CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

California Pest Rating Proposal

***Choreutis* cf. *emplecta* (Turner): a moth**

Lepidoptera: Choreutidae

Current Rating: Q

Proposed Rating: C

Comment Period: 02/19/2021 – 04/05/2021

Initiating Event:

One adult specimen of *Choreutis* cf. *emplecta* was collected in Laguna Beach (Orange County) from a *Ficus microcarpa* plant by Orange County personnel in November 2020. Another official find was made at a nursery in Irvine (Orange County) in October 2020. There are reports of this moth in Los Angeles, Orange, and Ventura counties on the web site iNaturalist. This moth has not been rated. Therefore, a pest rating proposal is needed.

History & Status:

Background: *Choreutis emplecta* is a small moth with a wingspan of approximately 1 cm. The wings are patterned with orange, brown, and white. There is almost no information available on this moth.

The genus *Choreutis* has received insufficient study on a worldwide basis. Therefore, there is significant taxonomic uncertainty among the species. Complicating this is the fact that some type specimens are reported to be lost, which makes morphological comparison of specimens with types impossible. The moth found in southern California appears to be *C. emplecta* based on the studied morphological characters for which illustrations are available. However, it is possible that 1) other described species of *Choreutis* may be synonyms of *C. emplecta* and 2) there may be unrecognized cryptic species currently identified as *C. emplecta*. For the later reason, the moths found in California

have been identified as *Choreutis* cf. *emplecta* (cf. is an abbreviation of the Latin confer). This proposal has mostly relied upon the sparse information available for the species *Choreutis emplecta* and the limited data regarding the infestation in California.

Larvae of *Choreutis* species are known to feed on the upper surfaces of leaves and spin silk coverings and/or tie the edges of the leaf together, forming a shelter (Gielis and Bippus, 2016; Michigan State University). Multiple species in the genus are reported to feed on *Ficus* species, including *Choreutis nemorana* (Hübner), which feeds on edible fig (*F. carica*). This species is described as a minor pest of fig, but it can cause significant leaf damage (Vaneva-Gancheva, 2017).

Worldwide Distribution: *Choreutis emplecta* appears to be native to eastern Australia based on the fact that Turner described the species from a specimen collected there and all of the citizen scientist reports on the web site iNaturalist besides those from California are from there (iNaturalist; Turner, 1941).

Official Control: *Choreutis emplecta* is reportable (S. Bullington, pers. comm.).

California Distribution: One adult specimen of *Choreutis* cf. *emplecta* was collected in Laguna Beach (Orange County) from *Ficus microcarpa* by Orange County personnel in November 2020 (California Department of Food and Agriculture). Larvae and pupae were also found in folded leaves at this site. In addition, as of December 4, 2020, there are reports (all from 2020) from citizen scientists of *C. emplecta* from Los Angeles, Orange, San Diego, and Ventura counties, and these identifications appear to be *C*. cf. *emplecta* based on the photographs (iNaturalist, M. Epstein, per. comm.). The observation locations span a distance of approximately 130 miles.

California Interceptions: *Choreutis* cf. *emplecta* was found on *Ficus microcarpa* at a nursery in Irvine (Orange County) in November 2020 and on a *Rhaphiolepis indica* plant at a nursery in Stanton (Orange County) in November 2020 (California Department of Food and Agriculture).

The risk *Choreutis* cf. *emplecta* poses to California is evaluated below.

Consequences of Introduction:

1) **Climate/Host Interaction:** *Choreutis* cf. *emplecta* appears to be established in southern California. *Choreutis emplecta* is reported from eastern Australia, where it is presumably native. *Choreutis* cf. *emplecta* is only known to feed on *Ficus microcarpa* in California, which is widely planted and has become naturalized in the southern portion of the state, including Los Angeles, Orange, Riverside, San Diego, and Ventura counties (Riefner, 2016). It has not been reported to attack edible fig. No hosts are reported for *C. emplecta*. Based on the known distribution of *C. emplecta*, this moth may be limited by climate to southern California. Therefore, it receives a **Medium (2)** in this category.

   – Low (1) Not likely to establish in California; or likely to establish in very limited areas.

   – Medium (2) may be able to establish in a larger but limited part of California.

