

CALIFORNIAN MOSQUITOES

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MOSQUITOES AT SAN DIEGO, CALIFORNIA

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Under directions of Dr. L. O. Howard, of the Bureau of Entomology, U. S. Department of Agriculture, the writer spent seven weeks in San Diego, California, in the spring of 1916, to determine whether *Aedes calopus*, the yellow fever mosquito, was present in that city. Exact observations were desired, although general conditions indicated that the species did not occur. These indications were borne out by the examination; *Aedes calopus* was not found.

In general it may be said that San Diego is not infested by mosquitoes. Occasional single specimens of *Aedes squamiger* may be found biting and one *Culiseta incidens* was taken hovering suspiciously about the person; *Culex comitatus*, also, may be troublesome in unscreened houses; a gorged female was taken on the ceiling of a bedroom. But, in general, mosquitoes are seldom met with. The main residential part of the city lies high and is continually swept by cold sea breezes, conditions unfavorable for abundance of mosquitoes. The following species were taken in the environs of the city.

Culex tarsalis Coquillett.

This species is not particular about its breeding places, the larvæ being found in all sorts of natural pools and even in salt-marsh pools, where permanent. The larvæ are transparent and colorless and develop very slowly.

Culex stigmatosoma Dyar.

This species breeds naturally in pools in stream-beds left by high water, when these have become sufficiently stale, these pools being without vegetation. Consequently, it takes readily to artificial puddles, ponds and fountains. An egg-boat was taken from the fish pond in the square in Old Town and bred to maturity. An accidental pool on the grounds of the Theosophical Homestead at Point Loma was stocked with larvæ of this species.

Culex comitatus Dyar and Knab.

Males were taken swarming in daisy bushes just before and after dusk, in the city. No definite swarm was seen, the males flying in and over the flowers rather independently of each other. They did not congregate over the bushes, nor in connection with prominent objects, an adjoining fence being higher than the bushes, but neglected by the mosquitoes. Apparently they swarmed about the flowers, to which the females may possibly be attracted. The natural breeding places of this species are unknown. Larvæ have been taken only in artificial receptacles, such as water barrels.

Culex erythrothorax Dyar.

This species is closely confined to permanent ponds containing cat-tails. The adults rest in the reeds and only bite persons coming close to or in the water. The bite is not painful, but leaves an unsightly red blotch that lasts for several days, without swelling. Most of the breeding places of this species had been washed out and destroyed by the unusual floods of the preceding winter, but one undisturbed pool was found near the mouth of the San Diego River. The pool was about 50 by 300 feet in size, the water deep, the cat-tails growing in a fringe along the shore at a depth of about three feet. Masses of *Lemna* were lodged in the reeds, though the main part of the pond was open. Fish were present, the pond being occasionally visited by fishermen with hook and line. Red-winged blackbirds frequented the reeds, which held many of their nests with eggs and young. These birds doubtless furnish the normal blood supply to the mosquitoes and must be seriously annoyed by them.

In the *Lemna*, among the cat-tails, the larvæ of *erythrothorax* occurred in numbers. Eggs were obtained in the pool and from captured females that had bitten. The egg-boat is rather small, of usual shape, more pointed at one end than the other, containing from 80 to 100 eggs. The mature larva has a very long tube and is deeply pigmented, distinctly blackish. Young larvæ appear banded, the central pigment being

absent from the fourth abdominal segment, though the side patches are present. The banding is not as marked as in *C. territans*.

The statement on page 317 of the *Carnegie Monograph*, vol. III, part i, that "the larvæ are translucent," should be corrected, as this description applies to *tarsalis*, not to *erythrothorax*.

Culex territans Walker.

The larvæ occurred abundantly in some pools in the San Diego River valley. The pools had been washed out by the flood, but were regaining normal conditions. There was a slight current of water through the pools and many small slender reeds. The form of *territans* occurring here is very small, the larvæ strongly banded, due to the absence of pigment in the fourth abdominal segment. There is no general pigment in these larvæ, but the lateral patches are present, except in the fourth segment. Only very few *tarsalis* were present in these pools. *Territans* occurred also in the large pool described under *C. erythrothorax*. These larvæ were darker, having deep body pigment besides the lateral spots, but the fourth segment was colorless. The banding was, therefore, even more prominent.

Culex species.

