

***Morganella longispina* (Morgan) on Avocado in Hawaii
(Homoptera: Diaspididae)**

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When the annual shedding of leaves from my avocado tree at 2044 Lanihuli Drive, Manoa Valley, commenced, I first noticed, December 14, 1948, on fallen leaves, small black scales which I had never seen before. The scales were quite numerous on the under side of the leaves, and located along the sides of the midrib and other veins. On further examination nearly every leaf on the ground was found to have the scales, and many of those on the lower branches had the scales also. The infested leaves were readily distinguished by yellowing spots showing on the upper surface, caused by the presence of the scales beneath.

On search in the neighborhood, December 16, fallen avocado leaves with a few of the scales were found in several nearby locations: Lipioma near Beckwith, Mohala Way near Beckwith and Linohau Way near its eastern end. Then on December 26, I found fallen kukui leaves with the scales on the underside at base in the axils of the veins.

C. E. Pemberton made slide mounts and determined the species to be *Morganella longispina* (Morgan), by comparing with the figure of the species in "Insects of Hawaii," 5:358, 1948, and in Ferris's "Atlas of American Coccidae", S. II:244, 1938. Mr. Zimmerman sent material to H. L. McKenzie at Sacramento, California, who also determined it as *Morganella longispina*.

Apparently the present sudden appearance of this scale on avocado leaves is significant as the first record of its occurrence on this hostplant, and the first record of it on leaves, as other records have been of its occurrence on bark. It is strange also that this scale has apparently escaped notice by the entomologists in Hawaii for over 30 years, since the Kotinsky records on fig and Bombay mango in 1906 (Proc. Hawn. Ent. Soc. 1:78, 1906 and Report of Hawaii Experiment Station for 1912, page 38).

The early history of the occurrence of *Morganella longispina* in Hawaii is revealed in a field note (No. 1122) of Albert Koebele, which records his finding it in Kona, Hawaii, in February 1894: "a small black scale on the bark of mango, kukui and other trees"; and in July, 1896, he found it at Lihue, Kauai, "very abundant and destructive to fig and orange trees in a garden". Then, again from the Kona locality, September, 1896, Koebele reared parasites from this scale which were described by Dr. Howard from Koebele's slide mount No. 1122 as *Prospaltella koebelei* (Ann. Ent. Soc. Amer., 1:282, 1908). When first found by Koebele, specimens of the scales were transmitted to Maskell, who determined them as *Aspidiotus longispina* Morgan, which was the name used in Koebele's note No. 1122 (Trans. N. Z. Institute, 27:38, 1895). Kirkaldy's record of *Aspidiotus*

maskelli Ckll. in Fauna Hawaiiensis 3:107, is apparently from the same Koebele material.

Pteroptrichoides perkinsi Fullaway is another parasite reared from *Morganella longispina*, described in Report of the Hawaii Experiment Station for 1912, page 28, as having been "Bred from a coccid (n.g. and n. sp.) on Bombay mango by Jacob Kotinsky, August 24, 1906, Honolulu". In a later list of scale parasites (Proc. Hawn. Ent. Soc., 4:245, 1920), Fullaway gives *Morganella longispina* as the host of this parasite. Timberlake in Proc. Hawn. Ent. Soc., 5:438, 1924, assigns the parasite *perkinsi* to the genus *Archenomus*, and refers to the same record by Kotinsky as above: August 24, 1906.

Apparently there were no more records of *Morganella longispina* in Hawaii since the Kotinsky record of 1906, which was no doubt on a mango tree in Moanalua Gardens where Mr. Samuel Damon was growing several Indian varieties of mangoes, among them the Bombay mango.

This heavy infestation on my avocado tree indicates the probability that this scale may be more generally present than we were conscious of, and can be found if searched for. I have reared two different parasites from the scales found on kukui leaves, but they are not the same parasites mentioned above: *Comperiella bifasciata* Howard and *Aphytis chrysomphali* (Mercet). (Later, these parasites were reared from *longispina* on avocado leaves.)

Later records of the distribution of *Morganella longispina*:

During the year 1949 this scale was found at various times in the following places:

March 13—On fallen kukui leaves in the small park in fork of Manoa Road and East Manoa Road, and they were thus found at all times throughout the year.

April 10—On kukui leaves near east end of Nehoa St.

April 10—On leaves of *Bauhinia purpurea* on Ualakaa St. The scales were situated on underside in axils of veins at base, the same as on kukui leaves.

April 24—On kukui leaves on Ferdinand St., and on Manoa Road at the Waioli tea room.

July 24—On kukui leaves on Nehoa St., west of Keeaumoku St.

August 14—At 2044 Lanihuli Drive, an occasional scale on avocado leaves on the tree, and also on twigs at leaf scars and other rough places. This indicates how this scale can survive the annual complete shedding of leaves before blooming time.

October 16—On kukui leaves at McKinley High School.

October 19—On kukui leaves in several places in upper part of Woodlawn, Manoa Valley.

October 19—On a yellow fallen leaf of avocado there were green spots showing on upper surface where there were scales on lower surface.

November 27—On kukui leaves, Kaneohe, on road below the Pali.

December 4—On kukui leaves, Makiki Valley at waterworks park.

December 12—Abundant on fallen avocado leaves at 2044 Lanihuli Drive, the same as they were the previous year.

January 1, 1950—On kukui leaves in Kalihi Valley.