

A REVISED CHECKLIST AND CONCISE HOST INDEX OF HIPPOBOSCIDAE (Diptera)¹

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The following index and list are to supersede those by Bequaert (1953: 213-336) and Maa (1963: 85-139), respectively. Under each species or subspecies in the checklist, the synonymy is not repeated unless different from or not included in the 1963 list; the distribution is given in more detail than in Bequaert's list which has been found inconvenient by users interested in particular local or regional fauna; and the format for listing recorded hosts is a compromise and is, therefore, admittedly inconsistent. Hosts in strongly host-specific forms are given in full names while those in less specific forms are given only to genus and family ranks to indicate presumed breeding and occasional hosts, respectively. Under *Ornithoica unicolor* (p. 262), for instance, the Strigidae are understood to be its presumed breeding hosts, whereas the Accipitridae, Podargidae etc., occasional hosts. Of course, the allocation of the various host records of each fly into the 2 categories, occasional and non-occasional, is more or less arbitrary and subjective. One may also argue that within a bird- or mammal-family preferred by a certain fly, not all previously recorded genera or species are necessarily its true or presumed breeding hosts since in certain countries and seasons, this very fly may have profound preference for one particular genus or species of bird or mammal. But our present knowledge of the relative host preference in most cases of Hippoboscidae is so fragmentary that obviously other ways of listing recorded hosts would heavily sacrifice space or clarity, or both. Before the host population, host range, parasitism percentage and parasitism intensity are adequately investigated, hardly anything can be conclusive regarding host relationships of Hippoboscidae.

In the host index, the hosts are given to family-rank all except for Cervidae and Bovidae which are given to subfamily rank. The arrangement of genera and species of the Hippoboscidae is in an ascending order. The limits and order of arrangement of bird-families are after E. Mayr & D. Amadon (1951, Amer. Mus. Novitates 1946: 1-42) and that of mammal-families, after G. G. Simpson (1945, Bull. Amer. Mus. Nat. Hist. 85: 39-162). For practical reasons, the list and index do not cover all published records of distribution and hosts. Purposely omitted are the occurrence of alate Lipopteninae on birds, man and Ornithomyiinae on snakes, bats, etc., and other obviously incorrect, unreliable and meaningless records. Records of the findings in zoos or in association with

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freshly imported host animals are also left out unless the permanent establishment of the fly in question has been proven.

CHECKLIST

Subfamily **Ornithomyinae** (Bigot, 1853)

Genus **Ornithoica** Rondani, 1878

Systematics. Divisible into *Ornithoica* s. s. and *Lobolepis*. The former subgenus is again divisible into 5 groups: (a) *unicolor*; (b) *confluenta*, *podicipis*, *beccariina*; (c) *turdi*, *vicina*; (d) *zamicra*, *rabori*, *bistativa*, *philippinensis*, *stipituri*, *tridens*, *momiyamai*, *simplicis*, *hovana*, *exillis*, *podargi*, *aequisenta*, *punctatissima*; (e) *pusilla*. Latest revision: Maa 1966: 10-124.

Subgenus **Ornithoica** s. s.

Ornithoica (Ornithoica) unicolor Speiser, 1900

Distribution. W. Pakistan, E. Pakistan, Burma, Thailand, Malaya, Sumatra, Borneo, (?) Japan.

Hosts. Accipitridae. Strigidae (*Ketupa*, *Ninox*, *Otus*, *Pholidus*, *Scotopelia*, *Strix*). Podargidae. Pittidae, Muscipidae, Corvidae. Altogether 12 genera, 6 families, 4 orders of birds recorded.

Ornithoica (Ornithoica) confluenta (Say, 1823)

Distribution. U. S. A. (Florida), Bahama Is., Venezuela (Anzoategui), Brazil (Sao Paulo).

Hosts. Ardeidae (*Bubulcus*, *Butorides*, *Casmerodius*, *Leucophoyx*).

Ornithoica (Ornithoica) podicipis von Röder, 1892

Distribution. W. Egypt, Congo, Tanzania, Uganda, Malawi, (?) Madagascar.

Hosts. Podicipidae. Ardeidae (*Ardeola*, (?) *Bubulcus*, *Ixobrychus*). Altogether 4 genera, 2 families, 2 orders of birds recorded.

Ornithoica (Ornithoica) beccariina Rondani, 1878

Distribution. Amboina, W. Australia.

Hosts. Ardeidae (*Ardetta*, *Casmerodius*).

Ornithoica (Ornithoica) turdi (Latreille, 1812)

Distribution. Britain, Netherlands, Belgium, France, Italy, Morocco, Libya, Portuguese Guinea, Nigeria, Cameroons, Sao Tome I., Gabon, Congo, Uganda, Kenya, Tanzania, Cape Prov.

Hosts. Accipitridae (*Accipiter*, *Buteo*, *Circus*, *Elanus*, *Gypohierax*, *Kaupifalco*, *Lophaetus*, *Machaerhamphus*), Falconidae. Phasianidae. Columbidae. Musophagidae (*Crinifer*, *Gymnochizorhis*, *Musophaga*, *Ruwenzoorhis*, *Tauraco*), Cuculidae. Strigidae (*Asio*, *Bubo*, *Ciccaba*,

Otus, *Scops*, *Scotopelia*, *Strix*). Caprimulgidae. Coraciidae, Alcedinidae, Meropidae, Bucerotidae. Picidae. Alaudidae, Hirundinidae, Pycnonotidae, Campephagidae, Muscicapidae, Laniidae (*Dryoscopus*, *Laniarius*, *Lanius*, *Malaconotus*, *Tchagra*), Prionopidae, Fringillidae, Ploceidae, Sturnidae, Oriolidae (*Oriolus*), Corvidae. Altogether 57 genera, 25 families, 9 orders of birds recorded.

Ornithoica (Ornithoica) vicina (Walker, 1849)

Distribution. Canada (Brit. Columbia to 50° N, Ontario, Quebec), U. S. A. (Arizona, California, Colorado, Connecticut, Dist. of Columbia, Illinois, Kansas, Louisiana, Maine, Maryland, Massachusetts, Missouri, New Hampshire, New Jersey, New Mexico, New York, N. Carolina, Ohio, Oregon, Pennsylvania, S. Carolina, Tennessee, Utah, Vermont, Virginia, Washington (state), W. Virginia, Wisconsin), Mexico, Guatemala, Costa Rica, Panama, Cuba, Jamaica, Colombia, Venezuela, Brazil (Parana, Santa Catharina, Sao Paulo), Paraguay, Ecuador, Peru, Bolivia, Guiana, Chile to 41° 30' S; Hawaiian Is.

Hosts. Tinamidae. Ardeidae. Accipitridae, Falconidae. Phasianidae. Columbidae. Psittacidae. Cuculidae. Strigidae (*Aegolius*, *Asio*, *Bubo*, *Glaucidium*, *Otus*, *Pseudoscops*, *Strix*, *Tyto*). Picidae, Ramphastidae. Formicariidae, Furnariidae, Tyrannidae, Cotingidae, Muscicapidae (*Chamaea*, *Cinclus*, *Corthylio*, *Dendroica*, *Dumetella*, *Geothlypis*, *Hylocichla*, *Mimus*, *Mniotilta*, *Regulus*, *Seiurus*, *Toxostoma*, *Troglodytes*, *Turdus*, *Wilsonia*), Laniidae, Sittidae, Paridae, Drepaniidae, Thraupidae, Fringillidae (*Ammodramus*, *Carpodacus*, *Hedymeles*, *Junco*, *Melospiza*, *Passerculus*, *Passerella*, *Pipilo*, *Poocetes*, *Richmondia*, *Spizella*, *Zonotrichia*), Icteridae (*Agelaius*, *Euphagus*, *Icterus*, *Molothrus*, *Quiscalus*), Ploceidae, Corvidae (*Aphelocoma*, *Corvus*, *Cyanocitta*, *Cyanocorax*, *Perisoreux*, *Pica*, *Uroleuca*). Altogether 86 genera, 25 families, 10 orders of birds recorded.

Ornithoica (Ornithoica) zamicra Maa, 1966: 47.

Distribution. New Guinea.

Hosts. Alcedinidae. Muscicapidae (*Pachycare*, *Pachycephala*, *Pitohui*, *Poecilodryas*, *Rhipidura*), Motacillidae, Laniidae, Meliphagidae (*Melilestes*, *Meliphaga*, *Xanthotis*), Sturnidae, Dicruridae, Corvidae, Cracticidae, Paradisaeidae. Altogether 17 genera, 10 families, 2 orders of birds recorded.

Ornithoica (Ornithoica) rabori Maa, 1966: 52.

Distribution. Philippines (Luzon, Leyte, Mindanao, Palawan).

Hosts. Cuculidae. Pycnonotidae (*Hypsipetes*, *Pycnonotus*), Muscicapidae (*Copsychus*, *Macronus*, *Megalurus*), Oriolidae (*Oriolus*), Dicruridae (*Dicrurus*). Altogether 8 genera, 5 families, 2 orders of birds recorded.

Ornithoica (Ornithoica) bistativa Maa, 1966: 52.

Distribution. Iran, W. Pakistan, Nepal, Burma, Thailand, Malaya, Java, Borneo.

Hosts. Columbidae. Cuculidae. Alcedinidae. Picidae. Pittidae (*Pitta*), Pycnonotidae (*Criniger*, *Hypsipetes*, *Pycnonotus*), Muscicapidae (*Alcippe*, *Copsychus*, *Cyornis*, *Enicurus*, *Garrulax*, *Hodgsonius*, *Hypothymis*, *Malacopteron*, *Muscicapa*, *Myiophoneus*, *Pomatorhinus*, *Rhinomyias*,

Rhipidura, *Stachyris*, *Terpsiphone*, *Trichastoma*, *Zoothera*), Prionopidae, Zosteropidae, Paridae, Fringillidae, Ploceidae, Sturnidae, Dicruridae, Corvidae. Altogether 35 genera, 13 families, 5 orders of birds recorded.

Ornithoica (Ornithoica) philippinensis Ferris, 1927

Distribution. Philippines (Alabat I. nr Luzon, Sibuyan, Mindanao).

Hosts. Accipitridae. Columbidae. Psittacidae. Trogonidae. Alcedinidae. Pittidae (*Pitta*), Campephagidae, Muscicapidae (*Brachypteryx*, *Pachycephala*, *Rhipidura*, *Turdus*, *Zoothera*), Motacillidae, Laniidae, Certhiidae, Zosteropidae, Dicruridae. Altogether 17 genera, 13 families, 7 orders of birds recorded.

Ornithoica (Ornithoica) stipituri (Schiner, 1868)

Synonym. *Ornithoica distenta* Speiser, 1902.

Distribution. New Guinea, New Britain, Solomon Is., Queensland, N. S. Wales.

Hosts. Accipitridae. Rallidae. Charadriidae. Columbidae. Psittacidae. Cuculidae. Strigidae. Coraciidae, Alcedinidae (*Alcyone*, *Dacelo*, *Halcyon*, *Melidora*, *Sauromarptis*, *Syma*, *Tanysiptera*). Pittidae. Campephagidae, Muscicapidae (*Cisticola*, *Monarcha*, *Pachycephala*, *Pitohui*, *Stipiturus*), Laniidae (*Lanius*), Meliphagidae, Sturnidae (*Aplonis*, *Mino*), Oriolidae, Dicruridae, Corvidae, Cracticidae, Ptilonorhynchidae (*Ailuroedus*), Paradisaeidae (*Cicinnurus*, *Craspedophorus*, *Manucodia*, *Paradisaea*, *Parotia*, *Phonygamus*). Altogether 41 genera, 21 families, 9 orders of birds recorded.

Ornithoica (Ornithoica) tridens Maa, 1966: 65.

Distribution. Taiwan, Botel Tobago I. nr Taiwan.

Hosts. Rallidae. Picidae, Capitonidae. Pycnonotidae, Muscicapidae (*Alcippe*, *Brachypteryx*, *Cinclidium*, *Garrulax*, *Heterophasia*, *Muscicapa*, *Myiophoneus*), Laniidae, Oriolidae, Dicruridae, Corvidae (*Dendrocitta*, *Urocissa*). Altogether 17 genera, 9 families, 3 orders of birds recorded.

Ornithoica (Ornithoica) momiyamai Kishida, 1932

Distribution. Japan.

Hosts. Muscicapidae (*Emberiza*, *Turdus*, *Zoothera*), Laniidae, Corvidae. Altogether 5 genera, 3 families, 1 order of birds recorded.

Ornithoica (Ornithoica) simplicis Maa, 1966: 68.

Distribution. New Guinea, Borneo, Malaya, Vietnam, Taiwan.

Hosts. Rallidae. Columbidae. Cuculidae. Alcedinidae. Capitonidae. Eurylaimidae, Muscicapidae (*Alcippe*, *Cisticola*, *Pachycephala*, *Poecilodryas*, *Zoothera*), Meliphagidae (*Melipotes*), Zosteropidae, Sturnidae, Paradisaeidae. Altogether 21 genera, 11 families, 6 orders of birds recorded.

Ornithoica (Ornithoica) hovana Maa, 1966: 72.

Distribution. Madagascar.

Host. Ciconiidae (*Lophotibis*), 1 record.

Ornithoica (Ornithoica) exilis (Walker, 1861)

Synonym. *Ornithoica distincta* Kishida, 1932.

Distribution. Nepal, Burma, Thailand, Ryukyu Is., Taiwan, Malaya, Sumatra, Christmas I. (Indian Ocean), Borneo, Philippines, Lesser Sunda Is. (Mojo I.), Waigeo I., New Guinea, Kei Is., Australia (Queensland), New Britain, Solomon Is., New Hebrides, Mariana Is., Caroline Is., Loyalty Is., Fiji, Samoa.

