HOKKAIDO UNIVERSITY

Title	Discovery of Fiorinia externa Ferris in Japan (Homoptera : Coccoidea)
Author(s)	Takagi, Sadao
Citation	Insecta matsumurana, 26(2), 115-117
Issue Date	1963-12
Doc URL	http://hdl.handle.net/2115/9708
Type	bulletin (article)
File Information	26(2)_p115-117.pdf

Instructions for use

Hokkaido University Collection of Scholarly and Academic Papers : HUSCAP

DISCOVERY OF FIORINIA EXTERNA FERRIS IN JAPAN

(HOMOPTERA : COCCOIDEA)

By SADAO TAKAGI

Entomological Institute, Faculty of Agriculture,
Hokkaido University, Sapporo

Fiorinia externa is a common pest of hemlock-spruce in northeastern United States, and there has hitherto been no reliable record of its occurrence in any other part of the world. As I have recently found this species in Japan a brief account should be given below about the present discovery.

Fiorinia externa Ferris

Fiorinia externa Ferris, Atlas Scale Ins. N. Amer. SIV-393, 1942.

This species was originally described from Baltimore, Maryland, and Queens, Long Island, New York, as a feeder of *Tsuga*. According to the original author, however, it was first reported in 1912 by Sasscer from Queens under the name *Fiorinia japonica*. Davidson & McComb (1958) state that *F. externa* is found also in Connecticut, Pennsylvania, Ohio and New Jersey and that its infestations are commonly very heavy wherever it is found. Furthermore, they add yew and spruce to its host plants.

I have collected specimens of this species at the Hokkaido University Experiment Forest, Wakayama-ken, Honsyu (7. I, 1962), and Omogo-Kei, Ehime-ken, Sikoku (14. V, 1963), Japan, on the leaves of *Tsuga Sieboldii*. Some of them were sent to Prof. McKenzie, who kindly compared those specimens with the type material and identified them with *F. externa*.

This species is variable in the number and arrangement of the marginal macroducts of the pygidium even on the sides of the same individual. In some cases these macroducts are six in number and arranged as follows: one on the fourth abdominal segment, two set close on the fifth and also on the sixth, and one on the seventh. This pattern may be basic of this species, whereas its variation seems to be caused by removing laterad or eliminating the outer of the paired macroducts on the fifth or sixth or both abdominal segments. Seven variants are found as given below. The variant d in the following table agrees with the form described and illustrated in the original description.

Variant	Abd. IV	Abd. V	Abd. VI	Abd. VII	Total
a (Fig. 1, B)	1	2	2	1	6
b (Fig. 1, F)	1	2	1+1	1	6
c	1	1+1	1+1	1	6
d	1	2	1	1	5

[Insecta Matsumurana, Vol. 26, No. 2, December, 1963]

