



Entomological Society of America Proposal Form for New Common Name or Change of ESA-Approved Common Name

Complete this form and e-mail to pubs@entsoc.org.

Submissions will not be considered unless this form is filled out completely.

The proposer is expected to be familiar with the rules, recommendations, and procedures outlined in the “Use and Submission of Common Names” on the ESA website at <https://www.entsoc.org/pubs/use-and-submission-common-names>.

1. Proposed new common name:

hell ant

2. Previously approved common name (if any):

N/A

3. Scientific name (genus, species, author):

Order: Hymenoptera

Family: Formicidae

Subfamily: Haidomyrmecinae (Perrichot et al. 2020)

Supporting Information

4. Please provide a clear and convincing explanation for why a common name is needed, possibly including but not limited to the taxon’s economic, ecological, or medical importance, striking appearance, abundance, or conservation status:

Haidomyrmecine “hell ants” are a lineage of extinct, stem-group ants from the Cretaceous with extremely aberrant mandible and head morphology. These ants possess scythe-like mandibles and a variety of head-appendages that include bifurcated and spoon-like horns. An informal common name is already in use both in the scientific literature and in public-facing media as these ants represent a potentially iconic lineage of extinct organisms that may be considered as analogous to theropod dinosaurs. A formal common name would bolster the profile of these animals and aid in popularizing extinction in insects.

There are few well-known examples of extinct insects relative to vertebrates, even as public perception of extinction may be linked to charismatic megafauna (e.g. woolly mammoths). In the scientific literature, the monophyly of this group is now firmly established and a common name would reduce jargon for newcomers to the field.

5. Stage or characteristic to which the proposed common name refers.

The informal common name “hell ant” is a translation of the scientific name for the type genus and species of the subfamily Haidomyrmecinae: *Haidomyrmex cerberus* (Dlussky 1996). Haido- in reference to Hades, while Cerberus is the three headed guard dog of the underworld in Greek mythology and a conspicuous occupant of the third circle of hell in Dante’s inferno.

6. Distribution (include references):

Hell ants are known from three fossil localities in France (Perrichot et al. 2008), Myanmar (Dlussky 1996), and Canada (McKellar et al. 2013), each dated to ~100, 99, and 78 Ma, respectively.

Perrichot, V., Nel, A., Néraudeau, D., Lacau, S. and Guyot, T., 2008. New fossil ants in French cretaceous amber (Hymenoptera: Formicidae). *Naturwissenschaften*, 95, pp.91-97.

G.M. Dlussky 1996. Ants (Hymenoptera: Formicidae) from Burmese amber. *Paleontological Journal* 30 (4): 449–454.

McKellar, R.C., Glasier, J.R. and Engel, M.S., 2013. A new trap-jawed ant (Hymenoptera: Formicidae: Haidomyrmecini) from Canadian Late Cretaceous amber. *The Canadian Entomologist*, 145(4), pp.454-465.

7. Principal hosts (include references):

N/A

8. Please provide multiple references indicating clearly that the proposed name is already established and ideally widespread in use. If the name has been newly coined for purposes of this application, please state so:

The informal common name was first used in the literature in 2016 (Barden et al. 2016) and has been subsequently in at least the following publications:

Barden, P. and Grimaldi, D.A., 2016. Adaptive radiation in socially advanced stem-group ants from the Cretaceous. *Current Biology*, 26(4), pp.515-521.

