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**The Descriptions of Larvae of *Colymbetes dolabratus* (PAYK.) with  
Keys to the Identification of Larvae of the European Species of  
*Colymbetes* CLAIRV. (Coleoptera, Dytiscidae)**

**Opisy larw *Colymbetes dolabratus* (PAYK.) wraz z kluczami do oznaczania  
larw europejskich gatunków rodzaju *Colymbetes* CLAIRV. (Coleoptera,  
*Dytiscidae*)**

**Описание личинок *Colymbetes dolabratus* (PAYK.) и определители  
личинок европейских видов рода *Colymbetes* CLAIRV. (Coleoptera,  
*Dytiscidae*)**

[With 57 text-figures]

In my paper on the immature stages of European species of *Colymbetes* CLAIRV. (GALEWSKI, 1964) I gave the descriptions of larvae of three species: *C. striatus* (L.), *C. fuscus* (L.) and *C. paykulli* ER. Here I give the lacking descriptions of larvae of the fourth European species — *C. dolabratus* (PAYK.), together with keys to larvae of all four species occurring in Europe.

During my stay at the Zoological Museum in Copenhagen I was happy to borrow a rich material of all three larval stages of *C. dolabratus* (PAYK.) collected in Greenland and Iceland. The larvae were accompanied by imagines and pupae of the species in question. I have also borrowed several third stage larvae of the said species, taken in Greenland, from the Zoological Institute in Lund. The identity of the larvae which have been compared with those of other *Colymbetes* species is beyond doubt.

Here I wish to record my warmest thanks to the keeper of the Coleoptera Laboratory of the Zoological Museum in Copenhagen — Dr. Sv. G. LARSSON, as well as to the conservator of the Zoological Institute in Lund — Mr. Hugo ANDERSSON, for lending me the material and for all their help given me at the mentioned institutions.

**Descriptions of Larvae of *Colymbetes dolabratus*  
(PAYKULL, 1798)**

A short morphological description of a third stage larva was given by SCHIÖDTE (1864), later by MEINERT (1901) and finally by BERTRAND (1928). Since the larvae of both *C. striatus* (L.) and *C. paykulli* ER. were not known at the time, a new comparative description is now presented. The first and second stage larvae have not been hitherto described.

**First Stage (Figs. 1-3)**

Body length 4.6-8.5 mm. Dorsal side pale brown.

Head (Figs. 1, 2) very large and very broad, slightly resembling head of *C. fuscus* (L.) in shape, but still broader and with lateral margins more regularly curved at base; head length including neck 1.30-1.35 mm, head breadth at eyes level 1.25-1.30 mm. Upper side of head brownish, unicolorous. Mandibles (Fig. 24) roughly similar to those in *C. fuscus* (L.). Palpi (Figs. 22, 23) and antennae with joints slightly more elongate than in *C. fuscus* (L.), but definitely shorter than in either *C. striatus* (L.) or *C. paykulli* ER. Head dorsal side not particularly darker than that of rest of body.

Terga longer as compared with their width than in other *Colymbetes* species.

Last abdominal segment (Figs. 1-3) shorter than in the species mentioned.

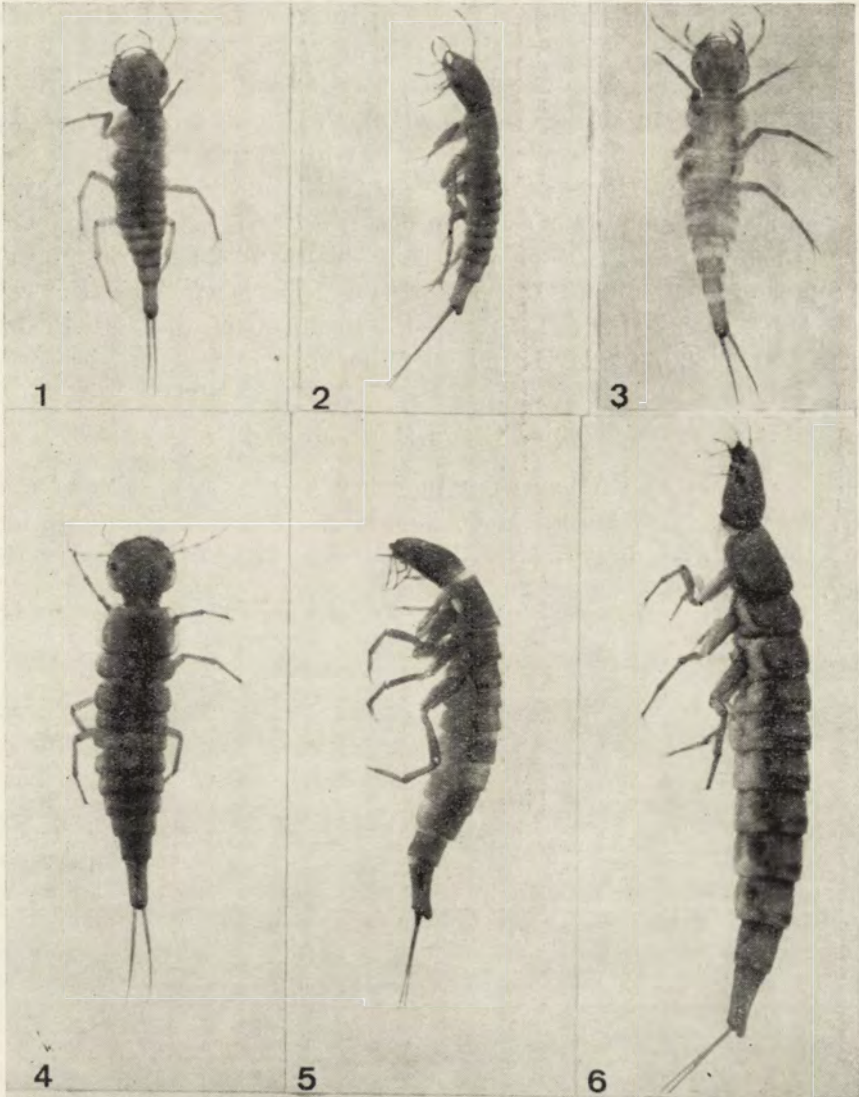
Cerci (Figs. 1-3) length in the main similar as in other *Colymbetes* species.

