

**CHIRONOMUS OCEANICUS PACKARD, 1869, A NEW JUNIOR  
SYNONYM OF HALOCLADIUS VARIABILIS (STAEGER, 1839)  
(DIPTERA: CHIRONOMIDAE)**

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With 1 table

**ABSTRACT:** A. S. Packard, Jr. described *Chironomus oceanicus* in 1869 based upon adult and immature specimens collected from the harbor at Salem, Massachusetts, USA. It has since been infrequently reported in the literature, and usually not based upon new material. The species has been most recently recognized as *Cricotopus oceanicus* (Packard). Some recently collected adult and pupal specimens from the Massachusetts coastline, tentatively identifiable as this species, prompted further study to resolve their identity. Some questions as to the actual date of description and source, as well as possible location of type specimens were addressed. Additional adult specimens were examined from Massachusetts, as well as a very similar species documented from Maine, Canada, Finland and Norway locations to assess possible synonymy and variation. Close morphological similarity as well as distribution, ecology and life history details suggest interpreting *Chironomus oceanicus* as a junior synonym of *Halocladus variabilis* (Staeger).

**Keywords:** Chironomidae, *Chironomus oceanicus*, *Cricotopus oceanicus*, *Halocladus variabilis*, marine, synonym

**RESUMO:** A.S. Packard, Jr. descreveu *Chironomus oceanicus* em 1869, utilizando espécimes adultos e larvas recolhidos no porto de Salem, Massachusetts, EUA, como referência. Desde essa data a espécie tem sido relatada de forma esporádica na literatura. No entanto, estas referências habitualmente não se baseavam em novo

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material biológico. A espécie foi posteriormente reconhecida como sendo *Cricotopus oceanicus* (Packard). Espécimes adultos e pupas recolhidos recentemente na linha costeira de Massachusetts, e identificados como pertencendo a esta espécie, permitem agora o desenvolvimento de novos estudos para resolver o problema de identidade taxonómica. Diversos problemas relacionados, com as datas de descrição, origem e localização dos espécimes tipo serão analisados. Espécimes adultos adicionais originários de Massachusetts, do Maine, Canada, Finlândia e Noruega serão estudados, por forma a determinar se estamos perante sinónimas ou variações. A proximidade morfológica, a distribuição, a ecologia e o ciclo de biológico sugerem que *Chironomus oceanicus* deve ser considerado como um sinónimo juvenil de *Halocladus variabilis* (Staeger).

A phenomenal naturalist, A. S. Packard, Jr. described two species of chironomid midges during his distinguished career. One of these, *Chironomus oceanicus* was described from Salem Harbor, Massachusetts (PACKARD 1869a). Prior brief accounts as *Chironomus* sp. were presented in meetings of the Essex Institute and Boston Society of Natural History and reflected in published meeting minutes, as was as an illustrated description, but none of these established a valid name. A descriptive account and valid name appeared in an entomology textbook originally available in ten parts from the author (PACKARD 1869b). The Diptera section was published in March 1869 as was PACKARD (1869a). With no more precise publication dates available, I resolve this case of simultaneous publication acting as First Reviser fixing the precedence of the name *Chironomus oceanicus* PACKARD (1869a) over the same name in PACKARD (1869b). Packard also informally characterized the species, at one time mistaking it for the larva of a rove beetle (*Micralymna* – later as *Micralymma*) living in green seaweed at the low water mark in Casco Bay, Maine.

There are additional Massachusetts records of *C. oceanicus* from studies in Vineyard Sound, Buzzard's Bay, Martha's Vineyard, and adjacent waters reported by VERRILL (1873). The species was noted from the rocky shores of sounds and bays as well as on eel grass, oyster beds, and on pilings of wharves. JOHANNSEN (1905) reported on adults of what he thought to be this species from Woods Hole, Massachusetts, treating them in his key as *Orthocladus oceanicus* and above the description section as *Orthocladus* (?) *oceanicus*. JOHANNSEN (1952) placed the species in *Cricotopus* and provided a key for recognition of the female. The species has been included in several catalogs of North American chironomids, but reports have not been based on any new material for over a century.

