**Systematic assessment of the Panopeidae and broader Eubrachyura (Decapoda: Brachyura) using mitochondrial genomics**

Lucas A. Jennings1, April M.H. Blakeslee2, Krista A. McCoy3, Donald C. Behringer1,4, Jamie Bojko5,6,\*

*1Fisheries and Aquatic Sciences, University of Florida, Gainesville, Florida, 32653, USA*.

*2East Carolina University, Greenville, North Carolina, 27858, USA.*

*3Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, Florida, 34946*

*4Emerging Pathogens Institute, University of Florida, Gainesville, Florida, 32611, USA.*

*5School of Health and Life Sciences, Teesside University, Middlesbrough, TS1 3BA, UK.*

*6National Horizons Centre, Teesside University, Darlington, DL1 1HG, UK.*

**Supplementary Table 1:** The accession numbers from each mitochondrial isolate used in the phylogenomic analysis is presented in this table along with the common name and current/revised taxonomy resulting from this study.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Species** | **Subsection** | **Superfamily** | **Family** | **Subfamily** | **Crab common name** | **Accession number** |
| *Austinograea alayseae* | Heterotremata | Bythograeoidea | Bythograeidae |  | Hyro-Vent Crabs | KC851803.1 |
| *Austinograea rodriguezensis* | Heterotremata | Bythograeoidea | Bythograeidae |  | Hyro-Vent Crabs | NC\_020312.1 |
| *Gandalfus puia* | Heterotremata | Bythograeoidea | Bythograeidae |  | Hyro-Vent Crabs | NC\_027414.1 |
| *Gandalfus yunohana* | Heterotremata | Bythograeoidea | Bythograeidae |  | Hyro-Vent Crabs | NC\_013713.1 |
| *Segonzacia mesatlantica* | Heterotremata | Bythograeoidea | Bythograeidae |  | Hyro-Vent Crabs | NC\_035300.1 |
| *Ashtoret lunaris* | Heterotremata | Calappoidea | Matutidae |  | Moon Crab | LK391941.1 |
| *Matuta planipes* | Heterotremata | Calappoidea | Matutidae |  | Moon Crab | NC\_039351.1 |
| *Myomenippe fornasinii* | Heterotremata | Eriphioidea | Menippidae |  | Stone Crab | LK391943.1 |
| *Pseudocarcinus gigas* | Heterotremata | Eriphioidea | Menippidae |  | Stone Crab | NC\_006891.1 |
| *Epixanthus frontalis* | Heterotremata | Eriphioidea | Oziidae |  |  | NC\_039110.1 |
| *Somanniathelphusa bawangensis* | Heterotremata (Potamoida) | Gecarcinucoidea | Gecarcinucidae |  | Freshwater Crabs | MN737135.1 |
| *Somanniathelphusa boyangensis* | Heterotremata (Potamoida) | Gecarcinucoidea | Gecarcinucidae |  | Freshwater Crabs | NC\_032044.1 |
| *Maja crispata* | Heterotremata | Majoidea | Majidae | Majinae | Spider Crabs | NC\_035424.1 |
| *Maja squinado* | Heterotremata | Majoidea | Majidae | Majinae | Spider Crabs | NC\_035425.1 |
| *Damithrax spinosissimus* | Heterotremata | Majoidea | Mithracidae |  | Mithrax Crabs | NC\_025518.1 |
| *Orithyia sinica* | Heterotremata | Orithyioidea | Orithyiidae |  |  | NC\_039639.1 |
| *Echinoecus nipponicus* | Heterotremata | Pilumnoidea | Pilumnidae | Eumedoninae |  | NC\_039618.1 |
| *Pilumnus vespertilio* | Heterotremata | Pilumnoidea | Pilumnidae | Pilumninae |  | NC\_039108.1 |
| *Chaceon granulatus* | Heterotremata | Portunoidea | Geryonidae | Geryoninae |  | AB769383.1 |
| *Ovalipes punctatus* | Heterotremata | Portunoidea | Ovalipidae |  | Swimming Crabs | NC\_042695 |
| *Callinectes sapidus* | Heterotremata | Portunoidea | Portunidae | Portuninae | Swimming Crabs | MH801206.1 |