Hosts. Ardeidae. Accipitridae (*Accipiter*, *Alviceda*, *Elanus*, *Haliastur*, *Henicopernis*, *Pernis*, *Spizaetus*), Falconidae. Megapodiidae, Phasianidae. Rallidae. Columbidae. Psittacidae (*Alisterus*, *Bolbopsittacus*, *Cacatua*, *Eos*, *Geoffroyus*, *Larius*, *Loriculus*, *Prioniturus*, *Probosciger*, *Tanygnathus*, *Trichoglossus*). Cuculidae (*Centropus*, *Eudynamis*). Strigidae (*Asio*, *Bubo*, *Glaucidium*, *Ketupa*, *Ninox*, *Otus*, *Pholidus*, *Pseudoptynx*, *Scops*, *Uroglaux*). Podargidae, Caprimulgidae. Apodidae. Trogonidae. Coraciidae (*Eurystomus*), Alcedinidae (*Dacelo*, *Halcyon*, *Lacedo*, *Melidora*, *Sauromarptis*, *Syma*, *Tanysiptera*), Meropidae, Bucerotidae. Picidae (*Chrysocolaptes*, *Dendrocopos*, *Dryocopus*, *Picus*). Eurylaimidae, Nectariniidae, Pittidae, Campyphagidae, Muscicapidae, Laniidae, Artamidae, Meliphagidae, Sturnidae (*Aplonis*, *Gracula*, *Melanopyrrhus*, *Mino*, *Sarcops*), Oriolidae, Dicruridae (*Dicrurus*), Corvidae (*Corvus*, *Garulus*), Cracticidae, Ptilonorhynchidae, Paradisaidae. Altogether 96 genera, 34 families, 14 orders of birds recorded.

Ornithoica (Ornithoica) podargi Maa, 1966: 87.

Distribution. New Guinea.

Hosts. Ardeidae. Accipitridae. Psittacidae. Strigidae. Podargidae (*Podargus*), Aegotheliidae. (*Aegotheles*), Caprimulgidae. Ptilonorhynchidae. Altogether 8 genera, 8 families, 6 orders of birds recorded.

Ornithoica (Ornithoica) aequisenta Maa, 1966: 90.

Distribution. New Britain, Solomon Is. (Kolombangara, Fauro).

Hosts. Columbidae (*Ducula*, *Ptilinopus*).

Ornithoica (Ornithoica) punctatissima Maa, 1966: 92.

Distribution. Solomon Is. (Fauro I.).

Hosts. Megapodiidae (*Megapodius*), 1 record.

Ornithoica (Ornithoica) pusilla (Schiner, 1868)

Distribution. Marshall Is. (Arno Atoll, Irikub Atoll, Jaluit Atoll), Gilbert I., Phoenix Is. (Hull I.), Tokelau Is., Line Is. (Caroline, Christmas, Palmyra, Vostok), Tuamotu Archip.

(Raroia Atoll, Tahiti).

Hosts. Sulidae. Ardeidae (*Demigretta*). Charadriidae (*Arenaria*, *Numenius*, *Pluvialis*), Laridae (*Anous*, *Gygis*, *Sterna*, *Thalasseus*). Alcedinidae. Altogether 10 genera, 5 families, 4 orders.

Subgenus **Lobolepis** Maa, 1966: 97 (type: *curvata* Maa)

Ornithoica (Lobolepis) submicans Maa, 1963

Distribution. Philippines (Luzon, Samar, Mindanao).

Hosts. Bucerotidae (*Aceros*, *Buceros*, *Penelopides*).

Ornithoica (Lobolepis) curvata Maa, 1963

Distribution. Ceylon, Burma, Thailand, Malaya, Borneo.

Hosts. Accipitridae. Cuculidae (*Centropus*, *Rhamphococcyx*). Strigidae. Alcedinidae. Meropidae, Bucerotidae (*Aceros*, *Anorrhinus*, *Anthracoseros*, *Berenicornis*, *Rhyticeros*); Coraciidae. Picidae (*Chrysocolaptes*, *Micropternus*, *Picus*), Capitonidae. Muscicapidae, Dicururidae, Corvidae. Altogether 20 genera, 12 families, 6 orders of birds recorded.

Ornithoica (Lobolepis) hirtisternum Maa, 1963

Distribution. New Guinea.

Hosts. Ardeidae. Bucerotidae (*Rhyticeros*). Paradisaeidae. Altogether 3 genera, 3 families, 3 orders of birds recorded.

Genus **Ornithophila** Rondani, 1879

Systematics. Latest revision: Theodor et al. 1964: 33-35. (See p. 1-23).

Ornithophila metallica (Schiner, 1864)

Distribution. Cape Prov., SW Africa, Transvaal, Bechuanaland, Rhodesia, Mozambique, Tanzania, Uganda, Congo, Liberia, Nigeria, Cameroons, Gabon, Sudan, Egypt, Spain, France, Germany, Netherlands, Yugoslavia, Greece, Cyprus, Asia Minor, Sinkiang, Korea, Japan, Bering I., Afghanistan, W. Pakistan, India, E. Pakistan, Burma, Thailand, Vietnam, Hainan I., Kwangtung, Taiwan, Malaya, Borneo, Java, Philippines, New Guinea, Bismarck Archip. (New Britain, Lihir I., Mali I., Boang I.), Solomon Is., New Hebrides, New Caledonia, Loyalty Is., Fiji, Samoa, Tonga Is., Australia (Queensland, N. S. Wales, S. Australia, Tasmania).

Hosts. Ardeidae. Accipitridae, Falconidae. Megapodiidae, Phasianidae. Charadriidae. Columbidae. Psittacidae. Musophagidae, Cuculidae. Strigidae. Apodidae. Coliidae. Trogonidae. Coraciidae (*Coracias*, *Eurystomus*), Alcedinidae (*Halcyon*, *Sauromartia*), Meropidae, Upupidae. Picidae, Capitonidae. Eurylaimidae, Pittidae, Alaudidae, Hirundinidae, Pycnonotidae (*Criniger*, *Hypsipetes*, *Pycnonotus*), Campephagidae, Muscicapidae (*Actinodura*, *Alcippe*, *Cettia*, *Chaimarrornis*, *Cinclidium*, *Cisticola*, *Copsychus*, *Emberiza*, *Erithacus*, *Garrulax*, *Heterophasia*, *Leiothrix*, *Macronus*, *Malacopteron*, *Melocichla*, *Monarcha*, *Monticola*,

Muscicapa, *Myiagra*, *Myiophoneus*, *Napothera*, *Oenanthe*, *Pachycephala*, *Parisoma*, *Pellorneum*, *Phragmaticola*, *Pomatorhinus*, *Ruticilla*, *Timalia*, *Turdoides*, *Turdus*), Motacillidae, Laniidae, Prionopidae, Artamidae, Irenidae, Paridae, Meliphagidae, Fringillidae, Ploceidae, Sturnidae (*Acridotheres*, *Aplonis*, *Cinnyricinclus*, *Gracula*, *Lamprocolius*, *Melanopyrrhus*, *Mino*, *Onychognathus*, *Pastor*, *Sarcops*, *Stilbopsar*, *Sturnus*), Oriolidae, Dicruridae (*Dicrurus*), Corvidae (*Corvus*, *Dendrocitta*, *Garrulus*, *Gymnocorvus*, *Pyrhocorax*, *Urocissa*), Cracticidae, Ptilonrhynchidae, Paradisaeidae. Altogether 134 genera, 42 families, 13 orders of birds recorded.

Ornithophila gestroi (Rondani, 1878)

Distribution. Tangier, Galita I. (nr Malta), Crete.

Hosts. Falconidae: *Falco eleonora* Gené (2 records), *F. tinnunculus* Linn. (1 record).

Genus **Ornithomya** Latreille, 1802

Systematics. Divisible into 4 groups: (a) *avicularia*, *marginalis*, *papillosa*, *fuscipennis*, *parva*, *chloropus*, *opposita*, *anchineuria*, *fringillina*, *apelta*, *bequaerti*, *candida*; (b) *biloba*, *fur*, *roubaudi*, *comosa*, *inocellata*; (c) *ambigua*, *hoffmannae*; (d) *rottensis*. The last one is a fossil species. Latest revisions: Beq. 1954: 114-162 (American spp.); Theodor et al. 1964: 35-40 (Palearctic spp.); Maa 1964b: 197-205 (African spp.).

Ornithomya avicularia avicularia (Linnaeus, 1758)

Synonyms. *Hippobosca corvi* Scopoli 1763, *Ornithomyia viridis* Latreille 1805, *O. viridula* Meigen 1830.

Distribution. Entire Europe to ca 61° N (but unrecorded yet from Norway), W. Pakistan; also stray records from Congo (Kivu, Equateur) and Cape Prov.

Hosts. Ardeidae. Accipitridae (*Accipiter*, *Buteo*, *Circus*), Falconidae (*Falco*). Phasianidae. Rallidae. Charadriidae (*Actitis*, *Calidris*, *Capella*, *Charadrius*, *Numenius*, *Pluvialis*, *Scolopax*, *Squatarola*, *Tringa*, *Vanellus*). Columbidae (*Columba*, *Streptopelia*). Cuculidae (*Cuculus*). Strigidae (*Aegolius*, *Asio*, *Athene*, *Bubo*, *Glaucidium*, *Otus*, *Strix*, *Tyto*). Picidae. Alaudidae, Hirundinidae, Muscicapidae (*Erithacus*, *Muscicapa*, *Oenanthe*, *Phoenicurus*, *Phylloscopus*, *Regulus*, *Saxicola*, *Sylvia*, *Troglodytes*, *Turdus*), Prunellidae, Motacillidae, Laniidae, Sittidae, Paridae, Fringillidae, Ploceidae, Sturnidae (*Sturnus*), Oriolidae, Corvidae (*Coloeus*, *Corvus*, *Garrulus*, *Pica*). In addition, Bequaert (1953: 327) listed *O. avicularia* from tropical Africa on *Necrosyrtes* (Accipitridae) and "*Corvultur*" (Corvidae). Altogether 65 genera, 23 families, 10 orders of birds recorded.

Ornithomya avicularia aobatonis Matsumura, 1905

Synonyms. *Ornithoica diomedea* Kishida 1932, *O. kubitaki* Kishida 1932, *O. nipponensis* Kishida 1932, (?) *Hippobosca oculata* Motschulsky 1860.

Distribution. Japan, Korea, (?) E Siberia.

Hosts. Diomedidae. Accipitridae (*Accipiter*). Columbidae. Strigidae. Pycnonotidae, Muscicapidae (*Acrocephalus*, *Cinclus*, *Emberiza*, *Erithacus*, *Zoothera*), Motacillidae, Corvidae (*Corvus*). Altogether 13 genera, 8 families, 5 orders of birds recorded.

Ornithomya avicularia nigricornis Erichson, 1842

Synonym. *Ornithomyia tasmanensis* Macquart 1851.

Distribution. Australia (Queensland (SE), N. S. Wales, Victoria, Tasmania).

Hosts. Accipitridae (*Accipiter*, *Uroaetus*), Falconidae. Phasianidae (introduced species). Psittacidae (*Calyptorhynchus*, *Glossopsitta*, *Neophema*, *Platycercus*, *Trichoglossus*). Strigidae (*Ninox*, *Otus*, *Tyto*). Caprimulgidae. Muscicapidae, Meliphagidae, Corvidae (*Corvus*), Cracticidae (*Strepera*). Altogether 18 genera, 10 families, 6 orders of birds recorded.

Ornithomya marginalis Maa, 1964b: 198.

Distribution. Natal.

Host. Muscicapidae (*Cossypha*), 1 record.

Ornithomya papillosa Maa, 1964b: 200.

Distribution. Congo (Kivu).

Host. No record.

Ornithomya fuscipennis Bigot, 1885

Distribution. Assam, Burma, Thailand, Kwangtung (Hong Kong), Taiwan, Malaya, Sumatra, Java, Philippines (Leyte, Mindanao, Palawan), Borneo, New Guinea, Solomon Is. (Kolombangara), Australia (Queensland, N. S. Wales, Victoria, S Australia).

Hosts. Ardeidae. Accipitridae (*Accipiter*), Falconidae. Columbidae (*Chalcophaps*, *Macropygia*, *Phapitreron*). Psittacidae. Cuculidae. Strigidae (*Glaucidium*, *Ketupa*, *Ninox*, *Otus*, *Pholidus*, *Scops*, *Strix*, *Tyto*). Podargidae (*Batrachostomus*, *Podargus*). Trogonidae (*Harpactes*). Alcedinidae (*Dacelo*, *Halcyon*). Picidae. Muscicapidae (*Alcippe*, *Emberiza*, *Garulax*, *Muscicapa Myiophonus*, *Turdus*), Motacillidae, Irenidae, Meliphagidae, Zosteropidae, Fringillidae, Sturnidae, Corvidae, Ptilonorhynchidae. Altogether 42 genera, 20 families, 11 orders of birds recorded.

Ornithomya parva Macquart, 1843

Distribution. Tristan da Cunha, Gough I., Argentina (Catamarca, Chubut, Salt), N to ca 26° S, Chile.

Hosts. Falconidae. Rallidae (*Atlantisia*, *Porphyriornis*). Strigidae. Picidae. Furnariidae (*Cinclodes*), Tyrannidae (*Agriornis*, *Muscisaxicola*), Muscicapidae (*Mimus*, *Nesocichla*, *Turdus*), Fringillidae (*Agelaius*, *Diuca*, *Embernagra*, *Nesospiza*, *Zonotrichia*), Icteridae. Altogether 17 genera, 9 families, 5 orders of birds recorded.

Ornithomya chloropus chloropus Bergroth, 1901

Distribution. Iceland, Norway to 70° N, U. S. S. R., Poland, Germany, British Isles S to 51° 30' N, Netherlands, Belgium, S Europe; southern limits of range not quite clear, there were records (? stray) from Egypt and Palestine.

Hosts. Ardeidae. Accipitridae (*Accipiter*, *Buteo*, *Circus*), Falconidae (*Falco*). Phasianidae (*Gallus* [domesticated], *Lagopus*, *Lyrurus*, *Perdix*, *Phasianus* [introduced], *Tetrao*). Rallidae. Haematopodidae, Charadriidae (*Actitis*, *Calidris*, *Capella*, *Charadrius*, *Gallinago*, *Numenius*, *Philimachus*, *Pluvialis*, *Scolopax*, *Squatarola*, *Tringa*, *Vanellus*), Laridae (*Larus*, *Stercorarius*, *Sterna*). Cuculidae. Apodidae. Strigidae (*Asio*, *Bubo*, *Otus*, *Strix*, *Surnia*). Picidae. Alaudidae, Hirundinidae, Muscicapidae (*Acrocephalus*, *Cinclus*, *Erithacus*, *Hippolais*, *Muscicapa*, *Oenanthe*, *Phoenicurus*, *Phylloscopus*, *Regulus*, *Saxicola*, *Sylvia*, *Turdus*, *Zosterops*), Prunellidae, Motacillidae (*Anthus*, *Motacilla*), Laniidae, Certhiidae, Sittidae, Paridae, Fringillidae (*Chloris*, *Emberiza*, *Fringilla*, *Loxia*), Ploceidae, Sturnidae (*Sturnus*), Corvidae (*Corvus*, *Garrulus*, *Nucifraga*, *Pica*). Altogether 72 genera, 25 families, 10 orders of birds recorded.