Legs (Figs. 55-57) very long, slender, composed of much longer parts than in *C. fuscus* (L.), (Figs. 52-54) *C. striatus* (L.) or *C. paykulli* ER.

**Second Stage (Figs. 4, 5)**

Body smaller than in other *Colymbetes* species, its length 8.5-13.9 mm.

Head (Figs. 12, 13) shape in general similar as in *C. fuscus* (L.); head sides parallel or slightly converging anteriorly; head length including neck 1.45-2.14 mm, width at eyes level 1.90-2.00 mm. Antennae and maxillar palpi (Fig. 31) with joints markedly slenderer than in *C. fuscus* (L.), but definitely less elongate than in *C. striatus* (L.) and *C. paykulli* ER.: their width and length falls somehow inbetween the two groups. Mandibles (Fig. 33) fairly short, of a *C. striatus* (L.) type, their inner edge without "tooth", or "bulge". Temporal spines 7-11 in number. Upper side of head brown or dark brown with a slight olive shade, almost unicolorous: colour-pattern completely, or almost completely, blurred; pale spots hardly visible, if at all, often confluent into indistinct, pale patches or streaks. Antennae and palpi yellowish or light brown, usually almost unicolorous: apical part of joints barely darkened. Puncturation of upper side of head in the main similar as in *C. fuscus* (L.): punctures distinct, concentrated mainly in an arcuate row across the middle of head. Tentorial fosses indistinct.



Figs. 1-6. Larvae of *Colymbetes dolabratus* (PAYK.); 1-3 — First Stage, 1, 3 — dorsal view, 2 — lateral view; 4, 5 — Second Stage, 4 — dorsal view, 5 — lateral view; 6 — Third Stage, lateral view. Phot. T. PŁODOWSKI.

Pronotum anterior margin (Fig. 45) rather slightly incised at sides; anterior angles feebly protruding, distinctly rounded.

Last abdominal segment (Figs. 4, 5) shorter than in other species and with a more distinct setation; setae more robust and in general more numerous than in other species.

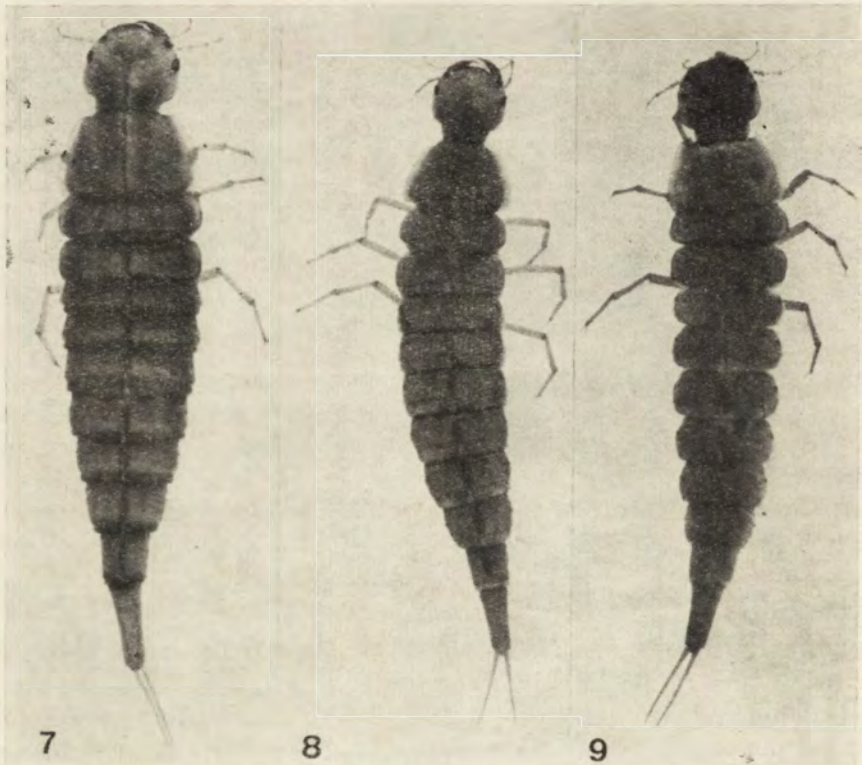
Cerci similar as in the remaining *Colymbetes* species, cercal setae on their

