

Zeitschrift: Entomologica Basiliensia
Herausgeber: Naturhistorisches Museum Basel, Entomologische Sammlungen
Band: 13 (1989)

Artikel: Rearing Dytiscid Beetles (Coleoptera, Dytiscidae)
Autor: Alarie, Y. / Harper, P. P. / Maire, A.
DOI: <https://doi.org/10.5169/seals-980569>

Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. [Mehr erfahren](#)

Conditions d'utilisation

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. [En savoir plus](#)

Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. [Find out more](#)

Download PDF: 03.04.2026

ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>

Entomologica Basiliensia	13	147–149	1989	ISSN 0253-2484
--------------------------	----	---------	------	----------------

Rearing Dytiscid Beetles (Coleoptera, Dytiscidae)

by Y. Alarie, P.P. Harper & A. Maire

Abstract: An “ex ovo” technique for rearing dytiscid larvae is described. The main peculiarity of this method is that no food is given to the adults. In 1986 and 1987, 38 species and approximately one thousand larvae were obtained.

Key words: Coleoptera Dytiscidae – methods – larvae rearings.

Although Dytiscidae are among the most common beetle inhabitants of freshwaters, knowledge of their larval morphology is still in need of much research, especially in the subfamily Hydroporinae. The main problem seems to be the difficulty in rearing larvae (MATTA & PETERSON, 1985). In this note, we present a very easy method for obtaining eggs from adults in the laboratory.

The vast majority of the world dytiscid larvae which have been described have been from reared larvae or “ex societate imaginis”. However, these approaches may tend to erroneous identifications. Dytiscid larvae are superficially very similar and it is not always possible to be sure that two specimens belong to the same species. Also, the presence of adults in a pond, even in abundance, does not guarantee the identity of the larvae, particularly in North America where larvae of most species are still undescribed. The larvae described by NEEDHAM & WILLIAMSON (1907) as *Coptotomus interrogatus* (Fabricius) and by WILSON (1923) as *Hydroporus niger* Sharp and *Acilius semisulcatus* Aubé were erroneously associated due to such a technique. More recently, DETTNER (1984) suggested that GALEŃSKI’S (1975) description “ex societate imaginis” of a larva of the Palearctic *Hydaticus grammicus* Germar was wrong and that it was probably based on a small larva of *H. seminiger* De Geer.

Rearing of larvae “ex ovo” provides certain association of larvae and adults. PERKINS (1980) and NILSSON (1983, 1985, 1986, 1987) reared larvae of some hydroporine species from adults maintained in the laboratory. The methods presented in these studies are similar in that they attempt to recreate natural habitat conditions in the laboratory. Beetles are kept in aquaria in which a layer of sand and tufts of aquatic plants are deposited on the bottom and live food is given to the adults. Although the beetles may eat much of the food by day, accumulation of

uneaten material and dead prey bodies, rapidly causes the development of a bacterian film at the water surface especially at room temperature. It then becomes necessary to change the water often increasing considerably the time required for the experiments.

Our approach for obtaining larvae from eggs is simpler in that adult beetles are not fed. Considering the number of species reared, it gives good results with relatively little effort.

Field collected adults are brought into the laboratory for identification and then placed in breeding containers. A breeding container consists of a 125 ml polypropylene disposable specimen jar containing about 80 ml of filtered pond water and a small piece of moss which serves as an oviposition site. Because of their large size, specimens of Dytiscinae are kept in Pyrex storage dishes (diameter 100 mm × height 80 mm) half filled with pond water and also containing a piece of moss. The number of specimens in each breeding container may vary from a single female to more than 20 adults Hydroporinae, the number depending upon the size and availability of specimens. No food is given to the adults.

Eggs are collected daily from each jar. Most specimens lay eggs within two days of their capture. If after five to seven days no eggs are obtained, the beetles are killed.