A single female, bred from a pupa taken in the large pond mentioned under *C. erythrothorax*, comes very close to *derivator* Dyar and Knab (a Mexican species), and from the one specimen I do not venture to separate it. It is smaller and probably distinct, as Mr. Knab suggests to me, but a good series will be necessary to differentiate it properly.

Culex anips, new species.

Male.—Proboscis long, moderately slender, scarcely at all swollen apically, smoothly black-scaled, the labellæ paler and brownish, smooth, without setæ. Palpi long, slender, smooth, far exceeding proboscis, the first joint reaching nearly to end of palpi, with a few stiff black setæ at its tip; second and

third joints slender, smooth, upturned, the third with a few short setæ, all black-scaled. Antennæ plumose, the last two joints long and slender. Occiput clothed with appressed blackish scales, the margins of the eyes broadly white-scaled; erect forked scales on the nape brownish. Mesonotum dark brown, thickly clothed with narrow curved bronzy-brown scales, the submedian rows of black setæ forming two darker lines. Pleuræ dull greenish with a few white scales. Coxæ pale, a little greenish. Abdomen subcylindrical, flattened, expanded at tip; dorsal vestiture deep black, slightly bluish, no dorsal bands, a series of rounded white lateral spots, basally on the segments, faint on the first four segments, distinct on the next three; ventral segments broadly black-scaled at apices, dull whitish at bases, the colors suffused, not sharply banded; lateral ciliation of weak, short recurved hairs, very slight. Wing-scales black, the stems of the fork-cells short. Legs rather long and slender, clothed with black scales; femora white beneath, narrowly so nearly to apex, no knee-spots; femora and tibiæ with a very few black bristles.

Length: Body, about 3 mm.; wing, 2.5 mm.

Female.—As in the male except palpi short, about three times as long as the clypeus; antennæ with the joints subequal; abdomen with the white lateral spots larger, subtriangular, venter sordid white-scaled, only the last segment marked with black.

Length: Body, about 3 mm.; wing, 2.8 mm.

Type, Cat. No. 20304, U. S. Nat. Mus.

Occurring rarely in the large pool described under *erythrothorax*. The pupæ are very minute, even smaller than those of *Uranotænia anhydor*. The larva was not found.

Culiseta incidens Thompson.

The larvæ were found in drainage pools in a canyon at the north end of town. An egg-boat, taken from such a pool, was bred to maturity. The males all emerged first, then the females. There were about twice as many females as males bred from this boat.

***Aedes squamiger* Coquillett.**

This species breeds in the salt marshes. The adults are found sparingly in the canyons along the bluff at the north end of town and occasionally bite in the city in evening or morning. Eggs obtained from captured females were of the usual shape, rather thickly fusiform, one side flattened, micropylar end rounded and with a small annular cushion; white when deposited, turning deep black; smooth. The eggs are laid singly.

***Aedes tæniorhynchus* Wiedemann.**

Found breeding on the salt marshes in 1906 by Mr. Caudell and the writer. No specimens were taken about town and the species cannot be considered as troublesome.

***Uranotænia anhydor* Dyar.**

Described from a single larva found in a pool in Sweetwater Valley in 1906. The larvæ occurred in fair numbers in the large pool described under *Culex erythrothorax*. The adult has black legs and a violet line on each side of the disk of the thorax, but no central line, thus easily differentiating it from other known species. Only bred specimens were obtained, the adults not coming to bite even in the pool itself. Their habits may be nocturnal. The larvæ lie quietly in the masses of dead and living reeds among the *Lemna* and *Spirogyra*, the tube at the surface, the mouth biting hold of a root of *Lemna* or similar object below the surface, the body oblique, the head often bent at an angle. They feed only at infrequent intervals.

***Anopheles pseudopunctipennis* Theobald.**

The larvæ occurred in the large pool mentioned under *Culex erythrothorax* and in a pool in the Sweetwater Valley that had been damaged by the floods, but was returning to normal conditions. This species seems to favor these permanent reedy pools.

Anopheles punctipennis Say.

Bred in 1906 from a pool in the Sweetwater Valley by Mr. Caudell and the writer. It was not met with in 1916.

Anopheles occidentalis Dyar and Knab.

Breeding commonly in the river pools mentioned under *Culex territans* and also in the large pool with *A. pseudopunctipennis*. No *Anopheles* adults were taken in the residential portion of the city, though undoubtedly houses situated in the river bottoms will be visited by them.