A first broad-scale molecular phylogeny of Prionoceridae (Coleoptera: Cleroidea) provides insight into taxonomy, biogeography and life history evolution

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 3651805
Author(s) Geiser, Michael F.; Hagmann, Reto; Nagel, Peter; Loader, Simon P.
Author(s) at UniBasel Geiser, Michael ; Hagmann, Reto ; Loader, Simon Paul ; Nagel, Peter ;
Year 2016
Title A first broad-scale molecular phylogeny of Prionoceridae (Coleoptera: Cleroidea) provides insight into taxonomy, biogeography and life history evolution
Journal Arthropod Systematics & Phylogeny
Volume 74
Number 1
Pages / **Article-Number** 3-21
Keywords Soft-winged flower beetles, Cucujiformia, Idgia, Prionocerus, Lobonyx, taxonomy, nocturnality, diurnality, biogeography, barcoding.

Based on partial sequences of three mitochondrial (cox1, cox2, trnL) and two nuclear genes (18S and 28S) we conducted a molecular phylogenetic analysis of Prionoceridae represented by all three valid genera, 34 species and a large number of informal species groups from the Palaearctic, Afrotropical and Oriental regions. Analyses indicate the split of Prionoceridae in two main clades, Lobonychinae and Prionocerinae. Lobonychinae includes the genus Lobonyx Jacquelin du Val, 1859 and some species currently placed in Idgia Laporte de Castelnau, 1838. Prionocerinae includes a large paraphyletic grade of Idgia and monophyletic Prionocerus Perty, 1831, with Idgia viridescens Gorham, 1895 identified as a sister group to Prionocerus. Idgia consists of seven clades, with their basal relationships weakly resolved. Two clades – Idgia oculata and Idgia pallidicolor species groups – are well supported by molecular data and morphological characters. Species identifications based on morphology are consistent with tree topology recovered from molecular dataset, with one possible exception (Idgia inapicalis). Sequence divergence in cox1 varies from 3.7 to 16% between species and from 0 to 4.9% within species of Prionoceridae. The reconstruction of diurnal and nocturnal life histories suggests a single origin of nocturnality, and multiple transitions from nocturnal to diurnal life style within Prionoceridae. The African and the Arabian species represent two lineages, both having their origin in tropical Asia. Based on partial sequences of three mitochondrial (cox1, cox2, trnL) and two nuclear genes (18S and 28S) we conducted a molecularphylogenetic analysis of Prionoceridae represented by all three valid genera, 34 species and a large number of informal species groupsfrom the Palaearctic, Afrotropical and Oriental regions. Analyses indicate the split of Prionoceridae in two main clades, Lobonychinae andPrionocerinae. Lobonychinae includes the genus Lobonyx Jacquelin du Val, 1859 and some species currently placed in Idgia Laporte deCastelnau, 1838. Prionocerinae includes a large paraphyletic grade of Idgia and monophyletic Prionocerus Perty, 1831, with Idgia viridescensGorham, 1895 identified as a sister group to Prionocerus. Idgia consists of seven clades, with their basal relationships weakly resolved.Two clades – Idgia oculata and Idgia pallidicolor species groups – are well supported by molecular data and morphological characters. Speciesidentifications based on morphology are consistent with tree topology recovered from molecular dataset, with one possible exception(Idgia inapicalis). Sequence divergence in cox1 varies from 3.7 to 16% between species and from 0 to 4.9% within species of Prionoceridae.The reconstruction of diurnal and nocturnal life histories suggests a single origin of nocturnality, and multiple transitions from nocturnal todiurnal life style within Prionoceridae. The African and the Arabian species

represent two lineages, both having their origin in tropical Asia.
Publisher Museum für Tierkunde Dresden
ISSN/ISBN 1863-7221 ; 1864-8312
URL http://www.senckenberg.de/files/content/forschung/publikationen/arthropodsy stematics/asp_74_1/01_asp_74_1_g
21.pdf
edoc-URL http://edoc.unibas.ch/44783/
Full Text on edoc No;
ISI-Number WOS:000379380700001
Document type (ISI) Article