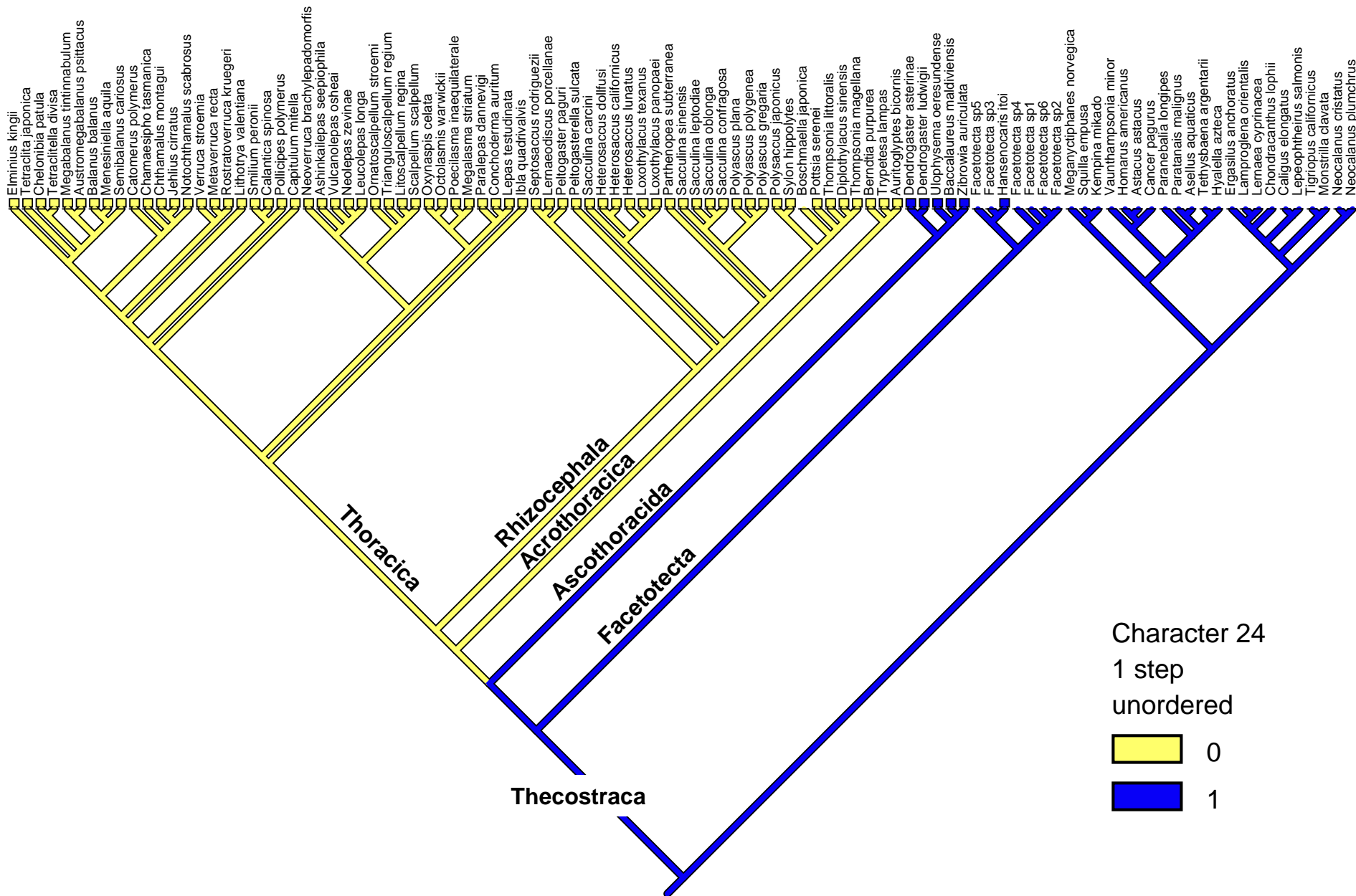


1



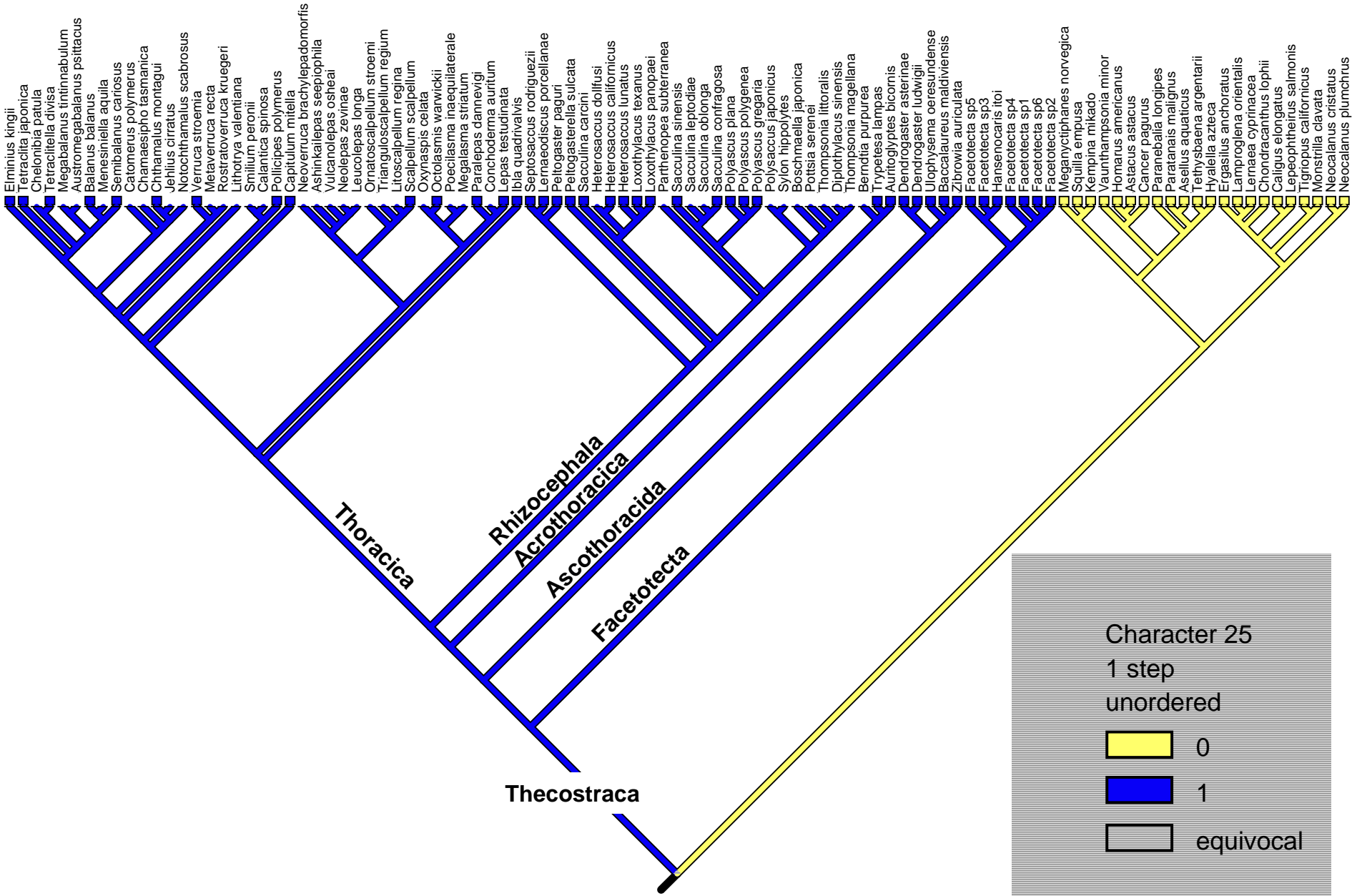
equivocal

**Character 24. Antennule with (motile) distal claw: (0) absent; (1) present.