HORIDIPLOSIS FICIFOLII, A NEW SPECIES OF GALL MIDGE (DIPTERA: CECIDOMYIIDAE) DAMAGING ORNAMENTAL FIG PLANTS, *FICUS BENJAMINA* L.

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Horidiplosis ficifolii Harris, sp. n. is described on the basis of larvae and reared adults collected in the Netherlands and in Denmark and of galls collected in the UK from plants of the ornamental fig, *Ficus benjamina* L., initially imported into the Netherlands from China (Taiwan). Larvae develop in irregular blister galls on young leaves and the galled areas become increasingly discoloured, resembling fungal or bacterial leaf spots. The possibility that this Oriental species might become established in glasshouses in Europe is noted.

Correspondence: L. J. W. de Goffau, Ministry of Agriculture, Nature Management and Fisheries, Plant Protection Service, Section Entomology, 15 Geertjeweg, P.O. Box 9102, NL-6700 HC Wageningen, the Netherlands. E-mail: L.J.W.de.Goffau@pd.agro.nl

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In 2001 and 2002, plant health inspectors in western Europe found leaf galls induced by an unknown gall midge species on *Ficus benjamina* L. plants imported from Southeastern Asia. *F. benjamina*, the ornamental weeping fig, is widely grown in western Europe (and in other parts of the world) as a house-plant or glasshouse plant. It is marketed internationally as a container-grown plant and importations from Southeastern Asia, where it is indigenous, are common. It is possible that the gall midge might become established in greenhouses and on house-plants in Europe but information on its ecological requirements is insufficient at present to form a definite opinion. It will certainly be advisable in future to examine critically any plants of *Ficus benjamina* that show symptoms resembling those described below. Because of these phytosanitary considerations, this species is described here as a new species of *Horidiplosis* Felt, 1920. Many species of gall midge have been described from the genus *Ficus*, especially in India and Indonesia. A thorough biosystematic revision of these species is needed but seems unlikely to be undertaken in the foreseeable future.

In October 2001 the Plant Protection Service in Wageningen received a sample of *Ficus* leaves [PD no. 21008860] from Bleiswijk, the Netherlands, showing unusual leaf damage on plants imported into the

Netherlands from Taiwan. These leaves were marked by dark brown patches and orange-rose gall midge larvae were present. Initially it was thought that the larvae were not the cause of the damage but were simply feeding on fungal mould on the damaged leaves. In January 2002 a second sample [PD no. 22000265] was submitted from Bleiswijk consisting of lenticular leaf galls plus gall midge larvae on *Ficus benjamina* 'Exotica'. Then in March 2002 a third sample [PD no. 22001457] of damaged leaves with orange-rose gall midge larvae was obtained at Honselersdijk, the Netherlands, from a consignment of bonsai *Ficus benjamina* imported from Taiwan. Finally, at the end of June, a sample [PD no. 22003339] of three leaves with blister galls from a plant of *Ficus benjamina* 'Nitida', imported into the Netherlands from Japan was received but no gall midge larvae were found in the galls.

Meanwhile, the Central Science Laboratory [CSL], Sand Hutton, York, UK, received a sample [CSL 2022300] of *Ficus benjamina* leaves that had been collected in April 2002 by the Danish plant protection authorities on bonsai plants imported from China via the Netherlands in May 2001. Galls on these leaves matched those already seen in the Netherlands and gall midge larvae present on them, plus a single reared female, were identical. The same galls on leaves

Figs. 1-7. *Horidiplosis ficifolii* sp.n. – 1, Male third flagellomere; 2, wing venation, male; 3, tarsal claw and empodium, male; 4, male genitalia (a, gonostyle; b, aedeagus; c, hypoproct); 5, female third flagellomere; 6, ovipositor, dorsal; 7, ovipositor, lateral. Scales: a: 0.5 mm; b – c: 0.1 mm.

of a *Ficus* had previously been found by the UK Plant Health Inspectorate on a nursery at Newent, Gloucestershire, UK in September 2001. Two live larvae were present in a sample of leaves received at CSL but they died and galled leaves kept at CSL until late 2002 yielded no further specimens. The plants in the nursery at Newent had been obtained from a nursery in the Winchester area of the UK that had imported them from Bleiswijk, the Netherlands.

DIAGNOSIS OF SPECIES

Horidiplosis Felt, 1920, contains six Oriental species

that have been particularly associated with leaf galls on various species of *Ficus*. The type-species of *Horidiplosis* is *H. fici*, which was described on the basis of adults reared from pustule galls on the leaves of *Ficus infectoria* Roxb. collected at Pusa, India (Felt 1920). Since then five additional species, all from India on *Ficus* species other than *F. benjamina*, have been included in this genus (Gagné in press) but most are not adequately described and no thorough revisionary work has ever been done on this group of gall midges. Under these circumstances comparison of the new species with all previously named species is not possible but the new species is well characterised

Fig 8. *Horidiplosis ficifolii* sp. n., third instar larva, anterior and posterior segments, ventral. Scale line: 0.1 mm.

by the adult and larval characters described below.

