Polar Biol (2003) 26: 283–285
DOI 10.1007/s00300-002-0475-7

SHORT NOTE

S.J. Coulson · I.D. Hodkinson · N.R. Webb · P. Convey

A high-Arctic population of *Pyla fusca* (Lepidoptera, Pyralidae) on Svalbard?

Received: 21 October 2002 / Accepted: 12 December 2002 / Published online: 13 February 2003

Introduction

Over 300 species of insect (including Collembola) are recorded from Svalbard. These include 11 species of Lepidoptera, the majority of which are occasional summer immigrants (Coulson and Refseth 2003). Those for which locality data are available are summarised in Table 1. It has been suggested that *Apamea maillardi* (Geyer, 1834) [=*zeta* (Duponchel, 1854) (Mikkola and Goater 1988)] and *Plutella xylostella* (L., 1758) may be resident (Kaisila 1973) but no overwintering stages have yet been found. Here we report large numbers of the pyralid moth, *Pyla fusca* Haworth, 1811, in late July 2002 on Ossiansarsfjellet and suggest that a resident colony is established.

The collection site and observations

Ossiansarsfjellet consists of a ridge approximately 6 km long, 2 km wide and peaking at ca. 250 m a.s.l., located at the eastern end of Kongsfjord, Svalbard (78°56.5′N 12°28.6′E) (Fig. 1). It is bordered to the north, east and south by Kronebreen and to the west by the waters of the fjord. Ossiansarsfjellet is a protected area by virtue of its exceptionally rich botanical communities (Anonymous 2002). On 9 July 2002, a single male specimen of *Pyla fusca* was obtained near the base of grassy terraces near the centre of Ossiansarsfjellet. On 27 July 2002, a further 20 adults were collected, and many more observed, from the vicinity of the east stream and from a series of southwest-facing vegetated terraces which descend a gentle slope to sea level from a height of approximately 50 m a.s.l. Of these, 5 ♂ and 3 ♀ were mounted for critical examination. The vegetation is unusually rich, dominated by grass/*Carex*, interspersed with many other species, such as *Dryas octopetala* and *Salix polaris*.

On both dates, weather conditions were warm, with high broken cloud and no, or a slight, easterly breeze. Moths were active and abundant, flying close to the ground but occasionally reaching up to 2 m. However, *Pyla fusca* was not noted during a short visit on 13 July 2002 despite similar weather conditions. Moreover, despite intensive searching, no moths were seen at other vegetated sites in Kongsfjord, including Blomstrandhalvøya (30 July; similar warm, still day), the southern shore of Kongsfjord (including well-developed vegetation under bird cliffs at Krykkjefjellet and Stuphallet) between 4 July and 1 August, or amongst vegetation under bird cliffs at Casimir-Périerkammen (Krossfjord) in warm but overcast conditions on 14 July.

Discussion

Although it was not possible to attempt searches for other life stages during the limited time available on site, several lines of evidence strongly suggest that these are observations of a resident population.

1. Large numbers of *Pyla fusca* were observed within a small area at Ossiansarsfjellet. Their distribution in Kongsfjord was extremely restricted and adults were not seen elsewhere. This contrasts with observations of the migrant species, *Plutella xylostella*, during 2000, when large numbers of immigrant moths were observed and collected at many sites along the southern shore and the islands (Storholmen) of Kongsfjord (Coulson et al. 2002). No such immigration event was observed in 2002. Furthermore, there

S.J. Coulson · I.D. Hodkinson (✉)
School of Biological and Earth Sciences,
Liverpool John Moores University, Byrom St,
L3 3AF Liverpool, UK
E-mail: i.d.hodkinson@livjm.ac.uk
Fax: +44-151-2073224

N.R. Webb
NERC Centre for Ecology and Hydrology,
Winfrith Technology Centre, DT2 8ZD Dorchester Dorset, UK

P. Convey
British Antarctic Survey, Natural Environment Research Council,
High Cross, Madingley Road, CB3 OET Cambridge, UK