SUBLETTE (1967) examined three (one male and two females) of eight pinned specimens treated by JOHANNSEN (1905) from Woods Hole, noting that only the female was “adequately described” and that the species should be recognizable from the key by JOHANNSEN (1952). Females were considered recognizable among other features by a

dull thorax with contrasting vittae, thoracic setation, hairy eyes, genitalia without elongate cerci, and legs not banded. For the present study five other pinned (but very fragmented) individuals of Johannsen's series were examined, and all (8) slide mounted. These as well as all other specimens examined in this study had morphology, measurements, and ratios as well as long looped seminal ducts, similar to those described for *H. variabilis* (HIRVENOJA 1973). One of the Johannsen females (as well as 2 Newfoundland females) exhibited what may be a very small seta on one antennal scape, but these could also be artifacts or debris.

It has been surmised that *Chironomus oceanicus* might be a synonym of *Chironomus variabilis* Staeger (1839). HIRVENOJA (1973) in his classic work on the genus *Cricotopus* erected the genus *Halocladius* to include *variabilis* and other salt water species. He stated that *C. oceanicus* Packard had often been mentioned as a synonym of *Trichocladius vitripennis* (Meigen, 1818) in the sense of Thienemann, which included both *H. variabilis* and *H. varians* according to HIRVENOJA (1973). However, the true *Chironomus vitripennis* Meigen remains a *nomen dubium* as M. Spies (pers. comm.) has found the Meigen material in Paris to contain mixed species, none of which belong to *Halocladius*.

Both *Chironomus oceanicus* and *H. variabilis* were described from marine coastal environments. In establishing *Halocladius*, HIRVENOJA (1973) recorded *H. variabilis* (under various names in the literature) distribution over parts of coastal Europe and Scandinavia, parts of the Soviet Union, Greenland, and Canada. Some more recent accounts (see below) that also include some aspects of ecology and phenology for North America include salt marshes and intertidal rocky coastline of the northeastern Atlantic coast of Canada. *Chironomus oceanicus* is known only from Massachusetts with no new material reported there since JOHANNSEN (1905). Massachusetts specimens recently collected by the author helped to prompt further study of the status of *C. oceanicus*.

GARBURY et al. (2005) described a unique symbiosis between *H. variabilis* and the brown alga, *Elachista fucicola*, an epiphyte on the intertidal brown alga, *Ascophyllum nodosum*. Extremely high larval midge densities were reported and this association obviously represents a favored habitat. Such symbiosis may be restricted to the western Atlantic around Nova Scotia, but this association is certainly not obligatory for the midge. COLBO (1996) reported *H. variabilis* from intertidal algae, particularly *Pilayella littoralis* on the Newfoundland coast and GIBERSON et al. (2001) added a record from Prince Edward Island salt marshes, a habitat in which the occurrence of *Elachista* is unlikely. Different plant preferences were observed by PACKARD (1869a) in his description of *Chironomus oceanicus* larvae from an eelgrass (*Zostera marina*, commonly known as seawrack) and also from green filamentous seaweeds.

From the similarities of morphology, measurements and ratios, the similar ecology, often with a preference for marine algae and seaweeds, and the overlapping distribution in the Nearctic, the present author concludes that *Chironomus oceanicus*

*Packard* (= *Cricotopus oceanicus* (Packard sensu Johannsen 1952 and Sublette 1967)) is a junior synonym of *Halocladius variabilis* (Staeger). *Chironomus oceanicus* has been a largely unreported taxon for over a century, probably due to lack of types and adequate descriptions. The few instances in which variation observed for *Chironomus oceanicus* falls outside that previously reported for *H. variabilis* are minor and are thus considered as intraspecific variation. Every specimen examined in this study from the area of northeastern North America is clearly assignable to *H. variabilis* and there is no doubt that *Chironomus oceanicus* is a junior synonym.