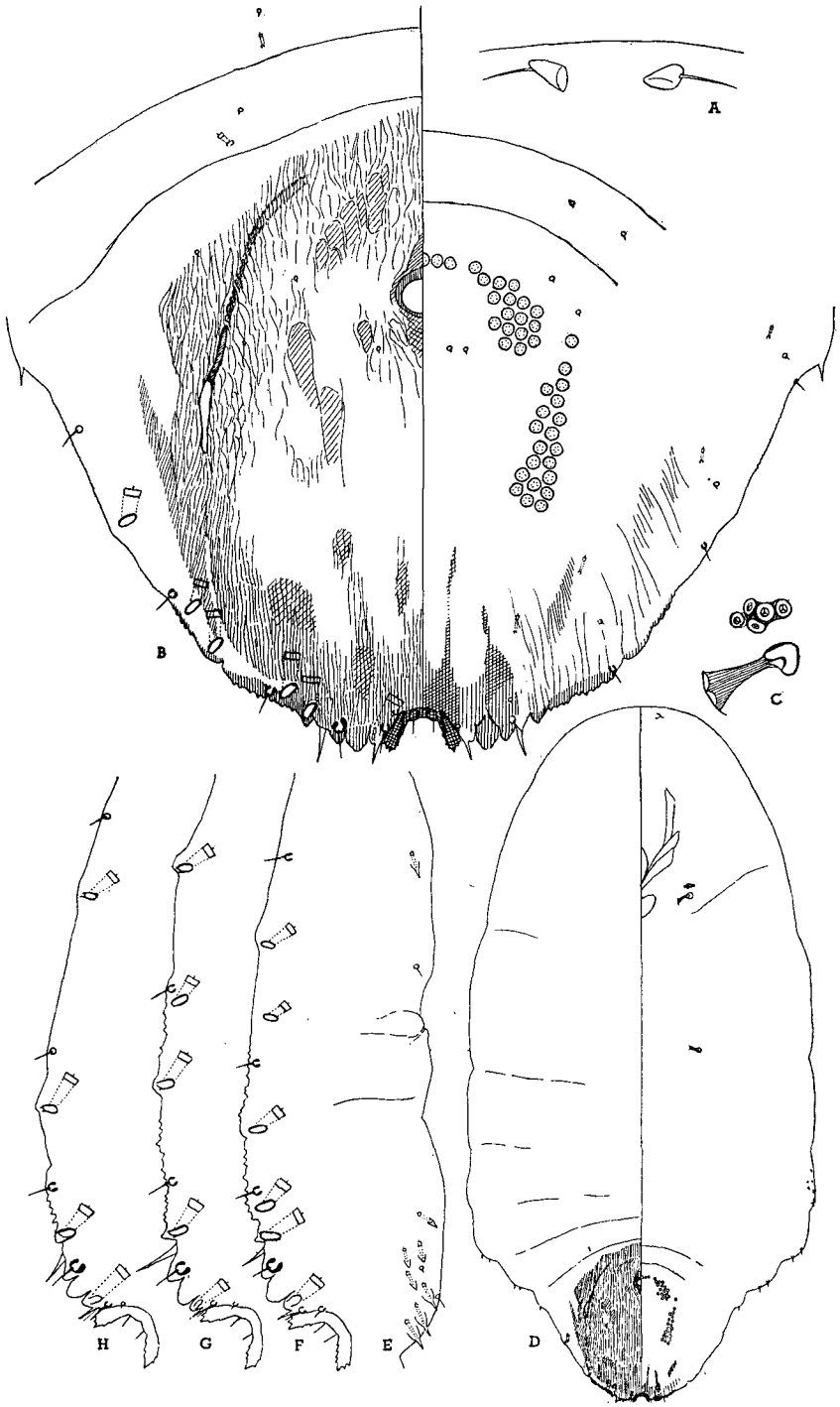

Fig. 1. *Fiorinia externa* Ferris: adult female.
A: antennae; B: pygidium; C: anterior spiracle; D: body; E: lateral margin of metathorax and first abdominal segment in ventral view; F, G, H: pygidial margin in dorsal view.

e	1	1+1	1	1	5
f (Fig. 1, G)	1	1	1+1	1	5
g (Fig. 1, H)	1	1	1	1	4

The number "2" means that two marginal macroducts are present and set close, and "1+1" that the outer of paired macroducts is set apart from the mesal and isolated.

In the original description it is stated that "the first exuvia seems ordinarily to be detached from the second, to which it is connected only by a thin film of wax". In the present material, however, this is also not always the case but is seen only in part. I have found many female scales which are normal in the position of the first exuvium.

The members of the genus *Fiorinia* concentrate distinctly in India across through China as north as Japan, and it is generally accepted that any species of the genus occurring in other parts of the world such as Africa, America and Europe must have been introduced in these parts. Four species of the genus are known from North America. One of them, *F. fioriniae*, is widely distributed over the world, and other two, *F. japonica* and *F. theae*, occur also in southeastern Asia. As well as these three species *F. externa* is also undoubtedly an invader in North America, and it seems now quite natural to take Japan for its cradle-land. Furthermore, its host in Japan, *Tsuga Sieboldii*, is native and abundant in the country.

I wish to express my hearty thanks to Prof. C. Watanabe, Hokkaido University, for his direction, to Prof. H. L. McKenzie, University of California, for his examining my material, and to Mr. Y. Hishinuma, Hokkaido University, for his kindness in my survey at the Hokkaido University Experiment Forest in Wakayama-ken. This study is supported by a grant from the Ministry of Education.

Literature

Davidson, J. A. & C. W. McComb, 1958. Notes on the Biology and Control of *Fiorinia externa* Ferris. J. Econ. Ent. 51: 405.

BOOK REVIEW

The Physiology of Mosquitoes. By A. N. Clements, Department of Physiology and Biochemistry, University of Southampton. International Series of Monographs on Pure and Applied Biology. Division: Zoology, volume 17, ix + 393 pages, 90 text-figures, 22 tables & 6 plates, 1963. Pergamon Press. 80 s net.

Mosquitoes are one of the most extensively investigated insect-groups, a number of informations by various authors having been published. Referring to those works the present author discusses concisely many interesting problems of mosquitoes in physiology and behaviour in 16 chapters as shown below:—

1. The egg. 2. Larval nutrition, excretion and respiration. 3. Osmotic and ionic regulation of body fluids. 4. Growth and metamorphosis. 5. The circulatory system. 6. Survival and longevity. 7. Adult feeding. 8. Adult nutrition and metabolism. 9. Reproduction. 10. Sense organs. 11. Diapause. 12. Behaviour of larvae and pupae. 13. Control of adult activity. 14. Flight behaviour. 15. Host-seeking behaviour. 16. Reproductive behaviour.

This work will be very useful to entomologists and insect-physiologists who are so interested in mosquitoes. By the way, the appendix "Systematic list of species mentioned" is very convenient for readers.

C. WATANABE