

# The stable fly (*Stomoxys calcitrans*) (Diptera: Muscidae) recorded from the Faroes

## Stingflugan (*Stomoxys calcitrans*) (Diptera: Muscidae) skrásett í Føroyum

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### Úrtak

Í 2002 varð stingfluga (*Stomoxys calcitrans*) funnin í fimm fjósum á Velbastað. Hetta er fyrsta skráseting av slagnum í Føroyum. Stingfluga víggjar í deytt og rotið plantutilfar. Liggur mykja, t.d. blandað við hoyggj, alt árið í fjósinum, og hevur ein hita uppá 18° C, kan slagið nærast í fjósinum alt árið. Bæði kynini súgva blóð av ryggjórurum, men best dárar teimum neyt og onnur kleyvdýr. Eru nógvar stingflugur í fjósinum, kann tað ampa neytini, so tey mjólka minni og fara aftur.

Hugsandi er, at *S. calcitrans* er komin til Føroya við innfluttum fódri. Av tí at fyrsta skrásetingin av, at fluga hevði bitið mann, varð gjørd í 2002, er hugsandi, at slagið er komið til Føroya rættiliga stutt síðani. Um velbastaðarleiðina er slagið vanligt og er óivað spjatt av teirri orsök, at bøndur hava flutt neyt og fóður sínamilum. Fyri at minka um vansarnar við fluguni er umráðandi at hava tað reint í fjósinum. Fyri at fáa tamarhald á fluguni verður mælt til at seta út snultvespuna *Spalangia cameroni*.

### Summary

The stable fly (*Stomoxys calcitrans*) was recorded from the Faroe Islands in 2002 for the first time in five byres at Velbastaður in the vicinity of Tórshavn. The stable fly breeds in dead and decomposing plant material e.g. dung mixed with straw. If the temperature

is higher than 18 °C the species can reproduce all the year in the byres. Both sexes are blood feeding and attack vertebrates with preference for cattle and other ungulates. By high fly population the biting activity can result in reduction of milk and bodyweight in the livestock.

*S. calcitrans* was probably introduced into the Faroes in imported cattle feed. Since the first reports on flies biting man were received in 2002, the species was probably recently introduced. In the Velbastaður area the species is widespread and probably mainly dispersed by exchange of cattle or forage. To reduce the fly problem it is important to maintain a high standard of hygiene in the byres. To control the fly it is recommended to use releases of the parasitoid wasp *Spalangia cameroni*.

### Introduction

The stable fly (*Stomoxys calcitrans* (Linnaeus, 1758)) (Diptera: Muscidae) (Fig. 1) is a blood-sucking biting fly mainly feeding on cattle, but also on horses, pigs, sheep, man, and other vertebrate hosts (Thomsen, 1938). Both sexes feed on blood and due to its painful bite the stable fly is a very annoying pest of livestock

| <i>Diptera</i>                       | <i>Byres</i> |         |       |         |       |         |        | <i>Sum</i> |
|--------------------------------------|--------------|---------|-------|---------|-------|---------|--------|------------|
|                                      | 1            | 2       | 3     | 4       | 5     | 6       | 7      |            |
| <i>Tipulidae</i>                     |              |         |       |         |       | 1(1)    |        | 1          |
| <i>Sciaridae</i>                     |              |         | 2(7)  |         |       |         |        | 2          |
| <i>Psychodidae</i>                   | 22(17)       | 5(3)    | 3(10) |         |       | 2(2.2)  |        | 32         |
| <i>Anisopodidae</i>                  |              | 1(0.5)  |       | 1(0.5)  |       | 1(1)    |        | 3          |
| <i>Scatopsidae</i>                   |              | 15(7)   |       | 9(4)    |       | 9(10.3) | 1(2)   | 34         |
| <i>Chironomidae</i>                  | 3(2)         | 148(75) | 8(28) | 4(1.5)  | 3(33) | 40(46)  | 8(14)  | 214        |
| <i>Sepsidae</i>                      |              |         | 1(3)  |         |       |         |        | 1          |
| <i>Heleomyzidae</i>                  | 1(1)         |         | 5(17) |         |       |         |        | 6          |
| <i>Sphaeroceridae</i>                | 2(2)         | 1(0.5)  | 8(28) | 2(1)    | 6(67) | 5(6)    | 3(5)   | 27         |
| <i>Drosophilidae</i>                 | 2(2)         | 13(6.5) | 2(7)  |         |       | 1(1)    |        | 18         |
| <i>Ephydriidae</i>                   | 3(2)         |         |       |         |       |         |        | 3          |
| <i>Anthomyidae</i>                   | 3(2)         |         |       |         |       |         |        | 3          |
| <i>Muscidae: Stomoxys calcitrans</i> | 91(72)       | 13(6.5) |       | 205(91) |       | 27(31)  | 46(79) | 382        |
| <i>Muscidae: other species</i>       |              | 2(1)    |       | 4(2)    |       | 1(1)    |        | 7          |
| <i>Number of specimens.</i>          | 127          | 198     | 29    | 225     | 9     | 87      | 58     | 733        |