| *Portunus gracilimanus* | Heterotremata | Portunoidea | Portunidae | Portuninae | Swimming Crabs | NC\_040124.1 |
| *Portunus pelagicus* | Heterotremata | Portunoidea | Portunidae | Portuninae | Swimming Crabs | KT382858.1 |
| *Portunus sanguinolentus* | Heterotremata | Portunoidea | Portunidae | Portuninae | Swimming Crabs | NC\_028225.1 |
| *Portunus trituberculatus* | Heterotremata | Portunoidea | Portunidae | Portuninae | Swimming Crabs | NC\_005037.1 |
| *Scylla olivacea* | Heterotremata | Portunoidea | Portunidae | Portuninae | Swimming Crabs | FJ827760.1 |
| *Scylla paramamosain* | Heterotremata | Portunoidea | Portunidae | Portuninae | Swimming Crabs | JX457150.1 |
| *Scylla serrata* | Heterotremata | Portunoidea | Portunidae | Portuninae | Swimming Crabs | FJ827758.1 |
| *Scylla tranquebarica* | Heterotremata | Portunoidea | Portunidae | Portuninae | Swimming Crabs | FJ827759.1 |
| *Charybdis bimaculata* | Heterotremata | Portunoidea | Portunidae | Thalamitinae | Swimming Crabs | MG787408.1 |
| *Charybdis feriata* | Heterotremata | Portunoidea | Portunidae | Thalamitinae | Swimming Crabs | NC\_024632.1 |
| *Charybdis natator* | Heterotremata | Portunoidea | Portunidae | Thalamitinae | Swimming Crabs | NC\_036132.1 |
| *Thalamita crenata* | Heterotremata | Portunoidea | Portunidae | Thalamitinae | Swimming Crabs | MH425338.1 |
| *Thalamita sima* | Heterotremata | Portunoidea | Portunidae | Thalamitinae | Swimming Crabs | NC\_039640.1 |
| *Monomia gladiator* | Heterotremata | Portunoidea | Portunidae |  | Swimming Crabs | NC\_037173.1 |
| *Apotamonautes hainanensis* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | MN737137.1 |
| *Candidiopotamon okinawense* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | MN737145.1 |
| *Geothelphusa dehaani* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | NC\_007379.1 |
| *Geothelphusa sp.* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | MG674171.1 |
| *Huananpotamon lichuanense* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | NC\_031406.1 |
| *Longpotamon kenliense* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | MK584299 |
| *Longpotamon parvum* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | MN737134.1 |
| *Longpotamon xiushuiense* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | KU042041 |
| *Longpotamon yangtsekiense* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | NC\_036946.1 |
| *Lophopotamon yenyuanense* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | MN737139.1 |
| *Neilupotamon sinense* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | MN737143.1 |
| *Parapotamon spinescens* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | MN737144.1 |
| *Potamiscus montosus* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | MN737133.1 |
| *Potamiscus motuoensis* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | KY285013.1 |
| *Potamiscus yiwuensis* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | MN737136.1 |
| *Potamiscus yongshengensis* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | MN737142.1 |
| *Sinopotamon xuishuiense* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | NC\_029226.1 |
| *Sinopotamon yaanense* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | NC\_036947.1 |
