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THE MOSQUITOES OF THE PACIFIC NORTHWEST

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

In studying the mosquitoes of the Sierra Nevada Mountains of California in 1916, I was confronted by the problem of a certain similarity between *Aëdes tahoënsis* of the Sierras and *A. pullatus* of the Rocky Mountain region of British Columbia and Idaho. The two differ in the number of larval head hairs, and it was thought that *tahoënsis* might extend up the Cascades through the Pacific Northwest to British Columbia, where the mountains meet, and so the two species converge. Accordingly a short exploration was undertaken of the mountains in Washington State in the spring of 1917. Specifically, Glacier, in the Mount Baker region; Longmire Springs, in the Mount Rainier region, and Lake Cushman, in the Olympics, were visited.

Concerning the special problem in hand, it was determined that *tahoënsis* does not follow up the Cascades, but is replaced by an allied species, and therefore the geographical isolation of *tahoënsis* and *pullatus* is assured, together with their distinctness. This is quite clearly indicated by the very different climatic and floral conditions obtaining in the Sierras, as a short stay will readily convince one. In the Northwest it rains, producing a dense forest with moss and undergrowth; in California there is no rain, the forest being open and dry, while the lowland is treeless.

As compared with California, the Pacific Northwest is poor in mosquitoes, both in individuals and in the number of species concerned. But three black-legged species of *Aëdes* were found

in the mountains instead of six as in California. This is again conditioned by the climate. Frequent rains are conducive to permanent pools in which *Aëdes* do not thrive. The *Culex, Culiseta,* and *Anopheles* that do frequent such places are the same as in California, minus the tropical element, but without any additional species, all resulting in a small mosquito fauna.

Aëdes aloponotum, new species.

Mesonotum light red, with three narrow dark brown lines in the integument; vestiture of narrow curved bronzy brown scales, becoming straw-color about the antescutellar space. Abdomen black, with basal segmental whitish bands, widening at the sides; venter with median black patches almost forming a band. Wing-scales black, with white ones intermixed on costa and first vein, some also on forks of second and fourth veins. Legs black; femora white within nearly to tip, a white knee-spot; tarsi with broad basal whitish rings, the last joint half white. Claws toothed.

Type, female, No. 21543, U. S. Nat. Mus.; Lake Cushman, Washington, June 28, 1917 (H. G. Dyar).

Two other females were taken at the same place; one has the integument of the mesonotum dark brown, but with the same foxy-red vestiture.

A peculiar species of the *cantans* group. Male and early stages unknown.

Aëdes increpitus Dyar.

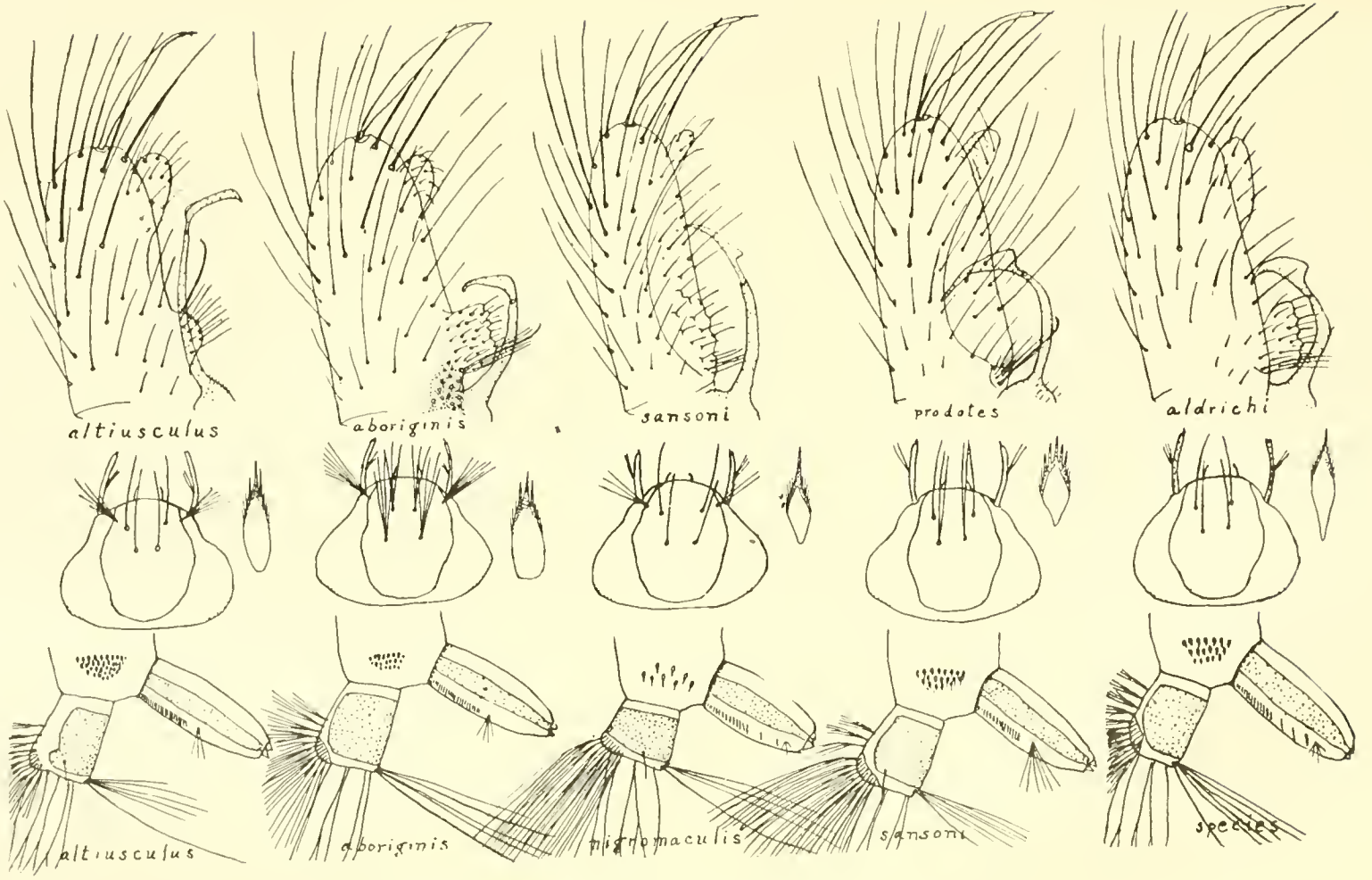
A single female taken at Lake Cushman, Washington, June 27, 1917, is referred to *increpitus* pending further information.