***Ornithomya chloropus extensa* Maa, 1967 : 737**

Distribution. Japan, Korea.

Hosts. Motacillidae, Fringillidae (*Emberiza*, *Fringilla*).

***Ornithomya opposita* Walker, 1849**

Synonym. *Ornithomyia variegata* Bigot 1885.

Distribution. Australia (Queensland, N. S. Wales, W Australia), New Zealand.

Hosts. Psittacidae, Ploceidae, 1 record each.

***Ornithomya anchineuria* Speiser, 1905**

Synonym. *Ornithomyia pallida* Say 1823 (nom. praeocc.)

Distribution. Alaska, Canada (Alberta, Brit. Columbia, Labrador, Newfoundland, Nova Scotia, Ontario, Quebec, Saskatchewan, Yukon to 68° N), U. S. A. (Arizona, California, Colorado, Dist. of Columbia, Ill., Ind., Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, Montana, New Hampshire, New Jersey, New Mexico, New York, N. Dakota, Ohio, Oregon, Pennsylvania, S. Dakota, Tennessee, Utah, Vermont, Washington (state), W. Virginia, Wisconsin, Wyoming), Mexico (Distrito Federal, Michoacan). Rare and sporadic S to 36° N; southern limits of distributional range not clear.

Hosts. Accipitridae, Falconidae, Pandionidae, Cathartidae. Phasianidae (*Bonasa*, *Cana-chites*, *Colinus*, *Dendragapus*, *Lagopus*, *Phasianus* [introduced]). Charadriidae, Laridae. Strigidae. Alcedinidae. Picidae (*Colaptes*, *Dendrocopos*, *Picoides*, *Sphyrapicus*). Tyrannidae, Muscicapidae (*Catharus*, *Compsothlypis*, *Dendroica*, *Dumetella*, *Geothlypis*, *Helmitheros*, *Hylocichla*, *Icteria*, *Mniotilta*, *Myadestes*, *Oporornis*, *Seiurus*, *Setophaga*, *Siala*, *Thryomanes*, *Thryothorus*, *Toxostoma*, *Troglodytes*, *Turdus*, *Vermivora*, *Wilsonia*), Motacillidae, Laniidae (*Lanius*), Sittidae (*Sitta*), Paridae (*Baeolophus*, *Penthestes*), Thraupidae (*Piranga*), Fringillidae (*Ammodramus*, *Carpodacus*, *Hesperiphona*, *Junco*, *Loxia*, *Melospiza*, *Passerculus*, *Passerella*, *Passerina*, *Pheucticus*, *Pipilo*, *Plectrophenax*, *Poocetes*, *Richmondia*, *Spizella*, *Zonotrichia*), Icteridae (*Agelaius*, *Dolichonyx*, *Euphagus*, *Icterus*, *Molothrus*, *Quiscalus*), Ploceidae, Sturnidae, Corvidae (*Aphelocoma*, *Corvus*, *Cyanocitta*, *Perisoreus*). Altogether 68 genera, 22 families, 7 orders of birds recorded.

Note: The above listed distributional and host records of this species, being long mixed

up with that of *O. bequaerti* Maa, are in need of verification.

Ornithomya apelta Maa, 1969 : 246

Distribution. Philippines, New Guinea, Solomon Is.

Hosts. "New Guinean broadbill"; Zosteropidae (*Zosterops*).

Ornithomya fringillina Curtis, 1836

Distribution. Sweden, Finland (to ca 62°N), Denmark, England, Germany, Poland, Belgium, Italy; southern limits of range in Europe not clear; Japan (Hokkaido), Korea.

Hosts. Accipitridae. Strigidae. Hirundinidae, Muscicapidae (*Acrocephalus*, *Erithacus*, *Muscicapa*, *Phylloscopus*, *Regulus*, *Saxicola*, *Sylvia*), Prunellidae (*Prunella*), Motacillidae, Certhiidae, Sittidae, Paridae (*Parus*), Fringillidae (*Chloris*, *Emberiza*, *Fringilla*, *Linota*), Ploceidae. Altogether 21 genera, 11 families, 3 orders of birds recorded.

Ornithomya bequaerti Maa, 1969 : 249

Distribution. Exact limits of range not clear, partly overlapping that of *O. anchineuria* Speis. (*q. v.*)

Hosts. Long confused with that of *O. anchineuria* Speis. (*q. v.*). Probably confined to small passerine birds.

Ornithomya candida Maa, 1967 : 741

Distribution. Japan.

Hosts. Muscicapidae (*Emberiza*, *Erithacus*, *Zoothera*).

Ornithomya biloba Dufour, 1827

Synonyms. *Ornithomyia pallida* von Olfers 1816 (nom. praeocc.), *O. ptenoletis* Loew 1857, *O. tenella* Schiner 1864, (?) *O. transfuga* Séguy 1938.

Distribution. Sweden, Germany, Netherlands, Belgium, France, Italy, Austria, Egypt, Nepal, Hopei; limits of range not quite clear.

Hosts. Hirundinidae: *Hirundo rustica* Linn., rarely *Delichon urbica* Linn., *Riparia riparia* Linn. Straying on Accipitridae; Strigidae; Apodidae.

Ornithomya fur Schiner, 1868

Distribution. Cape Prov., Transvaal, Cameroons.

Hosts. Hirundinidae: *Cecropis abyssinica* Guérin, *C. cucullata* Bodd., *C. semirufa* Sundevall. Straying on Apodidae.

Ornithomya clarki Paramonov, (in press)

Synonym. *Ornithomyia tasmanensis* Macquart 1851 (pt., 2 of the paratypes only).

Distribution. Australia (N. S. Wales, S and W Australia).

Hosts. Hirundinidae: *Petrochelidon ariel* Gould, *P. nigricans* Vieill.

Ornithomya roubaudi Séguy, 1938

Distribution. Gabon, Congo Republic ("French Congo"), Republic of Congo ("Belgian Congo").

Hosts. Hirundinidae: *Psalidoproctus* sp., "swallow nests". Straying on Muscicapidae.

Ornithomya comosa Austen, 1930

Distribution. India (Bihar), Nepal, Thailand, Malaya.

Hosts. Hirundinidae: *Hirundo rustica* Linn., *Riparia paludicola* Vieill.

Ornithomya inocellata Ferris, 1930

Distribution. Cape Prov., Transvaal.

Host. Hirundinidae: *Petrochelidon spilodera* Sundevall.

Ornithomya ambigua Lutz, 1915

Distribution. Colombia, Venezuela, Brazil (Espírito Santo, São Paulo), Peru (Rio Tarma).

Hosts. Hirundinidae: *Notiochelidon cyanoleuca* Vieill., *Progne chalybea* Gmelin, *Stelgidopteryx ruficollis* Vieill., *Tachycineta albiventer* Bodd. Straying on Columbidae; Furnariidae.

Ornithomya hoffmannae Bequaert, 1954

Distribution. Mexico (Chiapas).

Host. Accipitridae (*Buteo*), 1 record, apparently not a true host.

Ornithomya rottensis (Statz, 1940)

Distribution. Upper Oligocene shales (Aquitania), Rott, Siebengebirge, Germany.

Hosts. Unknown.

Genus **Crataerina** von Olfers, 1816

Systematics. Divisible into 3 groups: (a) *pallida*, *acutipennis*, *obtusipennis*, *melbae*; (b) *hirundinis*; (3) *seguyi*. Latest revisions: Austen 1926: 350-360 (Old World spp.); Theodor et al. 1964: 40-45 (Palearctic spp.)

Crataerina pallida (Latreille, 1812)

Distribution. Nearly entire Europe, Morocco.

Hosts. Apodidae: *Apus apus* Linn., rarely *A. melba* Linn. Straying on Accipitridae;

Hirundinidae, Sturnidae, Ploceidae.

Crataerina acutipennis Austen, 1926

Distribution. Entire S. Africa, Congo, Canary Is., Madeira.

Hosts. Apodidae: *Apus affinis* Gray, *A. caffer* Licht., *A. horus* Heuglin, *A. pallidus* Shelly, *A. unicolor* Jardine. Straying on Hirundinidae.

Crataerina obtusipennis Austen, 1926

Distribution. Malaya (Penang), Mongolia.

Hosts. No record.

Crataerina melbae (Rondani, 1879)

Distribution. Spain, Switzerland, Italy, Syria, Afghanistan, Burma, Basutoland, Cape Prov.

Hosts. Apodidae: *Apus melbae* Linn., *A. pacificus cooki* Har., *A. aequatorialis* Müller (?), *A. apus* Linn.

Crataerina hirundinis (Linnaeus, 1758)

Distribution. Entire Europe, Asia Minor, Palestine, Afghanistan, India (W Himalayas), Szechwan, Japan, Taiwan.

Hosts. Hirundinidae: *Delicon urbica* Linn., *D. dasypus* Bonap., rarely on *Hirundo rustica* Linn., *Riparia riparia* Linn., *Ptyonoprogne rupestris* Scopoli. Straying on Apodidae, Ploceidae.

Crataerina seguyi Falcoz, 1929

Distribution. Colombia (Bogota, Santander Sur), Venezuela (Merida), Peru, Argentina (Mendoza, Catamarca), Chile (Arica).

Hosts. Hirundinidae: *Alopochelidon fuscata* Temm., *Notiochelidon cyanoleuca* Vieill., *N. murina* Cassin.

Genus **Myophthiria** Rondani, 1875

Systematics. Divisible into 2 groups, one each for the Old and New Worlds. The New World forms were recently revised by Bequaert (1954: 171-81) whereas the Old World ones (and their hosts as well) are badly in need of revision. Besides types and topotypes of the 3 nominal species, I have seen odd specimens of the genus from Ceylon, Lombok, New Guinea, Queensland, New Hebrides, New Caledonia and Fiji. None of them can be positively determined as to species without additional material. Therefore, the distribution for these nominal species given below covers only their type localities. The hosts are given only to genus.

Myopthiria reduvioides Rondani, 1875

Distribution. Borneo.

Hosts. Apodidae (*Collocalia*).

Myopthiria capsoides Rondani, 1878

Distribution. Philippines (Luzon, Cebu, Samar).

Hosts. Apodidae (*Collocalia*). Straying on Alcedinidae.

Myopthiria lygaeoides Rondani, 1878

Distribution. Amboina.

Hosts. Apodidae (*Collocalia*).

Myopthiria fimbriata (Waterhouse, 1887)

Distribution. U. S. A. (Arizona, Colorado, Nebraska, New Mexico, Utah, Wyoming).

Hosts. Apodidae: *Aeronautes montivagus* d'Orbigny & Lafresnaye, *A. saxatilis* Woodhouse, *Cypseloides niger borealis* Kennerly; rarely on Hirundinidae (*Tachycineta*).

Myopthiria neotropica Bequaert, 1943

Distribution. Venezuela (Distrito Federal, Aragua).

Host. Apodidae: *Aeronautes montivagus* d'Orbigny & Lafresnaye, 2 records.

Genus **Ornithoctona** Speiser, 1902

Systematics. Divisible into 4 groups: (1) *australasiae*, *fusciventris*, *hulahula*, *idonea*, *laticornis*, *oxycera*, *soror*; (2) *nitens*, *orizabae*; (3) *erythrocephala*; (4) *plicata*, *rugicornis*. Latest revisions: Beq. 1954: 181-232 (American spp.); Maa 1963: 156-61 (*Plicata* group). (See p. 1-23)

Ornithoctona australasiae (Fabricius, 1805)

Distribution. Japan, Malaya, Sumatra, Java, Philippines, Tondano (nr Celebes), New Guinea, Solomon Is.

Hosts. Falconidae. Columbidae. Alcedinidae. Picidae. Pittidae, Pycnonotidae, Campephagidae, Muscicapidae (*Alcippe*, *Apoia*, *Bradypterus*, *Hypothymis*, *Leiothrix*, *Megalurus*, *Muscicapa*, *Orthotomus*, *Pachycephala*, *Phylloscopus*, *Poecilodryas*, *Rhinomyias*, *Rhipidura*, *Turdus*, *Zoothera*), Motacillidae, Laniidae, Artamidae, Paridae, Zosteropidae, Meliphagidae, Sturnidae, Dicruridae, Ptilonorhynchidae, Paradisaeidae. Altogether 38 genera, 17 families, 5 orders of birds recorded.

Ornithoctona hulahula Maa, 1969: 17

Distribution. Hawaiian Is.

Host. No record.

Ornithoctona soror Ferris, 1926

Distribution. Borneo.

Hosts. Muscicapidae (*Garrulax*, *Pachycephala*), Dicruridae (*Dicrurus*).

Ornithoctona laticornis (Macquart, 1835)

Synonym. *Ornithomyia platycera* Macquart 1843.

Distribution. Cape Prov., Rhodesia, Cameroons, Congo, Uganda, Tanzania, Kenya, Ethiopia.

Hosts. Phoenicopteridae. Anatidae. Columbidae. Trogonidae. Coraciidae. Alcedinidae. Picidae. Eurylaimidae. Hirundinidae. Pycnonotidae, Muscicapidae (*Batis*, *Cossypha*, *Dioptornis*, *Muscicapa*, *Myrmecocichla*, *Saxicola*, *Seicercus*, *Sylvietta*, *Terpsiphone*, *Turdus*), Laniidae (*Dryoscopus*, *Lanius*, *Tchagra*, *Telephonus*), Zosteropidae, Fringillidae (*Polioptila*, *Serinus*, *Spinus*), Ploceidae (*Coccyzygia*, *Coliuspasser*=*Euplectes*, *Lagonosticta*, *Nigrita*, *Ploceus*), Sturnidae (*Cinnyricinclus*, *Creatophora*, *Onychognathus*), Oriolidae, Dicruridae. Altogether 41 genera, 17 families, 7 orders of birds recorded.

Ornithoctona idonea Falcoz, 1929

Distribution. Madagascar.

Host. Coraciidae (*Leptosoma*), 1 record.

Ornithoctona fusciventris (Wiedemann, 1830).

Distribution. Canada (Ontario, Quebec to 45° 30' N), U. S. A. (California, Connecticut, Dist. of Columbia, Illinois, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New York, Pennsylvania, Virginia, Washington (state) to 46° 40' N, Wisconsin), Mexico, Guatemala, Costa Rica, Panama, Antilles (Jamaica, Hispaniola), Colombia, Venezuela, Brazil (Minas Gerais, Parana, Rio Grande do Sul, Rio de Janeiro, Sao Paulo), Ecuador, Peru, Argentina (Misiones, Tucuman) to betw. 27° and 28° S, Chile.