inner edge, however, often less numerous; number of setae along inner edge varying from 27 to 37, that of the outer one from 20 to 33.

Legs slenderer than in other species; tarsi and tibiae narrower in relation to their length than in either *C. fuscus* (L.), *C. striatus* (L.) or *C. paykulli* ER. Lower edge of tarsi, tibiae and femora provided with more numerous setae than in the species mentioned; there are 8–12 setae on the lower edge of anterior, 15 setae on median and 16–22 setae on posterior tarsi; 11–15 setae on anterior, 16–18 on median, and 15–23 on posterior tibiae, and 20–29 setae on anterior, 20–28 setae on median and 15–23 setae on posterior femora (the respective numbers in *C. fuscus* (L.) are 6–8, 11–12, 10–15 on tarsi, 7–10, 12–16, 12–18 on tibiae and 14–20, 16–24, 18–20 on femora).

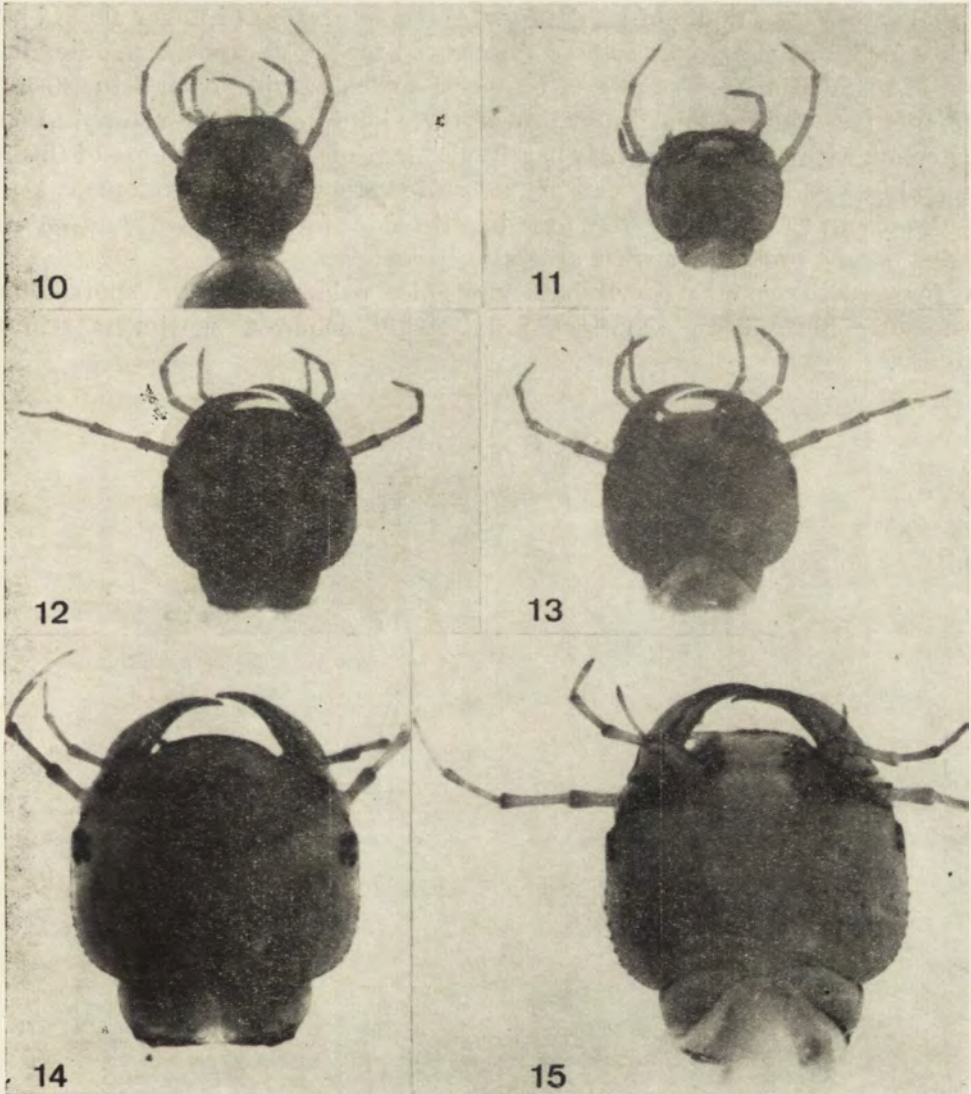
### Third Stage (Figs. 6, 8, 9)

Body considerably smaller than in other European species of *Colymbetes* CLAIRV. (Fig. 7): body length 14.00–25.8 mm. Dorsal side variable in colour, brown-yellow to dark brown, even black brown, head often darker than rest of body.