**Table 1.** Number of dipterans (%) recorded from seven byres in Velbastaður, the Faroes, 11–12 May, 2002.

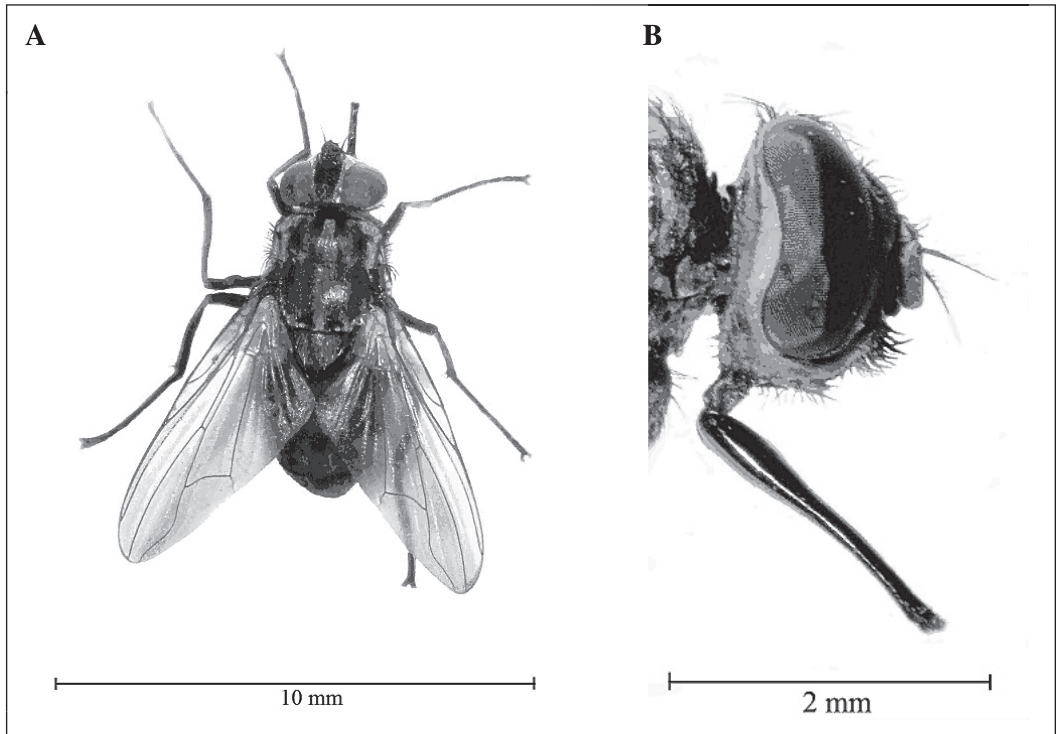
**Talva 1.** Mongd av tvíveingjum (%) skrásett í sjev stallum á Velbastað, Føroyar, 11-12 Maj 2002

and other hosts. When fly populations are high, the disturbance and the blood loss caused by the biting activity may result in considerable reduction of milk production and body weight (Bruce and Decker, 1958; Stork, 1979; Wieman *et al.*, 1992; Cantangui *et al.*, 1997; Wall and Shearer, 1997). Further, it may transmit microbial diseases among domestic animals, especially horses (Wall and Shearer, 1997). *Stomoxys calcitrans* is a species of worldwide distribution; probably, the original home of this species are the tropical parts of the Old World (Zumpt, 1973). Secondly, the stable fly followed man into the temperate region, where it is widely distributed, but until recently the fly has

not been recorded from the Faroes (Thomson, 1938; Lyneborg, 1968). This paper reports on the first record of the species from the Faroes.