**

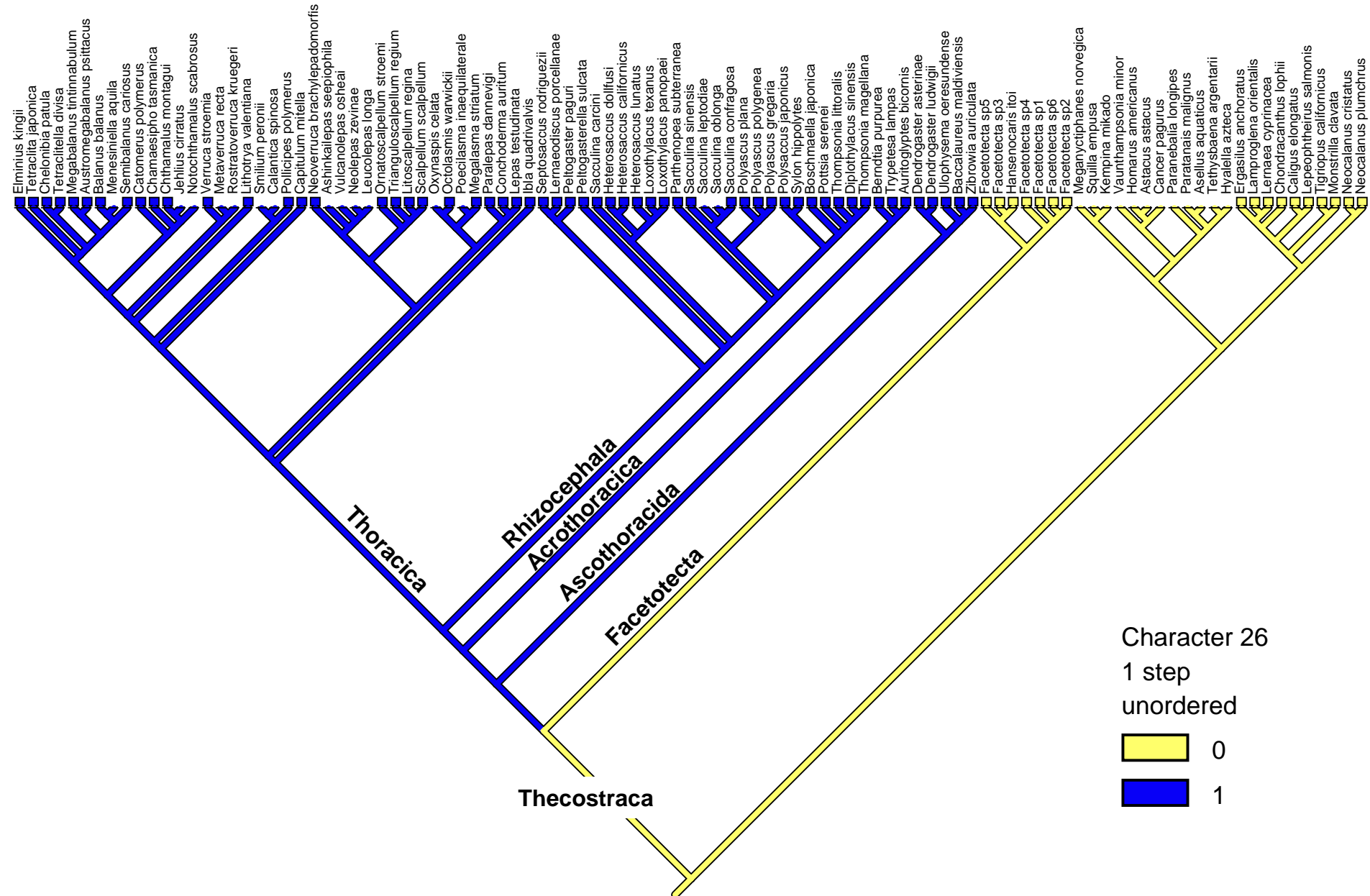




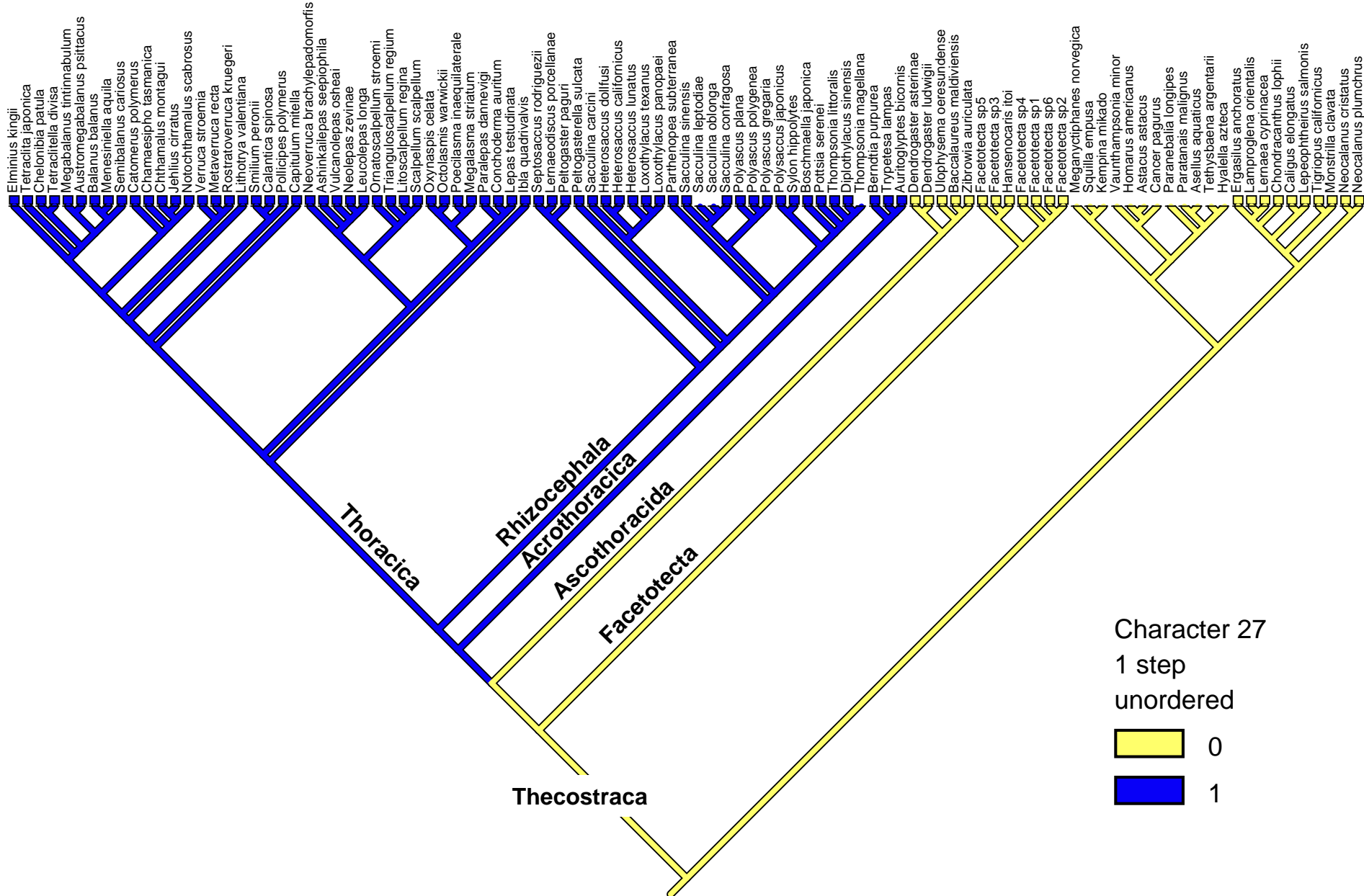
**Character 25. Aesthetascs:** (0) on almost every antennular segment; (1) only one or two aesthetascs.