Aëdes curriei Coquillett.

A coast species breeding in tidal pools, not distinct from the inland *curriei.* A specimen was seen on the marsh at Bellingham, Washington, May 31, 1917, and others were captured at Alki Point, Seattle, Washington, June 20, 1917.

Aëdes cinereus Meigen (*fuscus* Osten Sacken).

A larva was found at Glacier, Washington, and bred to adult, June 13, 1917. Male adults were taken at Lake Cushman, June 26, 1917.



DETAILS OF GENITALIA AND LARVÆ OF AËDES

Aëdes varipalpus Coquillett.

The western tree-hole species occurs both in lowland and the mountains. Specimens have been recorded from Seattle in the monograph and I met with it commonly at Lake Cushman, in the Olympics. A larva was found at Longmire Springs, June 11, in water in a sawed-off stump.

Aëdes aboriginis, new species.

Head and mesonotum with dark yellow or brownish yellow narrow curved scales; a double line of small dark brown ones dorsally; traces only of the posterior lateral lines; area around antescutellar space golden. Abdomen black with basal segmental narrow white bands, triangularly widened at the sides, narrow posteriorly; venter grayish white scaled, with traces of a medioventral black stripe. Legs black, femora whitish beneath nearly to tip; tibiæ with a sprinkling of gray scales; knee-spot white. Wing-scales black, the scaling uniform, fine outstanding scales on the third vein like the rest.

In the male, the medioventral stripe of the abdomen is distinct, crossed by apical segmental black bands.

Genitalia (See Plate II). Apical lobe of sidepiece small, with slightly curved, partly appressed setæ; basal lobe large, expanded, tubercular, setose, the setæ very long and dense on the lower edge, concealing a moderately stout curved spine, not longer than the setæ. A thickened area between basal lobe and base, punctured by the insertions of small setæ. Stem of harpago moderate, the filament rather short, fusiform, with pointed curved tip. This is essentially as in *hexodontus*.

Larva (See Plate II). Scales of the lateral comb about 20, each with a row of apical spines. Air-tube with the pecten evenly spaced, followed by a 5-haired tuft. Anal segment not ringed by the plate, the plate reaching near the ventral line and evenly margined. Head hairs: Upper in threes, rarely fours; lower in threes, rarely in twos. Ante-antennal tuft of eight.

Types, male and female, No. 21544, U. S. Nat. Mus.; bred from larvæ found the middle of June, in the last stage, but with few pupæ, in temporary puddles on the marsh and in woods-pools near the marsh, Longmire Springs, Mount

Rainier National Park, Washington, issued June 17 to July 1, 1917 (H. G. Dyar).

Adult females, Glacier, Washington, June 3, 1917 (H. G. Dyar), and females and males, Lake Cushman, Washington, June 26, 27, 28, 1917 (H. G. Dyar); Hoquiam, Washington, May 27, 1904 (H. E. Burke), the latter erroneously recorded under *hexodontus* by me (Ins. Insc. Mens., v, 14, 1917); old specimens of this, the larger species, Ashford, Washington, August 1, 1906 (Dyar & Caudell).

