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ON THE AVIAN HIPPOBOSCIDAE (DIPTERA) OF CUBA

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Abstract. Nine species of Hippoboscidae are reported from Cuban birds, *Ornithoica confluenta* being new for the fauna of Cuba.

From November 1964 to December 1965 during the field expeditions of workers of the Institute of Parasitology, Czechoslovak Academy of Sciences and the Institute of Biology, Cuban Academy of Sciences, 187 specimens of hippoboscid flies were collected from various bird species. The results of the determination of this material are presented in this paper.

The findings of Hippoboscidae from Cuba and Isle of Pines are summarized by Bequaert (1940). He reports from this territory 11 species: *Ornithoctona erythrocephala* (Leach, 1817), *Stilbometopa fulvifrons* (Walker, 1849), *S. ramphastonis* Ferris, 1930, *Olfersia fumipennis* (Sahlberg, 1886), *O. sordida* Bigot, 1895, *O. spinifera* (Leach, 1817), *Pseudolynchia canariensis* (Macquart, 1840), *P. brunnea* (Latreille, 1812), *Microlynchia pusilla* (Speiser, 1902), *Lynchia albipennis* (Say, 1823) and *Ornithoica vicina* (Walker, 1849). In our material 9 species were found. The taxonomic division follows that of Maa (1969c). The distribution and ecological data are given after Maa (1963, 1966, 1969 a, b, d). The following abbreviations are used for the provinces of Cuba: C = Camagüey, H = Habana, L.V. = Las Villas, O = Oriente, P.R. = Pinar del Río.

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SURVEY OF SPECIES

Hippoboscidae

Ornithomyinae — Ornithomyini

1. *Ornithoctona erythrocephala* (Leach, 1817)

Material examined. *Accipiter gundlachi:* 1♂, Casilda, L.V., 15. 10. 1964; 1♂, Casilda, 16. 1. 1967 (additional collection of O. Garrido)—*Falco sparverius:* 1♀, Viñales, Valle de San Vicente, P.R., 20. 8. 1965—*Quiscalus niger:* 1♀, Cabañas, P.R., 26. 12. 1964—*Xiphidiopicus percussus:* 1♀, Soledad, L.V., 17. 11. 1964.

Recorded from Cuba and Isle of Pines on various birds belonging to 5 orders. *X. percussus* is a new host species. Widely spread over Nearctic and Neotropic region. Polyxenous species known from 14 bird orders but Accipitridae, Falconidae, Columbidae and Psittacidae are probably the true hosts for breeding.

2. *Ornithoica (Ornithoica) confluenta* (Say, 1823)

Material examined. *Ardeola ibis:* 15♀, Playa Baracoa, H., 2. 12. 1964; 2♀, the same data; 1♂, 1♀, Santo Tomás, Ciénaga de Zapata, L.V., 6. 1. 1965; 14♂, 34♀, Chiririco, O., 21. 1. 1965; 2♀, Tranquera, Bayamo, O., 22. 1. 1965; 1♀, Santo Tomás, Ciénaga de Zapata, L. V., 28. 2. 1965; 1♂, 7♀, Sabaniya, Baracoa, O., 13. 9. 1965; 2♂, 19♀, Canal de Vijil, La Gloria, C., 28. 10. 1965; 5♂, 18♀, the same data; 2♀, Laguna de Ariguanabo, H., 24. 11. 1965—*Casmerodius albus:* 1♀, Sierra Cubitas, Cairije, C., 26. 10. 1965; 2♀, the same data—*Egretta thula:* 4♀, La Bajada, Quanajacabibes, P.R., 24. 8. 1965—*Florida caerulea:* 1♂, 6♀, Sierra Cubitas, Cairije, C., 26. 10. 1965.

New for Cuba. Known from Florida, Bahama Is., Venezuela and Brazil. Oligoxenous species, confined to Ardeidae. Although considered as a rare species (Maa 1966), this parasite occurs rather frequently on Cuban herons.