Dr. R. J. Gagné, (USDA Systematic Laboratory, Washington, D.C.) compared specimens from our collections with Felt's types of *H. fici*. He noted some similarities in the male genitalia but there are also appreciable differences. In particular, *H. fici* is distinguished from the new species by its longer and narrower gonocoxites, longer ovipositor, and tarsal claws bent beyond mid-length but the type specimens are poorly mounted on microscope slides, making critical study difficult (R. J. Gagné, pers. comm.).

***Horidiplosis ficifolii* Harris sp. n.**
(figs. 1–10)

Type material. – Holotype ♂: Netherlands from Taiwan, Honselersdijk, ex leaf galls on *Ficus benjamina* L., coll. 27.03.2002, P. D. te Poeldijk, PD 22001457, slide no. 20136, deposited in the Zoological Museum, Amsterdam, the Netherlands. – Paratypes: 1 ♀, slide no. 20137; 3 larvae on slide no. 20138 and 4 larvae on slide no. 20139 (all associated with holotype ♂ and

paratype ♀, data as for holotype) deposited in the Zoological Museum, Amsterdam, the Netherlands.

Other material examined. – 1 ♀ on slide no. 20140 and 4 larvae on slide no. 20135 from galled leaves of *Ficus benjamina* collected in Denmark on plants imported from China via the Netherlands, [CSL 2022300], coll. 03.2002, deposited in the Natural History Museum, London, UK.

Description

Male (figs. 1–4). – Head: Antennae with 12 flagellomeres, each with looped circumfila, 1 set on the basal node and 2 sets on the distal node; necks and internodes long (fig. 1). Eyes large, connate and about 12 facets long at vertex; facets close-set, hexagonal; occiput with narrow dorsal projection (post-vertical peak) bearing two terminal setae. Frons with 10 setae; palpus 4-segmented; labellae ovoid, triangularly pointed terminally and each with 5–6 lateral setae. Thorax: Wings unmarked, length (arculus to apex) 1.6 mm; R₅ curved, joining C beyond wing apex (fig. 2). Tarsal claws simple on all legs, sharply curved in

Fig 9. Leaves of *Ficus benjamina* L. damaged by leaf-galling larvae of *Horidiplosis ficifolii* sp. n.

basal third, with empodia extending as far as tips (fig. 3); pulvilli inconspicuous, narrow and about half the length of the claws. Abdomen: Tergites 1-7 entire but not markedly sclerotized, rectangular and each with a single posterior row of up to 30 sharply pointed setae, two very small anterior trichoid sensillae present on each tergite but obscured by evenly spaced vestiture of narrow, strongly tapered scales. Tergite 8 not differentiated. Genitalia (fig. 4) with gonostyli relatively short, with microtrichia on basal third (fig. 4a); gonocoxites broad; aedeagus short, broad and distally tapered (fig. 4b); broadly divided cerci and hypoproct (fig. 4c).

Female (figs. 5-7). – Mainly as in male but slightly larger (wing length 2.0 mm). Antennal flagellomeres elongate cylindrical with necks about half length of basal node, circumfila simple, distal and basal loops linked, and slightly looped (fig. 5). Ovipositor short, only slightly retractile and with cerci splayed in dorsal view (fig. 6) and pendent in lateral view (fig. 7).

Larva (fig. 8). – Full-grown third instar larvae up to about 2.0 mm long, rosy orange and with well-developed sternal spatula. Most ventral and dorsal thoracic and abdominal papillae lacking setae or with barely discernible remnants thereof. Abdominal segments 7 and 8 with distinctive areas of cuticular patterning resembling fish scales; terminal segment with median pair of papillae modified to form short sclerotized pegs and the three other pairs lacking setae or with very small indistinct rudimentary setae.

Etymology

The specific name, *ficifolii*, means ‘of fig leaves’

and refers to larval development within leaf galls on *Ficus*. Authorship of the species description is to be attributed to the senior author [KMH].

Symptoms (figs. 9-10)

In the early stages of larval development galls appear as light coloured blisters on the green leaves. The larvae develop in these blisters. Later, the galled areas become increasingly discoloured, showing as light to dark-brown, irregular blotches (fig. 9). Vacated galls have small circular holes, about 1-2 mm diameter, on their upper surfaces (fig. 10) through which the larvae exit to pupate in soil or other substrates. The blisters then collapse so that the leaves appear to have been damaged by fungal and/or bacterial leaf-spot diseases.

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Fig. 10. Single leaf blister gall of *Horidiplosis ficifolii* sp. n. on *Ficus benjamina* showing hole through which the fully fed larva emerged. [Copyright: Central Science Laboratory, York, UK.]

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