Hosts. Accipitridae, Falconidae. Cracidae, Phasianidae. Columbidae. Apodidae. Trogonidae. Momotidae. Picidae. Rhinocryptidae, Formicariidae (*Cercomacra*, *Grallaria*, *Thamnophilus*), Furnariidae (*Anabacerthia*, *Lepidocolaptes*, *Sclerurus*, *Synallaxis*), Tyrannidae (*Colonia*, *Empidonax*, *Mitrephanes*, *Muscisaxicola*, *Myiochanes*, *Myiotheretes*), Cotingidae, Muscicapidae (*Cinnycerthia*, *Dendroica*, *Henicorhina*, *Mniotilta*, *Platycichla*, *Seiurus*, *Setophaga*, *Turdus*, *Wilsonia*), Vireonidae, Thraupidae (*Calospiza*, *Conirostrum*, *Dubusia*, *Piranga*, *Poecilothraupis*, *Tachyphonus*, *Thlypopsis*), Fringillidae (*Atlapetes*, *Coryphospingus*, *Euetheia*, *Junco*, *Hedymeles*, *Myadestes*, *Pezopetes*, *Poospiza*, *Pselliophorus*, *Zonotrichia*), Icteridae (*Icterus*, *Sturnella*), Corvidae. Altogether 58 genera, 21 families, 7 orders of birds recorded.

Ornithoctona oxycera Falcoz, 1929

Distribution. Colombia (Antioquia, Boyaca, Cauca, Cundinamarca, Magdalena), Vene-

zuela (Aragua, Caracas).

Hosts. Accipitridae. Tyrannidae (*Cnemotriccus*, *Myiodynastes*), Muscicapidae (*Dendroica*, *Turdus*), Thraupidae. Altogether 6 genera, 4 families, 2 orders of birds recorded.

***Ornithoctona orizabae* Bequaert, 1954**

Distribution. Mexico (Vera Cruz).

Host. No record.

***Ornithoctona nitens* Bigot, 1885**

Distribution. Mexico (Chiapas), Republic of Honduras, Nicaragua, Costa Rica, Panama, Colombia (Huila, Magdalena), Venezuela (Merida).

Hosts. Columbidae. Trochilidae. Trogonidae (*Pharomachrus*, *Trogon*). Muscicapidae. Altogether 5 genera, 4 families, 4 orders of birds recorded.

***Ornithoctona erythrocephala* (Leach, 1817)**

Distribution. Canada (Alberta, Brit. Columbia, Manitoba, Nova Scotia, Ontario to 56° N, Quebec), U. S. A. (Connecticut, Florida, Georgia, Illinois, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, N. Carolina, N. Dakota, Ohio, Pennsylvania, W. Virginia, Wisconsin), Mexico, Guatemala, Republic of Honduras, Nicaragua, Costa Rica, Panama, Antilles, Colombia, Venezuela, Brazil (Matto Grosso, Parana, Rio Grande do Sul, Santa Catarina, Sao Paulo), Ecuador, Peru, Bolivia, Argentina (Chaco de Santiago, Misiones, Tucuman), Uruguay, Chile (Valparaiso at 33° S).

Hosts. Ardeidae. Anatidae. Accipitridae (*Accipiter*, *Buteo*, *Buteogallus*, *Chondrohierax*, *Circus*, *Elanoides*, *Elanus*, *Haliaeetus*, *Hypomorphnus*, *Ictinia*, *Leucopternis*, *Odontriorchis*, *Oraoetes*, *Urubitornis*), Falconidae (*Caracara*, *Daptrius*, *Falco*, *Herpetotheres*, *Micrastur*), Pandionidae, Cathartidae. Cracidae (*Chamaepetes*, *Ortalis*, *Penelope*, *Penelopina*), Phasianidae. Eurypygidae. Columbidae (*Claravis*, *Columba*, *Columbigallina*, *Geotrygon*, *Leptotila*, *Oreopeleia*, *Zenaida*, *Zenaidura*). Psittacidae (*Amazona*, *Aratinga*, *Pionus*). Cuculidae. Strigidae. Caprimulgidae. Trogonidae. Alcedinidae. Momotidae. Picidae. Ramphastidae. Furnariidae. Pipridae. Cotingidae. Icteridae. Corvidae. Altogether 76 genera, 25 families, 14 orders of birds recorded.

***Ornithoctona plicata* von Olfers, 1816**

Distribution. Madagascar, Comoro Is., Mauritius, Ceylon, India, Thailand, Fukien, Taiwan, Japan, Korea, Mongolia, Kuriles Is., Philippines, Caroline Is., Sumatra, Java, Borneo, Flores, Wetter, Seroea (in Banda Sea), Buru, Ceram, Batjan, New Guinea, Aru Is., Australia (Queensland, N. S. Wales), Solomon Is., New Hebrides, New Caledonia, Loyalty Is., Fiji, Samoa, Tonga.

Hosts. Ardeidae. Accipitridae (*Accipiter*, *Aviceda*, *Circus*, *Haliastur*, *Henicoperis*, *Milvus*), Falconidae. Megapodiidae. Phasianidae. Charadriidae. Columbidae (*Chalcophaps*, *Columba*, *Didunculus*, *Ducula*, *Gallicolumba*, *Geopelia*, *Gymnophaps*, *Leucotreron*, *Macropygia*,

Megaloprepia, *Phapitreron*, *Ptilinopus*, *Reinwardtoena*, *Streptopelia*, *Treron*). Psittacidae (*Cacatua*, *Coracopsis*, *Lorius*, *Tanygnathus*). Cuculidae. Strigidae. Trogonidae. Alcedinidae, Bucerotidae. Picidae. Campephagidae, Muscicapidae, Artamidae, Sittidae, Sturnidae, Oriolidae, Corvidae. Altogether 52 genera, 20 families, 12 orders of birds recorded.

Ornithoctona rugicornis Maa, 1963

Distribution. Sao Tome I. (in Gulf of Guinea, W Africa).

Hosts. Psittacidae (*Agapornis*), Sturnidae (*Onychognathus*), 1 record each.

Genus **Stilbometopa** Coquillett, 1899

Systematics. By strict application of the law of priority, the genus should be known as *Lynchia* Weyenbergh 1881. Since the latter name has long been misused, an application for its suppression is being made so as to avoid endless confusion. All species of the genus are so closely similar to each other that an infrageneric grouping seems unnecessary. Latest revision: Beq. 1955: 234-260.

Stilbometopa impressa (Bigot, 1885)

Distribution. U. S. A. (Arizona, California, Nevada, New Mexico), Mexico (Sonora).

Hosts. Accipitridae. Phasianidae (*Callipepla*, *Gallus* [domesticated], *Lophortyx*, *Oreortyx*).

Stilbometopa podopostyla Speiser, 1904

Distribution. U. S. A. (Arizona, Kansas, Nebraska, Oklahoma, Texas), Mexico, Guatemala, Brit. Honduras, Republic of Honduras, Colombia, Venezuela, Guiana, Brazil (Amazonas, Goias, Minas Gerais, Piaui, Rio de Janeiro, Rio Grande do Sul, Sao Paulo, Santa Catharina), Paraguay, Ecuador, Peru, Bolivia, Argentina (Chaco, Tucuman).

Hosts. Tinamidae (*Crypturellus*, *Tinamus*). Phasianidae [domesticated], Meleagridae [domesticated]. Columbidae (*Columba*, *Leptotila*, *Scardafella*, *Zenaida*, *Zenaidura*). Formicariidae. Altogether 10 genera, 5 families, 4 orders of birds recorded.

Stilbometopa fulvifrons (Walker, 1849)

Distribution. U. S. A. (New Jersey), Antilles (Bahamas, Cuba, Isle of Pines, Jamaica), Costa Rica.

Hosts. Phasianidae [introduced]. Columbidae (*Columba*, *Geotrygon*, *Oreopeleia*). Cuculidae. Cotingidae, Muscicapidae, Icteridae. Altogether 8 genera, 6 families, 4 orders of birds recorded.

Stilbometopa ramphastonis Ferris, 1930

Distribution. Guatemala, Costa Rica, Panama, Antilles (Hispaniola, Cuba), Brazil (Goias, Santa Catharina), Ecuador.

Hosts. Cracidae (*Pipile*). Columbidae. Trogonidae. Ramphastidae (*Ramphastos*). Tyrannidae. Altogether 5 genera, 5 families, 5 orders of birds recorded.

Stilbometopa legtersi Bequaert, 1955

Synonym. (?) *Lynchia penelopes* Weyenbergh 1881.

Distribution. Argentina (Salta), (?) Brazil (Matto Grosso).

Host. Cracidae (*Ortalis*), 1 record.

Genus **Proparabosca** Theodor & Oldroyd, 1965: 92 (type: *alata* Theod. & Oldr.)

Proparabosca alata Theodor & Oldroyd, 1965: 92.

Distribution. Madagascar (Namoroka).

Host. Indriidae: *Propithecus verreauxi coronatus* Milne-Edwards.

Genus **Allobosca** Speiser, 1899

Allobosca crassipes Speiser, 1899

Distribution. Madagascar.

Hosts. Lemuridae: *Lemur macaco* Linn., *L. rubriventer* I. Geoffrey, *Lepilemur mustelinus* I. Geoff.; Indriidae: *Avahi laniger* Gmelin, *Propithecus diadema* Bennett.

Genus **Ortholfersia** Speiser, 1902

Systematics. Divisible into 2 groups: (a) *minuta*; (b) the remaining species. Latest revision: Maa 1962: 603-608.

Ortholfersia minuta Paramonov, 1954

Distribution. Australia (Queensland).

Host. "Kangaroo".

Ortholfersia bequaerti Maa, 1962

Distribution. Australia (Queensland).

Hosts. Macropodidae: *Protemnodon dorsalis* Gray, *P. eugenii* Desm.

Ortholfersia phaneroneura Speiser, 1902

Distribution. Australia (N. S. Wales, Victoria, Tasmania).

Hosts. Macropodidae: *Protemnodon bicolor* Desm., *P. rufogrisea* Desm.

Ortholfersia macleayi (Leach, 1817)

Distribution. Australia (Queensland, N. S. Wales).

Hosts. Macropodidae: *Protemnodon dorsalis* Gray, *P. parryi* Bennett, (?) *P. canguru* Müller, *Thylogale thetis* Lesson.

Genus *Austrolfersia* Bequaert, 1953*Austrolfersia ferrisi* Bequaert, 1953

Distribution. Australia (Queensland).

Hosts. Macropodidae: *Thylogale stigmatica* Gould, (?) *Hyposiprymmodon moschatus* Ramsay.

Genus *Icosta* Speiser, 1905

Synonym. *Ornithoponus* Aldrich 1923 (good as subgenus). The name *Olfersia* was first published by Leach (1817), thus *Olfersia* Say 1823 is unavailable under the provisions of International Code of Zoological Nomenclature.

Systematics. Divisible into 5 subgenera and a number of groups and subgroups. Latest revisions: Beq. 1945b: 88-104 ("larger" species); 1955: 260-363 (American spp.); Theodor et al. 1964: 45-52 (W. Palearctic spp.); Maa 1969a: 87-103 (African sp.). A name list of the species is given below. For details of the synonymy, distribution and hosts, see p. 25-203.

Icosta (Ornithoponus) antica Maa, 1969—New Guinea, Casuariidae: *Casuarius*, Irec.

Icosta (Ornithoponus) americana (Leach, 1817)

Nearctic and Neotropical, chiefly on Accipitridae, Phasianidae, Strigidae.

Icosta (Ornithoponus) rufiventris (Bigot, 1885)

Nearctic and Neotropical, chiefly on Accipitridae, Strigidae.

Icosta (Ornithoponus) angustifrons (van der Wulp, 1903)

Neotropical, chiefly on Accipitridae.

Icosta (Ornithoponus) latifacies (Bequaert, 1955)

Neotropical, only 1 record from Cuculidae: *Piaya*.

Icosta (Ornithoponus) dukei (Austen, 1911)

Ethiopian, chiefly on Accipitridae.

Icosta (Ornithoponus) nigra (Perty, 1833)

Nearctic, Neotropical and Hawaii, chiefly on Falconiformes.

Icosta (Ornithoponus) suvaensis (Bequaert, 1941)

Fiji, only 1 record each from undetermined hawk and parrot.

Icosta (Ornithoponus) hirsuta (Ferris, 1927)

Californian Subregion, on Phasianidae.

Icosta (Ornithoponus) tripelta (Maa, 1964a: 93)

Mozambique, host unknown.

Icosta (Ornithoponus) plaumanni (Bequaert, 1943)

Neotropical, possibly breeding on Galliformes.

Icosta (Ornithoponus) zumpti (Maa, 1964a: 91)

Ethiopian, chiefly on Accipitridae and Musophagidae.

Icosta (Ornithoponus) maquilingensis (Ferris, 1924)

Oriental (western part), on Phasianidae.

Icosta (Ornithoponus) simplex (Walker, 1861)

Celebes, New Guinea, on Columbidae and Megapodiidae.

Icosta (Ornithoponus) australica (Paramonov, 1954)

Queensland, only known from Megapodiidae.

Icosta (Ornithoponus) minor (Bigot, 1858)

Ethiopian, also Mediterranean Subregion, on Passeriformes.

Icosta (Ornithoponus) sensilis sensilis Maa, 1969

Oriental, on Passeriformes.

Icosta (Ornithoponus) sensilis reducta Maa, 1969

India, only known from Corvidae: *Corvus*.

Icosta (Ornithoponus) lonchurae Maa, 1969

Oriental, on Ploceidae: *Lonchura*.

Icosta (Ornithoponus) parallelifrons (Speiser, 1902)

New Guinea, Australia; on Psittacidae: *Cacatua galerita* Latham.

Icosta (Ornithoponus) paramonovi Maa, 1969

Australia, on Psittacidae: *Cacatua roseicapilla* Vieillot.

Icosta (Ornithoponus) papulata Maa, 1969

Indonesia (Komodo I. nr Sumbawa), host unknown.

Icosta (Icosta) wenzeli Maa, 1969

Philippines, possibly breeding on Psittacidae.

Icosta (Icosta) recessa (Maa, 1964a: 91)

Uganda, probably on Cuculidae.

Icosta (Icosta) jactatrix Maa, 1969

New Guinea, possibly on Alcedinidae.