3. *Ornithoica (Ornithoica) vicina* (Walker, 1849)

Material examined. *Amazona leucocephala:* 1♀, Cabañas, P.R., 26. 12. 1964.

Known from Cuba from *Tyto alba*. Distributed throughout the New World, introduced and established in Hawaiian Is. Polyxenous species, recorded from many genera of 10 bird orders, but Strigiformes and Passeriformes represent most probably the true hosts for breeding.

4. *Stilbometopa fulvifrons* (Walker, 1849)

Material examined. *Geotrygon chrysia:* 1♂, Carapachibey, Isla de Pinos, 18. 4. 1965.

Recorded from Cuba and Isle of Pines on a pigeon, *Holoquiscalis jamaicensis* (= *Quiscalus niger*) and *Columba leucocephala*. Distributed in Antilles, reported also from Costa Rica and USA (New Jersey). Polyxenous species, known from 4 bird orders. Columbiformes and Passeriformes seem to be preferred.

5. *Stilbometopa ramphastonis* Ferris, 1930

Material examined: *Columba leucocephala:* 1♂, Santo Tomás, Ciénaga de Zapata, L.V., 26. 2. 1965; 1♀, Los Indios, Isla de Pinos, 16. 4. 1965—*Buteogallus anthracinus:* 1♂, Carapachibey, Isla de Pinos, 18. 4. 1965.

Recorded from Cuba without host data. Distributed in Neotropical region. Host preference uncertain, known from 5 bird orders. *B. anthracinus* represents a new host species and host order.

Ornithomyinae — Olfersiini

6. *Icosta (Ardmoeca) albipennis* (Say, 1823)

Material examined. *Ardeola ibis:* 1♀, Playa Baracoa, H., 2. 12. 1964; 1♀, Chiririco, O., 21. 1. 1965—*Butorides virescens:* 1♀, Soledad, L.V., 17. 11. 1964; 1♂, Cayo Win, Baracoa, O., 27. 1. 1965; 1♀, Salinas, Ciénaga de Zapata, L.V., 27. 2. 1965—*Casmerodius albus:* 2♂, Sierra Cubitas, Cairije, C., 26. 10. 1965—*Dichromanassa rufescens:* 1♂,

Salinas, Ciénaga de Zapata, L.V., 9. 1. 1965—*Egretta thula:* 2♀, Salinas, L.V., 24. 2. 1965; 1♂, La Bajada, Guanajacabibes, P.R., 24. 8. 1965—*Florida caerulea:* 1♂, Punta de Caguanes, Yaguajay, L.V., 20. 11. 1964; 1♀, Chiririco, O., 21. 1. 1965; 1♂, 3♀, Salinas, Ciénaga de Zapata, L.V., 24. 2. 1965—*Hydranassa tricolor:* 1♀, Punta de Hicacos, L.V., 15. 11. 1964; 1♀, Santo Tomás, Ciénaga de Zapata, L.V., 6. 1. 1965; 1♂, 1♀, Salinas, Ciénaga de Zapata, L.V., 2. 12. 1965—*Nyctanassa violacea:* 2♀, Uvero Quemado, Quanajacabibes, P.R., 21. 8. 1965—*Ajaia ajaja:* 1♀, Salinas, L.V., 27. 2. 1965—*Aramus guarauna:* 1♀, Tranquera, Bayamo, O., 22. 1. 1965; 1♀, La Habana, 20. 12. 1965.

Known from Cuba (without host) and from Isle of Pines (as *Lynchia albipennis*) from *Guara alba* (= *Eudocimus albus*). Distributed over Neotropical region and spreading northward to Nearctic region. Oligoxenous species, breeding on Ardeidae. The findings on *Ajaia ajaja* (Threskiornithidae) and *Aramus guarauna* (Aramidae) must be considered as accidental. Such an accidental occurrence was observed on members of Pelecanidae, Threskiornithidae, Ciconiidae, Anatidae, Falconidae and Charadriidae. Other not verified records exist from further 6 families.

