BIRD ECTOPARASITES FROM SOUTH FARALLON ISLAND, CALIFORNIA

By Adrian G. Marshall and Bernard C. Nelson

Abstract: During two visits to South Farallon Island in July of 1964 and 1965 the nests and bodies (if both were accessible) of 11 species of birds and single individuals of a further 3 species, as well as 3 species of mammal, were examined for ectoparasites. Three species of Siphonaptera were collected, one host specific, another confined to passerines and the third widely distributed; 5 new host records were recorded, to which may be added a further 3 possibilities; 5 new accidental host associations were observed. Of the 14 species of Mallophaga collected, one was previously known only from a male specimen removed from a now extinct host, and a further 4 species constitute new host records. Numerous specimens of a tick were collected from the nests of Western Gulls which, it is suggested, should be known as Ornithodoros sp. near danmarki. A new species of dermanyssid mite was collected from 2 sp cies of host.

The Farallon Islands, approximately 43 km west of San Francisco, California, contain magnificent colonies of sea birds which have received considerable attention from ornithologists. Bowman (1961) mentioned 12 breeding species of sea birds and 3 breeding species of passerines. Despite the value of the study of ectoparasites in the elucidation of the phylogeny of birds (Mayr 1957) few ectoparasites have been reported from North American sea birds (Hubbard 1947, Hicks 1959, 1962) other than Mallophaga (Emerson 1962). The senior author visited the island twice, from 7–10 July 1964 and again from 3–10 July 1965, collecting ectoparasites (which included Siphonaptera, Mallophaga, and Acarina) from 12 of the 16 bird species examined.

MATERIALS AND METHODS

Of the 15 species of birds mentioned by Bowman (1961) as breeding on South Farallon Island we examined the incubating sites and bodies of living birds (if both were accessible) of 12 species, few of which had been examined previously for ectoparasites (Hicks 1959, 1962, Kir'yakova 1963, Emerson 1964). We also examined dead individuals of four species of vagrants or transients. Most fleas and ticks were removed from the nesting material either by hand or by use of Berlese funnels. Lice, a few fleas and mites were removed from the birds either by hand or by asphyxiation with chloroform in polythene bags. All ectoparasites, with the exception of the ticks, which were kept alive for virus isolation, were preserved in 70% alcohol for subsequent mounting and identification.

RESULTS

1. Oceanodroma homochra (Coutes). Ashy Petrel. Many adults, juveniles, and nests were examined. Fleas: 1 ♂, 2 ♀♀ and many larval Actenopyilla suavis Jordan & Rothschild, 1923 were removed from one nest. Lice: Philoecus annuliventris (Uchida 1917); Halipeterus raphanus Timmerman, 1961. These constitute the first records of lice from this host. Acarines: A new species of Dermanyssus was collected from juvenile hosts.


3. Phalarocorax penicillatus (Brandt). Brandt's Cormorant. Many juveniles and nests examined. Fleas: Many C. pelecani in nests. New host record. Lice: Eidmaniella kuwani (Kellogg & Chapman 1902); nymphs of Pectinopygus sp., the first record of this genus from this host.


5. Haematopus bachmani Audubon. Black Oystercatcher. Two adults, 2 juveniles and a single nest examined. Lice: Actornithophilus grandiceps (Piaget 1880); Saemundssonia haematopi (Linnaeus 1758).

6. Larus occidentalis Audubon. Western Gull. Four adults, and many juveniles and nests examin-
ed. Fleas: Many *C. pelecani* in nests. New host record. Lice: *Austromenopon transversum* (Denny 1842); *Saemundssonia lari gonothorax* (Giebel 1874). Acarines: *Ornithodoros* sp. near *denmarki* Kohls, Sonnenshine & Clifford, 1965 found in considerable numbers in many gulls' nests.


8. *Cepphus columba* Pallas. Pigeon Guillemot. Many juveniles and nests examined. Fleas: *C. pelecani* rare but removed from both juveniles and nests. New host record. Lice: *Saemundssonia procax* (Kellogg & Chapman 1899). Acarines: A new species of *Dermatophilus* was collected from this host identical to that found on juvenile Ashy Petrels.

9. *Psychoramphus aleutica* (Pallas). Cassin's Auklet. Many adults, juveniles and nesting burrows examined. Fleas: *Actenophyllus suavis* common both on birds within their nesting burrows and in the burrows themselves. 1 ♀ *C. pelecani* was also removed from a nest. Lice: *Quadraceps maritimus* (Kellogg & Chapman 1899). Also 2 ♀♀ and 1 ♂ of the *Austromenopon nigropleurum* group were collected from an incubating male by G.E. Chaniot Jr. on 2.VI.1965. This is the first record of this genus from Cassin's Auklet. We have followed Clay (1959) in referring this form to the *nigropleurum* group.


11. *Salpinctes obsoletus* (Say). Rock Wren. Five juveniles and 2 nests examined. Fleas: Many *Dasyphyllus gallinulae perpinatus* (Baker 1904) in nests. Five individuals, 6%, of the fleas collected were *C. pelecani*. Both are new host records.


A single dead individual of each of the following species of birds was examined for ectoparasites and in each case proved negative: *Pelecanus occidentalis* Linnaeus (Brown Pelican); *Selasphorus sasin* (Lesson) (Allen's Hummingbird); *Dendroica pensylvanica* (Linnaeus) (Chestnut-sided Warbler); *Spinus pinus* (Wilson) (Pine Siskin).

