

Chortodes stigmatica (Eversmann, 1855) (Lepidoptera, Noctuidae) – a moth new to Surtsey, 1995

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ABSTRACT

In the dusk the of July 19, 1995 two specimens of the rare moth *Chortodes stigmatica* (Eversmann, 1855) were collected above an old stand of *Leymus arenarius* on the eastern part of Surtsey. At least 19 other similarly looking moth specimens were seen at the same time and place. They were considered to be of the same species suggesting that this rare moth was one of the first Lepidoptera species to establish a resident population on Surtsey.

INTRODUCTION

Since the eruption of Surtsey in 1963–1967 a total of about 19 moth species and 2 butterfly species have been observed in the island (Lindroth et al. 1966, 1967, 1972, 1973, Ólafsson 1978, 1982). The more common species of Lepidoptera found on Surtsey are well-known migratory species, but others may have spread from other eruptive islands or the mainland of Iceland (Lindroth, 1973), where 89 naturally existing wild species of Lepidoptera have been found (Ólafsson, pers. comm.). On a visit to Surtsey during July 17–20, 1995, I decided to investigate if the rare moth *Chortodes stigmatica* (Eversmann, 1855) could be found on the island since *Leymus arenarius* one of the probable food plants for the species, had established on the island.

Synonyms: *Leucania stigmatica* Eversmann, 1855, *Hypocoena dispersa* (Wolff, 1970), *Photodes stigmatica* ssp. *dispersa* in Wolff, 1971, *Chortodes stigmatica* (in Nowacki & Fibiger, 1996).

FIELD SAMPLING

During an entomological investigation of the Faroe Islands in 1991 Dr. Svend Kaaber and I recognized,

that the little known moth species *Chortodes stigmatica* could be found in numbers in and above the dense *Ammophila arenaria* and *Elymus* (= *Leymus*) *arenarius* vegetation during late nights on the island of Sandoy (S. Kaaber unpublished). I therefore decided to study if it was possible also to find *Chortodes stigmatica* on Surtsey as old and



Fig 1. *Leymus arenarius* vegetation on eastern part of Surtsey where *Chortodes stigmatica* was found, July 19, 1995. Other small volcanic islands north of Surtsey in the background.



Fig 2. *Chortodes stigmatica* dark morph from Surtsey, forewings normally cover most of the animal at rest.

younger stands of *Leymus* had established on the island.

On a calm evening of July 19, 1995 I visited some of the dense and oldest *Leymus* vegetation located about 250 m NE of the research hut on eastern part of Surtsey. The *Leymus* was about 80 cm high and surrounded by *Honckenya peploides* (Fig. 1). Almost lying on the ground very close to the *Leymus*-vegetation I could see the grass vegetation as a silhouette on the light northerly sky and waited, hoping that some moth would come up from the base of the *Leymus* vegetation or just pass the site by accident. In my hand I had a butterfly net. In the dusk a moth suddenly was seen flying very fast around the *Leymus* vegetation. I tried to catch it, but without success. Soon other moths were seen, and some of them even coming up from the base of the *Leymus* vegetation. During the following hour I saw in all at least 21 dark similarly looking moths circling around the *Leymus* vegetation, and incidentally I succeeded in catching two of them (Fig. 2). In the field it was not possible to identify them. When I left Surtsey to Reykjavik the next day, I went to some of the impressive stands of *Leymus* vegetation in the sand dunes close to Vik, South Iceland, to see if it was possible to find some dark moth specimens, but without success. Back in Denmark it soon was recognized that both of the moth specimens from Surtsey actually belonged to the rare species *Chortodes stigmatica*, a very dark form.

DISCUSSION

Chortodes stigmatica was for the first time found in the North Atlantic area, in Medalland Skardsmyri, Iceland, in 1929 by C. H. Lindroth (Eliasson, 1992) and later in northern Iceland (Kopasker) by A. Nørrevang in 1937, as a dark morph (Wolff, 1971). Later the species was found in hundreds of

specimens at Skeidarársandur, SE Iceland (Ólafsson & Björnsson, 1976), and then in other places along the southern coast line of Iceland (Eliasson, 1992).

In the Faroes the first observation of *Chortodes stigmatica* was a male found in a pit-fall trap in the island of Sandoy, 1978 (Bengtson, 1982). The species was rediscovered in the same area in the years 1991 to 1997 (Kaaber 1997).

However, the specimens from Surtsey were not the well known light form from the Faroes. It was on the other hand a dark-brown morph of nearly the same colour as the dark tephra volcanic material in which the *Leymus* grows on Surtsey (Fig.1). In Iceland both light and dark specimens have been found, and the rather dark specimen from Kopasker, 1937, was described as a new subspecies *dispersa* by Wolff (1970, 1971). The dark morph *dispersa* seems to be common in Iceland. The sand dunes in southern Iceland are all made of almost black sand, and dark specimens of *Chortodes stigmatica* seem to be well adapted to hide in the dark sand dunes as well as in the dark tephra material in Surtsey and thus avoid bird predators. The moths at the southern coastline could be found on the roots of *Leymus* vegetation (Eliasson, 1992). In Iceland *Chortodes stigmatica* is characteristic by having light wing venation on the forewings.

