

EXTERNAL PARASITES¹ ON CERTAIN BIRDS OF BRITISH COLUMBIA.

BY G. J. SPENCER,

University of British Columbia.*

During June and July of 1926 while doing marine investigation at Tofino, Clayoquot Sound, on the west coast of Vancouver Island, I had the opportunity of examining certain birds for external parasites. The results from some hosts were so far removed from the normal Mallophagan population of most birds that it seemed worth while recording them at the time.

I am greatly indebted to Professor A. W. Baker, of the Ontario Agricultural College at Guelph and to Professor G. F. Ferris of Leland Stanford University for identifying the Mallophaga and Hippoboscid, respectively, mentioned below.

During the months at Tofino, five Steller's jays, *Cyanocitta stelleri stelleri*, came into my hands at intervals. The first bird, a juvenile, revealed, after a careful search, one very large flea on its head and nothing else. The second jay, also a juvenile, carried a single winged Hippoboscid, *Ornithomyia avicularia*, Linn. and no Mallophaga or fleas on its body. The Mallophaga that I sought on the bird were concentrated on the abdominal tergites of the fly and there were no less than sixteen mature lice tightly wedged together in this area, some at least holding on to the membrane by their mandibles, all with their bodies free so that they looked as if standing on their heads. So tightly were they adhering that when removed with forceps, each one came away with a distinct jerk leaving the intersegmental membrane scarred in places where their mouth parts had been attached. The fly, at least for the time being, was the generous host rather than the bird because, besides the masses of lice, there were some small white mites around and on both the bases of the fly's wings. The mites, at least, had apparently been there for some time because they had laid extensive clusters of oval eggs cemented by little pedicels to one another and to the membrane of the fly's wings.

The lice are *Degeeriella deficiens* Piaget, the same species as others I obtained off jay no. 3. I kept the fly alive for a little while before killing it and neither mites nor lice made efforts to drop off. Concerning this species of louse Professor Baker says "This material appears to be nearer the figures of *Degeeriella ampullata* but Harrison considers this a synonym of *deficiens*. He has had the opportunity of examining much of this European material. The species is recorded from *Cyanopollus (Cyanopica) cooki*, which is a blue magpie of southern Europe. Only one *Degeeriella* has, with my hurried scanning of the literature, been recorded from a jay in North America, that is *D. vulgata*, Kellog,

¹—Written in September, 1926, at Tofino, B. C. Read before the Annual Meeting of the Entomological Society of Ontario, at Ottawa, November, 1927.

from *Cyanocitta stelleri frontalis*, the blue fronted jay. This material is certainly not *D. vulgata*" which Ferris records from many Passerine birds. This is therefore, constitutes a new North American record and a new host record.

On the third jay, an adult, were some two dozen specimens of this souse louse *D. deficiens* Piaget. On the fourth and fifth jays, both juveniles, I find nothing although both birds were kept as usual for two days wrapped in paper bags and were examined at intervals.

Thus of the five Steller's jays only one, the adult, had Mallophaga on body and with the exception of the one flea and the one fly, the four juveniles were free from parasites.

Since Hippoboscids are carried in North America mostly by raptorial cursorial birds, I took two ravens, *Corvus corax*, in the hope of finding additional specimens, but without success. Instead, I obtained very large numbers of the louse *Colpocephalum subacuale* Nitzsch. Both ravens were literally swarming with this louse and after taking over two hundred individuals off of them, without exhausting the supply by any means, I used both birds for bait. Besides those specimens that were put into alcohol, others swarmed over the wrapping papers and spread in all directions. The sides of the birds under the wings were densely crowded with lice, chiefly in the apterylae. Undoubtedly ravens are very insensitive, they must be terribly plagued with vermin if the two specimens furnish any criterion.

In addition to the swarms of *C. subacuale* N., which species is recorded by European and American writers from various species of *Corvus*, including the American raven *Corvus corax sinuatus*, one of my birds furnished two individuals of the louse *Philoater ocellatus* Scopoli, which is recorded by European writers from various species of *Corvus*. This constitutes a new host record and a new American record.

Blue herons, that is the northwestern coast herons, *Ardea herodias fanni* are plentiful in Clayequot Sound. Since one cannot examine herons for lice without handling them, it became necessary to shoot one and a juvenile came within sixty yards of me. The idea of killing the bird was most repugnant to me as it was getting on in the season and I remembered my experience with Bald-headed Eagles early in June. At that time these majestic birds were plentiful, for many as seventeen hunted around the bay all one forenoon, but I could not bring myself to shoot one. Finally, when I had hardened my heart sufficiently in the cause of Mallophagan and Hippoboscidian science—there was not an eagle to be seen. So when this heron arrived, I took no further chances but even the bullet disliked its mission because it dropped low and forced me to chase a bird with one broken leg up and down the coast line for an hour before I could get near enough for a killing shot. The only consolation to be derived from the murder, was the satisfaction of the first shot which was really good marksman

mens of the louse *Esthiopterum ardeae* Linn. (*Lipeurus leucopygus* N.), of which were still alive after having been subjected to four high-tide immersions. Now herons do not immerse their bodies under water and even their heads are rarely below the surface and then only for an instant in the act of catching fish, so that the ability of these lice to stand submersion for long periods is remarkable: in this case four periods of seven and one half hours each or a total of thirty hours. Moreover, this made a total of eight days that these lice lived after their host was killed. Some would have lived even longer had not preserved them in alcohol.