Eggs removed from the breeding containers are placed in separate but similar jars. Eggs deposited on the sides and bottom of the container are detached with a fine brush and collected with a pipette while those fixed on plants are transferred with the plant. Near the end of the incubation period, eggs of Dytiscinae and Colymbetinae are isolated to avoid cannibalism among young larvae. The water of the incubation containers does not need to be changed except for eggs with a long incubation period in which case it can be renewed every three to four days (Dytiscinae and some Colymbetinae).

Hatchlings are isolated in separate rearing containers $\frac{2}{3}$ filled with pond water and provided with a small piece of moss or a pebble as a resting site. The larvae are fed daily generally with mosquito larvae of an appropriate size. *Dytiscus* larvae are fed with tadpoles. The water is changed daily.

The breeding, incubating and rearing containers are kept at room temperature and the photoperiod adjusted to natural conditions.

During 1986 and 1987, 38 species and approximately one thousand larvae were obtained by our "ex ovo" rearing method. Best results were obtained with Hydroporinae species (23) but larvae of 15 other species

distributed between Colymbetinae (13) and Dytiscinae (2) were also obtained. Considering the difficulty in collecting Hydroporinae larvae in the field and the great species diversity in genera like *Hygrotus* Stephens and *Hydroporus* Clairville, our technique of rearing is an easy way to obtain reliably identified larvae of this subfamily.

References

- DETTNER, K. (1984): *Description of the larvae of Hydaticus leander Rossi (Coleoptera: Dytiscidae) with a key to larvae of European species of the genus Hydaticus*. Entomologica Basiliensia 9: 108–115.
- MATTA, J.F., & PETERSON, D.E. (1985): *The larvae of six nearctic Hydroporus of the subgenus Neoporus (Coleoptera: Dytiscidae)*. Proc. Acad. nat. Sc. Phil. 137: 53–60.
- NEEDHAM, J.C., & WILLIAMSON, H.V. (1907): *Observations on the natural history of diving beetles*. American Nat. 61: 477–494.
- NILSSON, A.N. (1983): *The larva of the predaceous water beetle Coelambus novemlineatus (Coleoptera: Dytiscidae)*. Aquat. Insects. 5(1): 45–50.
- NILSSON, A.N. (1985): *The larvae of the predaceous diving beetles Bidessus grossepunctatus, Graptodytes granularis and G. pictus (Coleoptera: Dytiscidae)*. Aquat. Insects. 7 (3): 165–172.
- NILSSON, A.N. (1986): *Larval morphology and phenology of four Fennoscandian species of Hydroporus Clairville (Coleoptera: Dytiscidae)*. Aquat. Insects. 8 (3): 141–153.
- NILSSON, A.N. (1987): *The 3rd-instar larvae of eight Fennoscandian species of Hydroporus Clairville (Coleoptera: Dytiscidae) with notes on subgeneric classification*. Ent. scand. 17: 491–502.
- PERKINS, P.D. (1980): *Larval and pupal stages of a predaceous diving beetle, Neoclypeodytes cinctellus (LeConte) (Dytiscidae: Hydroporinae: Bidessini)*. Proc. Entomol. Soc. Wash. 82 (3): 474–481.
- WILSON, C.B. (1923): *Water beetles in relation to pondfish culture, with life histories of those found in fishponds at Fairport*. Iowa. Bull. Bur. Fisheries. 39: 231–245.

Author's addresses:

Dr. Yves Alarie
Département de Sciences
biologiques
Université de Montréal
C.P. 6128
Succursale «A» Montréal
Québec, Canada, H3C 3J7

Dr. Pierre-Paul Harper
Département de Sciences
biologiques
Université de Montréal
C.P. 6128
Succursale «A» Montréal
Québec, Canada, H3C 3J7

Dr. Alain Maire
Département de
Chimie-Biologie
Université du Québec
à Trois-Rivières
C.P. 500
Trois-Rivières
Québec, Canada, G9A 5H7