Figs. 7–9. Larvae, dorsal view, Third Stage: 7 — *Colymbetes fuscus* (L.), 8, 9 — *C. dolabratus* (PAYK.). Phot. T. PŁODOWSKI.

Head (Figs. 14, 15) with sides only slightly converging anteriorly, often subparallel. Mandibles (Fig. 42) of a *C. striatus* (L.) type — without “tooth”, at most with a slight “bulge”; mandibles, however, shorter than in the species



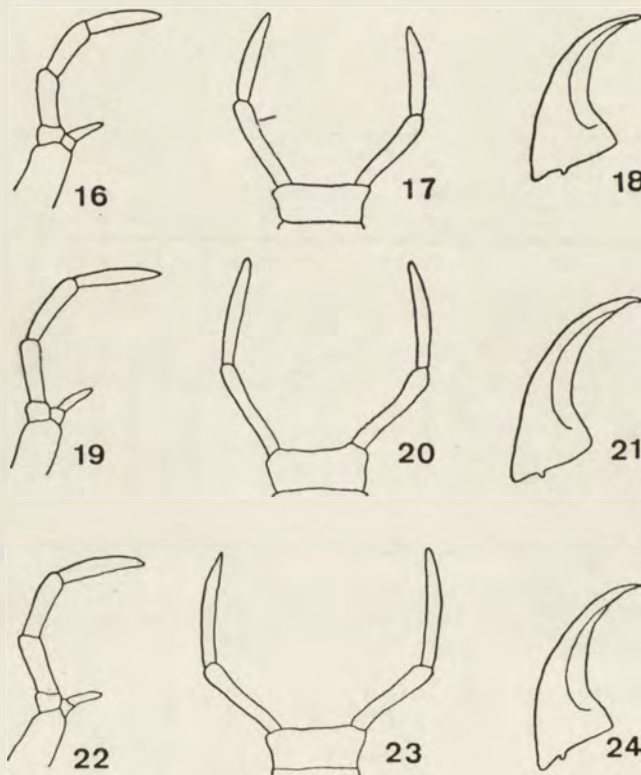
Figs. 10–15. Heads of larvae of *Colymbetes dolabratus* (PAYK.) 10, 12, 14 — dorsal view, 11, 13, 15 — ventral view: 10, 11 — First Stage, 12, 13 — Second Stage, 14, 15 — Third Stage. Phot. T. PŁODOWSKI.

mentioned and in this respect approaching *C. fuscus* (L.). Palpi (Figs. 40, 41) and antennae composed of joints slightly more elongate than those in *C. fuscus* (L.), however, shorter than in either *C. striatus* (L.) or *C. paykulli* ER. Dorsal

side of head variable in colour, yellowish-brown to blackish with colour-pattern feebly marked; pale spots often blurred and confluent, in darker specimens with dark brown or blackish dorsal side, often invisible; often, however, in specimens lightly coloured, a paler band, similar to that in *C. fuscus* (L.), visible across the middle of head (Fig. 14). Puncturation of upper side of head rather feebly marked, punctures concentrated mostly across the middle, along pale band mentioned. Number of temporal spines varying from 7 to 12. Palpi and antennae yellowish brown or brown, their joints with darkened apical part. Underside with tentorial fossetts barely visible, thus similar to those of *C. striatus* (L.) in this respect. Setation of underside rather poorly developed.

Pronotum (Fig. 51) anterior margin with sides feebly excised, and anterior angles barely protruding with apices well rounded.

Terga with colour-pattern hardly visible, pale marks and spots almost completely blurred and confluent; in darkly coloured specimens strongly reduced.