Concerning these lice, Professor Baker tells me that "these specimens are a little larger than the European descriptions and lack some of the bristles on the clypeal margin figured by Giebel, but are undoubtedly the same species. They are recorded by European writers from various species of *Ardea*."

This constitutes a new host record and a new North American record.

Five Brandt's cormorants or shags, *Phalacrocorax penicillatus*, fell into my hands at one time and although examined at once and several times afterwards, not a single bird louse could be found on them. Instead, the five birds yielded twenty four large and small ticks, taken, with one exception, from the head and neck; the one exception was on the upper part of the breast. Most of the ticks were from one-twelfth to one-eighth of an inch, but one measured one-quarter inch in length. Although ticks are mostly parasites of land animals they have been recorded from birds in the Veterinary Surgeon's reports from the Dominion Experimental Farm at Agassiz. Cormorants spend most of their time on the edge of or on sea water and sometimes dive very deeply under it. As I have one record of a shag taken from a crab trap four fathoms deep and another from one trap ten fathoms, that is sixty feet deep at high tide on that day in question. The difference between highest and lowest tide at that period was only eight feet, so at the very least, that cormorant went fifty two feet deep, and in order to get into the trap it must have been skimming along the bottom. All of this means that ticks as well as heron lice and probably lice on marine birds, can stand submersion for long periods. In the case of Malloraga it is perhaps not so surprising, because they would be protected by feathers, but ticks are fat creatures and large ones project out beyond the short feathers on a bird's head and neck.

Blue pigeons, the band-tailed pigeons of the west coast, *Columba fasciata fasciata*, form small flocks during August of anywhere up to forty birds in a flock; they fly from point to point at fairly regular hours every day in order to feed on the seeds of cascara trees. Upon examining several of these birds I found two species of lice, both fairly plentiful. One was *Esthiopterum columbae* Linne (*Lipeurus baculus* N.), the common species which infests wild and domestic pigeons and doves practically everywhere; its presence on this bird, however,

constitutes a new host record. The other species, *Goniodes piageti* Johnson and Harrison (*G. minor* of Piaget) is recorded from Columba species, including the domestic pigeon of Europe. In this instance it is a new North American record and a new host record.

In view of what I had written in this paper in September of 1926, it was of great interest to me to read an article by H. E. Ewing on "The Hippoboscid Fly *Ornithomyia avicularia* Linnaeus as a carrier of Mallophaga," published in the Annals of the Entomological Society of America for June, 1927.

The pertinent substance of Ewing's article is as follows:

Nine records are cited of Mallophagan infestation of *O. avicularia* Linnaeus.

In records of Hippoboscids carrying Mallophaga, eight out of the eleven known cases are of this one host-species of fly; two cases are synonyms of this same fly; one case only is definitely that of another bird fly. Other more commonly occurring flies have not been recorded as carriers of Mallophaga.

Seven widely occurring species of birds are detailed as carriers of *O. avicularia* L.

While the one Hippoboscid is almost the sole carrier of Mallophaga, several species of lice are involved and six out of the seven determined species belong to genus *Degeeriella*, while the seventh species belongs to genus *Philopterus*, a genus never separated from *Degeeriella* by any clear-cut generic character.

In the matter of numbers of attached lice, one case is of "several specimens," five cases are of one louse each and three cases are of two lice each per fly.

The article concludes with a discussion of suggested reasons for this association of Mallophaga and *O. avicularia*.

My findings add another page to this interesting chapter.

We have here the same fly *O. avicularia*, but carrying this time no less than sixteen specimens of the louse genus in question, *Degeeriella*, but of the species *deficiens* Piaget, on yet another bird host to those mentioned by Ewing, namely *Cyanocitta stelleri stelleri*, all the lice being in one group on the dorsum of the abdomen.

In an analysis of Ewing's suggestions as to the reasons for this association, it would seem that the matter of transportation can be discarded since this suggests consciousness on the part of the bird-lice, whereas it should be considered a felicitous result of some other stimulus. The question of the lice attempting to obtain some of the blood that the flies have imbibed from the bird host seems to me doubtful because to accomplish this the Mallophagan mouth parts would have to penetrate deep enough to pierce the alimentary