

**Differential Characters of the female  
*Aedes nigripes* (Zett.) and *A. nearcticus*  
Dyar. (Dipt. Cul.)**

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Though an immense literature has grown up on the Palaearctic mosquitoes, there are still several problems unsolved even concerning the systematics. The principal character used in the classification of the adult *Culicidae* has long been the male genital organs, but Edwards (1921) introduced generic distinctions which are applicable to both sexes. As to the differential characters of the species, however, we have still often to rely on the male terminalia and in many cases the distinctions of the females are rather vague. This is especially the matter in the genus *Aedes*, with the exception of the *communis*-group, where Peus (1933) has, with advantage, used the scaling on the pleurae for differential purpose. This character seems to be constant and renders it possible to differentiate even closely related species.

Most northern species of *Aedes* are treated in the paper by Peus, but the species *nigripes* Zett. and *nearcticus* Dyar are not considered. Consulting the literature as to the descriptions of the females of these species I could not find distinct characters, and I have long been in doubt as to the differentiation of the female *nigripes* and *nearcticus*.

The original description of *Aedes nigripes* (Zett.) is found in "Insecta Lapponica" (1840, p. 807). The diagnosis reads as follows: "6. *C. nigripes*: totus ater, nigro-pubescens, alis hyalinis; abdominis segmentis basi in femina albo-fasciatus. ♂♀." In the description Zetterstedt further remarks: "Femina: nigra, obscure griseo-pubescens, thoracis dorso vittis nigris et ferrugineis mixtis vestito. Alae et halteres ut in ♂. Pedes toti nigri."

*Aedes (Ochlerotatus) nearcticus* was described by Dyar (1919, p. 32 c) on specimens from Bernard harbour, Northwest Territories, as follows: "Female. — Proboscis long; palpi one-fifth the length of proboscis; setæ long and abundant on head, thorax, coxæ, femora, and abdomen, black, becoming whitish in old specimens. Mesonotum with coarse, narrow, curved, dark bronzy brown scales. Abdomen with broad basal segmental dull whitish bands; venter wholly grey-scaled. Integument entirely black.

Wing-scales black, some white ones along the costa, sub-costal, and first veins, rather numerous towards base. — The species is allied to *A. innuitus* Dyar and Knab, of Greenland; but the male genitalia differ in the shape of the harpes and the filaments of the harpagones. Also allied to *nigripes* Zetterstedt from Lapp-land, for a discussion of which see Dyar and Knab, Ins. Ins. Mens. V, 167, 1917.”

As will be seen from the above, Dyar did not give any differential characters of *nearcticus* and *nigripes*.

In his paper: “Mosquitoes of the United States”, Dyar (1923) distinguished the species *nigripes* and *nearcticus* in the key (p. 45) as follows: “Thorax with long hairs, especially below”, but he did not differentiate the two species. In the description of *A. alpinus* L. [= *nigripes* Zett.] he i. a. remarked (p. 84): “A rather large black mosquito, with long hairy vestiture, especially conspicuous on under side of thorax. . . Venter whitish scaled . . .”, and *A. nearcticus* he characterised as: “A medium-sized black mosquito, much like *alpinus* rather smaller, the legs less white speckled.”

In his last monograph, Dyar (1928, p. 145) differentiates the two species in the key as follows: “Somewhat larger, more hairy, the mesonotum brown-scaled . . . *alpinus* Linæus; somewhat smaller, less hairy, the mesonotum in the female slightly variegated and sometimes with a pair of pale spots . . . *nearcticus* Dyar.” In the descriptions the most conspicuous differential character given is the colouring of the sternites. For *alpinus* L. [= *nigripes* Zett.] he (p. 182) says: “Venter grayish white-scaled” and for *nearcticus* (p. 196): “Venter gray, the apices of the segments more or less distinctly black-banded.”