**Character 26.** *Distal antennular musculature:* (0) complex; (1) simple.

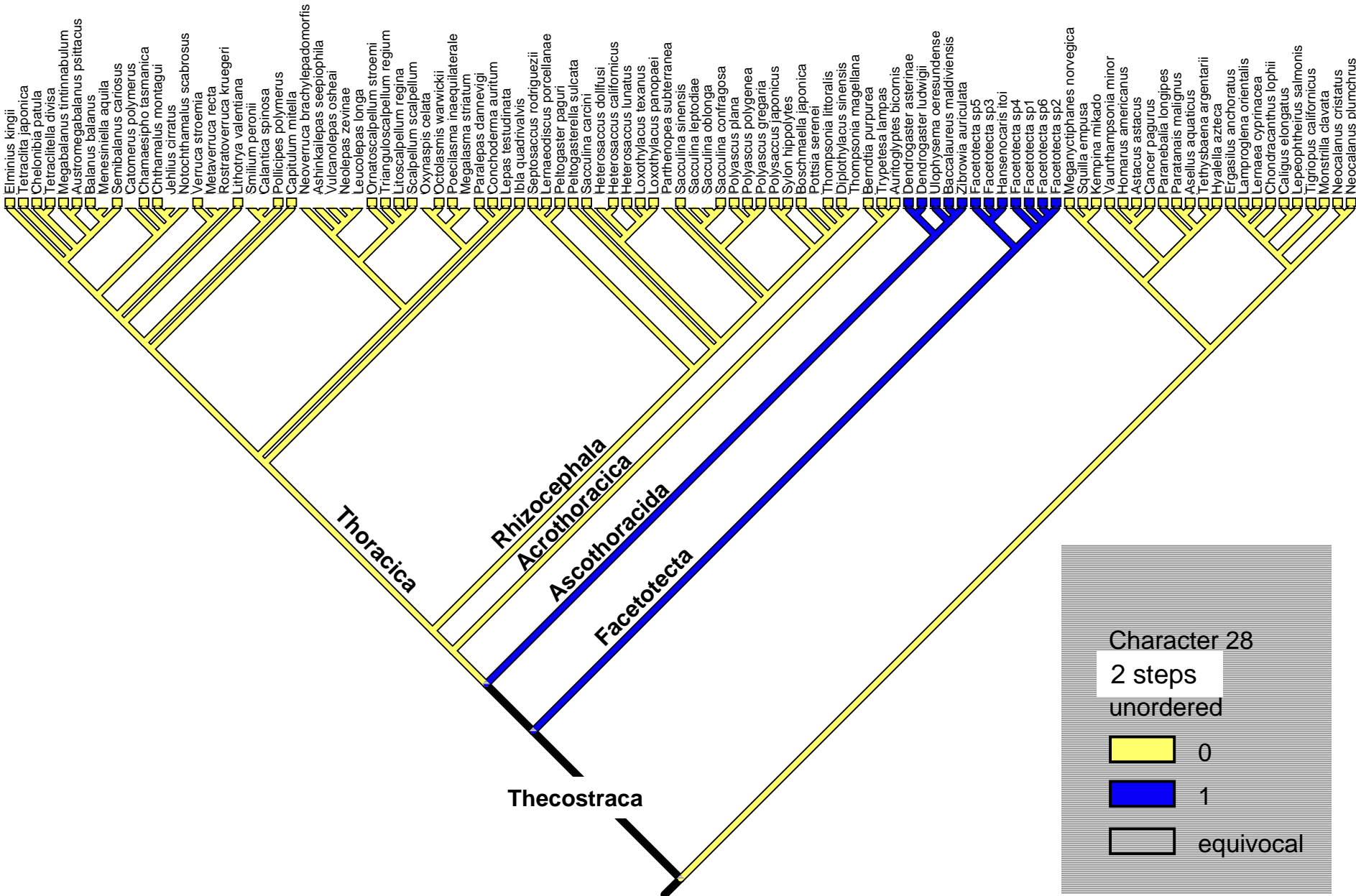


**Character 27. Multicellular cement gland exiting on antennule: (0) absent; (1) present.**

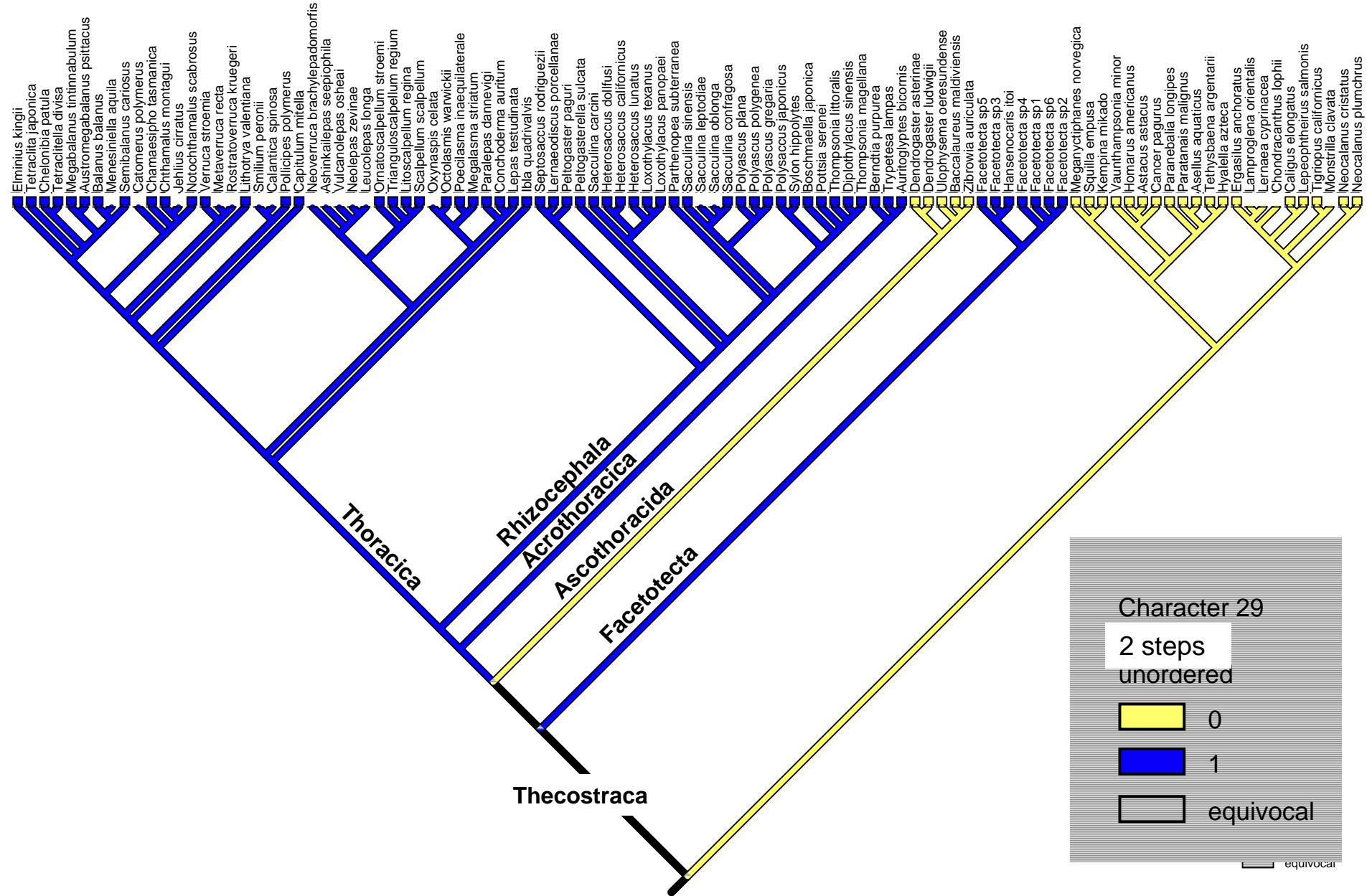


# Character 28. Filamentary tuft-like cephalic sensory appendage in post-naupliar stage:

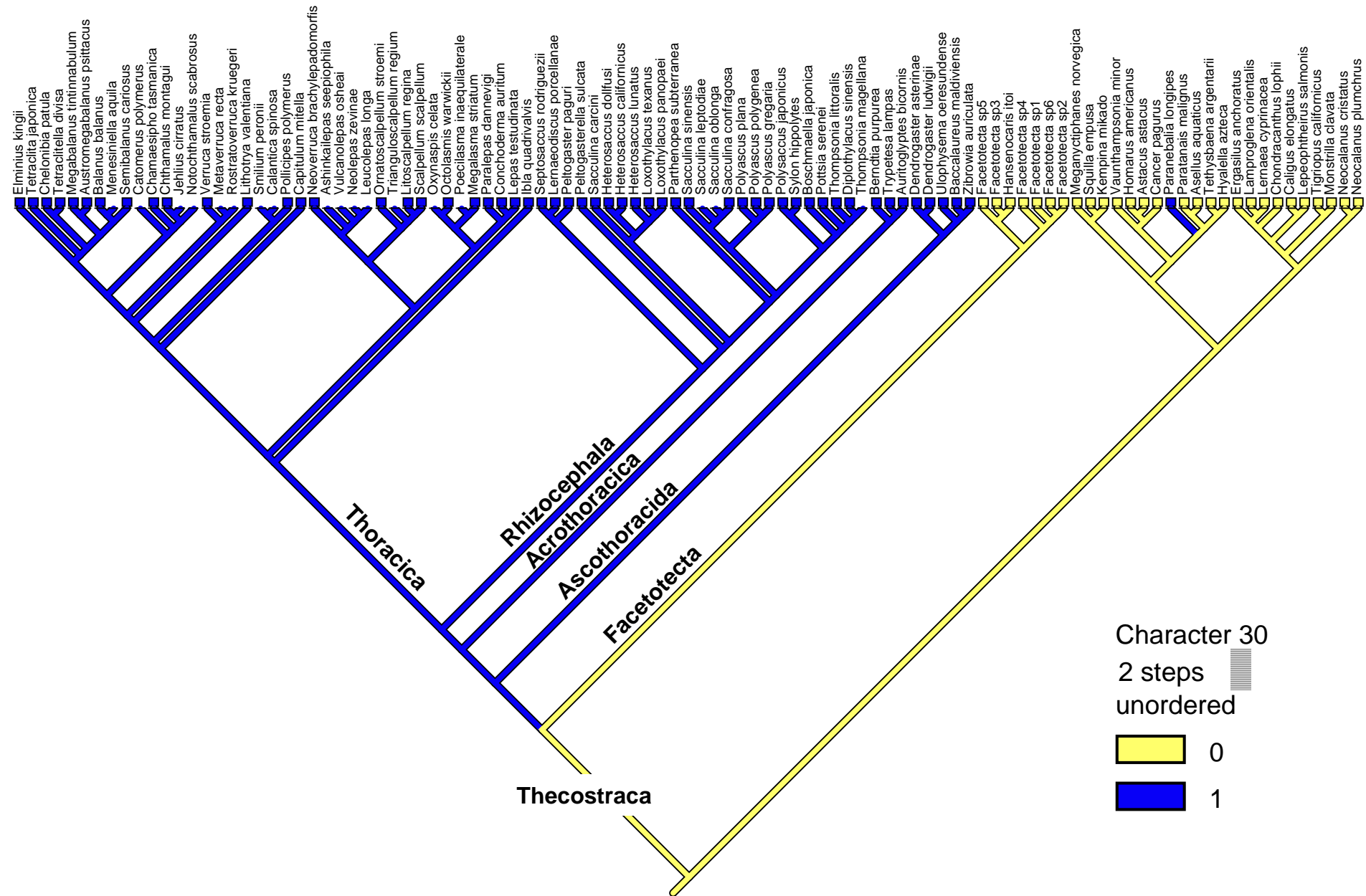