Icosta (Icosta) elbeli Maa, 1969

Oriental, on Cuculidae.

Icosta (Icosta) tarsata Maa, 1969

- Thailand, on Muscicapidae: *Myiophoneus*.
- Icosta (Icosta) trita* (Speiser, 1905)
Oriental, on Capitonidae: *Megalaima*.
- Icosta (Icosta) plana* (Walker, 1861)
New Guinea, on Passeriformes, particularly Paradisaeidae.
- Icosta (Icosta) fenestella* Maa, 1969
Oriental, on Passeriformes.
- Icosta (Icosta) diluta* Maa, 1969
New Guinea, only 1 record from Campephagidae: *Coracina*.
- Icosta (Icosta) samoana* (Ferris, 1927)
Samoa, only known from Muscicapidae.
- Icosta (Icosta) chalcamptra* (Speiser, 1904)
Oriental, chiefly on Accipitridae, Psittacidae; less often on Columbidae, Cuculidae, Sturnidae and Corvidae.
- Icosta (I.) malagasi* Maa, 1969—Madagascar, host undetermined.
- Icosta (Icosta) humilis* Maa, 1969
Liberia, only 1 record from Phasianidae: *Francolinus*.
- Icosta (Icosta) subdentata* Maa, 1969
Uganda, only known from Phasianidae and Musophagidae.
- Icosta (Icosta) coalescens* (Maa, 1964a: 98)
Ethiopian, on Bucerotidae.
- Icosta (Icosta) mecorrhina* (Maa, 1964a: 95)
Ethiopian, chiefly on Accipitridae, less often on Bucerotidae.
- Icosta (Icosta) longipalpis* (Macquart, 1835)
Oriental, on Accipitridae particularly *Spilornis cheela* Latham.
- Icosta (Icosta) acromialis acromialis* (Speiser, 1904)
New Guinea, Bismarck Archip., on Corvidae, Sturnidae.
- Icosta (Icosta) acromialis tuberculata* (Ferris, 1927)
Philippines, on Corvidae, Sturnidae.
- Icosta (Icosta) corvina* Maa, 1969
Oriental, on Corvidae.
- Icosta (Icosta) bicorna* (Ferris, 1927)

Philippines, on Bucerotidae.

Icosta (Icosta) spinosa Maa, 1969

Thailand, on Bucerotidae.

Icosta (Icosta) bucerotina Maa, 1969

Oriental, on Bucerotidae.

Icosta (Icosta) dioxyrhina (Speiser, 1904)

Oriental, on Bucerotidae.

Icosta (Armoeca) albipennis (Say, 1823)

Nearctic and Neotropical, on Ardeidae.

Icosta (Armoeca) ardeae botaurinorum (Swenk, 1916)

Nearctic, on Ardeidae.

Icosta (Armoeca) ardeae ardeae (Macquart, 1835)

All over Old World, on Ardeidae.

Icosta (Armoeca) massonnati (Falcoz, 1926)

France, only 1 record from Threskiornithidae: *Platalea*.

Icosta (Armoeca) macclurei Maa, 1969—Thailand, on Ciconiidae.

Icosta (Armoeca) schoutedeni (Bequaert, 1945)

Ethiopian, on Phalacrocoracidae.

Icosta (Armoeca) holoptera holoptera (Lutz, 1915)

Nearctic and Neotropical, on Rallidae.

Icosta (Armoeca) holoptera omnisetosa Maa, 1969

Oriental, on Rallidae.

Icosta (Gypoecca) meda (Maa, 1963)

Ethiopian, southern Palaearctic, on Aegyptiinae.

Icosta (Rhyponotum) pilosa (Macquart, 1843)

Ethiopian, on Otidae.

Genus **Phthona** Maa, 1969 : 160 (type: *nigrita* Speis.)

Phthona modesta (Maa, 1963)

Distribution. Lower Thailand, Sumatra, Java.

Host. Falconidae: *Microhierax caerulescens horsfieldi* Lesson.

Phthona nigrita (Speiser, 1905)

Distribution. Philippines (Luzon, Samar, Mindanao).

Hosts. Falconidae: *Microhierax erythrogenys* Vigors. Stray records: Bucerotidae; Di-
cruridae.

Phthona leptoptera (Maa, 1963)

Distribution. Assam, Burma, Thailand, Tonkin.

Hosts. Falconidae: *Microhierax c. caerulescens* Linn., *M. melanoleucus* Blyth.

Genus **Pseudolynchia** Bequaert, 1926

Systematics. Divisible into 2 groups: (a) *serratipes*; (b) *garzettae*, *mistula*, *canariensis*,
brunnea. Latest revision: Maa 1966: 125-38.

Pseudolynchia serratipes Maa, 1966: 127

Distribution. New Guinea.

Host. Columbidae (*Ptilinopus*), 1 record.

Pseudolynchia mistula Maa, 1969: 254

Distribution. New Guinea.

Host. Phasianidae indet., 1 record.

Pseudolynchia brunnea (Latreille, 1812)

Distribution. Canada (Ontario), U. S. A. (Arkansas, Florida, Georgia, Iowa, Kansas, Maryland, Massachusetts, Michigan, Minnesota, New Mexico, New York, N. Carolina, Ohio, S. Carolina, Tennessee, Texas, Virginia), Mexico, Panama, Cuba, Guiana, Brazil (Matto Grosso, Rio de Janeiro, Sao Paulo), Argentina (Territorio Rio Negro, Tucuman).

Hosts. Caprimulgidae (*Caprimulgus*, *Chordeiles*, *Hydropsalis*, *Nyctidromus*, *Phalaenoptilus*,
Setopagis). Muscicapidae.

Pseudolynchia garzettae (Rondani, 1879)

Distribution. Africa (Central and E, S to Transvaal, Mozambique), France, Switzerland, Cyprus, Thailand, Taiwan, Philippines.

Hosts. Accipitridae. Burhinidae. Cuculidae. Strigidae (*Athene*, *Bubo*, *Ciccaba*, *Glaucidium*,
Tyto). Caprimulgidae (*Caprimulgus*, *Macrodipteryx*, *Scotornis*, *Semeiophorus*). Apodidae. Corvidae. Altogether 14 genera, 7 families, 7 orders of birds recorded.

Pseudolynchia canariensis (Macquart, 1840)

Distribution. Nearly cosmopolitan where domestic pigeons are kept. Known from wild hosts in Continental Africa, Mediterranean Subregion, Afghanistan, India, Nepal, Thailand, Taiwan, Ryukyu Is., Philippines, Malaya, Indonesia (Sapudi I.).

Hosts. Ciconiidae. Accipitridae (*Accipter*, *Aquila*, *Buteo*, *Circaetus*, *Circus*, *Gymnogenys*,

Haliaeetus, *Kaupifalco*, *Lophaetus*, *Melierax*, *Milvus*, *Neophron*, *Polihierax*, *Spizaetus*), Falconidae (*Falco*). Phasianidae. Pteroclididae (*Pterocles*), Columbidae (*Columba*, *Streptopelia*, *Treron*, *Turtur*). Musophagidae, Cuculidae. Strigidae. Coraciidae. Alaudidae, Muscicapidae, Sturnidae. Altogether 33 genera, 13 families, 8 orders of birds recorded. In the New World, there was only one published record ex wild host (Columbidae: *Columbigallina*).

Genus *Microlynchia* Lutz, 1915

Systematics. Divisible into 2 groups: (a) *pusilla*, *crypturelli*, *furtiva*; (b) *galapagoensis*. Latest revision: Beq. 1955: 364-86.

Microlynchia pusilla (Speiser, 1902)

Distribution. U. S. A. (Arizona, California, Dist. of Columbia, Florida, Idaho, Iowa, Kansas, Nebraska, New Mexico, N. Dakota, Texas), Mexico, Costa Rica, Antilles (Cuba, St Croix, St Thomas, Grenada), Colombia, Venezuela, Brazil (Matto Grosso, Rio de Janeiro), Peru, Paraguay, Chile (Arica).

Hosts. Tinamidae. Accipitridae. Phasianidae (*Callipepla*, *Colinus*, *Lophortyx*). Columbidae (*Columba*, *Columbigallina*, *Geotrygon*, *Leptotila*, *Metropelia*, *Nesopelia*, *Scardafella*, *Streptopelia*, *Zenaida*, *Zenaidura*). Cuculidae (*Geococcyx*). Caprimulgidae. Momotidae. Muscicapidae, Fringillidae (*Arremonops*, *Hedymeles*, *Pipilo*, *Richmondena*), Icteridae. Altogether 17 genera, 10 families, 8 orders of birds recorded.

Microlynchia crypturelli Bequaert, 1938

Distribution. Panama, Brazil (Matto Grosso, Santa Catarina).

Hosts. Tinamidae (*Crypturellus*). Columbidae.

Microlynchia furtiva Bequaert, 1955

Distribution. Brit. Honduras.

Host. Tinamidae (*Crypturellus*).

Microlynchia galapagoensis Bequaert, 1955

Distribution. Galapagos Is.

Hosts. Accipitridae. Columbidae (*Nesopelia*).

Genus *Olfersia* Leach, 1817

Synonyms. *Feronia* Leach 1817, *Olfersia* Wiedemann 1830, *Pseudolfersia* Coquillett 1899.

Systematics. Divisible into 4 groups: (a) *sordida*; (b) *fossulata*, *bisulcata*, *fumipennis*; (c) *aenescens*, *spinifera*; (d) *coriacea*. Latest revision: Beq. 1957: 418-82.

Olfersia sordida Bigot, 1885

Distribution. U. S. A. (Florida, Louisiana, Oregon at 43° N, Texas, Utah), Mexico, Guatemala, Panama, Antilles, Trinidad, Venezuela, Brazil (Matto Grosso at 18°S), Galapagos; unknown south to the Tropic of Capricorn.

Hosts. Phalacrocoracidae (*Phalacrocorax*), Pelecanidae (*Pelecanus*), Ardeidae.

Olfersia fossulata Macquart, 1843

Distribution. Panama, Cocos I., Antilles (Puerto Rico, St Croix), "Brazil", Ecuador, Peru (Chincha Is., Mazorca I., San Lorenzo I., etc.), Galapagos, Chile (Tarapaca); Philippines, Indonesia (Wetter I.)

Hosts. Phalacrocoracidae (*Phalacrocorax*), Sulidae (*Sula*), Pelecanidae (*Pelecanus*), Laridae (*Larosterna*, *Larus*), Strigidae.

Olfersia bisulcata Macquart, 1847

Distribution. U. S. A. (Texas at 29° 15' N), Mexico, Brit. Honduras, Guatemala, Nicaragua, Costa Rica, Panama, Colombia, Venezuela, Trinidad, Guiana, Brazil (Amazonas, Espirito Santo, Goias, Matto Grosso, Minas Gerais, Para, Piaui, Sao Paulo at 23° 10' S), Bolivia, Peru, "Chile".

Hosts. Cathartidae (*Cathartes*, *Coragyps*, *Sarcoramphus*, *Vultur*).

Olfersia fumipennis (J. Sahlberg, 1886)

Distribution. Canada (Brit. Columbia at 50° 40' N, Quebec), U. S. A. (Arizona, Florida, Georgia, Kansas, Louisiana, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, N. Carolina, Ohio, Oregon, Pennsylvania, Tennessee, Texas, Vermont, Virginia, Wisconsin), Mexico, Brit. Honduras, Antilles (Bahamas, Cuba), Venezuela, Brazil (Amazonas, Rio de Janeiro at 23° S), Finland at 62° 50' N, U. S. S. R. (Walowiki), Canary Is., S. Africa, Red Sea, Sumba.

Hosts. Pandionidae: *Pandion haliaetus* Linn. Stray record: Gaviidae; Accipitridae, Cathartidae.

Olfersia aenescens C. G. Thomson, 1869

Distribution. Pantropical in the Pacific, Atlantic and Indian Oceans; never straying far inland and far from the Equator; northern- and southernmost records were 22° N (Isabel I., Mexico) and 38° 40' S (St Paul's Rocks in Indian Ocean), respectively.

Hosts. Diomedidae (*Diomedea*), Procellariidae (*Oceanodroma*, *Petrodroma*, *Puffinus*), Phaethontidae (*Phaethon*), Sulidae (*Sula*). Laridae (*Anous*, *Sterna*).

Olfersia spinifera (Leach, 1817)

Distribution. Pantropical in the Pacific, Atlantic and Indian Oceans. Stray records were from Scotland (Tiree I., 56° 30' N), France (Saumur, 47° N, ca 150 km from nearest sea), U. S. A. (Louisiana: Quarantine, 29° 15' N), etc.

Hosts. Fregatidae (*Fregata*), Phalacrocoracidae, Sulidae, Pelecanidae. Laridae.

Olfersia coriacea van der Wulp, 1903

Distribution. Mexico (to 19° N), Brit. Honduras, Guatemala, Panama, Colombia, Venezuela, Guiana, Brazil (Goias, Matto Grosso at 22° S, Para, Pernambuco, Rio Grande do Norte), Bolivia, Peru.

Hosts. Tinamidae. Ardeidae. Cracidae (*Crax*, *Ortalis*, *Penelope*), Meleagridae (*Agriocharis*, *Meleagris*).

Subfamily Hippoboscinae (Samouelle, 1819)

Genus **Struthibosca** Maa, 1963

Struthibosca struthionis (Janson, 1889)

Distribution. Entire S Africa, Uganda, Tanzania, Kenya.

Host. Struthionidae: *Struthio camelus* Linn.

Genus **Hippobosca** Linnaeus, 1758

Systematics. Divisible into 3 groups: (a) *equina*, *longipennis*, *fulva*; (b) *camelina*; (c) *variegata*, *hirsuta*, *rufipes*. Latest revision: Beq. 1939b: 70-90.

Hippobosca equina Linnaeus, 1758

Distribution. Entire Europe, Morocco, Algeria, Tunisia, Libya, Canary Is., Madeira, Azores, Senegal, Sudan, Egypt, Cyprus, Palestine, Asia Minor, Transcaucasia, Chinese Turkestan (Sinkiang), Arabia, Iran, India, Burma, Thailand, Tonkin, N. China. Introduced and established in Japan, Philippines, Java, Madura, Bali, Lombok, Flores, Sumbawa, Salar, Celebes, Amboina, New Hebrides, New Caledonia, Loyalty Is., Fiji. Odd records from Cape Prov., Congo, Taiwan, Singapore, Australia, etc., have probably been unsuccessful introduction with newly imported horses.