The males were observed swarming at Lake Cushman in small groups in the forest in the forenoon, bright sunlight shining through the trees, but well screened by the dense foliage. The swarms were on the dark side of the trunks of enormous cedar trees, in one case growing upon a rocky bank, which added to the shadow. The swarms were from 6 to 10 feet from the ground, varying from a few to 50 individuals.

Aëdes altiusculus, new species.

Head and mesonotum as in *aboriginis,* the color a little less yellow, more creamy. Abdomen black, with rather broad basal segmental white bands, triangularly widened on the sides; venter white, with narrow apical segmental black bands. Wings and legs as in *aboriginis.*

Male with the venter gray-white scaled, narrow apical segmental black bands and no trace of medioventral line.

Genitalia (See Plate II). Apical lobe of sidepiece large, with long straight setæ; basal lobe expanded, setose, a long stout seta on the outer (dorsal) side. Stem of harpago long, the basal part curved and minutely pilose; filament sickle-shaped with double dorsal membranous ridge. This is essentially as in *tahoënsis.*

Larva (See Plate II). Lateral comb of the eighth segment of about 36 scales, each scale with a row of apical spines. Anal segment not ringed by the plate, which reaches only the middle of the side and terminates in a ragged edge; lateral hair single. Air-tube with the pecten evenly spaced, followed by a 6-haired tuft. Head hairs single, long and stout, approximate; ante-antenal tuft of nine.

Types, male and female, No. 21545, U. S. Nat. Mus.; "Indian Henry's," Mount Rainier National Park, Washington, larvæ June 13, 1917, in a mountain meadow. Old specimens of this small species, Mount Rainier, Washington, August 3-4, 1906 (Dyar & Caudell).

I owe the discovery of this species to Mrs. W. P. Allen, my faithful nurse, and Mr. J. B. Flett, Forest Ranger in the Mount Rainier National Park. Undaunted by the rain and soft snow, these indefatigable people tramped up 1,300 feet of altitude to Indian Henry's, only to find the whole meadow deep in snow. However, they searched for a wet place, and, finding it, scooped out the freezing mixture with their hands. Their perseverance was rewarded by some 20 larvæ of *altiusculus,* in the first stage, which were kicking about in the water under the snow.

I would express my obligation to both Mrs. Allen and Mr. Flett for their kindness in making this arduous ascent, which I was prevented from undertaking personally by physical disability.

Culiseta impatiens Walker.

This large mosquito is common in all the mountain regions. Adults: Glacier, June 3; Longmire Springs, June 11; Lake Cushman, June 26. Larvæ at Lake Cushman in a dark pool in the forest, in considerable numbers, preyed upon by a flock of larvæ of *Eucorethra.*

Culiseta incidens Thomson.

Everywhere in the lowlands, absent from the mountains. Hoquiam, May 27; Centralia, May 28; Bellingham, May 31; Ashford, June 10; Seattle, June 22, 1917.

Culex tarsalis Coquillett.

Abundant in the lowlands. Centralia, May 28; Bellingham, May 31; Tacoma, June 16; Seattle, June 22, 1917.

Culex saxatilis Grossbeck. (*territans* Auct.).

Larvæ, presumably of this species, were found in woods pools of permanent water, Glacier, Washington, June 2, 1917. An adult was captured at Sumas, Washington, June 2, 1917.

Anopheles occidentalis Dyar & Knab.

Anopheles larvæ were common in protected spots around the shores of Lake Whatcomb, Bellingham, Washington, May 31, 1917. The specimens were not bred, having been accidentally left behind on a train in the hurry of making a quick connection, but are presumably of this species.

NOTES ON AEDES AT LAKE PEND D'OREILLE, IDAHO

(*Diptera, Culicidæ*)

By HARRISON G. DYAR

A brief stop was made, July 3-4, 1917, at Sandpoint, on Lake Pend d'Oreille, and a trip taken to Sunnyside, an hour's ride down the lake. The altitude is 2,096 feet above sea level. The country is mountainous and well forested with conifers down to the lake margin. The following species of *Aëdes* were taken:

Aëdes aestivalis Dyar.

Seventy-three females and twenty-eight males. The mesonotum is whiter than in typical *aestivalis* from Kaslo, British Columbia, only a few being of the yellow color. This was noticeable to the naked eye, for when the mosquitoes would alight on dark clothing at dusk they looked like little flakes of cotton. Under a lens, most are ash gray with a broad central brown stripe, rarely narrowly divided on mesial line. There is a sprinkling of white scales on the wing along costa and subcostal vein.

The genitalia as described in the monograph (vol. iv, p. 742) should be slightly corrected. The basal lobe of the sidepiece is not accompanied by a stout hooked spine, but by a group of stiff setæ the outmost of which is thickened and has a large insertion, the spine not being fully differentiated as our description implies. The filament of the harpagone should be described as angularly widened near base. The apical lobe of the sidepiece is sparsely setose, being bare only at the tip on