7. *Microlynchia pusilla* (Speiser, 1902)

Material examined. *Geotrygon chrysia:* 1♂, Carapachibey, Isla de Pinos, 18. 4. 1965; 1♂, the same data—*Mimocichla plumbea:* 1♂, Melean, Isla de Pinos, 18. 4. 1965.

Described from Cuba without host and locality data. Distributed in Neotropical region and extending to the southern USA. Polyxenous species, recorded from 8 bird orders. Columbidae are very often parasitized. Muscicapidae, Fringillidae and Icteridae are known hosts of this species among Passeriformes.

8. *Olfersia sordida* Bigot, 1885

Material examined. *Phalacrocorax auritus:* 1♀, Salinas, Ciénaga de Zapata, L.V., 24. 2. 1965; 1♀, Tío Pepe, north of Sagua La Grande, L.V., 10. 3. 1965—*Pelecanus occidentalis:* 1♂, Tío Pepe, L.V., 10. 3. 1965.

Recorded from Cuba and Isle of Pines on both bird species. Distributed in Neotropical region and southern USA. Pleioxenous species parasitizing on *Pelecanus* and *Phalacrocorax*, in Galapagos collected also from *Ardea herodias*.

9. *Pseudolynchia canariensis* (Macquart, 1840)

Material examined. *Columba domestica:* 7♀, La Habana, 10. 2. 1965.

Known from Cuba. A world-wide parasite of domestic pigeon, introduced into the Americas from the Old World where it is a polyxenous species known from 8 bird orders. In the New World, there was only one published record from wild host (*Columbigallina*).

Ecological notes. From the results obtained it is evident that members of 12 families of birds were found to be infested with Hippoboscidae (Tab. 1). Four species were collected on Columbidae, two species on Ardeidae and Accipitridae, and one species on hosts from each of the remaining families. Various species of herons are relatively frequently parasitized by two species of hippoboscids. The intensity of infestation is sometimes very high (34♀, 14♂ of *Ornithoica confluenta* in one case). In two species collected in greater numbers the females prevail in the material (114♀, 24♂ in *Ornithoica confluenta*, 18♀, 8♂ in *Icosta albipennis*). A mixed infestation was observed three times: *Ornithoica confluenta* and *Icosta albipennis*

Table 1. Host-parasite relationships of avian Hippoboscidae in our material from Cuba

Pelecaniformes	
Pelecanidae	
Pelecanus occidentalis occidentalis L.	*Olfersia sordida*
Phalacrocoracidae	
Phalacrocorax auritus floridanus (Aud.)	*O. sordida*
Ciconiiformes	
Ardeidae	
Ardeola ibis ibis (L.)	*Icosta albipennis* *Ornithoica confluenta*
Butorides virescens maculatus (Bodd.)	*I. albipennis*
Casmerodius albus egretta (Gmel.)	*I. albipennis* *O. confluenta*
Dichromanassa rufescens colorata (Grisc.)	*I. albipennis*
Egretta thula thula (Mol.)	*I. albipennis* *O. confluenta*
Florida caerulea (L.)	*I. albipennis* *O. confluenta*
Hydranassa tricolor ruficollis (Gosse)	*I. albipennis*
Nyctanassa violacea bancrofti Huey	*I. albipennis*
Threskiornithidae	
Ajaia ajaja (L.)	*I. albipennis*
Falconiformes	
Accipitridae	
Accipiter gundlachi Lawr.	*Ornithoctona erythrocephala*
Buteogallus anthracinus gundlachii (Cab.)	*Stilbometopa ramphastonis*
Falconidae	
Falco sparverius sparverioides Vig.	*O. erythrocephala*
Gruiformes	
Aramidae	
Aramus guarauna pictus (Meyer)	*I. albipennis*
Columbiformes	
Columbidae	
Columba livia domestica	*Pseudolynchia canariensis*
Columba leucocephala (L.)	*S. ramphastonis*
Geotrygon chrysia Salv.	*S. fulvifrons* *Microlynchia pusilla*
Psittaciformes	
Psittacidae	
Amazona leucocephala leucocephala (L.)	*Ornithoica vicina*
Piciformes	
Picidae	
Xiphidiopicus percussus percussus (Temm.)	*O. erythrocephala*
Passeriformes	
Icteridae	
Quiscalus niger caribaeus (Todd)	*O. erythrocephala*
Turdidae	
Mimocichla plumbea rubripes (Temm.)	*M. pusilla*