### Materials and methods

On 11-12 May 2002 insects were collected in seven byres in Velbastaður in the vicinity of Tórshavn, the Faroes. The insects were collected by sweeping around cattle and along walls and ceilings; sampling period per byre was about 20 minutes. Further, insects were collected from window sills. The insects were preserved in 70% alcohol and identified to species or family level under a binocular microscope. The byres differed as regards age, size and



**Fig. 1.** (A and B) The stable fly (*Stomoxys calcitrans*) is pale grey and the dorsal side of the thorax and the abdominal segments carry four black longitudinal stripes and 2-5 symmetrical round black spots, respectively. Body length is 6-8 mm. In resting flies the wings are slightly spread and placed flat along dorsum of abdomen. In body size and general appearance the stable fly resembles the house fly (*Musca domestica*), however, the former species is recognized by the strongly sclerotized proboscis projecting forward. (Photos: Søren Achim Nielsen).

**Mynd 1.** (A and B). Stingflugan (*Stomoxys calcitrans*) er grábleik og á rygg síðuni av yvirkroppinum og undirlívs líðini hevur hon fyra svartar strípur eftir longdini og 2 -5 eins rundar plettur. Kroppslongdin er 6 - 8 mm. Á eini hvílandi flugu eru veingirnir eitt sindur spreiddir og lagdir flatt niður á ryggin av undirlívinum. Í kroppsstødd og vanligari útsjón, líkist stingflugan nógv tí vanligu húsluguni (*Musca domestica*). Kortini kann tað fyrr nevnda slagið kennast aftur á tí sterkt sklerotiska trantinum, ið peikar frameftir. (Myndir: Søren Achim Nielsen).

arrangement, but also in management of dung and bedding. Generally, the byres were low-ceilinged, affecting the airing and the temperature of the rooms.

## Results and discussion

Thirteen dipteran families were recorded from the byres (Table 1). Muscidae and Chironomidae were predominant; a single species, viz. the stable fly, made up about half of all flies collected. The spe-



**Fig. 2.** Interior from a Faroese byre (Photo: Søren Achim Nielsen).

**Mynd 2.** Innan í einum Føroyskum fjósi (Mynd: Søren Achim Nielsen).

cies was recorded from five of the byres, and in two of them (1, 4) it occurred in considerable densities. All dipteran families found in the Faroese byres were previously recorded from stables in Central Europe (Kühlhorn, 1964). No relation between the abundance of *S. calcitrans* in the byres and the number of other dipterans was found. This might reflect, that the dipteran fauna recorded is made up of species actually hatched in the byres as well as immigrants from field habitats. In the sampling period the day temperature out-of-doors was about 12 °C, permitting activity of Diptera in the open.

The population dynamics of *S. calci-*

*trans* depends on the number of cows in the byre, the extent and frequency of cleaning, and the room temperature (Thomsen, 1938). The stable fly breeds in dead and decomposing plant material, e.g. in dung mixed with straw and urine, especially in places where bedding accumulates during a long time. In most of the byres visited potential breeding media for *S. calcitrans* were found.

According to Thomsen (1938) no oviposition occurs at temperatures below 14-15 °C; at temperatures of about 18 °C the development from egg to adult takes about a month (Lysyk, 1998). In byres in Denmark the air temperature during the winter

is 17-20 °C, which renders fly reproduction possible; unfortunately, the temperature was not measured in the Faroese byres, however, a similar temperature level is expected. In a majority of the Faroese byres the herd was stalled all year round, which supports continuous development of fly populations.

*S. calcitrans* was probably introduced into the Faroes in imported cattle feed. Since the first reports on flies biting man were received in 2002, the species was probably recently introduced. In the Velbastaður area the species is widespread and probably mainly dispersed by exchange of cattle or forage. However, since the stable fly is a strong flier, the possibility of active dispersal by flight from farm to farm cannot be excluded, providing that the outdoor air temperature is sufficiently high (above 18° C) and the wind is gentle. In Denmark *S. calcitrans* is a typical stable species but on hot, calm summer days it has been observed in small numbers on cattle in the field.

Since *S. calcitrans* is an annoying fly pest on domestic animals, the further dispersal of the fly in the Faroes and its abundance in the byres should be watched. To reduce the fly problem it is important to maintain a high standard of hygiene in the byres. To control the fly it is recommended to use releases of the parasitoid wasp *Spalangia cameroni* (Hymenoptera: Pteromalidae) (Skovgård, 2004).

### Acknowledgement

The authors are grateful to Boy Overgaard Nielsen, Institute of Biological Sciences, University of Aarhus for his helpful criti-

cal and constructive comments. Also a thank to Pehr H. Enckell, University of Lund for commenting the paper and to Høgni Holm for translation of the abstract into Faroese.

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