(0) absent; (1) present.



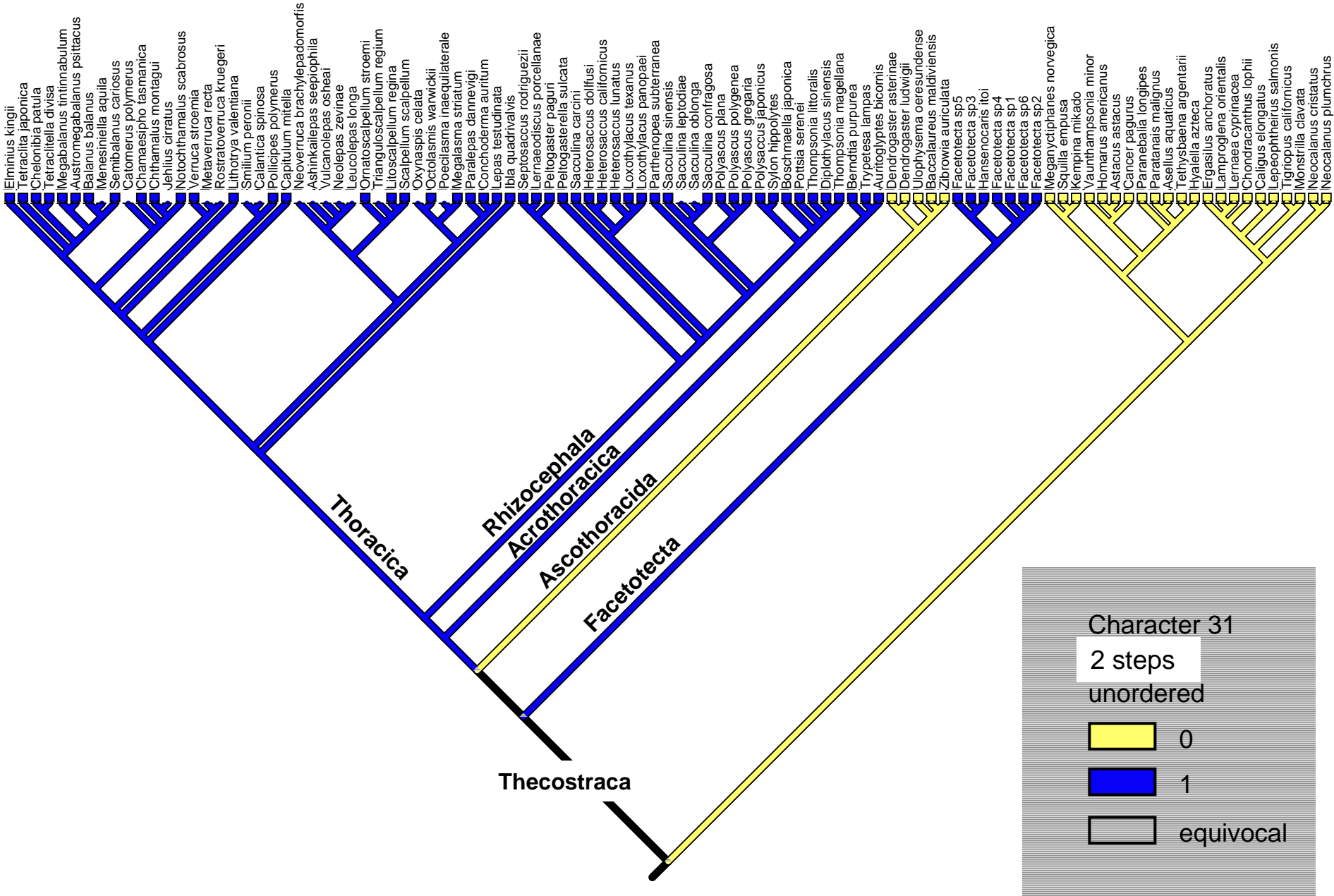
**Character 29. Mouthparts and gut.** (0) retained after metanauplius;  
 (1) lost or reduced in cypridoid stage, but can reappear.



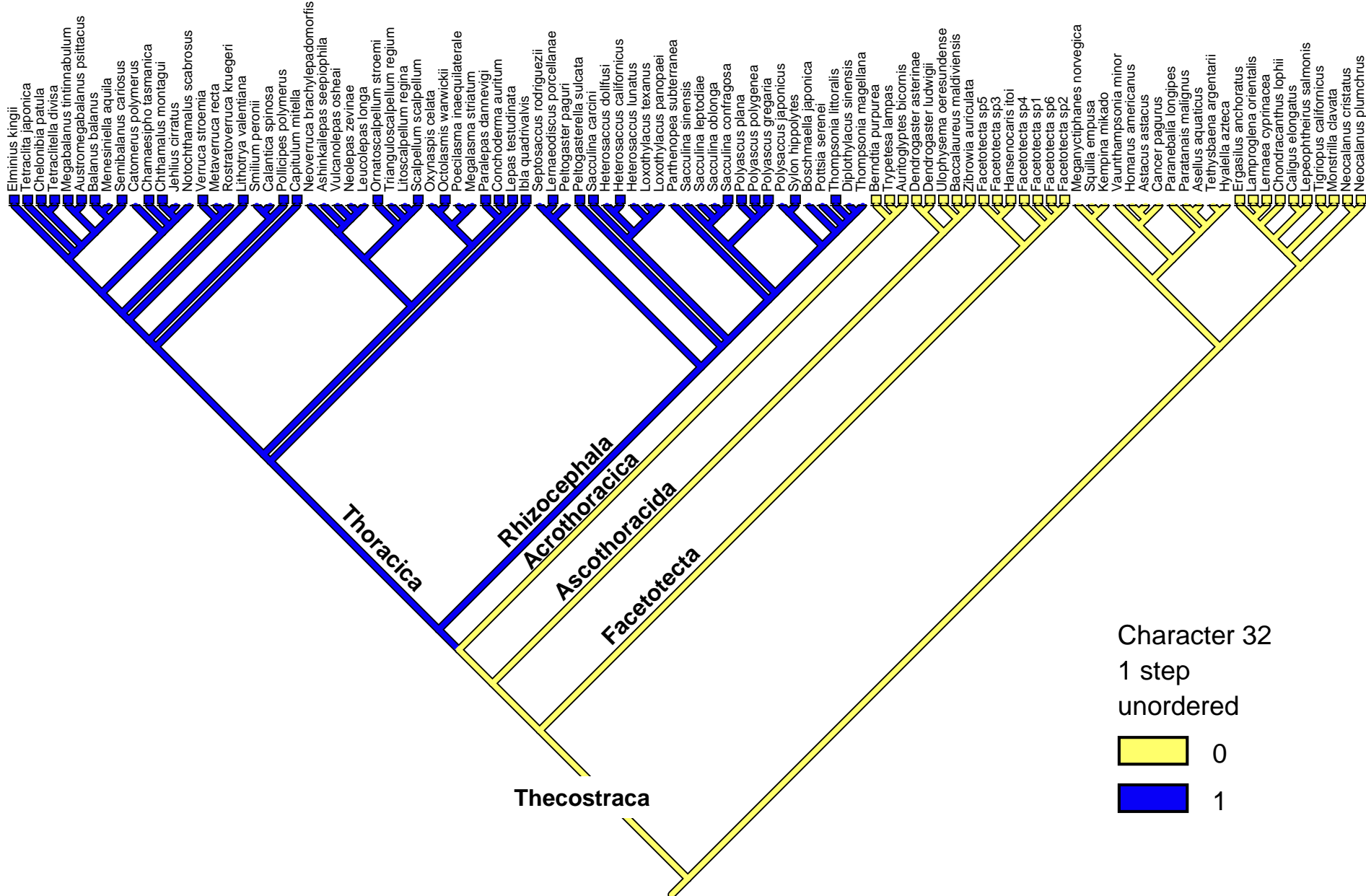
**Character 30.** *Postoral adductor muscle (for any post-naupliar stage):* (0) absent; (1) present.