Hosts. Horse, donkey, mule. Facultatively on cattle; accidentally on man, dog, rabbit, camel and some birds.

Hippobosca longipennis Fabricius, 1805

Distribution. Entire S. Africa, Mozambique, Tanzania, Kenya, Eritrea, Sudan, Morocco, Algeria, Tunisia, Libya, Egypt, Italy, Hungary, Greece, Bulgaria, Crimea, Asia Minor, Palestine, Arabia, Transcaspia, Turkestan (Amu Daria; Sinkiang), Iran, Pakistan, Kashmir, India, Ceylon, Vietnam, China Proper, Manchuria, U. S. S. R. (Siberia), Korea. Previous records from Germany, Poland, Taiwan, Japan, etc., are doubtful regarding the permanency of establishment of this species in those countries.

Hosts. Canidae: *Canis familiaris* Linn. (*C. spp.*), *Vulpes vulpes* Linn. Viverridae: *Viverra civetta* Schreber. Hyaenidae: *Crocota crocota* Erxl., *Hyaena hyaena* Linn. Felidae:

Actinonyx jubatus Schreber, *Felis serval* Schreber, *Panthera leo* Linn., *P. pardus* Linn. Accidentally on antelopes (*Sylvicapra grimmia* Linn., *Madoqua kirkii* Günther), mule, birds.

Hippobosca fulva Austen, 1912

Distribution. Tanzania, Zambia, Rhodesia, Mozambique, Zululand, Swaziland.

Hosts. Bovidae: *Madoqua kirkii* Günther, *Raphicerus campestris* Thbg., *R. melanotis* Thbg., *Sylvicapra grimmia* Linn.; also recorded from Bovidae: *Aepyceros melampus* Licht., *Alcelaphus lichtensteinii* Peters, *Gazella granti* Brooke, *Tragelaphus scriptus* Pallas.

Hippobosca camelina Leach, 1817

Distribution. Entire Africa where camels are kept, Asia Minor, Syria, Palestine, Arabia, Iran, Afghanistan, Baluchistan; once found in S France.

Hosts. Camelidae: *Camelus bactrianus* Linn., *C. dromedarius* Linn.; unknown from wild forms. Occasionally on man, horse.

Hippobosca variegata Megerle, 1803

Distribution. Entire Africa S of the Sahara, Madagascar, Reunion Is., Mauritius, Seychelles, Egypt, Iraq, Pakistan, India, Nepal, Ceylon, Andaman Is. Introduced and established in Indonesia (Celebes, Sumba, Timor), Philippines.

Hosts. Horse, donkey, mule, cattle; occasionally on camel. No wild hosts known.

Hippobosca hirsuta Austen, 1911

Distribution. Congo, Uganda, Zambia, Malawi.

Hosts. Bovidae: *Kobus defassa* Rüppell, *K. ellipsiprymnus* Ogilby, *K. vardoni* Livingstone.

Hippobosca rufipes von Olfers, 1816

Distribution. Entire S. Africa, Angola, Congo, Malawi, Uganda, Tanzania.

Hosts. Bovidae: *Alcelaphus buselaphus* Pallas, *Antidorcas marsupialis* Zimm., *Connochaetes gnou* Zimm., *C. taurinus* Burchell, *Damaliscus korrigum* Ogilby, *Oryx gazella* Linn., *Raphicerus campestris* Thbg., *Taurotragus oryx* Pallas, *Bos taurus* Linn. (domestic cattle). Girafidae: *Giraffa camelopardalis* Linn. Frequently on horse, donkey; occasionally on man, dog and *Equus burchellii* Gray.

Subfamily **Lipotheninae** Speiser, 1908

Genus **Lipothena** Nitzsch, 1818

Systematics. Divisible into 5 groups: (a) *japonica*, *cervi*, *efovea*, *nirvana*, *sigma*, *saepes*, *pauciseta*, *rusaecola*, *fortisetosa*, *axis*, *timida*; (b) *pteropteri*; (c) *couturieri*, *saltatrix*, *grahami*, *weidneri*, *chalconelaena*, *capreoli*, *ariana*; (d) *hopkinsi*, *sepiacea*, *iniqua*, *binoculus*, *paradoxa*; (e) *depressa*, *guimaraesi*, *mazamae*. Latest revisions: Beq. 1942a: 52-157; Theodor et al. 1964: 57-64 (Palearctic spp.); Maa 1965: 233-248 (synopsis). (See p. 205-36).

Lipoptena japonica Bequaert, 1942

Distribution. (?) Japan.

Host. (?) Bovidae: Caprinae: *Capricornis crispus* Temm.

Lipoptena cervi (Linnaeus, 1758)

Distribution. Britain, Sweden, Denmark, Netherlands, Belgium, France, Germany, Estonia, Latvia, Lithuania, Poland, Czechoslovakia, Austria, Switzerland, Hungary, Yugoslavia, Albania, Bulgaria, Italy, Spain, Algeria, Kansu, U. S. S. R. (E Siberia). Introduced and established in U. S. A. (New Hampshire, Massachusetts, Pennsylvania, New York).

Hosts. Cervidae: Cervinae: *Cervus elaphus* Linn.; Odocoileinae: *Alces alces* Linn., *Capreolus capreolus* Linn., (?) *Dama dama* Linn.; (?) Moschinae: *Moschus moschiferus* Linn. Acquired hosts: Cervinae: *Cervus canadensis* Erxl. (in U. S. A.); Odocoileinae: *Odocoileus virginianus* Bodd. (in U. S. A.), *Rangifer tarandus* Linn. (introduced).

Lipoptena efovea Speiser, 1905

Distribution. Ceylon.

Hosts. Cervidae: Cervinae: *Axis axis ceylonensis* Fischer; (?) Muntiacinae: *Muntiacus muntjak malabaricus* Lydekker.

Lipoptena nirvana Maa, 1969: 206

Distribution. Vietnam.

Hosts. No record.

Lipoptena sigma Maa, 1965: 241.

Distribution. Taiwan.

Host. Cervidae: Cervinae: *Cervus unicolor swinhoi* Sclater

Lipoptena saepes Maa, 1969: 207

Distribution. Nepal.

Host. Cervidae: Cervinae: *Axis porcinus* Zimm.

Lipoptena pauciseta Edwards, 1919

Synonym. *L. indicum* (sic) Rao, Hiregaudar & Alwar 1964: 267.

Distribution. Madras (state), Thailand, Laos, Vietnam, Szechwan, Sumatra.

Host. Cervidae: Muntiacinae: *Muntiacus muntjak* Zimm.

Lipoptena rusaecola Bequaert, 1942

Distribution. Philippines (Luzon, Mindanao).

Host. Cervidae: Cervinae: *Cervus unicolor philippinus* H. Smith.

Lipoptena fortisetosa Maa, 1965: 236

Distribution. Japan.

Host. Cervidae: Cervinae: *Cervus nippon* Temm.

Lipoptena axis Maa, 1969: 210

Synonym. *L. indica* Maa 1965: 239 (nom. praeocc.)

Distribution. India (Madhya Pradesh), Ceylon, Nepal.

Hosts. Cervidae: Cervinae: *Axis axis* Erxl. (?) Bovidae: Bovinae: *Tetracerus quadricornis* Blainv.

Lipoptena timida Maa, 1969: 209

Distribution. Nepal.

Host. (?) Cervidae: Cervinae: *Axis porcinus* Zimm.

Lipoptena pteropi Denny, 1843

Synonyms. *L. gracilis* Speiser 1903, *L. traguli* Ferris & Cole 1922.

Distribution. Thailand, Vietnam (Bien Hoa), Malaya, Mergui Archip., Java.

Hosts. Tragulidae: *Tragulus napu*, F. Cuvier, *T. javanicus* Osbeck.

Lipoptena couturieri Séguy, 1935

Distribution. Pyrenees Mts in France and Spain.

Host. Bovidae: Caprinae: *Rupicapra rupicapra* Linn.

Lipoptena saltatrix Maa, 1969: 212

Distribution. India (Uttar Pradesh).

Hosts. Bovidae: Caprinae: *Hemitragus jemlahicus* H. Smith, (?) *Naemor hedus goral* Hardwicke.

Lipoptena grahami Bequaert, 1942

Distribution. Szechwan.

Host. No record.

Lipoptena weidneri Maa, 1969: 220

Distribution. India (Molta in the Himalayas).

Host. Bovidae: Caprinae: *Naemorhedus goral* Hardwicke.

Lipoptena chalconelaena Speiser, 1904

Distribution. Sinai Penin., Egypt (Nubia Mts), Sudan, (?) Turkey (Cilician Taurus)

Hosts. Bovidae: Caprinae: *Capra nubiana* F. Cuvier, (?) *C. hircus aegagrus* Erxl.

Lipoptena capreoli Rondani, 1878

Distribution. Yugoslavia (Dalmatia), Greece, Turkey (Asia Minor), Syria, Cyprus, Palestine, Iraq, Iran, W. Pakistan, Punjab.

Host. Bovidae: Caprinae: *Capra hircus hircus* Linn. (domestic goat).

Lipoptena arianae Maa, 1969: 214

Distribution. Iran (N. Khurasan, Laristan).

Host. Bovidae: Caprinae: *Ovis* sp., probably *O. laristanica* Nasonov or *O. orientalis* Gmelin.

Lipoptena hopkinsi Bequaert, 1942

Distribution. Kenya, Uganda, Congo (Kivu).

Hosts. Bovidae: Bovinae: *Tragelaphus scriptus* Pallas; Cephalophinae: *Cephalophus monticola* Thbg., *C. nigrifrons* Gray; Antilopinae: *Nesotragus moschatus* v. Dueben.

Lipoptena sepiacea Speiser, 1905

Distribution. Ghana, Nigeria, Sudan, Eritrea, Kenya, Uganda, Tanzania, Malawi.

Hosts. Bovidae: Bovinae: *Tragelaphus scriptus* Pallas, *T. strepsiceros* Pallas; Cephalophinae: *Cephalophus monticola* Thbg., *C. rufilatus* Gray, *Sylvicapra grimmia* Linn.; Hippotraginae: *Damaliscus korrigum* Ogilby; Antilopinae: *Ourebia ourebi* Zimm., *Gazella rufifrons* Gray, *G. thomsonii* Günther, *G. tilonura* Heuglin, (?) *G. granti* Brooke.

Lipoptena iniqua Maa, 1969: 220

Distribution. India (Punjab, Uttar Pradesh).

Host. Bovidae: Antilopinae: *Antilope cervicapra* Linn.

Lipoptena binoculus (Speiser, 1908)

Distribution. Orange Free State, Bechuanaland, Cape Prov., Mozambique.

Hosts. Bovidae: Antilopinae: *Raphicerus campestris* Thbg., *Antidorcas marsupialis* Zimm.

Lipoptena paradoxa Newstead, 1907

Distribution. Ghana, Congo (Kivu, Katanga), Angola, Urundi, Uganda, Ethiopia, Kenya, Tanzania, Rhodesia, Malawi, Mozambique, Transvaal, Bechuanaland, Zululand, Cape Prov.

Hosts. Bovidae: Bovinae: *Tragelaphus angasii* Gray, *T. scriptus* Pallas, *T. imberbis* Blyth, *T. strepsiceros* Pallas, *Taurotragus oryx* Pallas; Cephalophinae: *Sylvicapra grimmia* Linn.;

Hippotraginae: *Kobus ellipsiprymnus* Ogilby, *Redunca arundinum* Bodd., *Hippotragus equinus* Desmarest; Antilopinae: *Ourebia ourebi* Zimm., *Rhaphicerus melanotis* Thbg., *Aepyceros melampus* Licht.

Lipoptena depressa depressa (Say, 1823)

Distribution. U. S. A. (Montana, Wyoming, S. Dakota, Nebraska).

Hosts. Cervidae: Odocoileinae: *Odocoileus hemionus* Rafin., *O. virginianus* Bodd.

Lipoptena depressa pacifica Maa, 1969: 226

Distribution. Canada (Brit. Columbia), U. S. A. (Washington (state), Oregon, Idaho, California).

Hosts. As in nominotypical form.

Lipoptena guimaraesi Bequaert, 1957

Distribution. Brazil (Goias, Matto Grosso).

Host. Cervidae: Odocoileinae: *Ozotoceros bezoarticus* Gray.

Lipoptena mazamae Rondani, 1878

Synonyms. *L. depressa* var. *mexicana* Townsend 1897, *L. conifera* Speiser 1905, *L. surinamensis* Bau 1930, *L. odocoilei* Byram 1964: 155.

Distribution. U. S. A. (Florida, Georgia, Louisiana, S. Carolina, Texas), Mexico, Guatemala, Republic of Honduras, Panama, Colombia, Venezuela, Trinidad, Guiana, Brazil (Amazonas, Matto Grosso, Parana, Santa Catharina), Ecuador, Peru, Bolivia, Uruguay, Paraguay, Argentina.

Hosts. Cervidae: Odocoileinae: *Mazama americana* Erxl., *M. guazupita*, *M. simplicicornis* Illiger, *M. tema* Rafin., *Odocoileus virginianus* Bodd.

Genus **Neolipoptena** Bequaert, 1942

Neolipoptena ferrisi (Bequaert, 1935)

Distribution. Canada (Brit. Columbia), U. S. A. (California, Montana, Oregon, S. Dakota, Washington (state), Wyoming), Mexico (Baja California).

Hosts. Cervidae: Odocoileinae: *Odocoileus hemionus* Rafin., *O. virginianus* Bodd. Antilocapridae: *Antilocapra americana* Ord.

Genus **Melophagus** Latreille, 1802

Systematics. Divisible into 2 groups: (a) *antilopes*, *rupicaprinus*; (b) *ovinus*. Latest revisions: Beq. 1942a: 157-207; Theodor et al. 1964: 64-67.

Melophagus antilopes (Pallas), 1777

Distribution. E Siberia.

Host. Bovidae: Antilopinae: *Procapra gutturosa* Pallas.

Melophagus rupicaprinus Rondani, 1879

Distribution. Alps Mts in Germany, France, Switzerland, Italy and Austria.

Hosts. Bovidae: Caprinae: *Rupicapra rupicapra* Linn., *Capra ibex* Linn.