Ectoparasites were also obtained from three species of mammal. One adult *Oryctolagus cuniculus* (Linnaeus) (European Rabbit) was examined and yielded the following: Fleas: 1 ♂ *C. pelecani*. Lice: *Haemodipsus ventricosus* (Denny 1842). Acarines: A single blood-engorged larva of *Ornithodoros* sp. near *denmarki*. One adult *Mus musculus* Linnaeus (House Mouse) was infested with deutonymphs of the genus *Pecilochirus* (Acarina: Parasitidae) usually phoretic on beetles. The senior author was readily bitten by *C. pelecani* and engorged fleas frequently were found on his legs after walking through a gull colony.

**Discussion**

**Siphonaptera.** Three species of flea were taken from ten species of bird and two species of mammal.

*Actenophyllus suavis* is the only species of this Nearctic genus and is thought to be host specific to Cassin's Auklet (Hopkins & Rothschild 1953, Hicks 1959, 1962, Thoresen 1964). On South Farallon Island Cassin's Auklets frequently nest in close association with Ashy Petrels in dilapidated dry stone walls, but *A. suavis* was found only once in an Ashy Petrel's nest. This nest contained 1 ♂, 2 ♀, and many larvae of the flea. Examination of the females indicated that they were probably unfed. It therefore seems most unlikely that the Ashy Petrel is a true host of this flea, the nest in question probably previously having belonged to an Auklet. (The term "true host" as regards Siphonaptera is best retained for "the host which, in nature, provides the flea with suitable conditions for indefinitely continued reproduction" [Hopkins 1957]).

Nearly all species of the large Holarctic genus *Ceratophyllum* occur on birds with most species showing a preference for type of nest rather than for a particular group of birds (Hopkins 1957). This is certainly true of *C. pelecani* which was widespread upon several hosts throughout South Farallon Island although it had been recorded previously only from the Brown Pelican and the Deer Mouse, *Peromyscus maniculatus elusus* Nelson & Goldman, (Hubbard 1947). The following birds undoubtedly act as true hosts: Double-crested Cormorant, Brandt's Cormorant, Pelagic Cormorant and Western Gull, as well as the Brown Pelican reported by Hubbard (1947). The Pigeon Guillemot and Rock Wren may also be true hosts, but *C. pelecani* was probably an accidental parasite upon the Common Murre, Cassin's Auklet, rabbit and man.

*Dasyphyllus* is a small genus of bird fleas with a relic distribution, having only one Holarctic species, *D. gallinulae*. This species occurs in association with a wide variety of birds, most of which are Passeriformes that build their nests in low situations (Hopkins 1957). *D. gallinulae perpinatus* is widely distributed west of the Coast Range from
Southern Alaska possibly continuously to Central America (Holland 1963). It has been taken from many avian hosts and also from burrowing rodents (Hubbard 1947). On South Farallon Island it was found in considerable numbers in Rock Wren’s nests and upon the body of an American Redstart but never in association with any other host. The fact that Rock Wrens nested on the ground in similar situations and in close proximity to other birds such as the Ashy Petrel and Cassin’s Auklet makes it difficult to believe that this flea breeds indiscriminately on hosts sharing a common habitat as stated by Holland (1964).

**Mallophaga and Anoplura.** Fourteen species of Mallophaga, of which five are of particular interest, were taken from nine species of bird and one Anoplura from a rabbit.

*Philoeucanus annuliventris* has been reported previously only from the Fork-tailed Petrel, *Oceanodroma furcata* (Gmelin). Our record from the Ashy Petrel indicates that this species has a wider host distribution.

*Haliparus raphanus*, also taken from the Ashy Petrel, was known previously only from 1♂ collected from the now extinct Guadalupe Petrel, *Oceanodroma macrodactyla* Bryant. Our 5 ♂♂ specimens fit the measurements given for the holotype and their genitalia are similar to that illustrated by Timmerman (1961). In addition to the 5 ♂♂, 6 ♀♀ and 5 nymphs were collected. Since the Guadalupe Petrel is now extinct Timmerman suggested that there was little chance of obtaining additional material of *H. raphanus* unless this species has a wider host distribution or the Guadalupe Petrel was not its true host. We now believe that the former is more probable since some species of *Haliparus*, such as *H. pelagicus* (Denny 1842), have a wide host distribution (Emerson 1964).

The two specimens of *Eidmaiella* constitute the first record of the genus from the Pelagic Cormorant. J. E. Keirans (pers. comm.) examined our specimens and concluded that these specimens were not significantly different from our material from Brandt’s Cormorant. Therefore, we have referred these specimens to *E. kuuami*. It is possible that our record is a case of straggling and an undescribed species of *Eidmaiella* occurs on Pelagic Cormorants.

Two other findings constitute new host records—the nymphs of *Pectinopygus* sp. from Brandt’s Cormorant and the three specimens of *Austromenopon nigropleurum* group from Cassin’s Auklet.

**Acarina.** Two species of ectoparasitic acarines were collected.

Dermanyssid mites removed from juvenile Ashy Petrels and Pigeon Guillemots were identified by D.P. Furman as a new species of *Dermanyssus* which he and the junior author are presently describing. It is likely that *Dermanyssus* sp. reported by Thoresen (1964) on Cassin’s Auklets belong to the same species.

Many *Ornithodoros* ticks were collected from Western Gull nests, and a single larva was removed from a rabbit. This species, which belongs to the so-called “O. capensis group,” keyed out to *O. denmarki* (Kohls et al. 1965). However, C. M. Clifford suggested that these ticks, the first record of *O. denmarki* from a region off the west coast of the continental U.S., be referred to as *Ornithodoros* sp. near *denmarki*.

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**REFERENCES**