| *Tenuilapotamon latilum* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | MN737132.1 |
| *Tenuipotamon yuxiense* | Heterotremata (Potamoida) | Potamoidea | Potamidae | Potamiscinae | Freshwater Crabs | MN737140.1 |
| ***Eurypanopeus depressus*** | Heterotremata | **Xanthoidea** | **Panopeidae** |  | **Mud Crabs** | **This study** |
| ***Panopeus herbstii*** | Heterotremata | **Xanthoidea** | **Panopeidae** |  | **Mud Crabs** | **This study** |
| ***Rhithropanopeus harrisii*** | Heterotremata | **Xanthoidea** | **Panopeidae** |  | **Mud Crabs** | **This study** |
| *Etisus anaglyptus* | Heterotremata | Xanthoidea | Xanthidae | Etisinae | Mud Crabs | NC\_042208.1 |
| *Leptodius sanguineus* | Heterotremata | Xanthoidea | Xanthidae | Xanthinae | Mud Crabs | NC\_029726.1 |
| *Atergatis floridus* | Heterotremata | Xanthoidea | Xanthidae | Zosiminae | Mud Crabs | NC\_037201.1 |
| *Atergatis integerrimus* | Heterotremata | Xanthoidea | Xanthidae | Zosiminae | Mud Crabs | NC\_037172.1 |
| *Dynomene pilumnoides* | Podotremata (Section) | Dromioidea | Dynomenidae | Dynomeninae |  | KT182070.1 |
| *Homologenus malayensis* | Podotremata (Section) | Homoloidea | Homolidae |  | Carrier Crab | KJ612407.1 |
| *Moloha majora* | Podotremata (Section) | Homoloidea | Homolidae |  | Carrier Crab | NC\_029361.1 |
| *Latreillia valida* | Podotremata (Section) | Homoloidea | Latreilliidae |  | Carrier Crab | MK204361 |
| *Lyreidus brevifrons* | Podotremata (Section) | Raninoidea | Raninidae | Lyreidinae | Frog Crabs | NC\_026721.1 |
| *Umalia orientalis* | Podotremata (Section) | Raninoidea | Raninidae | Notopodinae | Frog Crabs | NC\_026688.1 |
| *Ranina ranina* | Podotremata (Section) | Raninoidea | Raninidae | Ranininae | Frog Crabs | KM189817.1 |
| *Cardisoma carnifex* | Thoracotremata | Grapsoidea | Gecarcinidae |  | Land Crab | NC\_039105.1 |
| *Grapsus tenuicrustatus* | Thoracotremata | Grapsoidea | Graspsidae |  | Land Crab | NC\_029724.1 |
| *Metopograpsus frontalis* | Thoracotremata | Grapsoidea | Graspsidae |  | Land Crab | NC\_042152.1 |
| *Metopograpsus quadridentatus* | Thoracotremata | Grapsoidea | Graspsidae |  | Land Crab | MH310445.1 |
| *Pachygrapsus crassipes* | Thoracotremata | Grapsoidea | Graspsidae |  | Land Crab | NC\_021754.1 |
| *Pachygrapsus marmoratus* | Thoracotremata | Grapsoidea | Graspsidae |  | Land Crab | NC\_039109.1 |
| *Chiromantes dehaani* | Thoracotremata | Grapsoidea | Sesarmidae |  | Marsh Crab | NC\_041212.1 |
| *Chiromantes haematocheir* | Thoracotremata | Grapsoidea | Sesarmidae |  | Marsh Crab | NC\_042142.1 |
| *Clistocoeloma sinense* | Thoracotremata | Grapsoidea | Sesarmidae |  | Marsh Crab | NC\_033866.1 |
| *Metopaulias depressus* | Thoracotremata | Grapsoidea | Sesarmidae |  | Marsh Crab | NC\_030535.1 |
| *Nanosesarma minutum* | Thoracotremata | Grapsoidea | Sesarmidae |  | Marsh Crab | NC\_040977.1 |
| *Parasesarma affine* | Thoracotremata | Grapsoidea | Sesarmidae |  | Marsh Crab | NC\_039990.1 |
| *Parasesarma pictum* | Thoracotremata | Grapsoidea | Sesarmidae |  | Marsh Crab | NC\_038066.1 |
| *Parasesarma tripectinis* | Thoracotremata | Grapsoidea | Sesarmidae |  | Marsh Crab | NC\_030046.2 |
| *Sesarma neglectum* | Thoracotremata | Grapsoidea | Sesarmidae |  | Marsh Crab | NC\_031851.1 |