- Barden, P., Herhold, H.W. and Grimaldi, D.A., 2017. A new genus of hell ants from the Cretaceous (Hymenoptera: Formicidae: Haidomyrmecini) with a novel head structure. *Systematic Entomology*, 42(4), pp.837-846.
- Miao, Z. and Wang, M., 2019. A new species of hell ants (Hymenoptera: Formicidae: Haidomyrmecini) from the Cretaceous Burmese amber. *Journal of the Guangxi Normal University (Natural Science Edition)*, 37(2), pp.139-142.
- Barden, P., Perrichot, V. and Wang, B., 2020. Specialized predation drives aberrant morphological integration and diversity in the earliest ants. *Current Biology*, 30(19), pp.3818-3824.
- Boudinot, B.E., Perrichot, V. and Chaul, J.C., 2020. † *Camelosphecia* gen. nov., lost ant-wasp intermediates from the mid-Cretaceous (Hymenoptera, Formicoidea). *ZooKeys*, 1005, p.21.
- Cao, H.J., Perrichot, V., Shih, C., Ren, D. and Gao, T.P., 2020. A revision of *Haidomyrmex cerberus* Dlussky (Hymenoptera: Formicidae: Sphecomyrminae) from mid-Cretaceous Burmese amber. *Cretaceous Research*, 106, p.104226.
- Lattke, J.E. and Melo, G.A., 2020. New haidomyrmecine ants (Hymenoptera: Formicidae) from mid-Cretaceous amber of northern Myanmar. *Cretaceous Research*, 114, p.104502.
- Perrichot, V., Wang, B. and Barden, P., 2020. New remarkable hell ants (Formicidae: Haidomyrmecinae stat. nov.) from mid-Cretaceous amber of northern Myanmar. *Cretaceous Research*, 109, p.104381.
- Wilson, E.O., 2020. *Tales from the ant world*. Liveright Publishing.
- Han, Y., Shih, C., Ren, D. and Wang, Y., 2022. New wood soldier flies from mid-Cretaceous Myanmar amber (Diptera, Stratiomyomorpha, Xylomyiidae). *Cretaceous Research*, 134, p.105142.
- Luo, C., Beutel, R.G., Engel, M.S., Liang, K., Li, L., Li, J., Xu, C., Vršanský, P., Jarzembowski, E.A. and Wang, B., 2022. Life history and evolution of the enigmatic Cretaceous–Eocene Alienopteridae: A critical review. *Earth-Science Reviews*, 225, p.103914.
- Richter, A., Boudinot, B., Yamamoto, S., Katzke, J. and Beutel, R.G., 2022. The first reconstruction of the head anatomy of a Cretaceous insect, † *Gerontofornica gracilis* (Hymenoptera: Formicidae), and the early evolution of ants. *Insect Systematics and Diversity*, 6(5), p.4.
- Wang, B., Xu, C. and Jarzembowski, E.A., 2022. Ecological radiations of insects in the Mesozoic. *Trends in Ecology & Evolution*, 37(6), pp.529-540.
- van de Kamp, T., Mikó, I., Staniczek, A.H., Eggs, B., Bajerlein, D., Faragó, T., Hagelstein, L., Hamann, E., Spiecker, R., Baumbach, T. and Janšta, P., 2022. Evolution of flexible biting in hyperdiverse parasitoid wasps. *Proceedings of the Royal Society B*, 289(1967), p.20212086.
- Campbell, H. and Blanchard, B., 2023. *Ants: A Visual Guide*. Princeton University Press.

Grimaldi, D.A. ed., 2023. *The Complete Insect: Anatomy, Physiology, Evolution, and Ecology*. Princeton University Press.

Hellenbrand, J.P. and Penick, C.A., 2023. Ant cuticle microsculpturing: diversity, classification, and evolution. *Myrmecological News*, 33.

Yamamoto, S. and Caterino, M.S., 2023. A remarkable new fossil species of *Amplectister* with peculiar hindleg modifications (Coleoptera: Histeridae): further evidence for myrmecophily in Cretaceous clown beetles. *Palaeoworld*, 32(3), pp.481-489.

Wang, Z., Zhang, W., Li, J., Wang, J., Yang, Y., Bao, T., Wu, J. and Wang, B., 2023. Biomechanical Analysis Reveals Predation Strategies of Cretaceous Hell Ants. Available at SSRN 4428759.

Sosiak, C., Janovitz, T., Perrichot, V., Timonera, J.P. and Barden, P., 2023. Trait-based paleontological niche prediction recovers extinct ecological breadth of the earliest specialized ant predators. *The American Naturalist*, 202(6), pp.E147-E162.

Barden, P., 2023. Where the Hell Ants Came From. *American Entomologist*, 69(3), pp.36-37.

Bernot, J.P., Boxshall, G.A., Goetz, F.E. and Phillips, A.J., 2024. MicroCT illuminates the unique morphology of Shiinoidae (Copepoda: Cyclopoida), an unusual group of fish parasites. *PeerJ*, 12, p.e16966.

Mizumoto, N., Hellemans, S., Engel, M.S., Bourguignon, T. and Buček, A., 2024. Extinct and extant termites reveal the fidelity of behavior fossilization in amber. *Proceedings of the National Academy of Sciences*, 121(12), p.e2308922121.

9. Please identify any common names in use, including those used by indigenous peoples in the insect's area of origin, that have been applied to this taxon, other than the one herein proposed, with references. Please briefly describe the methods used to find alternative names and, if necessary, justify why each alternate name is inadequate:

N/A – these animals have only recently been discovered.

10. Please identify any other organisms to which your proposed common name could apply, giving careful consideration to closely related taxa. Please justify why the proposed common name is (i) unsuitable for each of those taxa and/or (ii) better suited for the proposed taxon:

The common name would apply only to taxa within the subfamily Haidomyrmecinae, including 10 genera and 16 species.

11. Please document your efforts to consult with entomologists (including taxonomic specialists), colleagues, or other professionals who work with the taxon as to the suitability and need for the

proposed common name. Please note that this is an important element of your proposal; proposals that do not document these steps are less likely to be successful.

While I have not formally consulted with others, the name has been used in the literature by all living taxonomists who have proposed taxonomic action related to these animals since the informal common name was first used in 2016 (11 authors in total).

Proposed by (your name): Phillip Barden

Address: Central King Building 337
100 Summit St Newark, NJ 07102 USA

E-mail: barden@njit.edu

Phone: 973 596 5863

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170 Jennifer Road, Suite 230, Annapolis, MD 21401 USA
Phone: 1-301-731-4535 Fax: 1-301-731-4538
esa@entsoc.org www.entsoc.org