

Lloyd & Philip, 1966

The "Wingless" Fly, *Carnus hemapterus* Nitsch (Milichiidae), on Hawk Fledglings in Northern Utah

At the time of a review by Bequaert (1942, Bull. Brook. Ent. Soc. 37: 140-149) of the anomalous fly, *Carnus hemapterus* Nitsch, with disputed ectoparasitic habits, the only North American records were from a fledgling flicker in New York and a screech owl in Florida. The fly is much better documented in Europe and Bequaert cites records from 15 families of birds there. Mr. Curtis W. Sabrosky, U. S. Department of Agriculture, wrote us of subsequent North American records from New Brunswick, Arizona, California, and Baja California; and we are indebted to him also for identification of the present collection.

During the early summers of 1963 and 1964, Lloyd kept frequent surveillance on occupied raptorial bird nests among cliffs and buttes in Heiners Canyon, 6,500 ft alt., near Coalville, Summit County, Utah. On 17 and 19 June 1963 each of two young fledgling western red-tailed hawks, *Buteo jamaicensis calurus* Cassin, in one of three nests of that species being observed, carried specimens of these peculiar dealated flies on bare areas under the wings and in the inner folds of the legs. He could not determine, on the two fledglings left in the nest, whether any of the flies were attached to the skin of the hosts at time of examination. Ten days later and repeatedly thereafter as feathering progressed, none was found, although the nestlings now had heavy infestations of *Protocalliphora* dipterous larvae in the ears and larval ticks, *Ornithodoros concanensis* Cooley and Kohls (identified by G. M. Kohls), around the eyes.

In 1964 *C. hemapterus* were again observed in similar situations on young fledglings in one nest each of the prairie falcon, *Falco mexicanus* Schlegel, 17 June, and the sparrow hawk, *F. sparverius* L., 25 June. At this time no flies were found on fledglings in nests of the peregrine falcon, pigeon hawk, red-tailed, sharp-shinned, Swainson's and Cooper's hawks, goshawk, golden eagle, great-horned and long-eared owls, and a turkey vulture under concomitant observation in the same general vicinity.

Most specimens of the fly had swollen abdomens with tergal plates well separated, the

fleshy walls opaque-whitish without evidence of dark blood meals showing through in any of them, and the short stumps of the wings were broken at the costal incisions (see figures by Bequaert, op. cit.). In only two unswollen, probably recently emerged, flies collected with a total of 32 others were the membranous wings still intact. The usual lack of complete wings complicates keying in various Nearctic texts including Curran's North American Diptera.

Bequaert places these flies in the family Milichiidae (as, more recently, also does Sabrosky) and discusses the moot question of possible blood-sucking habits. Though the proboscis theca is strongly sclerotized, the small, fleshy labella appear not to have rasping or penetrating parts fitted for piercing the skins of hosts. Evidence of potential parasitism on young bird fledglings in European reports is conflicting. There has been speculation also in Europe regarding potential transmission of avian plasmodia.

Since most records concern infestation of fledgling birds, it would be interesting to know more of (1) the life history of these specialized flies, only a partial idea of development of which is available from Europe; (2) how they survive the long periods intervening between host-nesting; and (3) whether they may be involved as vectors of avian blood pathogens. Though we have examined the faunae of the nests of certain birds in western Montana (e.g., Jellison and Philip, 1933, Can. Ent. 16: 26-31), and, to some extent, fledglings, we have not encountered these peculiarly adapted flies.

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