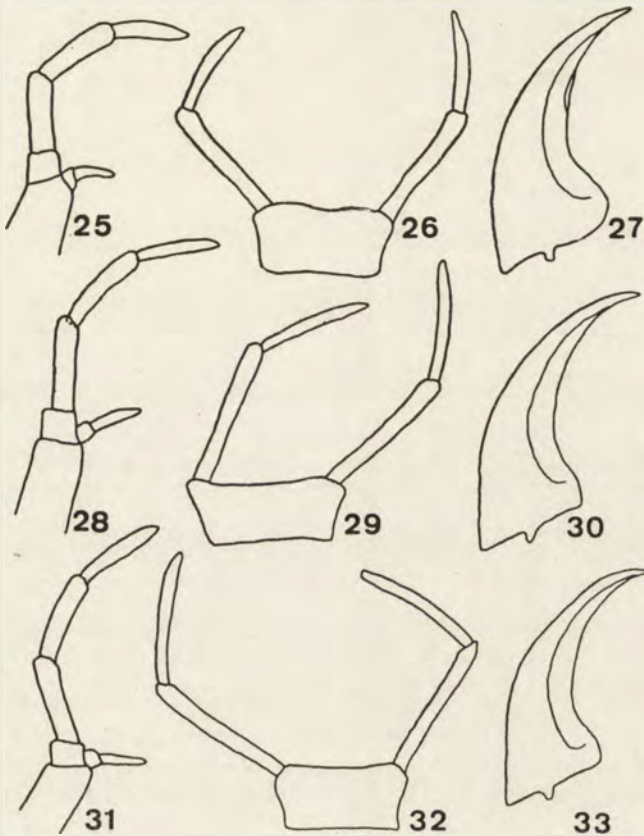


Figs. 16-24. Larvae of First Stage, appendages of head: 16-18 — *Colymbetes fuscus* (L.), 19-21 — *C. striatus* (L.), 22-24 — *C. dolabratus* (PAYK.); 16, 19, 22 — Maxillar palpi, 17, 20, 23 — labial palpi, 18, 21, 24 — mandibles.

Last abdominal segments fairly short (Figs. 6, 8, 9) with numerous and well developed setae.

Cerci outer face provided with 24–34 setae and the inner one with 35–50 setae.

Legs slenderer than in other European species of *Colymbetes* CLAIRV.; tarsi and tibiae conspicuously narrower in relation to their length than in either *C. fuscus* (L.), *C. striatus* (L.) or *C. paykulli* ER. Lower edge of tarsi and tibiae provided with more numerous setae than in the species mentioned; there are 8–10 setae on the lower edge of anterior, 14–17 on median, 16–19 setae on posterior tarsi, and 12–15 setae on anterior, 17–19 on median and 19–23 setae on posterior tibiae (the respective numbers for *C. fuscus* (L.) are 6–8, 9–12, 11–13 on tarsi and 9–12, 14–16 and 14–21 on tibiae).

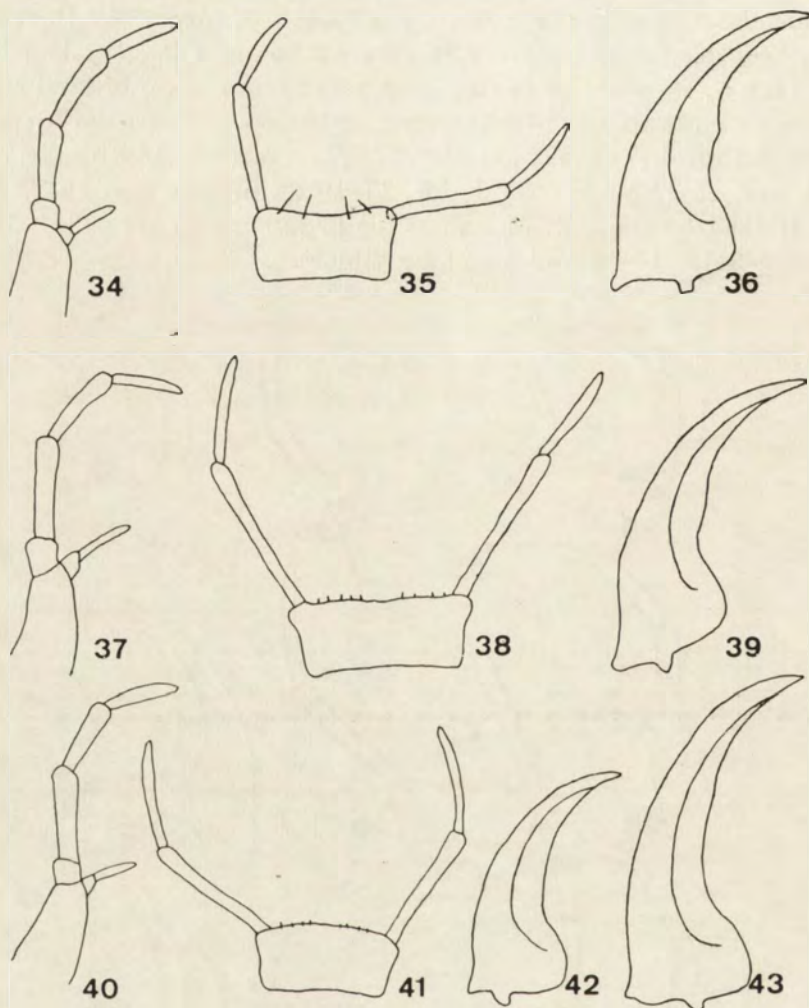


Figs. 25–33. Larvae of Second Stage, appendages of head: 25–27 — *Colymbetes fuscus* (L.), 28–30 — *C. striatus* (L.), 31–33 — *C. dolabratus* (PAYK.); 25, 28, 31 — maxillar palpi, 26, 29, 32 — labial palpi, 27, 30, 33 — mandibles.