**Character 31. General condition of thoracopodal musculature: (0) well developed; (1) poorly developed.**



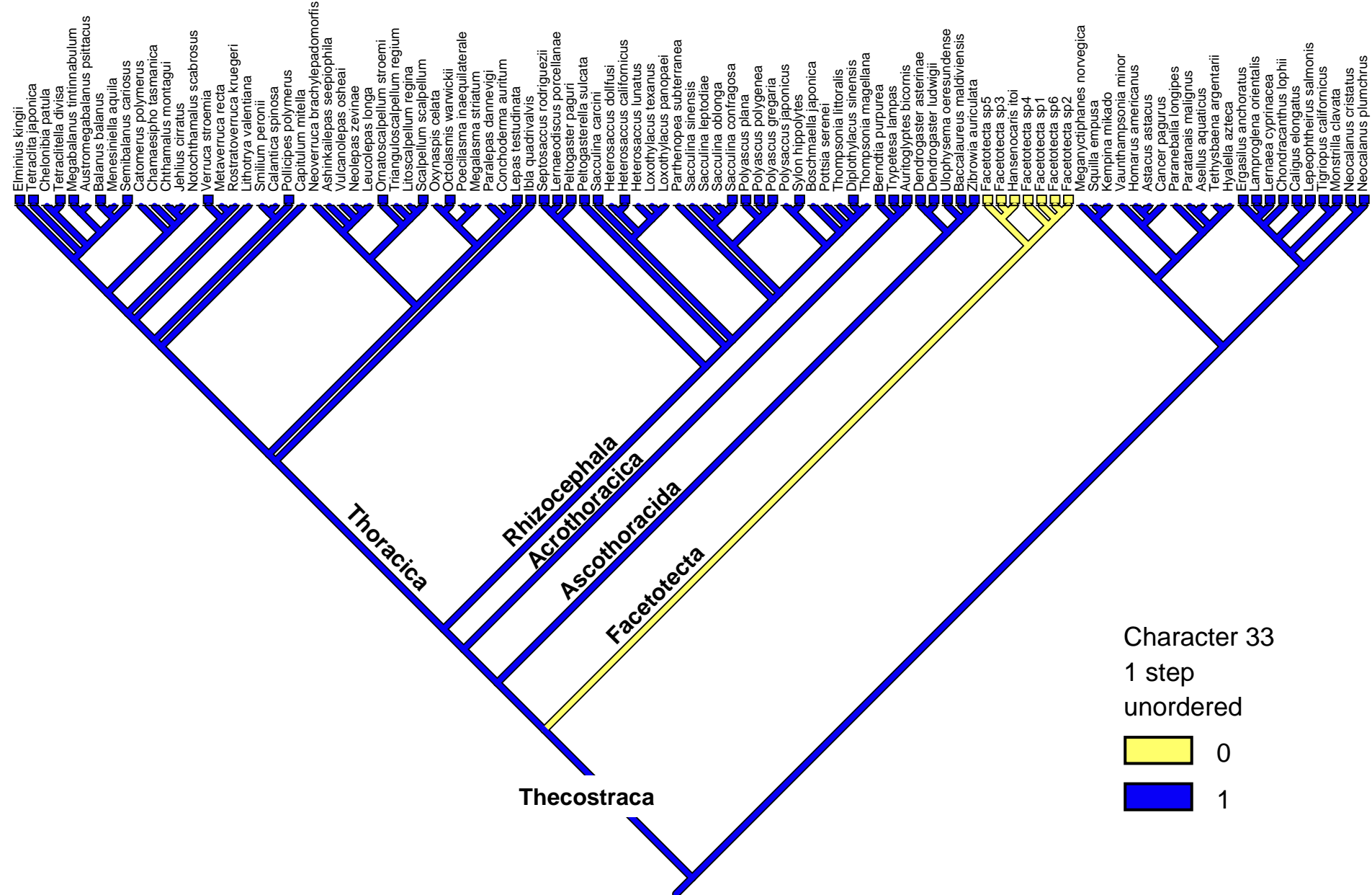
**Character 32.** *Fusion of the two basal segments of endopods in post-naupliar thoracopods 2 and following:* (0) absent; (1) present.