Apart from Iceland and the Faroes *Chortodes stigmatica* is known from easterly Siberia, Mongolia, Baikal, Amur and Ural. It is unknown how the species may have arrived to the north Atlantic islands, but following Eliasson (1992) the species may have arrived from Siberia by ice-rafting just after the last Ice-age. Eliasson also discusses the possibility that populations of *Chortodes stigmatica* may be found in *Leymus*-stands in Finnmark, Norway, but this has not been verified.

The biology of the species seems not to have been clarified, but the observations of numbers of specimens in or above *Ammophila arenaria* and *Leymus* vegetation in Sandoy, the Faroe Islands, indicate that the species is closely associated with *Ammophila* (not found in Iceland) or *Leymus* vegetation, as it is the case on Surtsey. It is also striking that tufts of *Leymus* were found at or very near most of the localities, where *Chortodes stigmatica* have been found in Iceland. As larvae most European species of the genus *Chortodes* live endophagous in the stems of their host grasses. However, one species, *Chortodes brevilinea* (Fenn) lives in its last larval instar freely on the leaves of its host plant, the Reed (*Phragmites communis*) (South, 1948).

Thus *Chortodes stigmatica* seems to be one of the first moth species having established a resident population on Surtsey. It may even have been there for several years since *Leymus arenarius* was among

the first plant species to colonize Surtsey in 1966 (Fridriksson, 1967, 2000).

The only other moth species found on Surtsey besides *Chortodes stigmatica* was a single specimen of *Plutella xylostella* observed at the crater Surtur on July 17, 1995.

In July 2005 a biological expedition on Surtsey rediscovered *Chortodes stigmatica*. A single moth was caught flying near a *Leymus* dune in the tephra covered lava in the easternmost part of the island (Ólafsson, pers. comm.).

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References

- Bengtson S.-A. 1982. Lavere dyr på land og i ferskvand, – In Nørrevang A. & J. Lundø (eds): Danmarks natur. 3. ed. vol 12: 123–141.
- Eliasson, C. 1992. A contribution to the knowledge of the Icelandic noctuid fauna (coll. Lindroth, Lepidoptera, Noctuidae) with new aspects on passive dispersal by Ice-rafting. Ent. Tidsskr. 113: 25–35.
- Fridriksson, S. 1967. A second Species of Vascular plants Discovered in Surtsey. Surtsey Research Progress Report III: 17–19.
- Fridriksson, S. 2000. Vascular plants on Surtsey, Iceland, 1991–1998. Surtsey Research 11: 21–28.
- Kaaber, S. 1997. An annotated list of Lepidoptera known from the Faroe Islands. Frodskaparrit 45: 97–106.
- Lindroth, C. H., H. Anderson & H. Böldvarsson 1966. Report on the Surtsey Investigation in 1965. Terrestrial Invertebrates. Surtsey Research Progress Report II: 15–16.
- Lindroth, C. H., H. Anderson, H. Böldvarsson & S. H. Richter 1967. Report on the Surtsey Investigation in 1966. Terrestrial invertebrates. Surtsey Research Progress Report III: 59–67.
- Lindroth, C. H., H. Anderson, H. Böldvarsson & S. H. Richter 1970. Preliminary Report on the Surtsey Investigation in 1968. Terrestrial invertebrates. Surtsey Research Progress Report V: 53–55.
- Lindroth, C. H., H. Anderson, H. Böldvarsson, B. Pejler & S. H. Richter 1972. Preliminary Report on the Surtsey Investigation in 1969 and 1970. Terrestrial invertebrates. Surtsey Research Progress Report VI: 78–81.
- Lindroth, C. H., H. Anderson, H. Böldvarsson & S. H. Richter 1973. Surtsey, Iceland. The development of a new fauna, 1963–1970. Terrestrial Invertebrates. Ent. Scand. Suppl. 5, 280 pp.
- Nowacki, J & M. Fibiger 1996: Noctuidae. – In O. Karsholt & J. Razowski (eds.): The Lepidoptera of Europe. A distributional check List. – Apollo Book. Stenstrup, Copenhagen: 251–293.
- Ólafsson, E. & H. Björnsson 1976. Sandygla (*Photodes stigmatica* Ev) endurfundin á Íslandi. Náttúrufræðingurinn 46: 118–120.
- Ólafsson, E. 1978. The development of the land-arthropod fauna on Surtsey, Iceland, during 1971–1976 with notes on terrestrial Oligochaeta.- Surtsey Research Progress Report. 8: 41–46
- Ólafsson, E. 1982. The status of the land-arthropod fauna on Surtsey, in the summer 1981. Surtsey Res. Progr. Rep. 9: 68–72.
- South, R.. 1948. The Moths of the British Isles. Vol. 1. 3. ed.: 308–309.
- Wolff, N. L. 1970. *Hypocoena dispersa* n.sp. (lep. Noct.) from Iceland. Ent Meddr. 38: 215–221.
- Wolff, N. L. 1971. Lepidoptera. Zoology of Iceland III, 45, 193 pp.