#### Material

Iceland: south of Vatna Jökull, summer 1908, little lake near the ice, 27 third stage larvae, leg. A. BØVING; Eyjarfjardará, central north, 1 third stage larva, leg. PHORODSON,

1876; Svinafell, south of Vatna Jökull, June 30, 1908, little lake near the ice, leg. A. BØVING; southern part of the valley of Malifell, Skagafjorodur distr., June 30, 1933, in a little pond, 7 third stage larvae, S. TUXEN leg; locality as before, Aug. 19, 1932, in very small ponds,

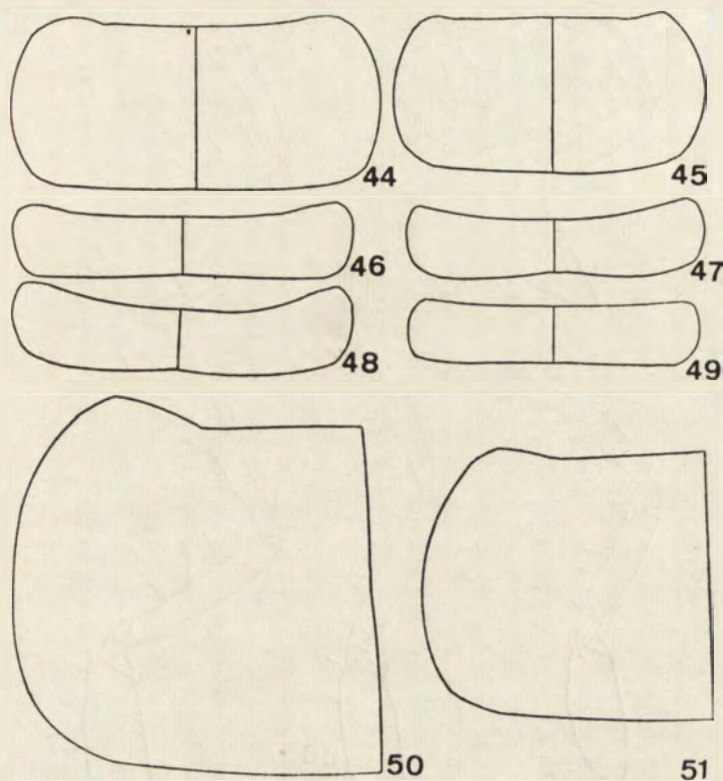


Figs. 34-43. Larvae of Third Stage, appendages of head: 34-36 - *Colymbetes fuscus* (L.), 37-39 - *C. striatus* (L.), 40-42 - *C. dolabratus* (PAYK.), 43 - *C. paykulli* ER.; 34, 37, 40 - maxillar palpi, 37, 38, 41 - labial palpi, 36, 39, 42, 43 - mandibles.

S. TUXEN leg., 1 second stage larva; Reykjavík, September 1875, 1 second and 1 third stage larva, leg. B. GRONDAL; Mulaver, south of Hofs Jökull, Aug. 21, 1939, little pond, 1 third stage larva, leg. G. GÍGJA; Maroðarnúpur, 1922, 2 second and 3 third stage larvae, leg. G. GÍGJA; Eyjafjörödur, July 23, 1885, 4 third stage larvae; same locality, June 13, 1885, 4 first stage larvae, both leg. STEINECKE; Froodárdalur, Aug. 10, 1934, greater lake, 1 first stage larva, leg. S. TUXEN; Kleppatjörn, north of Kalmanstangi in Borgarfjörödur (West Iceland), July 16, 1923, 1 third stage larva leg. A. HEMMINGSEN. All coll. of the Zoological Museum, Kopenhagen. Greenland: South Greenland, no further data, 1 first, 1 second and