Melophagus ovinus ovinus (Linnaeus, 1758)

Distribution. Iceland, Faroe Is., British Isles, Norway, Sweden, U.S.S.R., Poland, Denmark, Germany, Netherlands, Belgium, France, Spain, Switzerland, Austria, Czechoslovakia, Bulgaria, Yugoslavia, Greece, Italy, Morocco, Tunis, Libya, Palestine, Cyprus, Turkistan, Mongolia, N India. Introduced and established in Kenya (highlands), Orange Free State, Basutoland, Transvaal, Cape Prov., Japan, Australia (Queensland, N. S. Wales, S. Australia, Tasmania), New Zealand, Canada (Alberta, Brit. Columbia, Ontario, Quebec), U.S.A. (practically all 50 states, but apparently no records yet for Alabama, Florida, Georgia, Missouri, N. Dakota, S. Carolina, Tennessee), Mexico, Panama, Colombia, Venezuela, Ecuador, Peru, Bolivia, (confined to highlands in these 7 countries), Uruguay, Brazil (Santa Catarina), Argentina, Chile, Tristan da Cunha, Falkland Is.

Hosts. Bovidae: Caprinae: *Ovis aries* L. (domestic sheep); doubtful records: *O. ammon poli* Blyth, *O. canadensis* Shaw, *O. dalli* Allen.

Melophagus ovinus himalayae Maa, 1969 : 232

Distribution. Nepal, (?) Tibet.

Hosts. (?) Bovidae: Bovinae: *Bos grunniens* Linn. (yak.), *B. taurus* Linn. (domestic cattle), 1 record each.

HOST INDEX

Under each family of birds and mammals, the approximate number of described Recent species and the general distributional range of the family are given in parenthesis; parasites presumably to breed on certain members of that particular family are each prefixed by an asterisk (*).

AVES

Casuariiformes

Casuariidae (5. Papuan, Sub-reg.). *Icosta* *antica.

Struthioniformes

Struthionidae (1. Afr.). *Struthiobosca* *struthionis.

Tinamiformes

Tinamidae (33. Neotrop.). *Ornithoica vicina*.—*Stilbometopa* *podopostyla.—*Icosta holoptera*, *plaumanni*.—*Microlynchia* *crypturelli, *furtiva, *pusilla*.—*Olfersia coriacea*.

Gaviiformes

Gaviidae (4. N. Circumpolar). *Olfersia fumipennis*.

Podicipiformes

Podicipidae (20. N. Hemisp.). *Ornithoica podicipis*.

Procellariiformes

Diomedidae (13. Cosm.). *Ornithomya aobatonis*.—*Olfersia *aenescens*.

Procellariidae (73. Cosm.). *Olfersia *aenescens*.

Pelecaniformes

Phaethontidae (3. Palaeotrop.). *Olfersia *aenescens*.

Fregatidae (5. Cosm.). *Olfersia *spinifera*.

Phalacrocoracidae (31. Cosm.). *Icosta *schoutedeni*.—*Olfersia *fossulata*, **sordida*, *spinifera*.

Sulidae (9. Pantrop.). *Ornithoica pusilla*.—*Olfersia *aenescens*, **fossulata*, *spinifera*.

Pelecanidae (6. Cosm.). *Icosta albipennis*, *schoutedeni*.—*Olfersia *fossulata*, **sordida*, *spinifera*.

Ciconiiformes

Ardeidae (59. Cosm.). *Ornithoica *beccariina*, **confluenta*, *exilis*, *hirtisternum*, **podicipis*, *podargi*, **pusilla*, *vicina*.—*Ornithophila metallica*.—*Ornithomya avicularia*, *chloropus*, *fuscipennis*.—*Ornithoona erythrocephala*, *plicata*.—*Icosta *albipennis*, *americana*, **ardeae*, **botaurinorum*, *maquilingensis*.—*Olfersia coriacea*, *sordida*.

Threskiornithidae (28. Cosm.). *Icosta albipennis*, *massonnati*.

Ciconiidae (17. Cosm.). *Ornithoica hovana*.—*Icosta *albipennis*, **ardeae*, **macclurei*.—*Pseudolynchia canariensis*.

Phoenicopteridae (6. Cosm.) *Ornithoona laticornis*.

Anseriformes

Anatidae (145. Cosm.). *Ornithoona erythrocephala*, *laticornis*.—*Icosta albipennis*.

Falconiformes

Accipitridae (205. Cosm.). *Ornithoica curvata*, **exilis*, *podargi*, *philippinensis*, *stipituri*, **turdi*, *unicolor*, *vicina*.—*Ornithophila metallica*.—*Ornithomya anchineuria*, **aobatonis*, **avicularia*, *biloba*, **chloropus*, *fringillina*, **fuscipennis*, *hoffmannae*, **nigricornis*.—*Crataerina pallida*.—*Ornithoona *erythrocephala*, *fusciventris*, *oxycera*, **plicata*.—*Stilbometopa impressa*.—*Icosta albipennis* (? or *botaurinorum*), **americana*, **angustifrons*, *ardeae*, *bucerotina*, **chalcoplampra*, **dukei*, *fenestella*, **longipalpis*, **mecorrhina* **meda*, **nigra*, **rufiventris*, **suvaensis*, **zumpfi*.—*Pseudolynchia *canariensis*, *garzettae*.—*Microlynchia galapagoensis*, *pusilla*.—*Olfersia fumipennis*.

Falconidae (58. Cosm.). *Ornithoica exilis, turdi, vicina*.—*Ornithophila *gestroi, metallica*.—*Ornithomya anchineuria, *avicularia, *chloropus, fuscipennis, nigricornis, parva*.—*Ornithoctona australasiae, *erythrocephala, fusciventris, plicata*.—*Icosta albipennis, americana, angustifrons, chalcolampra, *nigra, rufiventris, zumpti*.—*Phthona *leptoptera, *modesta, *nigrita*.—*Pseudolynchia *canariensis*.

Pandionidae (1. Cosm.). *Ornithomya anchineuria*.—*Ornithoctona erythrocephala*.—*Icosta americana, botaurinorum*.—*Olfersia *fumipennis*.

Cathartidae (6. Amer.). *Ornithomya anchineuria*.—*Ornithoctona erythrocephala*.—*Icosta angustifrons, nigra*.—*Olfersia *bisulcata, fumipennis*.

Galliformes

Megapodiidae (10. E. Oriental). *Ornithoica exilis, *punctatissima*.—*Ornithophila metallica*.—*Ornithoctona plicata*.—*Icosta *australica, *simplex*.

Cracidae (38. Neotrop.). *Ornithoctona *erythrocephala, fusciventris*.—*Stilbometopa *legtersi, *ramphastonis*.—*Icosta plaumanni*.—*Olfersia *coriacea*.

Phasianidae (190. Cosm.). *Ornithoica exilis, turdi, vicina*.—*Ornithophila metallica*.—*Ornithomya *anchineuria, avicularia, *chloropus, nigricornis*.—*Ornithoctona erythrocephala, fusciventris, plicata*.—*Stilbometopa fulvifrons, *impressa, podopostyla*.—*Icosta *americana, chalcolampra, fenestella, *hirsuta, humilis, *maquilingensis, pilosa, plaumanni, subdentata, zumpti*.—*Pseudolynchia canariensis, mistula*.—*Microlynchia *pusilla*.

Meleagridae (2. Amer.). *Stilbometopa podopostyla*.—*Icosta americana*.—*Olfersia *coriacea*.

Gruiformes

Eurypygidae (1. Neotrop.). *Ornithoctona erythrocephala*.—*Icosta albipennis*.

Rallidae (132. Cosm.). *Ornithoica exilis, simplicis, stipituri, tridens*.—*Ornithomya avicularia, *parva*.—*Icosta albipennis* (? or *botaurinorum*), *ardeae, *holoptera, maquilingensis, *omni-setosa*.

Otididae (23. Old Wld.). *Icosta *pilosa*.

Charadriiformes

Jacaniidae (7. Pantrop.). *Icosta ardeae*.

Haematopodidae (6. Cosm.). *Ornithomya chloropus*.

Charadriidae (152. Cosm.). *Ornithoica *pusilla, stipituri*.—*Ornithophila metallica*.—*Ornithomya anchineuria, *avicularia, *chloropus*.—*Ornithoctona plicata*.—*Icosta albipennis, americana, angustifrons, ardeae, omni-setosa*.

Laridae (89. Cosm.). *Ornithoica *pusilla*.—*Ornithomya anchineuria, *chloropus*.—*Icosta albipennis, americana*.—*Olfersia *aenescens, *fossulata, spinifera*.

Alcidae (22. Holarctic). *Icosta americana*.

Burhinidae (9. Cosm.). *Pseudolynchia garzettae*.

Columbiformes

Pteroclididae (16. Afr., Palaearct.). *Icosta pilosa*.—*Pseudolynchia* *canariensis.

Columbidae (289. Cosm.). *Ornithoica* *aequisenta, bistativa, exilis, philippinensis, simplicis, stipituri, turdi, vicina.—*Ornithophila* *metallica*.—*Ornithomya* *ambigua*, *aobatonis*, **avicularia*, **fuscipennis*.—*Ornithoctona* *australasiae*, **erythrocephala*, *fusciventris*, *laticornis*, *nitens*, **plicata*.—*Stilbometopa* **fulvifrons*, **podopostyla*, *ramphastonis*.—*Icosta* *americana*, **chalcolampra*, *dioxyrhina*, *fenestella*, *plana*, *simplex*.—*Pseudolynchia* **canariensis*, **serratipes*.—*Microlynchia* *crypturelli*, **galapagoensis*, **pusilla*.

Psittaciformes

Psittacidae (316. Pantrop.). *Ornithoica* **exilis*, *podargi*, *philippinensis*, *stipituri*, *vicina*.—*Ornithophila* *metallica*.—*Ornithomya* *fuscipennis*, **nigricornis*, *opposita*.—*Ornithoctona* **erythrocephala*, **plicata*, *rugicornis*.—*Icosta* *angustifrons*, **chalcolampra*, *fenestella*, *maquilingensis*, **papulata*, **parallelifrons*, **paramonovi*, *plana*, *suvaensis*, *tuberculata*, **wenzeli*.

Cuculiformes

Musophagidae (19. Afr.). *Ornithoica* **turdi*.—*Ornithophila* *metallica*.—*Icosta* *dukei*, *mecorrhina*, *subdentata*, **zumpti*.—*Pseudolynchia* *canariensis*.

Cuculidae (128. Cosm.). *Ornithoica* *bistativa*, **curvata*, **exilis*, *rabori*, *simplicis*, *stipituri*, *turdi*, *vicina*.—*Ornithophila* *metallica*.—*Ornithomya* **avicularia*, *chloropus*, *fuscipennis*.—*Ornithoctona* *erythrocephala*, *plicata*.—*Stilbometopa* *fulvifrons*.—*Icosta* **chalcolampra*, **elbeli*, *latifacies*, *maquilingensis*, *minor*, *nigra*, **recessa*, **sensilis*, *simplex*, *wenzeli*.—*Pseudolynchia* *canariensis*, *garzettae*.—*Microlynchia* **pusilla*.

Strigiformes

Strigidae (134. Cosm.). *Ornithoica* *curvata*, **exilis*, *podargi*, *stipituri*, **turdi*, **unicolor*, **vicina*.—*Ornithophila* *metallica*.—*Ornithomya* *anchineuria*, *aobatonis*, **avicularia*, *biloba*, **chloropus*, *fringillina*, **fuscipennis*, **nigricornis*, *parva*.—*Ornithoctona* *erythrocephala*, *plicata*.—*Icosta* *albipennis*, **americana*, *angustifrons*, *chalcolampra*, *fenestella*, *longipalpis*, *nigra*, **rufiventris*, *zumpti*.—*Pseudolynchia* *canariensis*, **garzettae*.—*Olfersia* *fossulata*.

Caprimulgiformes

Podargidae (12. E. Orient.). *Ornithoica* *exilis*, **podargi*, *unicolor*.—*Ornithomya* **fuscipennis*.

Aegothelidae (8. E. Orient.). *Ornithoica* **podargi*.

Caprimulgidae (67. Cosm.). *Ornithoica* *exilis*, *podargi*, *turdi*.—*Ornithomya* *nigricornis*.—*Ornithoctona* *erythrocephala*.—*Icosta* *ardeae*, *mecorrhina*.—*Pseudolynchia* **brunnea*, **garzettae*.—*Microlynchia* *pusilla*.

Apodiformes

Apodidae (79. Cosm.). *Ornithoica* *exilis*.—*Ornithophila* *metallica*.—*Ornithomya* **acutipen-*

nis, *biloba*, *chloropus*, *fur*, **melbae*, **pallida*.—*Crataerina hirundinis*.—*Myophthiria *capsoides*, **fimbriata*, **lygaeoides*, **neotropica*, **reduvioides*.—*Ornithoctona fusciventris*.—*Icosta zumpti*.—*Pseudolynchia garzettae*.

Trochilidae (319. Amer.). *Ornithoctona nitens*.

Coliiformes

Coliidae (6. Afr.). *Ornithophila metallica*.

Trogoniformes

Trogonidae (35. Pantrop.). *Ornithoica exilis*, *philippinensis*.—*Ornithophila metallica*.—*Ornithomya *fuscipennis*.—*Ornithoctona erythrocephala*, *fusciventris*, *laticornis*, **nitens*, *plicata*.—*Stilbometopa ramphastonis*.—*Icosta angustifrons*.

Coraciiformes

Coraciidae (17. Palaeotrop.). *Ornithoica curvata*, **exilis*, *stipituri*, *turdi*.—*Ornithophila *metallica*.—*Ornithoctona idonea*, *laticornis*.—*Icosta bicorna*.—*Pseudolynchia canariensis*.

Alcedinidae (87. Cosm.). *Ornithoica bistativa*, *curvata*, **exilis*, *philippinensis*, *pusilla*, *simplicis*, **stipituri*, *turdi*, *zamicra*.—*Ornithophila *metallica*.—*Ornithomya anchineuria*, **fuscipennis*.—*Myophthiria capsoides*.—*Ornithoctona australasiae*, *erythrocephala*, *laticornis*, *plicata*.—*Icosta chalcolampra*, *jaetratrix*.

Meropidae (25. Palaeotrop.). *Ornithoica curvata*, *exilis*, *stipituri*, *turdi*.—*Ornithophila metallica*.—*Icosta minor*.

Momotidae (8. Neotrop.). *Ornithoctona erythrocephala*, *fusciventris*.—*Icosta angustifrons*.—*Microlynchia pusilla*.

Upupidae (7. Old Wld.). *Ornithophila metallica*.