   – High (3) likely to establish a widespread distribution in California.

2) **Known Pest Host Range:** *Choreutis* cf. *emplecta* is only known to feed on one species of *Ficus*, *F. microcarpa*. Larvae and pupae were found on leaves of this plant in Laguna Beach. Adult moths were found on *Rhaphiolepis indica* plants in nursery settings in California, but no evidence of feeding damage was found. Therefore, it receives a **Low (1)** in this category.

   – Low (1) has a very limited host range.

   – Medium (2) has a moderate host range.

   – High (3) has a wide host range.

3) **Pest Reproductive and Dispersal Potential:** *Choreutis* cf. *emplecta* is capable of flight. Therefore, it receives a **Medium (2)** in this category.

– Low (1) does not have high reproductive or dispersal potential.

– Medium (2) has either high reproductive or dispersal potential.

– High (3) has both high reproduction and dispersal potential.

4) **Economic Impact**. *Choreutis* cf. *emplecta* is reported to be causing damage to ornamental *Ficus microcarpa* in Orange County (S. Birenbaum, Orange County, pers. comm.). There are no reports of C*. emplecta* causing damage in the literature, but that is not surprising considering how little has been written on this species and considering its apparently limited distribution. Edible figs are presumed to be present in the areas of southern California where *C*. cf. *emplecta* has been reported from. However, no reports have been received of this moth causing damage to edible figs here. This moth could be of concern to other states and countries that import *Ficus* nursery stock from California. Therefore, it receives a **Medium (2)** in this category.

Economic Impact: B, C

A. The pest could lower crop yield.

B. The pest could lower crop value (includes increasing crop production costs).

C. The pest could trigger the loss of markets (includes quarantines).

D. The pest could negatively change normal cultural practices.

E. The pest can vector, or is vectored, by another pestiferous organism.

F. The organism is injurious or poisonous to agriculturally important animals.

G. The organism can interfere with the delivery or supply of water for agricultural uses.

Economic Impact Score: Medium

– Low (1) causes 0 or 1 of these impacts.

– Medium (2) causes 2 of these impacts.

– High (3) causes 3 or more of these impacts.

5) **Environmental Impact**. Reports suggest *C*. cf. *emplecta* is damaging plantings of ornamental *Ficus microcarpa* in Orange County and it has already triggered treatments there (S. Birenbaum, Orange County, pers. comm.). Therefore, *C.* cf*. emplecta* receives a **High (3)** in this category.

Environmental Impact: D, E

A. The pest could have a significant environmental impact such as lowering biodiversity, disrupting natural communities, or changing ecosystem processes.

B. The pest could directly affect threatened or endangered species.

C. The pest could impact threatened or endangered species by disrupting critical habitats.

D. The pest could trigger additional official or private treatment programs.

E. The pest significantly impacts cultural practices, home/urban gardening or ornamental plantings.

Environmental Impact Score: High (3)

– Low (1) causes none of the above to occur.

– Medium (2) causes one of the above to occur.

– High (3) causes two or more of the above to occur.

Consequences of Introduction to California for *Choreutis* cf*. emplecta*: Medium (10)

Add up the total score and include it here.

–Low = 5-8 points

–Medium = 9-12 points

–High = 13-15 points

6) **Post Entry Distribution and Survey Information:** *Choreutis* cf*. emplecta* was found in Laguna Beach, Orange County in November 2020. Pupae and larvae were found on the host plant. Citizen scientist reports suggests it is more widespread and is also present in Los Angeles, San Diego, and Ventura counties. It receives a **Low (-1)** in this category.

–Not established (0) Pest never detected in California, or known only from incursions.

–Low (-1) Pest has a localized distribution in California, or is established in one suitable climate/host area (region).

–Medium (-2) Pest is widespread in California but not fully established in the endangered area, or pest established in two contiguous suitable climate/host areas.

–High (-3) Pest has fully established in the endangered area, or pest is reported in more than two contiguous or non-contiguous suitable climate/host areas.