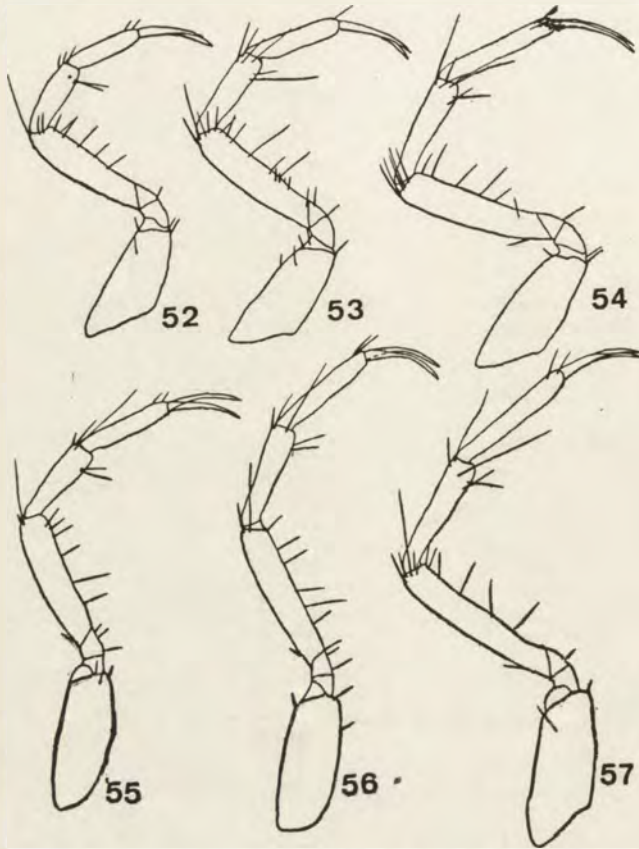
18 third stage larvae accomp. by 2 imagines, leg. KIELSEN; locality as before, summer 1908, 7 first, 19 second and over 120 third stage larvae, accomp. by 17 imagines and 4 pupae, leg. KIELSEN; Ulle Lump, July 26, 1933, 1 third stage larva; Sermilikfjord, Aug. 5, 1901,



Figs. 44-51. Larvae, Thoracic terga: 44, 45 - pronota, 50, 51 - halves of pronota; 46, 47 - mesonota, 48, 49 - metanota; 44, 46, 48, 50 - *Colymbetes fuscus* (L.), 45, 47, 49, 51 - *C. dolabratus* (PAYK.); 44-49 - Second Stage, 50, 51 - Third Stage.

1 third stage larva, leg. RÜTTEL in a pond; Upernivik, July 12, 1931, in a mountain-pond, 2 third stage larvae, leg. Chr. LEFTING; Clavering, north-west coast, July 24, 1929, in a little fresh-water moor, 2 third stage larvae leg. G. SEIDENFADEN; Godhavn, Aug. 8, 1931, fresh water, 1 third stage larva accomp. by 1 imago, Chr. LEFTING leg.; Sermitak, July 29, 1925, 2 third stage larvae, leg. O. HAGERUP; Kekkertarsuaq at Godhavn, July 8, 1897, small ponds, 2 third stage larvae, leg. C. KRUSE; Frederiksdal, July 12 and Sept. 20 (no year data) 1 third stage larva, leg. P. PETERSEN; Heklahavn, Aug. 9, 1891, 2 third stage larva, leg?; Disko Godhavn, summer 1909, 2 third stage larvae, leg. PORSILD; Egedesminde, no further data, 2 third stage larvae accomp. by 2 imagines, leg. SØRENSEN; Tingmiarmiut, East Greenland, April, 18, 1932, THULE exp., leg. R. BØGVAD, 7 third stage larvae; Ellaø, June, 17, 1939, in a lake, 1 first stage larva; locality as before, April, 18, 1937, 4 third stage larvae, same collector; Tassiussak, West Greenland July 20, 1931, 1 third stage larva, leg. Fritz JOHANSEN; Hurry Inlet, April 3, 1900, little fresh-water pond, 2 third stage larvae, leg. Søren JENSEN. All coll. Zoological Museum, Kopenhagen. Greenland, no further data,

Sept. 1894, 1 third stage larva accomp. by 1 imago, det. as "*Cym. groenlandicus*"; Greenland, July 15, 1944, further data illegible, 4 third stage larvae, det. as "*Cym. dolabratus* PAYK.". All coll. Zoological Institute, Lund.



Figs. 52-57. Larvae of First Stage, Legs: 52-54 - *Colymbetes fuscus* (L.), 55-57 - *C. dolabratus* (L.); 52, 55 - forelegs, 53, 56 - middlelegs, 54, 57 - hindlegs.

#### Key to Larval Stages

1. Cerci with seven setae only. No temporal spines . . . . . First Stage.
- Cerci with more than seven setae. Temporal spines present . . . . . 2.
2. Head length 1.95-2.30 mm . . . . . Second Stage.
- Head length 2.75-3.80 mm. . . . . Third Stage.

#### Key to First Stage

1. Head rather broad and short (Fig. 10; GALEWSKI, 1964, Fig. 15). Joints of palpi broader (Figs. 16, 22) . . . . . 2.
- Head narrower (GALEWSKI, 1964, Figs. 16, 17). Joints of palpi more elongated (Fig. 19). . . . . 3.