on *Casmerodius albus* and *Egretta thula* (1♀, *O.c.* 2♂ I.a. and 4♀ *O.c.* 1♂ *I.a.*, respectively), *Microlynchia pusilla* (1♂) and *Stilbometopa fulvifrons* (1♂) on *Geotrygon chrysia*. The fauna of avian Hippoboscidae of Cuba and Isle of Pines is so far represented by 12 species.

К ИЗУЧЕНИЮ МУХ-КРОВОСОСОК (HIPPOBOSCIDAE) ПТИЦ КУБЫ

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Резюме. Девять видов мух-кровососок (Hippoboscidae) зарегистрировано от кубинских птиц; в том числе *Ornithoica confluenta* является новым видом для фауны Кубы.

REFERENCES

BEQUAERT J., Notes on Hippoboscidae. 17. The Hippoboscidae of the Antilles. Mem. Soc. Cubana Hist. Nat. 14: 305—327, 1940.

MAA T. C., Genera and species of Hippoboscidae (Diptera); types, synonymy, habitats and natural groupings. Pacif. Insects Monogr. 6: 1—186, 1963.

—, The genus *Ornithoica* Rondani. Pacif. Insects Monogr. 10; 10—124, 1966.

—, Synopses of the genera *Ornithophila* and *Ornithoctona* with remarks on their habitat diversification (Diptera: Hippoboscidae). Pacif. Insects Monogr. 20: 1—23, 1969a.

—, Revision of *Icosta* Speiser (= *Lynchia* auctt.) with erection of a new related genus *Phthona* (Diptera: Hippoboscidae). Pacif. Insects Monogr. 20; 25—203, 1969b.

—, Notes on the Hippoboscidae (Diptera). II. Pacif. Insects Monogr. 20: 237—260, 1969c.

—, A revised checklist and concise host index of Hippoboscidae (Diptera). Pacif. Insects Monogr. 20: 261—299, 1969d.

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Damage and losses inflicted annually by insects and other pests to human and animal health as well as to plant production and including the cost of their control on the global scale represent an astronomical sum. In most cases the pesticides still serve as main control measures against important pests. Their wide application poses some difficult problems which are important from public health and environmental aspects. Of no less importance are problems connected with the development of new preparations, studies of their properties, effects on organisms, resistance etc. Between February 22 and 26, 1971 the Second International Congress of Pesticide Chemistry was held in Israel, attended by over 700 scientists from 35 countries. Within its framework 18 symposia and 14 workshop-sessions on various aspects of the chemistry of insecticides, herbicides and fungicides were organized. Papers submitted at this Congress have been published in six volumes.

Volume I, entitled "Insecticides" (496 pp.), opens with an introductory paper dealing with the use of insecticides in future. The following symposia and workshop-sessions cover particular ranges of topics. The volume includes five of them: 1) Mode of action and selectivity of insecticides, 2) Chemistry and activity of insecticides of plant origin, 3) Relation of chemical structure to biological activity and translocation of plant systemic insecticides, 4) Relation of chemical structure to biological activity, mode of action and selectivity of insecticides and acaricides, 5) Chemical induction of sterility of insects. The relevant papers are devoted to problems such as metabolism and action of carbamate insecticides, toxicity of diazinon and other non-systemic insecticides,