The Woods Hole specimens examined by SUBLETTE (1967) compare favorably to data given for *H. variabilis* by HIRVENOJA (1973). Measurements reported by SUBLETTE (1967) for 2 females included a range of LR<sub>1</sub> of 0.64-0.68, LR<sub>2</sub> 0.41, LR<sub>3</sub> of 0.58, wing length 2.26-2.44 mm, and VR 1.11-1.13. The wing of 2.44 mm when measured from arculus to tip was 2.12 mm. The other slide mounted female wings were not accurately measurable. For the male, the LR<sub>2</sub> was 0.40, LR<sub>3</sub> was 0.55, wing length was 2.00 mm (arculus to tip 1.71 mm), and VR was 1.12.

Based on general features and collection location, a recently collected female from Massachusetts could be considered to represent *Cricotopus oceanicus* (Packard). Meristic data are as follows in Table 1 and compare favorably with data of HIRVENOJA (1973) for *H. variabilis*. Other data include wing length of 2.13 mm, 24 squamal setae, R setae 18, R<sub>4+5</sub> setae 18, brachiolum setae 3, and VR 1.15.

The larvae available from Canada for the present study were identifiable as *H. variabilis*. The average AR of the specimens measured (n=12) was 1.27 with a range of 1.15-1.36. All pupae and pupal exuviae examined in this study, including exuviae from Massachusetts, conformed to the description for *H. variabilis*.

TABLE 1. Leg measurements and ratios, Massachusetts adult female, identifiable as *Cricotopus oceanicus* (Packard).

	Fe	Ti	Ta <sub>1</sub>	Ta <sub>2</sub>	Ta <sub>3</sub>	Ta <sub>4</sub>	Ta <sub>5</sub>	LR	SV	BV
p <sub>1</sub>	823	979	623	322	256	189	145	0.64	2.89	2.66
p <sub>2</sub>	878	901	367	211	178	33	122	0.41	4.85	3.33
p <sub>3</sub>	945	1056	600	334	278	167	145	0.57	3.33	2.82

The significance of the rare occurrence of a possible pedicel seta in Nearctic females is undetermined. Additional clarification of Nearctic specimens may be achieved with molecular studies.

PACKARD (1869a) designated no type specimens or repository for *Chironomus oceanicus*. Searches including the Smithsonian Institution, Yale University, Harvard University, Natural History Museum (London), Bowdoin College, University of

Massachusetts, Cornell University, and Peabody Essex Museum yielded no specimens. It is most likely that specimens were deposited at Yale College (now Yale University) but none could be located in the entomology or marine collections. Designation of a neotype at this time appears unnecessary due to synonymy.

Material examined: Canada - Prince Edward Island, 29 June 1993, leg. D. Giberson, 3 males; same data except 1 male, 2 females, 8 June 1993; same data except 9 July 1993, 1 female; Manitoba, Fort Churchill, 1 August 1952, leg. J. G. Chillcott, 2 males, 1 female; Newfoundland, Maddox Cove near St. John's, intertidal algae, 16 August 1993, leg. M. Colbo, 27 L; same data except 26 August 1993, 8 L, 1 Lex, 4 pharate male P, 2 pharate female P; same data except, sweep, intertidal rocks, 6 September 1993, 4 females; Broad Cove, near St. Phillip's, intertidal algae, 1 June 1992, leg. M. Colbo, 4 L; Finland - Tvärminne Biological Station, 1952, leg. E. Palmén, 11 slides of males and females (body parts variously mounted), 12 Pex; Norway - Kviturdvickpollen, 3 May 1965, leg. R. Koskinen, 2 males, 1 female, 2 P, 1 Pex; same data except 26 April 1965, leg. R. Koskinen, 2 L; United States - Maine, York Co., Isles of Shoals, central valley pool, 11 August 2000, leg. W. K. Reeves, 1 male; Appledore Is., Shoals Marine Lab. (marsh near sewage treatment area), 25 June 1992, leg. S. K. Burian, 1 male; Massachusetts, Essex Co., tidal pool on bedrock, Rockport, Massachusetts, 27 August 2001, leg. B. A. Caldwell, 4 Pex; same data except, shoreline area, 26 August 2001, 1 female; Woods Hole, 2 males, 6 females, no other data (O. A. Johannsen collection, Cornell Univ.).

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