2. Head broader (Fig. 10); joints of maxillar palpi narrower (Fig. 22). Last abdominal segment shorter (Figs. 1, 3). . . . . *C. dolabratus* (PAYK.).
- Head narrower (GALEWSKI, 1964, Fig. 15). ; maxillar palpi with shorter joints (Fig. 16). Last abdominal segment more elongate (GALEWSKI, 1964, Fig. 6) . . . . . *C. fuscus* (L.).
3. Neck broader (GALEWSKI, 1964, Fig. 16) . . . . . *C. striatus* (L.).
- Neck narrower (GALEWSKI, 1964, Fig. 17) . . . . . *C. paykulli* ER.

#### Key to Second Stage

1. Mandibles with a "tooth" or bulge on their lower edge (Fig. 27). Maxillar palpi with shorter joints (Fig. 25). Tentorial fossetts distinct, well pigmented. (GALEWSKI, 1964, Fig. 19) . . . . . *C. fuscus* (L.).
- Mandibles without "tooth" or bulge on their inner edge (Figs. 30, 33). Maxillar palpi with more elongate joints (Figs. 28, 31). Tentorial fossetts almost invisible (Fig. 13) (GALEWSKI, 1964, Fig. 21) . . . . . 2.
2. Mandibles shorter (Fig. 33). Maxillar palpi with broader joints (Fig. 31). Last abdominal segment shorter (Figs. 4, 5) . . . *C. dolabratus* (PAYK.).
- Mandibles more elongated (Fig. 30). Maxillar palpi with more elongate joints (Fig. 28). Last abdominal segment longer (GALEWSKI, 1964, Figs. 9-11). . . . . 3.
3. Head narrower (GALEWSKI, 1964, Fig. 22), its temporal angles less "bulging" at base. Dorsal side of head darker, almost unicolorous . . . . . *C. paykulli* ER.
- Head broader in basal part (GALEWSKI, 1964, Fig. 20), with temporal angles more "bulging" at base. Dorsal side of head pale with marks and spots in posterior part . . . . . *C. striatus* (L.).

#### Key to Third Stage

1. Mandibles with a distinct "tooth" on their inner edge (Fig. 36). Underside of head with distinct tentorial fossetts (GALEWSKI, 1964, Fig. 26). Palpi with shorter joints (Figs. 34, 35) . . . . . *C. fuscus* (L.).
- Mandibles without a distinct "tooth" on their inner edge, at most with a slight bulge or a very slight angulation on their inner edge (Figs. 39, 42, 43). Underside of head with tentorial fossetts feebly marked, barely visible (Fig. 15; GALEWSKI, 1964, Fig. 27). Palpi with longer joints (Figs. 37, 38, 40, 41). . . . . 2.
2. Smaller larva: head length 2.75-3.25 mm. Mandibles shorter (Fig. 42). Maxillar palpi with joints less elongate. (Fig. 40) . . . *C. dolabratus* (PAYK.).
- Larger larva: head length 3.40-3.70 mm. Mandibles longer (Figs. 39, 43). Maxillar palpi with joints more elongate (Figs. 37, 38). . . . . 3.
3. Mandibles outer edge in a more regular curve, their inner edge either smooth or slightly angulated (Fig. 43). Dorsal side of head black or black-brownish, with colour pattern visible at most on sides (GALEWSKI, 1964, Fig. 25) . . . . . *C. paykulli* ER.
- Mandibles with outer edge less regularly curved, often distinctly bent in basal part; inner edge of mandibles frequently with a slight bulge (Fig. 30).

Dorsal side of head yellowish or brownish with distinct colour-pattern. (GALEWSKI, 1964, Fig. 24) . . . . . *C. striatus* (L.).

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## STRESZCZENIE

Praca jest uzupełnieniem wcześniejszego opracowania (GALEWSKI, 1964) młodszych postaci rozwojowych europejskich gatunków z rodzaju *Colymbetes* CLAIRV. Autor opisuje wszystkie trzy stadia larwalne *C. dolabratus* (PAYK.), z braku materiału nie uwzględnione w poprzedniej pracy, jak również podaje klucze do oznaczania larw wszystkich czterech europejskich gatunków z rodzaju *Colymbetes* CLAIRV.: *C. fuscus* (L.), *C. striatus* (L.), *C. paykulli* ER. i *C. dolabratus* (PAYK.).

## РЕЗЮМЕ

Работа является дополнением предыдущей публикации (GALEWSKI, 1964) посвященной обработке ювенальных стадий развития европейских видов рода *Colymbetes* CLAIRV. Автор описывает все три личиночные стадии *C. dolabratus* (PAYK.), которые из-за отсутствия соответственных материалов не были учтены в предыдущей работе, и дает определители личинок всех четырех европейских видов рода *Colymbetes* CLAIRV.: *C. fuscus* (L.), *C. striatus* (L.), *C. paykulli* ER. и *C. dolabratus* (PAYK.).

Redaktor pracy — dr M. Mroczkowski