Bucerotidae (45. Palaeotrop.). *Ornithoica *curvata*, *exilis*, **hirtisternum*, **subnucans*, *turdi*.—*Ornithoctona plicata*.—*Icosta ardeae*, **bicorna*, **bucerotina*, **coalescens*, **dioxyrhina*, *maquilingensis*, **mecorrhina*, **spinosa*, *wenzeli*.—*Phthona nigrita*.

Piciformes

Picidae (210. Cosm.). *Ornithoica bistativa*, **curvata*, **exilis*, *tridens*, *turdi*, *vicina*.—*Ornithophila metallica*.—*Ornithomya *anchineuria*, *avicularia*, *chloropus*, *fuscipennis*, *parva*.—*Ornithoctona australasiae*, *erythrocephala*, *fusciventris*, *laticornis*, *plicata*.—*Icosta americana*, *angustifrons*, *fenestella*.

Ramphastidae (37. Neotrop.). *Ornithoica vicina*.—*Ornithoctona erythrocephala*.—*Stilbometopa *ramphastonis*.—*Icosta angustifrons*.

Capitonidae (76. Pantrop.). *Ornithoica curvata*, *simplicis*, *tridens*.—*Ornithophila metallica*.—*Icosta maquilingensis*, **trita*.

Passeriformes

Rhinocryptidae (26. Neotrop.). *Ornithoctona fusciventris*.

Formicariidae (221. Neotrop.). *Ornithoica vicina*.—*Ornithoictona* **fusciventris*.—*Stilbometopa podopostyla*.—*Icosta holoptera*, *plaumanni*.

Furnariidae (259. Neotrop.). *Ornithoica vicina*.—*Ornithomya ambigua*, **parva*.—*Ornithoictona erythrocephala*, **fusciventris*.

Eurylaimidae (14. Palaeotrop.). *Ornithoica exilis*, *simplicis*.—*Ornithophila metallica*.—*Ornithoictona laticornis*.—*Icosta chalcolampra*.

Pittidae (23. Palaeotrop.). *Ornithoica* **bistativa*, *exilis*, **philippinensis*, *stipituri*, *unicolor*.—*Ornithophila metallica*.—*Ornithoictona australasiae*.—*Icosta fenestella*, *plana*.

Tyrannidae (366. Amer.). *Ornithoica vicina*.—*Ornithomya anchineuria*, **parva*.—*Ornithoictona* **fusciventris*, **oxycera*.—*Stilbometopa ramphastonis*.

Pipridae (59. Amer.). *Ornithoictona erythrocephala*.

Cotingidae (90. Neotrop.). *Ornithoica vicina*.—*Ornithoictona erythrocephala*, *fusciventris*.—*Stilbometopa fulvifrons*.—*Icosta angustifrons*.

Alaudidae (75. Old Wld.). *Ornithoica turdi*.—*Ornithophila metallica*.—*Ornithomya avicularia chloropus*.—*Pseudolynchia canariensis*.

Hirundinidae (75. Cosm.). *Ornithoica turdi*.—*Ornithophila metallica*.—*Ornithomya* **ambigua*, *avicularia*, **biloba*, *chloropus*, **clarki*, **comosa*, *fringillina*, **fur*, **inocellata*, **roubaudi*.—*Crataerina acutipennis*, **hirundinis*, *pallida*, **seguyi*.—*Ornithoictona laticornis*.—*Icosta sensilis*.

Pycnonotidae (109. Palaeotrop.). *Ornithoica* **bistativa*, **rabori*, *tridens*, *turdi*.—*Ornithophila* **metallica*.—*Ornithomya aobatonis*.—*Ornithoictona australasiae*, *laticornis*.—*Icosta sensilis*, *trita*.

Campephagidae (72. Old Wld.). *Ornithoica exilis*, *philippinensis*, *stipituri*, *turdi*.—*Ornithophila metallica*.—*Ornithoictona australasiae*, *plicata*.—*Icosta chalcolampra*, *diluta*, *fenestella*.

Muscicapidae (1460. Cosm.). *Ornithoica* **bistativa*, *curvata*, *exilis*, **momiyamai*, **philippinensis*, **rabori*, **simplicis*, **stipituri*, **tridens*, *turdi*, *unicolor*, **vicina*, **zamicra*.—*Ornithophila* **metallica*.—*Ornithomya* **anchineuria*, **aobatonis*, **avicularia*, **candida*, **chloropus*, **fringillina*, **fuscipennis*, *marginalis*, *nigricornis*, **parva* *rouba*.—*Ornithoictona* **australasiae*, **fusciventris*, **laticornis*, *nitens*, **oxycera*, *plicata*, **soror*.—*Stilbometopa fulvifrons*.—*Icosta angustifrons*, **fenestella*, *hirsuta*, *minor*, *plana*, *samoana*, *sensilis*, **tarsata*.—*Pseudolynchia brunnea*, *canariensis*.—*Microlynychia pusilla*.

Prunellidae (12. Palaeart.). *Ornithomya avicularia*, *chloropus*, **fringillina*.

Motacillidae (48. Cosm.). *Ornithoica philippinensis*, *zamicra*.—*Ornithophila metallica*.—*Ornithomya anchineuria*, *aobatonis*, *avicularia*, **chloropus*, *extensa*, *fringillina*, *fuscipennis*.—*Ornithoictona australasiae*.—*Icosta minor*, *sensilis*.

Laniidae (67. Old Wld., Nearct.). *Ornithoica exilis*, *momiyamai*, *philippinensis*, **stipituri*, *tridens*, **turdi*, *vicina*, *zamicra*.—*Ornithophila metallica*.—*Ornithomya* **anchineuria*, *avicularia*, *chloropus*.—*Ornithoictona australasiae*, **laticornis*.—*Icosta minor*, *omnisetosa*, *sensilis*.

Prionopidae (14. Palaeotrop.). *Ornithoica bistativa*, *turdi*.—*Ornithophila metallica*.

Artamidae (10. E. Orient.). *Ornithoica exilis*.—*Ornithophila metallica*.—*Ornithoictona australasiae*, *plicata*.

Irenidae (14. Orient.). *Ornithophila metallica*.—*Ornithomya fuscipennis*.—*Icosta fenestella*.

Certhiidae (6. Old Wld., Nearct.). *Ornithoica philippinensis*.—*Ornithomya chloropus*, *frin-*

gillina.

Sittidae (29. Old Wld., Nearct.). *Ornithoica vicina*.—*Ornithomya* **anchineuria*, **avicularia*, **chloropus*, **fringillina*.—*Ornithoictona plicata*.

Paridae (64. Cosm.). *Ornithoica bistativa*, **vicina*.—*Ornithophila* **metallica*.—*Ornithomya* **anchineuria*, **avicularia*, **chloropus*, **fringillina*.—*Ornithoictona australasiae*.

Meliphagidae (160. Palaeotrop.). *Ornithoica exilis*, **simplicis*, **stipituri*, **zamicra*.—*Ornithophila* **metallica*.—*Ornithomya* **fuscipennis*, **nigricornis*.—*Ornithoictona australasiae*.—*Icosta chalcolumpra*.

Nectariniidae (104. Palaeotrop.). *Ornithoica exilis*.—*Icosta* (?) *minor*.

Zosteropidae (80. Palaeotrop.). *Ornithoica bistativa*, **philippinensis*, **simplicis*.—*Ornithomya* **apelta*, **fuscipennis*.—*Ornithoictona australasiae*, **laticornis*.

Vireonidae (41. Amer.). *Ornithoictona fusciventris*.

Drepaniidae (22. Hawaiian Is.). *Ornithoica vicina*.

Thraupidae (474. Amer.). *Ornithoica vicina*.—*Ornithomya* **anchineuria*.—*Ornithoictona* **fusciventris*, **oxycera*.—*Icosta albipennis* (? or *botaurinorum*).

Fringillidae (293. Cosm. except New Guinea, Austral.). *Ornithoica bistativa*, **turdi*, **vicina*.—*Ornithophila* **metallica*.—*Ornithomya* **anchineuria*, **avicularia*, **chloropus*, **extensa*, **fringillina*, **fuscipennis*, **parva*.—*Ornithoictona* **fusciventris*, **laticornis*.—*Icosta americana*, **angustifrons*, **hirsuta*.—*Microlynchia* **pusilla*.

Icteridae (88. Amer.). *Ornithoica* **vicina*.—*Ornithomya* **anchineuria*, **parva*.—*Ornithoictona* **erythrocephala*, **fusciventris*.—*Stilbometopa* **fulvifrons*.—*Microlynchia* **pusilla*.

Ploceidae (263. Old Wld.). *Ornithoica bistativa*, **turdi*, **vicina*.—*Ornithophila* **metallica*.—*Ornithomya* **anchineuria*, **avicularia*, **chloropus*, **fringillina*, **opposita*.—*Crataerina* **hirundinis*, **pallida*.—*Myophthiria* **fimbriata*.—**Ornithoictona* **laticornis*.—*Icosta* **bicornis*, **lonchurae*, **minor*, **sensilis*.

Sturnidae (103. Old Wld.). *Ornithoica bistativa*, **exilis*, **simplicis*, **stipituri*, **turdi*, **zamicra*.—*Ornithophila* **metallica*.—*Ornithomya* **anchineuria*, **avicularia*, **chloropus*, **fuscipennis*.—*Crataerina* **pallida*.—*Ornithoictona* **australasiae*, **laticornis*, **plicata*, **rugicornis*.—*Icosta* **acromialis*, **chalcolumpra*, **tuberculata*.—*Pseudolynchia* **canariensis*.

Oriolidae (34. Old Wld.). *Ornithoica exilis*, **rabori*, **stipituri*, **tridens*, **turdi*.—*Ornithophila* **metallica*.—*Ornithomya* **avicularia*.—*Ornithoictona* **laticornis*, **plicata*.—*Icosta* **fenestella*, **minor*, **plana*.

Dicruridae (20. Old Wld.). *Ornithoica bistativa*, **curvata*, **exilis*, **philippinensis*, **rabori*, **stipituri*, **tridens*, **zamicra*.—*Ornithophila* **metallica*.—*Ornithoictona* **australasiae*, **laticornis*, **sorror*.—*Icosta* **chalcolumpra*, **fenestella*.—*Phthoia* **nigrita*.

Corvidae (100. Cosm.). *Ornithoica bistativa*, **curvata*, **exilis*, **momiyamai*, **stipituri*, **tridens*, **turdi*, **unicolor*, **vicina*, **zamicra*.—*Ornithophila* **metallica*.—*Ornithomya* **anchineuria*, **aobatonis*, **avicularia*, **chloropus*, **fuscipennis*, **nigricornis*.—*Ornithoictona* **erythrocephala*, **fusciventris*, **plicata*.—*Icosta* **acromialis*, **americana*, **angustifrons*, **chalcolumpra*, **corvina*, **fenestella*, **minor*, **reducta*, **tuberculata*, **wenzeli*.—*Pseudolynchia* **garzettae*.

Cracticidae (11. New Guinea, Austral.). *Ornithoica exilis*, **stipituri*, **zamicra*.—*Ornithophila* **metallica*.—*Ornithomya* **nigricornis*.—*Icosta* **plana*.

Ptilonorhynchidae (17. New Guinea, Austral.). *Ornithoica exilis, podargi, *stipituri*.—*Ornithophila metallica*.—*Ornithomya fuscipennis*.—*Ornithoctona australasiae*.—*Icosta plana*.

Paradisaeidae (43. New Guinea, Austral.). *Ornithoica exilis, hirtisternum, simplicis, *stipituri, zamicra*.—*Ornithophila metallica*.—*Ornithoctona australasiae*.—*Icosta chalcolampra, *plana*.

MAMMALIA

Marsupialia

Macropodidae (29. New Guinea, Austral.). *Orthoferisia *bequaerti, *macleayi, *minuta, *phaneroneura*. *Austroferisia *ferrisi*.

Primates

Lemuridae (16. Madagascar). *Allobosca *crassipes*.

Indriidae (4. Madagascar). *Proparabosca *alata*.—*Allobosca crassipes*.

Carnivora

Canidae (Cosm.). *Hippobosca *longipennis*.

Viverridae (64. Madagascar, Afr., Eur., Asia). *Hippobosca *longipennis*.

Hyaenidae (2. Afr., Eur., Asia). *Hippobosca *longipennis*.

Felidae (Cosm.). *Hippobosca *longipennis*.

Perissodactyla

Equidae (Cosm.). *Hippobosca *equina, *rufipes, *variegata*; all on domestic equines.

Artiodactyla

Camelidae (Afr., Asia, S. Amer.). *Hippobosca *camelina*, on domestic camels.

Tragulidae (4. Afr., Asia). *Lipoptena *pteropti*.

Cervidae: Moschinae (1. Asia). *Lipoptena cervi*.

Cervidae: Muntiacinae (6. Asia). *Lipoptena efovea, *pauciseta*.

Cervidae: Cervinae (13. Eur., Asia, N. Amer.). *Lipoptena *axis, *cervi, *efovea, *fortisetosa, (?) japonica, (?) nirvana, *rusaecola, *saepes, *sigma, timida*.

Cervidae: Odocoileinae (20. Eur., Asia, Amer.). *Lipoptena *cervi, *depressa, *guimaraesi, *mazamae, *pacifica*.—*Neolipoptena *ferrisi*.

Giraffidae (3. Afr., Asia). *Hippobosca rufipes*.

Antilocapridae (1. N. Amer.). *Neolipoptena *ferrisi*.

Bovidae: Bovinae (21. Afr., Eur., Asia, N. Amer.). *Hippobosca *equina, *variegata* (both on domestic cattle), *fulva, *rufipes*.—*Lipoptena hopkinsi, *paradoxa, *sepiacea*.—*Melophagus himalayae* (on domestic cattle, domestic yak).

Bovidae: Cephalophinae (19. Afr.). *Hippobosca *fulva*.—*Lipoptena *hopkinsi, *sepiacea*.

Bovidae: Hippotraginae (27. Afr., Asia). *Hippobosca fulva*, **hirsuta*, **rufipes*.—*Lipoptena* **paradoxa*, **sepiacea*.

Bovidae: Antilopinae (43. Afr., Eur., Asia). *Hippobosca* **fulva*, **rufipes*.—*Lipoptena* **binoculus*, **hopkinsi*, **iniqua*, **paradoxa*, **sepiacea*.—*Melophagus* **antilopes*.

Bovidae: Caprinae (26. Afr., Eur., Asia, N. Amer.). *Lipoptena* **ariana*, **capreoli*, **chalconelaena*, **couturieri*, (?) **grahami*, (?) **japonica*, **saltatrix*, **weidneri*.—*Melophagus* **ovinus*, **rupicaprinus*.

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