Final Score:

7) The final score is the consequences of introduction score minus the post entry distribution and survey information score: Medium (9)

Uncertainty:

As explained in Background (above), there is significant taxonomic uncertainty regarding this moth. It is possible that the moth currently identified as *Choreutis* cf. *emplecta* is an unrecognized cryptic species. However, this does not appear to have a significant impact on this proposal for the reason that, except for distribution, biological information is essentially missing for *C. emplecta*. Therefore, even if *C.* cf. *emplecta* is later described as a new species, this would not mean that significant species-specific biological information had been used incorrectly in this proposal. The biological information considered for *C.* cf. *emplecta* is based on 1) sparse literature on *C. emplecta* (distribution), 2) observations in the infested area of California, and 2) biological generalizations for the genus *Choreutis*.

The full potential host range of *C.* cf. *emplecta* may not be known. According to the Hosts Lepidoptera hostplant database, most *Choreutis* species are oligophagous and feed on several species and/or genera of plant (HOSTS). Therefore, it is possible that this moth could be capable of attacking other *Ficus* species, including edible figs. Backyard figs are presumably present in the infested area in California and reports have not been found regarding damage to edible figs by this

moth, in California or elsewhere. However, damage to figs may be unreported. In addition, all of the available records of this moth in California are limited to the year 2020. It is possible that this moth may have a capacity for causing greater damage than has been observed but that it has not so far because it is so recently established in this state.

Conclusion and Rating Justification:

Choreutis cf. *emplecta* is currently present in Orange County and is probably also present in Los Angeles, San Diego, and Ventura counties. Although *C*. *emplecta* has not been reported to be a pest in the literature, *C*. cf. *emplecta* is causing damage to ornamental *Ficus microcarpa* in Orange County. It is already established in the state, apparently in at least four counties, and with no known lure, it seems unlikely that an eradication program will be carried out. Meanwhile, a B-rating would impact nurseries because they would have to eradicate all infestations of such a pest. For these reasons, a "C" rating is justified.

References:

California Department of Food and Agriculture. Pest and damage record database. Accessed November 9, 2020: https://pdr.cdfa.ca.gov/PDR/pdrmainmenu.aspx

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HOSTS. Accessed November 24, 2020: https://www.nhm.ac.uk/our-science/data/hostplants/search/index.dsml

iNaturalist. Accessed November 10, 2020: https://www.inaturalist.org/

Michigan State University. Apple-and-thorn skeletonizer. Accessed November 13, 2020: https://www.canr.msu.edu/resources/apple-and-thorn-skeletonizer#:~:text=Apple%2Dand%2Dthorn%20skeletonizer%20(,hawthorn%2C%20willow%20and%20mountain%20ash.

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Turner, A. J. 1941. Fragmenta Lepidopterologica. Proceedings of the Royal Society of Queensland 53:61-96.

Vaneva-Gancheva, T. T. 2017. *Choreutis nemorana* (Hübner, 1799) (Lepidoptera: Choreutidae) – first record in Bulgaria. Silva Balcanica 18:43-47.

USDA-APHIS. U.S. regulated plant pest table. Accessed November 12, 2020: https://www.aphis.usda.gov/aphis/ourfocus/planthealth/import-information/rppl/rppl-table

Responsible Party:

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*Comment Period: 02/19/2021 – 04/05/2021

*NOTE:

You must be registered and logged in to post a comment. If you have registered and have not received the registration confirmation, please contact us at permits[@]cdfa.ca.gov.

Comment Format:

- Comments should refer to the appropriate California Pest Rating Proposal Form subsection(s) being commented on, as shown below.

Example Comment:
Consequences of Introduction: 1. Climate/Host Interaction: [Your comment that relates to "Climate/Host Interaction" here.]

- Posted comments will not be able to be viewed immediately.

- Comments may not be posted if they:

Contain inappropriate language which is not germane to the pest rating proposal;

Contains defamatory, false, inaccurate, abusive, obscene, pornographic, sexually oriented, threatening, racially offensive, discriminatory or illegal material;

Violates agency regulations prohibiting sexual harassment or other forms of discrimination;

Violates agency regulations prohibiting workplace violence, including threats.

- Comments may be edited prior to posting to ensure they are entirely germane.
- Posted comments shall be those which have been approved in content and posted to the website to be viewed, not just submitted.

Proposed Pest Rating: C