

Xenos auriferi Pierce in Hawaii (Strepsiptera)

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For quite a number of years it has been known that *Polistes aurifer* Sauss. in Hawaii has been infested by a species of Stylopidae. At the August 5, 1910, meeting of the Hawaiian Entomological Society, "Mr. Terry exhibited male and female specimens of *Xenos* in the body of *Polistes aurifer*." See Proc. Haw. Ent. Soc., II, No. 4, p. 181, 1912. This is apparently the first and only record of its occurrence here.

In the collections at the Experiment Station, H. S. P. A., are a number of specimens of *Polistes aurifer* containing empty male stylopid exuviae bearing dates as follows: Oct. and Nov., 1907; Oct. 12, 1913; and Oct. 6, 1914. All are from various regions of Honolulu. There are also specimens of male stylopids dated: Oct. 14, 1914; Nov. 5, 1914; Nov. 8, 1914; and Dec. 16, 1927, similarly from various parts of Honolulu.

At other times, the writer has noticed affected wasps, without collecting them, and all in Honolulu. It is not known how general in the Islands this wasp parasite may be distributed.

Recently, I secured on Dec. 13, 1927, a nest of *Polistes aurifer* and the wasps that were associated with it. They were all adults that had been produced in the nest during the summer of 1927. The nest was a rather large one for this wasp, containing 201 cells, and was attached to a branch of *Ficus palawanensis* about five feet from the ground, the tree standing in my front yard at 2048 Lanihuli Drive, Manoa. The nest had been under observation for some time to ascertain how late the wasps remained with the nest before deserting it for the winter. This wasp passes through a sort of hibernation, or period of idleness for a few months as though it was passing through a winter like where it came from. Finally on the morning of Dec. 13, after a heavy rain during the night, the nest was found lying on the ground and the wasps all clustered on it. The whole colony was readily secured in a tin can, and later transferred to a large battery jar for observations. Many were seen to be affected by stylopids.

From day to day, the wasps that died were examined for stylopids and records kept of the number of wasps that were parasitized and of the number and sex of the parasites in each. The male stylopids had already issued, so that only the empty exuviae remained. However, in two instances, the dead male was found present, having failed to issue. A good proportion of females were found, and from some of these the larvae or triungulins were observed issuing and crawling about on the wasp. Specimens were mounted, and some preserved in alcohol.

In examination of literature, the description of *Xenos auriferi* Pierce was found in Proc. U. S. Nat. Mus., 40, No. 1834, p. 498, 1911. The species is described from a single female collected from *Polistes aurifer* in Palo Alto, California, Feb. 1892, by W. G. Johnson, and received from Professor Henry Comstock. Comparing specimens recently obtained, with this description, I consider them the same. The coloration of the cephalothorax agrees, and it is different from that of the other 15 species of *Xenos* listed by Pierce. There is some discrepancy in measurements, but this varies anyway among the several specimens that I have examined, while the description, as stated, is from an individual specimen.

On December 31, a dead female *Xenos* in a dead female wasp contained numerous embryos and some black triungulinids about ready to hatch.

On Feb. 13 and Feb. 21, 3 dead female *Xenos* in dead female wasps were examined and the triungulinids were not hatching yet. One dead female *Xenos* examined Feb. 21, contained over 3000 ova and triungulinids.

On Feb. 21, two wasps were dissected, each containing a female *Xenos*. The latter had numerous undeveloped ova, and a few about ready to hatch. One wasp seemed to have no ovarian tubes. The other wasp had the ovarian tubes of one side only—the side not containing the *Xenos*.

These observations demonstrate how the parasite is carried over the winter season as fertile females within the female wasps that go through the winter. Two other species of *Polistes* (*hebraeus* and *macaensis*) are prevalent in Hawaii, but they have never been found attacked by *Xenos*. In the above colony of *Polistes aurifer*, 50% of the males and 49% of the females were parasitized by *Xenos auriferi*.

TABLE SHOWING PARASITISM OF WASPS

Date	Dead Polistes examined		Xenos auriferi number per wasp		
	Male	Female	Male exuvium	Adult male	Female
Dec. 16, 1927		1	2		
		1	3		
		1	1		
		1	1		
	1		4	1 (dead)	
		1	1		2
		1	1		1
		1	1		1
Dec. 20		1	1		2
		1	2		2*
	1			0	0
		1	4		
Dec. 21		1			1*
	1		0	0	0
Dec. 27		1			2
		1			1
		10	0	0	0
Jan. 3, 1928		1	1		1
		1			1
		1	2		1
		1		1 (dead)	2*
Jan. 4		1			0
Jan. 9		1	0		0
Feb. 7		1			2
		1			1
Feb. 13		1			2
		1			1
Feb. 21		1			1
		1			1
		1			1
		1			1
		1			1
		16**			
	4	55	26	2	30

* The triungulinids were issuing from these and crawling about on the wasp.

** Living unparasitized wasps that were examined and liberated.