## Understanding the biodiversity boom in terrestrial hydrophilid beetles

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NATIONAL MUSEUM



## Why is Megasternini so diverse? Objectives

(1) To propose a phylogenetic hypothesis for the tribe, based on both molecular and morphological data.

(2) To obtain phylogenetically relevant data from different sources, like nuclear and mitochondrial genes, geometric morphometrics, micro-computerized tomography ...





## **Objectives**

- To redefine the generic boundaries for troublesome genera.
- To test the role of habitat shifts on the diversification processes within the tribe.
- To test the correlation between morphological evolution and the ecological shifts.
- To make systematic treatments on selected groups
- To publish taxonomic identification resources, morphological and molecular



- To sequence at least one representative of each genus
- -Extensive sampling of *Cercyon*
- Include museum specimens
- Perform field work in selected areas
- Codification of morphological characters
- Diversification analysis





Sorting and data-basing specimens in the freezer From the 55 genera in Megasternini we have 49!





Learning through facing some suboptimal results









Cercyon insularis Chevrolat

Based on recently collected and museum material, including type specimens of *C. insularis* Chevrolat and *C. variegatus* Sharp











#### Cercyon insularis Chevrolat

Cuba, Dominican Republic, Puerto Rico

#### Cercyon nigriceps (Masham)

Cuba, Dominican Republic, Haiti, Puerto, Rica, everywhere... Cercyon praetextatus (Say)

Cuba, Dominican Republic





*Cercyon quisquilius* (Linnaeus) Cuba

*Cercyon spiniventris* sp. nov. Dominican Republic *Cercyon sklodowskae* sp. nov. Cuba





*Cercyon gimmeli* sp. nov. Dominican Republic

*Cercyon armatipenis* sp. nov. Dominican Republic *Cercyon taino* sp. nov. Cuba

## Maximum likelihood tree of LCO-HCO fragment of COI mtDNA







### GenBank

# **BOLD** SYSTEMS



## Global Biodiversity Information Facility

Free and Open Access to Biodiversity Data



Welcome to Morphbank, V. 3!

Featured from 270974 images







Systematic Entomology (2016), DOI: 10.1111/syen.12198

#### O P I N I O N

#### The peril of dating beetles

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Selected Descare

# Expedition to Western Cape province, South Africa





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Zacualtipán, Hidalgo, 1200-2000 m

Xalapa, Veracruz, 800-1700 m

Los Tuxtlas, Veracruz, 50-800 m



















#### Cercyon sp.? Baltic amber





Genes previously used on Hydrophilidae: COI, COII and 16S and nuclear genes 18S, 28S

#### **Internation Congress of Entomology 2016, Orlando, Fl.**

- Developing novel nuclear markers for beetle phylogenetics, tested at both inter-family and intra-family levels

Li-Heng Che, Shao-Qian Zhang, Yun Li, Dan Liang, Hong Pang, Adam Slipinski and Peng Zhang













- Molecular and morphological analysis

- Publications
- Network skills
- Life in general



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