The last mentioned characters are also indicated by Matheson (1929), who gives the measures for the female *nearcticus*: length 4.5 mm; wing 4 mm and for *alpinus* L. [= *nigripes* Zett.]: length 6.5 mm; wing 5 mm.

As to the synonyms *alpinus* Linnaeus and *nigripes* Zetterstedt, I have recently (Natvig 1945) pointed out that *alpinus* L. is described as a species with white ringed legs. It is therefore not identical with *Aedes nigripes* (Zett.).

In 1927 I elaborated (Natvig 1928) a little collection of mosquitoes from the northernmost Norway (Finnmark), in the Tropical Institute at Hamburg, and in this material both species were represented. At that time I differentiated the female *nearcticus* by the somewhat broader scales at the vertex, the less hairy thorax and by the more conspicuous white scaling at the base of the wing-veins.

Since then I have received a very great material of mosquitoes from Greenland, collected by Danish and Norwegian expeditions. The Danish material was placed at my disposal by the late Dr. Kaj Henriksen. By an examination of these mosquitoes it proved that both *A. nigripes* and *A. nearcticus* occur in Greenland. Later on I received, by courtesy of prof. dr. N. A. Kemner, the type specimens of Zetterstedt's *Culex nigripes*, deposited in the Zoological Institute at Lund, Sweden. The types, one male and one female, were well preserved, especially the female is a large specimen, suiting well the description of *A. nigripes*, with the exception of the colouring of the sternites, the apices of the segments being dark-banded, as indicated by Dyar (1928) and Matheson (1929) for *nearcticus*. As most distinctions given in the literature were rather variable in the material at hand, and as both *nigripes* and *nearcticus* were represented in northern Norway as well as in Greenland, I was still in doubt as to the positive differentiation of the females.

However, in 1945 I discovered, among some undetermined Norwegian mosquitoes, one male and four females of *A. nearcticus*, from Fokstuen (On 37), a locality quite outside the range of distribution of *A. nigripes*. Comparing these females with supposed *nigripes* from Finmark and Greenland, I found some differences in the scaling of the pleurae. In *A. nigripes* the scale patch on the ventral mesepisternum (sternopleuron) reaches the upper frontal border, whereas in *nearcticus* the scale patch on the ventral mesepisternum did not reach the upper frontal border. Differentiating the Fennoscandian females at hand according to these pleural characters, it also proved that the smaller, less hairy specimens were *nearcticus* and the bigger ones *nigripes*. This is in accordance with the results secured by Dyar (1928) and Matheson (1929), who differentiated the species on other characters.

Before the war I received from prof. Matheson (Ithaca, N. Y.) and Dr. C. R. Twinn (Ottawa) several North American mosquitoes including *A. nigripes* and *A. nearcticus*, but unfortunately from places where both species were abundant. As it would be of special interest to control the pleural criterions, mentioned above, on a greater material, I wrote Dr. Curran in September 1945 and asked if he could furnish me with specimens of *nearcticus* from localities outside the range of distribution of *A. nigripes*. As a result of his inquiries I recently received from Dr. A. R. Brooks (Ottawa) and prof. R. Matheson (Ithaca, N. Y.) several specimens of *A. nearcticus* including some from Banff, Alberta. A comparison of these specimens with the Norwegian ones demonstrated smaller differences, most probably individual variations only. As to the pleural scaling, however, the American and the Norwegian

specimens coincided. I therefore consider this criterion as the most reliable for the differentiation of the two species *nigripes* and *nearcticus*. A revision of the northern material on this base will be published in a monograph on the Fennoscandian mosquitoes, in preparation. Also a re-description of the type specimens of *A. nigripes* (Zett.) will be published in near future.

Concluding these remarks I bring my hearty thanks to Dr. A. R. Brooks, Ottawa; Dr. C. H. Curran, New York; the late Dr. Kaj Henriksen, København; prof. Dr. N. A. Kemner, Lund; prof. R. Matheson, Ithaca, N. Y., and Dr. C. R. Twinn, Ottawa for their kind help and assistance.

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