

Carnus hemapterus

A parasite of nestling birds



Figure 91. Family CARNIDAE

https://en.wikipedia.org/wiki/Carnus_hemapterus



<http://diptera.myspecies.info/carnidae/content/introduction-carnidae>

<http://www.nhm.ac.uk/nature-online/species-of-the-day/scientific-advances/disease/carnus-hemapterus/index.html>

JAMES R. PHILIPS
Math/Science Division, Babson College,
Babson Park MA 02457-0310 U.S.A.

Philips, J.R. 2007. Ectoparasites chapter 17, Pathology; B. Ectoparasites, pp. 311-317. (In) D.M. Bird and K.L. Bildstein. Raptor Research and Management Techniques. Hancock House Publishers Blaine, WA, USA. 462 pp.

Carnid Flies (Carnidae) – p. 313

Carnid flies can be identified using the fly family key of

Arnett (2000). Grimaldi (1997) discusses the species, of which the most well known is *Carnus hemapterus*, and lists all avian hosts.

Carnus larvae scavenge in nests. Wingless adults either suck the blood of nestlings or feed on their skin secretions. Infestations are characterized by scabby axillae. Heavy infestations cause reduced pack-cell volumes in Barn Owls (*Tyto alba*) (Schulz 1986), reduced body mass in Common Kestrels (*F. tinnunculus*) (Heddergott 2003), and nestling mortality in Northern Saw-whet Owls (*Aegolius acadicus*) (Cannings 1986). The fly seems harmless to American Kestrels (*F. sparverius*) (Dawson and Bortolotti 1997). *Carnus* occurs in North America, Europe, Africa, and Malaysia. Specimens can be collected from hosts by hand or from nests by Tullgren funnel extraction of nest material (Mullen and O'Connor 2002), and then preserved in ethanol. Insecticide dusts can be used to treat hosts and control infestations in nests.

ARNETT, R.H., JR. 2000. American Insects, 2nd Ed. CRC Press, Boca Raton, FL U.S.A.

CANNINGS, R J. 1986. Infestations of *Carnus hemapterus* Nitzsch (Diptera: Carnidae) in Northern Saw-whet Owl nests. *Murrelet* 67:83–84.

DAWSON, R.D. AND G. BORTOLOTTI. 1997. Ecology of parasitism of nestling American Kestrels by *Carnus hemapterus* (Diptera: Carnidae). *Can. J. Zool.* 75:2021–2026.

GRIMALDI, D. 1997. The bird flies, genus *Carnus*: species revision, generic relationships, and a fossil *Meoneura* in amber (Diptera: Carnidae). *Amer. Mus. Nov.* No. 3190.

HEDDERGOTT, M. 2003. Parasitierung nestjunger Turmfalken *Falco t. tinnunculus* durch die Gefiederfliege *Carnus hemapterus* (Insecta: Milichiidae, Diptera). *Vogelwelt* 124:201–205.

MULLEN, G.R. AND B.M. O'CONNOR. 2002. Mites (Acari). Pages 449–516 in G.R. Mullen and L. Durden [EDS.], Medical and veterinary entomology. Academic Press, San Diego, CA U.S.A.

SCHULZ, T.A. 1986. Conservation and rehabilitation of the Common Barn-owl. Pages 146–166 in P. Beaver and D.J. Mackey [EDS.], Wildlife Rehabilitation, Vol. 5. Daniel James Mackey, Coconut Creek, FL U.S.A.

Carnus hemapterus NITZSCH FROM SWAINSON'S HAWK

by

Richard E. Fitzner

**Ecological Sciences Department
Battelle, Pacific Northwest Laboratory
Box 999
Richland, WA 99352
and**

**Norman E. Woodley
Museum of Comparative Zoology
Harvard University
Cambridge, MA 02138**

The wingless ectoparasitic fly (*Carnus hemapterus* Nitzsch) was first reported on North American birds by Bequaert (1942) although in Europe, *C. hemapterus* seems to be fairly generally distributed. Bequaert (1942) identified the fly from 2 birds, a nestling flicker (*Colaptes cafer*) collected at Penn Yann, New York and a Screech Owl (*Asio otus*) taken in Florida. Capelie and Whitworth (1973) have since reviewed the distribution of *C. hemapterus* in North America, citing records for 9 host species including 3 woodpeckers, starling (*Sturnus vulgaris*) Black-billed Magpie (*Pica pica*) and American Kestrel (*Falco sparverius*). Main and Walli (1974) found *C. hemapterus* on nestling Osprey (*Pandion haliaetus*) in Massachusetts and Wilson (1977) found Pileated Woodpecker (*Dryocopus pileatus*) nesting material to contain the parasites. These records, seem to indicate that *Carnus* is widespread in the United States. Its distribution, however, will be unclear until there is a systematic study of bird ectoparasites in this country.

Bequaert (1942) reports the *C. hemapterus* has been observed on 12 families and 26 species of birds in Europe. Seven raptor species, White-tailed Eagle (*Haliaeetus albicilla*), Imperial Eagle (*Aquila heliaca*), Peregrine Falcon (*Falco peregrinus*), Kestrel (*F. tinnunculus*), Saker (*F. cherrug*), Barn Owl (*Tyto alba*), and Tengmalm's Owl (*Aegolius funereus*) have been noted as host.

In July of 1980, while examining nestling Swainson's Hawks (*Buteo swainsoni*), we found that 12 of the 15 nestlings we studied were parasitized by *C. hemapterus*. The flies occurred in groups of 3 to 5 and were found only in the axillary region of the hawks. No flies were attached and on being disturbed they moved from the bare axillary region to nearby feathered areas. The exact nature of the diet of *C. hemapterus* is unknown. Noller (1920) reports that the fly sucks blood from its host, while Hendel (1928) felt that *Carnus* feeds most probably on skin secretions. We observed dried blood spots on the hawks axillary region which is supportive of Noller's (1920) claim. The true diet of the fly is presently in question, but the fly could act as a vector of certain avian blood parasites.

Our findings are of interest, since few records have been reported for *C. hemapterus* in non-cavity nesting birds or from long-distance migrants like the

Swainson's Hawk. Our report is also the first record of this dipteran parasite on the Swainson's Hawk.

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Literature Cited

Bequaert, J. 1942. *Carnus hemapterus* Nitzsch, an ectoparasitic fly of birds, New to America (Diptera). Bull. Brooklyn Ent. Soc. 37:140-149.

Capell, K.J., and T.L. Whitworth. 1973. The distribution and avian hosts of *Carnus hemapterus* (Diptera: milichiidae) in North America. J. Med. Ent. 10:525-526.

Hendel, F. 1928. Zweiflugler order Diptera. II. Allgemeiner Teil. in F. Dahl, Die Tierwelt Deutschlands, XI, Dipt., Pt. 2, pp. 1-135.

Main, A.J., and R.C. Wallis. 1974. Primary records of two vertebrate ectoparasites in New England (Acarina: Argasidae and Diptera: Milichiidae) Proc. Entomol. Soc. Washington 76:427.

Noller, W. 1920. Die Ergebnisse der Hemoptroteus-Forschung Zugleich vorläufige Mitteilung über Zuchtungsversuche an einigen anderen Trypanosomen. Arch. F. Protistenk., 41:149-168.

Wilson, N. 1977. Ectoparasites found in the nest cavities of Pileated Woodpeckers in Oregon. Bird-Banding 48:171-173.