| *Sesarmops sinensis* | Thoracotremata | Grapsoidea | Sesarmidae |  | Marsh Crab | NC\_030196.1 |
| *Cyclograpsus granulosus* | Thoracotremata | Grapsoidea | Varunidae | Cyclograpsinae | Estuarine Crab | NC\_025571.1 |
| *Helicana wuana* | Thoracotremata | Grapsoidea | Varunidae | Cyclograpsinae | Estuarine Crab | MH593562.1 |
| *Helice latimera* | Thoracotremata | Grapsoidea | Varunidae | Cyclograpsinae | Estuarine Crab | NC\_033865.1 |
| *Helice tientsinensis* | Thoracotremata | Grapsoidea | Varunidae | Cyclograpsinae | Estuarine Crab | NC\_030197.1 |
| *Metaplax longipes* | Thoracotremata | Grapsoidea | Varunidae | Cyclograpsinae | Estuarine Crab | NC\_040976.1 |
| *Pseudohelice subquadrata* | Thoracotremata | Grapsoidea | Varunidae | Cyclograpsinae | Estuarine Crab | MH718959 |
| *Gaetice depressus* | Thoracotremata | Grapsoidea | Varunidae | Gaeticinae | Estuarine Crab | NC\_038179.1 |
| *Eriocheir hepuensis* | Thoracotremata | Grapsoidea | Varunidae | Varuninae | Estuarine Crab | NC\_011598.1 |
| *Eriocheir japonica* | Thoracotremata | Grapsoidea | Varunidae | Varuninae | Estuarine Crab | NC\_011597.1 |
| *Eriocheir sinensis* | Thoracotremata | Grapsoidea | Varunidae | Varuninae | Estuarine Crab | KY041629.1 |
| *Hemigrapsus penicillatus* | Thoracotremata | Grapsoidea | Varunidae | Varuninae | Estuarine Crab | NC\_038202.1 |
| *Hemigrapsus sanguineus* | Thoracotremata | Grapsoidea | Varunidae | Varuninae | Estuarine Crab | NC\_035307.1 |
| *Neoeriocheir leptognathus* | Thoracotremata | Grapsoidea | Varunidae | Varuninae | Estuarine Crab | NC\_041211.1 |
| *Varuna yui* | Thoracotremata | Grapsoidea | Varunidae | Varuninae | Estuarine Crab | NC\_037155.1 |
| *Xenograpsus ngatama* | Thoracotremata | Grapsoidea | Xenograpsidae |  |  | NC\_035951.1 |
| *Xenograpsus testudinatus* | Thoracotremata | Grapsoidea | Xenograpsidae |  |  | NC\_013480.1 |
| *Dotilla wichmanni* | Thoracotremata | Ocypodoidea | Dotillidae | Dotillinae |  | NC\_038180.1 |
| *Ilyoplax deschampsi* | Thoracotremata | Ocypodoidea | Dotillidae | Dotillinae |  | JF909979.1 |
| *Macrophthalmus darwinensis* | Thoracotremata | Ocypodoidea | Macrophthalmidae | Macrophthalminae | Mangrove Crab | MF457408.1 |
| *Macrophthalmus japonicus* | Thoracotremata | Ocypodoidea | Macrophthalmidae | Macrophthalminae | Mangrove Crab | NC\_030048.1 |
| *Mictyris longicarpus* | Thoracotremata | Ocypodoidea | Mictyridae |  |  | LN611670.1 |
| *Austruca lactea* | Thoracotremata | Ocypodoidea | Ocypodidae | Gelasiminae | Fiddler Crabs | NC\_042401.1 |
| *Cranuca inversa* | Thoracotremata | Ocypodoidea | Ocypodidae | Gelasiminae | Fiddler Crabs | NC\_039111.1 |
| *Gelasimus borealis* | Thoracotremata | Ocypodoidea | Ocypodidae | Gelasiminae | Fiddler Crabs | NC\_038177.1 |
| *Tubuca capricornis* | Thoracotremata | Ocypodoidea | Ocypodidae | Gelasiminae | Fiddler Crabs | MF457401.1 |
| *Tubuca polita* | Thoracotremata | Ocypodoidea | Ocypodidae | Gelasiminae | Fiddler Crabs | NC\_039106.1 |
| *Ocypode ceratophthalmus* | Thoracotremata | Ocypodoidea | Ocypodidae | Ocypodinae | Ghost Crab | LN611669.1 |
| *Ocypode cordimanus* | Thoracotremata | Ocypodoidea | Ocypodidae | Ocypodinae | Ghost Crab | NC\_029725.1 |
| *Panulirus argus* (OUTGROUP) |  |  | Palinuridae |  | Spiny Lobster | MH068821 |