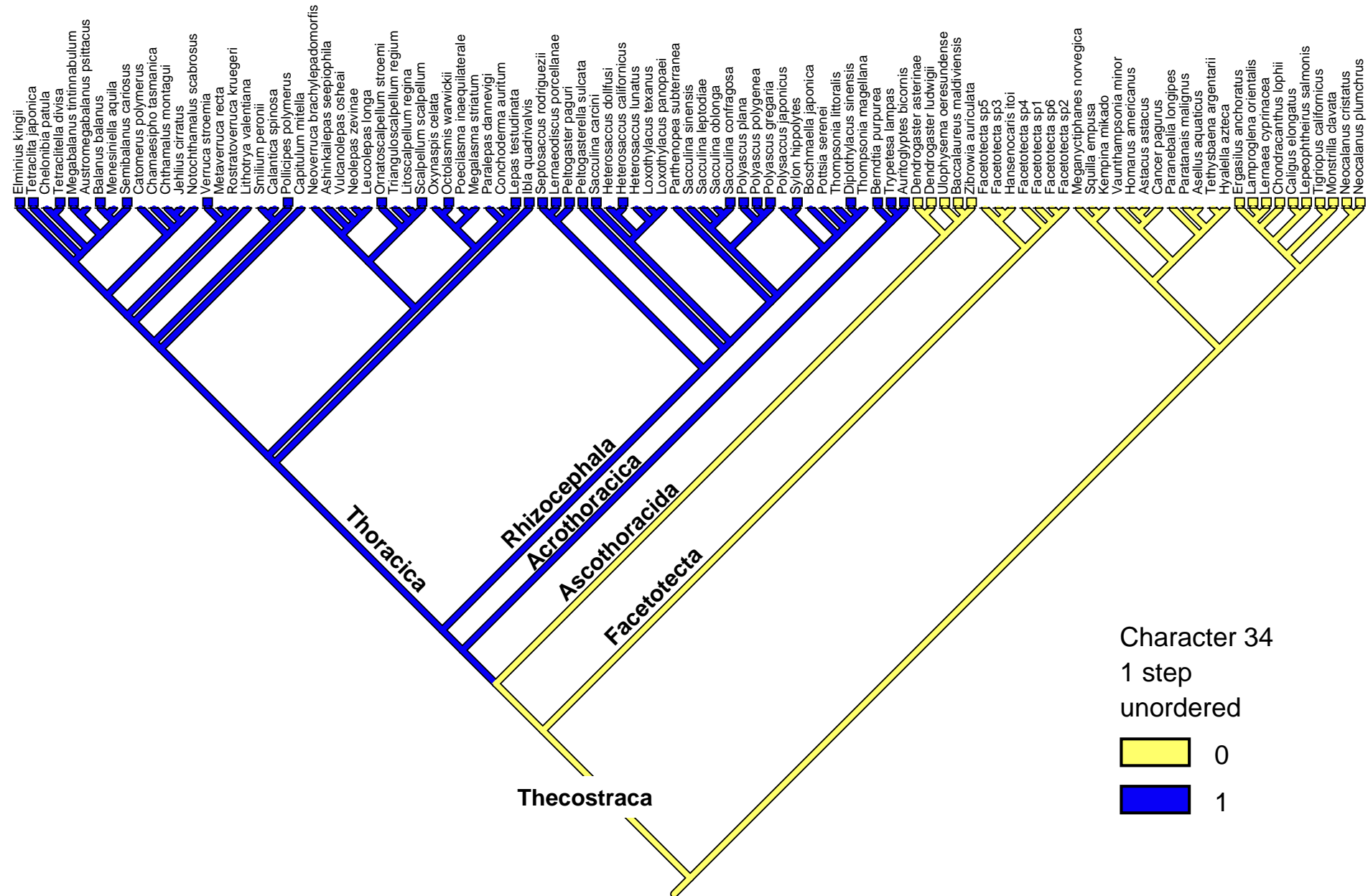


# Character 33. Seta on first exopodal segment of thoracopods in post-naupliar instars:

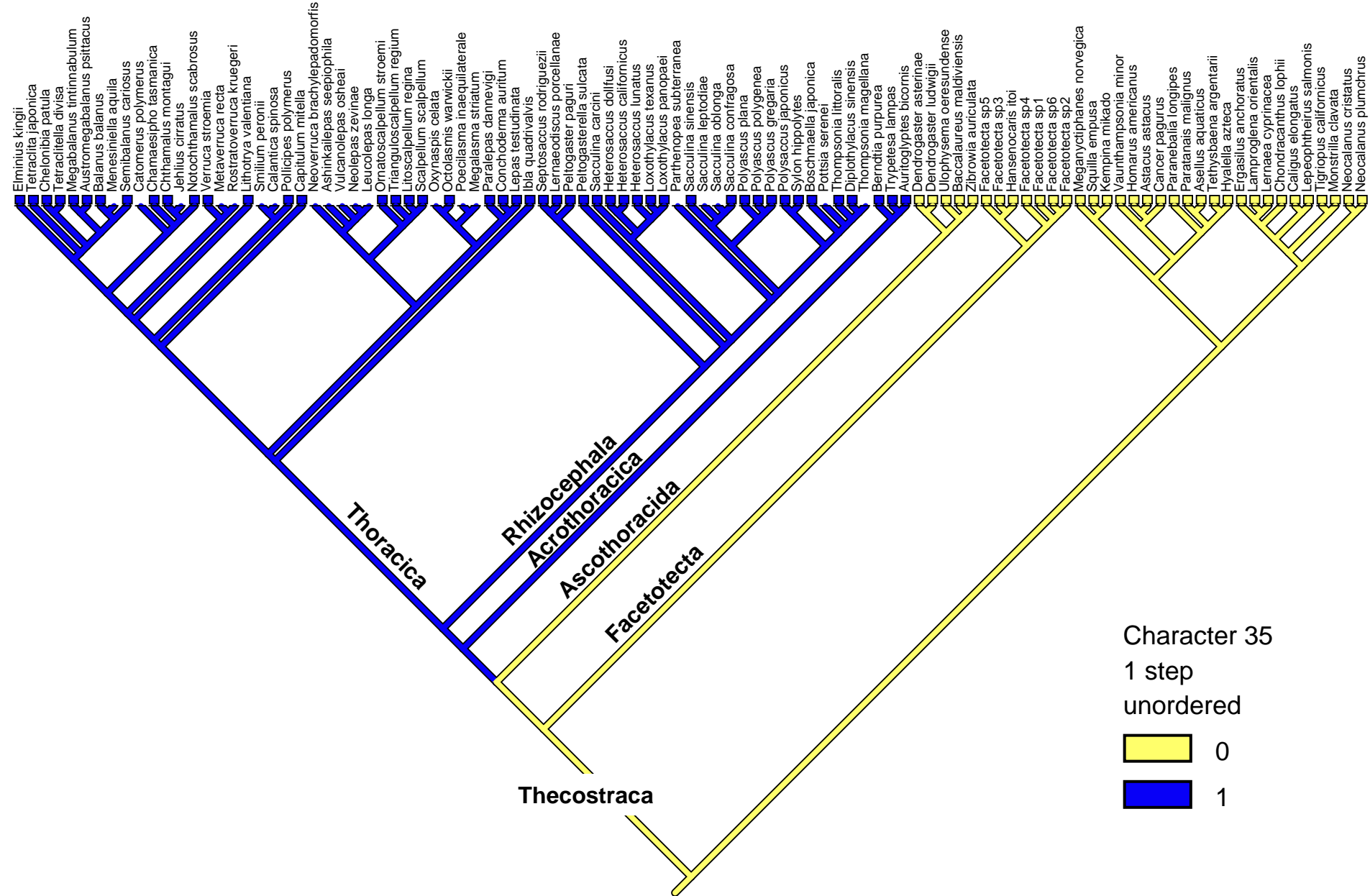
(0) absent; (1) present.



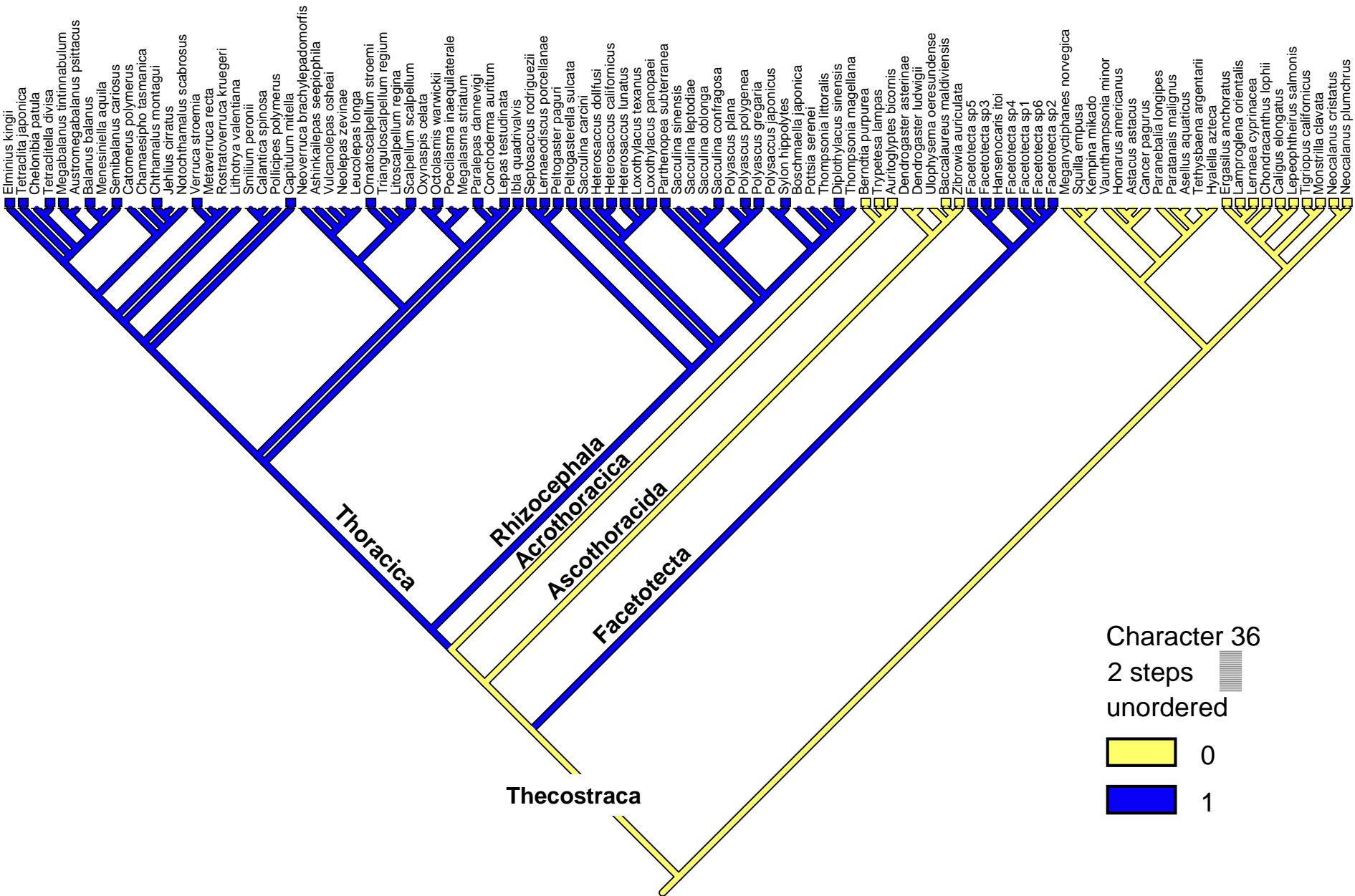
**Character 34.** *Single seta on first exopodal segment of thoracopods in post-naupliar instars is a serrated grooming seta: (0) no; (1) yes.*