Table 1 Observations of Lepidoptera on Svalbard for which locations are recorded

Species	Resident status	Location	References
Plutella xylostella (L., 1758) (Yponomeutidae)	Unlikely	Recherchefjord (Belsund), Storholmen and southern shore (Kongsfjord), Adventdalen and Colesbukta (Isfjord), Reinsdyrflya (Liefdefjorden), St. Johnsfjord, Isfjord, Semeldalen (Van Mijenfjord), Eckmanfjord, Sorgfjord	Thor (1930); Kaisila (1973) (and references therein); Aagaard et al. (1975); Lokki et al. (1978); Laasonen (1985); Coulson et al. (2002)
Hofmannospila pseudospretella (Stainton, 1849) (Oecophoridae)	No	Longyearbyen (Adventfjord)	Kaisila (1973) (and references therein)
Pyla fusca Haworth, 1811 (Pyralidae)	Likely	Ossiansarsfjellet (Kongsfjord)	Aagaard et al. (1975); G.W. Gabrielsen, personal communication (probable sightings July 2000, 2001)
Pieris napi (L., 1758) (Pieridae)	No	Longyearbyen (Adventdalen)	Kaisila (1973) (and references therein)
Vanessa cardui (L., 1758) (Nymphalidae)	No	Grumantbyen (Isfjord), Sassendalen (Sassenfjord)	Lokki et al. (1978)
Syngrapha interrogationis (L., 1758) (Noctuidae)	No	Gåsebu (southern shore, Kongsfjord)	Sendstad et al. (1976)
Apamea maillardi (Geyer, 1834) (= *zeta* ssp. *exulis*) (Noctuidae)	Possible	Brøggerhalvøya, Ossiansarsfjellet (Kongsfjord). Adventdalen (Isfjord)	Kaisila (1973) (and references therein); Alendal et al. (1980)

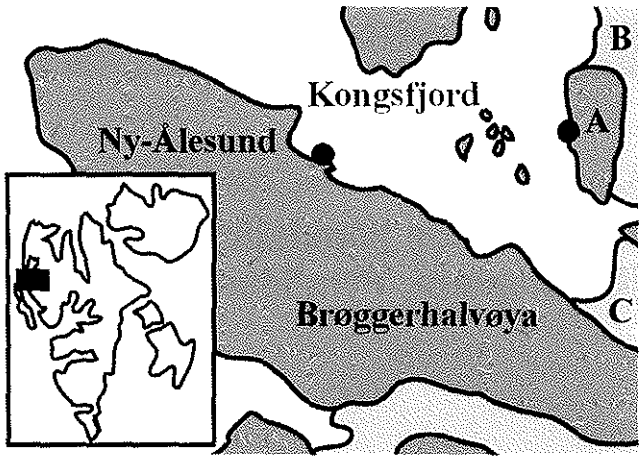

Fig. 1 Map showing the location of Ossiansarsfjellet in Kongsfjord, Svalbard with the collection site indicated by *A*. Principal glaciers, Kronebreen and Kongsvegen, designated by *B* and *C*, respectively. *Inset* map shows the location of Kongsfjorden, northwest Svalbard

are isolated previous records of *Pyla fusca* from Ossiansarsfjellet over the last 30 years (Table 1), but not from elsewhere in Kongsfjord or Svalbard in general.

2. Local topography at the collection sites on Ossiansarsfjellet, which faces southwest, gives a relatively mild microclimate compared with north-facing localities. The high central region of Ossiansarsfjellet shelters the collection sites from cold easterly winds descending from the Krone and Kongsveg glaciers. Together, the aspect and shelter result in the southwest-facing slopes having the warmest microclimate on Kongsfjord (see Joly et al. 2002). Vegetation species richness and growth are consequentially greater (I. Alsos, personal communication) and the potential for larval growth and development is higher than elsewhere around Kongsfjord. Mikkola (1992 and personal communication) noted that other insect diversity hotspots in the Arctic, such as Lake Hazen, Ellesmere Island, and Kilpisjävi, Finland, are similarly west facing, and with a radiation-reflective water body immediately to the west.

Pyla fusca larvae are known to feed on a range of plants, including Ericaceae and *Salix* spp. (Wolff 1971; Emmet 1979; Goater 1986). Potential larval food plants, including *S. polaris* and *S. reticulata*, are present at Ossiansarsfjellet, where they are abundant and grow more luxuriantly relative to most other sites on Svalbard.

3. *Pyla fusca* is resident at other high-latitude locations in northern Scandinavia, Iceland, Greenland and Alaska and with similar emergence and flight times to Svalbard (de Lesse 1951; Heinrich 1956; Wolff 1964, 1971; Karsholt and Razowsky 1996).

Summary

Pyla fusca was observed on several occasions in July 2002 along the southwest shore of Ossiansarsfjellet, West Spitsbergen, Svalbard, but was apparently absent at other locations along the coasts of the fjord. The high population density and restricted distribution, combined with sporadic earlier records, suggest that this is a breeding colony rather than an immigrant population, and may have been present for at least 30 years. The microclimate at the site is amongst the warmest around Kongsfjord and suitable larval food plants are present. It seems probable that *Pyla fusca* is one of few Lepidoptera to have colonised Svalbard successfully and represents one of the most northerly records for a breeding population of Lepidoptera.

Acknowledgements We thank B. Goater for identification of the specimens and K.T. Hansen (Svalbard Science Forum) for collecting the initial specimen on 9 July 2002. The eight specimens examined critically are deposited in the Natural History Museum, London. P.C. was supported under the EU-LSF scheme (NP-65/2001).

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