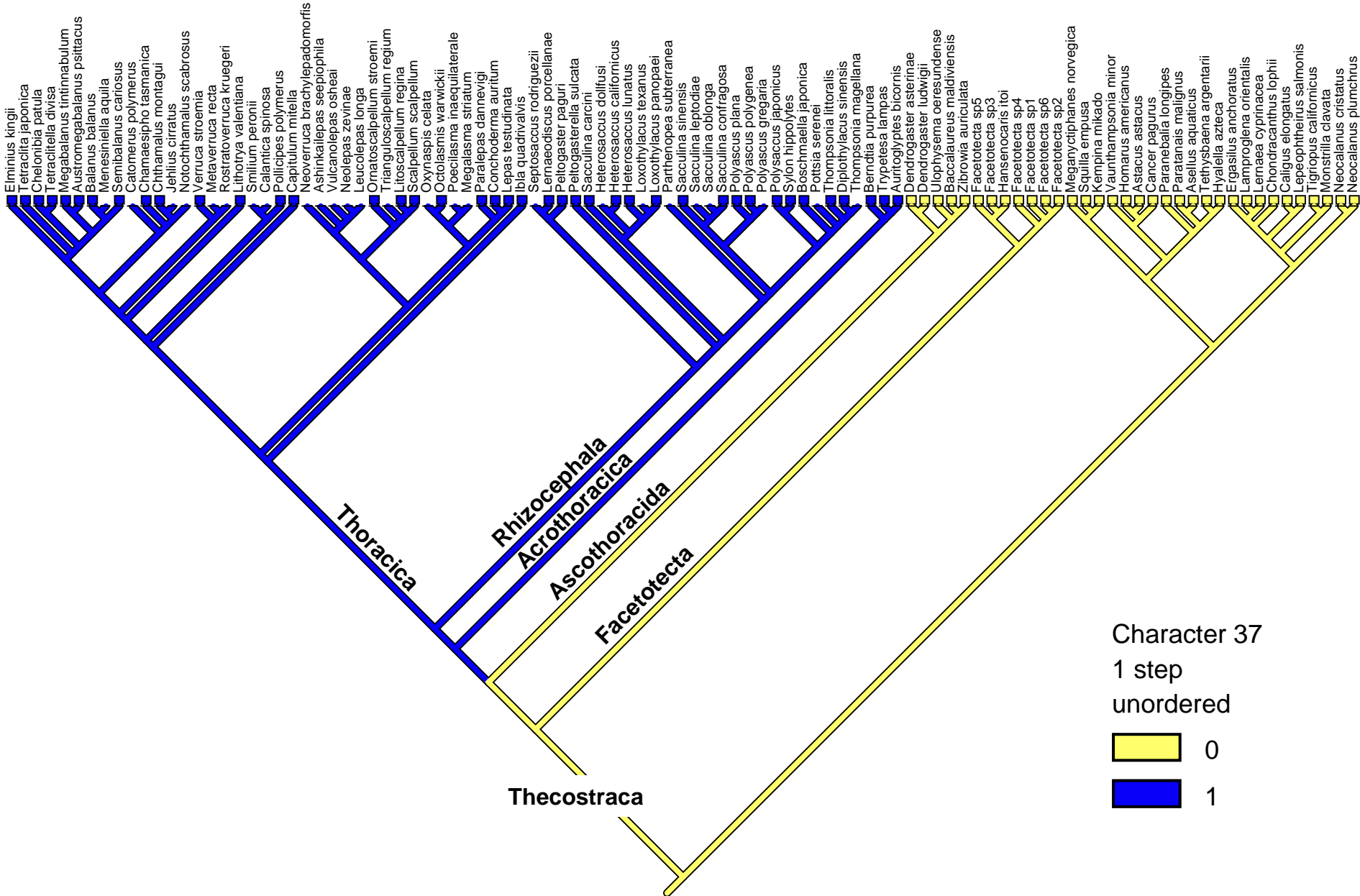
**Character 35. Abdominal development; excluding telson: (0) well developed; (1) rudimentary or absent.**



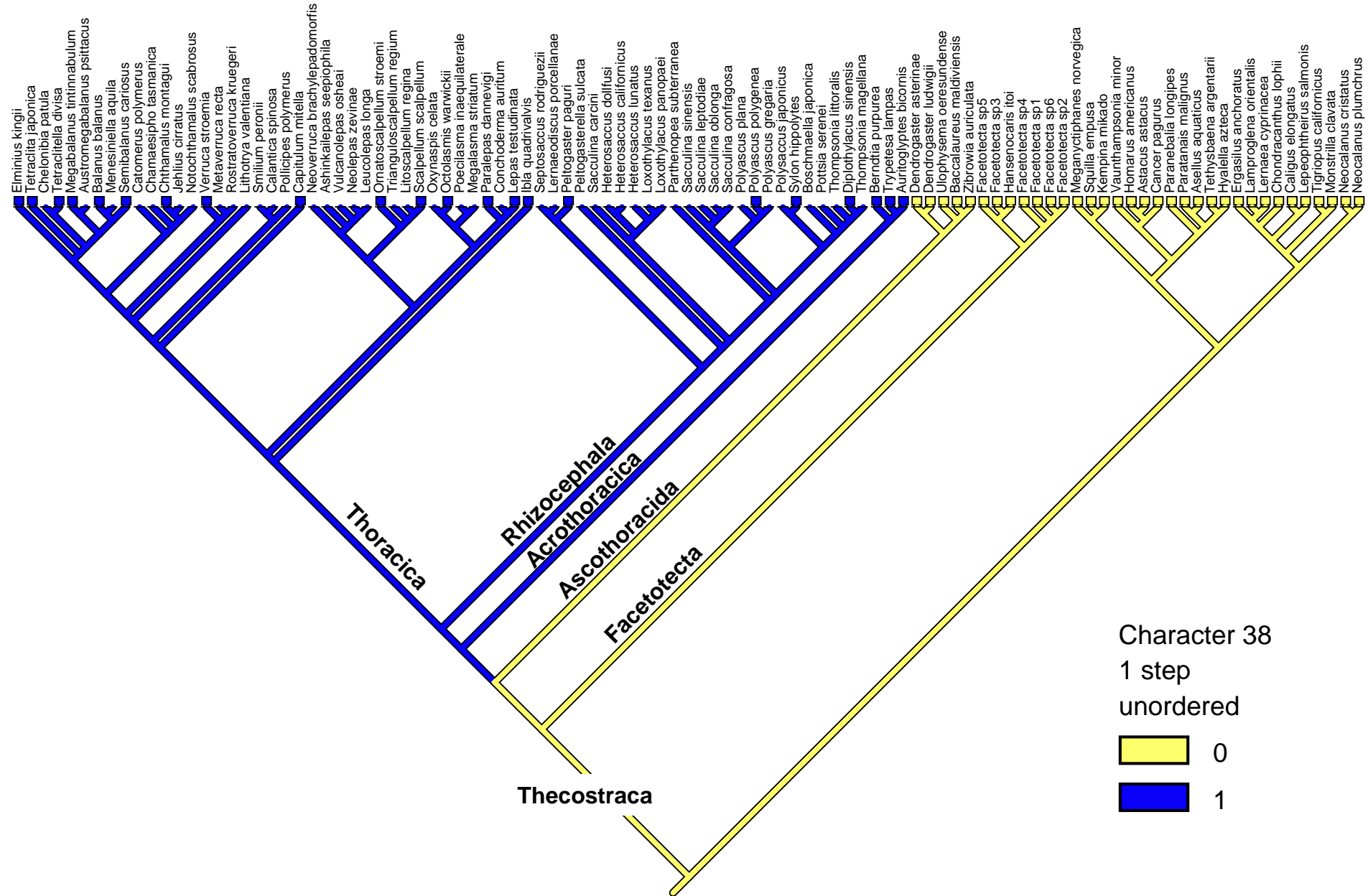
**Character 36. Abdominal segment number, excluding telson: (0) four; (1) less than four.**



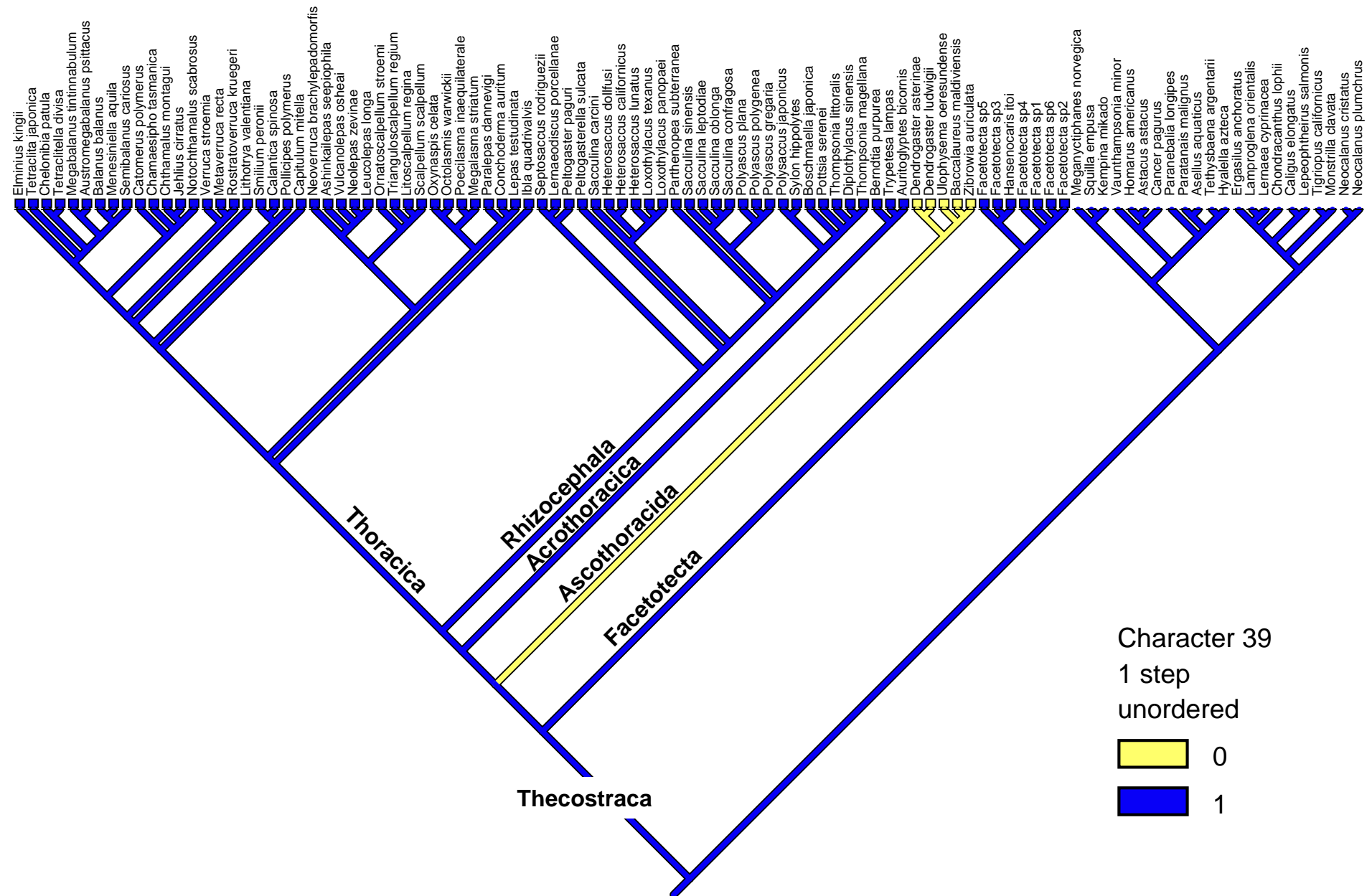
**Character 37.** *Telson-abdomen development relative to thorax:* (1) not pronouncedly narrower and not set off from thorax; (2) always distinct but narrower and set off from thorax.



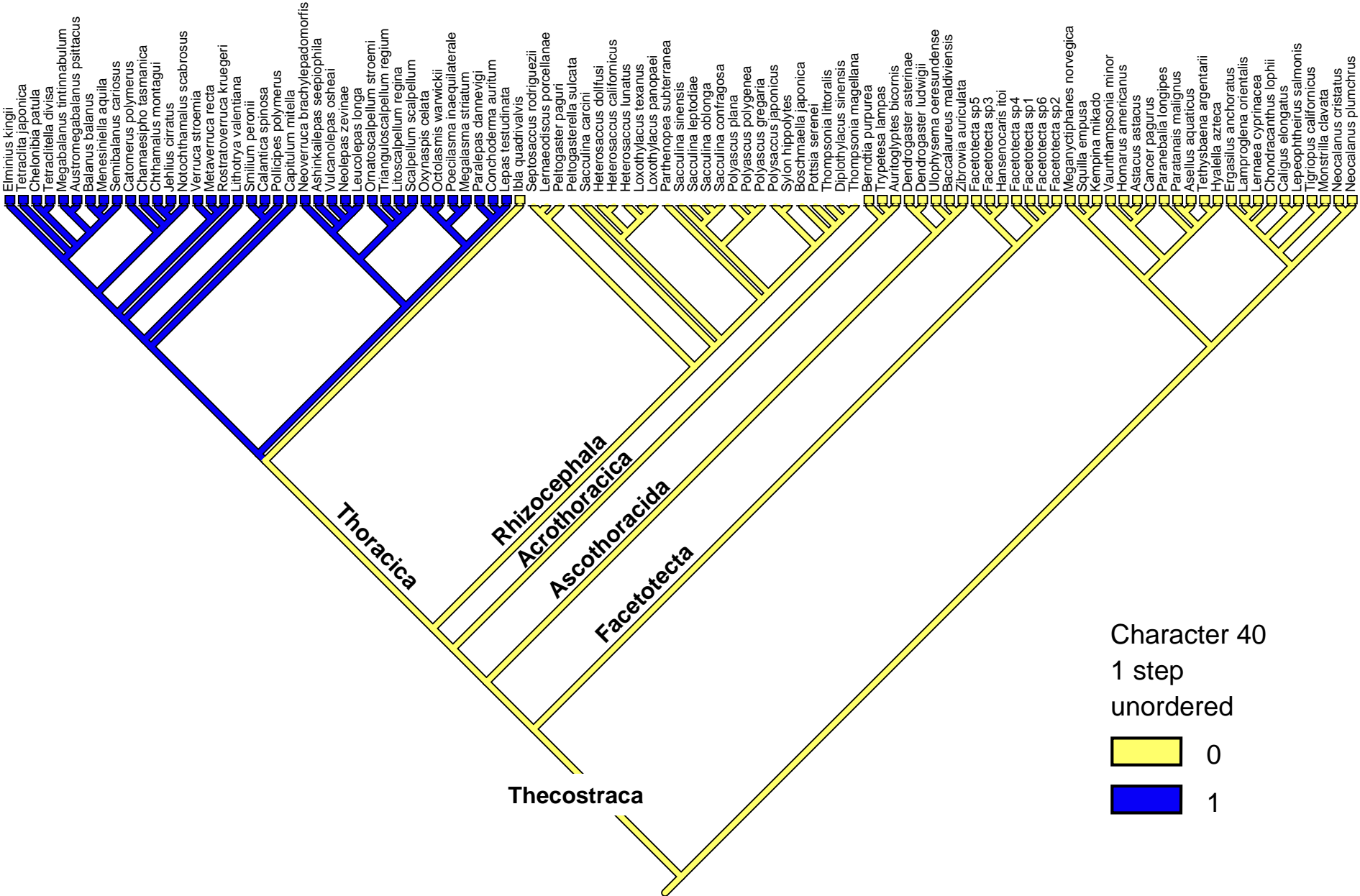
**Character 38.** *Telson cleft:* (0) absent; (1) distinct, shallow to almost reaching the base.



**Character 39.** *Profound metamorphosis after cypridoid stage:* (0) absent; (1) present.



**Character 40.** *Preoral adductor muscle in post-cypridoid stage:* (0) absent; (1) present.





**Character 41. Primordial shell plate in first attached instar. (0) no; (1) yes.**

