

# Lepidoptera of Terskij seashore of the Kola Peninsula, Northwestern Russia

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Kozlov, M. V. & Kullberg, J. 2006: Lepidoptera of Terskij seashore of the Kola Peninsula, Northwestern Russia. — Entomol. Fennica 17: 123–129.

The fauna of moths and butterflies of the Western part of the Kola Peninsula is reasonably well documented, while data from Eastern part are scarce, and only five species have so far been recorded from the White Sea shore between Kuzomen and Ponoï. Here we report the results of sampling conducted on June 29–July 2, 2004, in 14 sites along a 150 km stretch between Kuzomen and Pulonga. Among 146 collected species of Lepidoptera, 12 are recorded for the first time from the Kola Peninsula, which increased the regional fauna to 688 species. For *Udea nebulalis*, which is for the first time reported from Russia, we provide additional records from Karelia.

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*Received 20 April 2005, accepted 2 September 2005*

## 1. Introduction

Although the fauna of moths and butterflies of the Kola Peninsula is reasonably well documented, with 676 species reported to date (Kozlov & Jalava 1994, Kozlov *et al.* 2000), the vast majority of records originated from the western parts of the Murmansk region. The old Finnish territories were explored before World War II (Valle 1933, Krogerus 1943), while most of the material from the territories adjacent to the railway and road linking Murmansk with Kandalaksha, and from the White Sea shore between Kandalaksha and Varzuga, was accumulated during the past two decades [for a map showing collecting localities, see Kozlov & Jalava (1994)]. In contrast, the eastern part of the Kola Peninsula is still almost a “blank spot” from where fragmented faunistic data have been collected by Finnish entomologists during the second half of the 19<sup>th</sup> century and the beginning of the 20<sup>th</sup> century [see Silfverberg

(1988) for history]. In particular, only five species of Lepidoptera have so far been reported from the White Sea shore between Kuzomen and Ponoï (Kozlov & Jalava 1994).

Between June 29 and July 2, 2004, 146 species of Lepidoptera were collected in 14 sites along a 150-km stretch between Kuzomen and Pulonga (Fig. 1). This region is difficult to explore, because the roads are suitable only for tracked vehicles. To our knowledge, our team was the first to collect insects in this sparsely populated region since the last visits of the Finnish entomologists in the 19<sup>th</sup> century. We therefore present a complete list of the Lepidoptera sampled or observed during this visit.

## 2. Material and methods

The habitats surveyed in the course of our excursion were diverse, but we primarily collected in

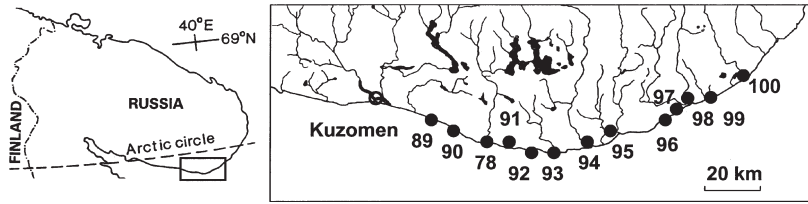


Fig. 1. Location of the sampling sites on the Southern coast of the Kola Peninsula, north-western Russia. Enlarged view shown on right; for place names and coordinates consult Table 1.

stunted birch-dominated forests, birch woodlands, seashore and riverside meadows and tundra-like habitats along the seashore (Fig. 2a–d). Coniferous forest sites occurred in the western part of our route, but further to the East conifers have not been observed near the seashore, although they were sometimes seen near the horizon. Care was taken to survey every possible habitat, although strong winds prevented us from collecting representative materials from several exposed sites. Lepidoptera were only sampled by netting; the total collecting effort approached 40 person-hours. As a rule, the single voucher speci-

men had been collected for each species at each study site; however, rare species, as well as groups that are difficult to discriminate in the field, have been collected more thoroughly. We did not aim at estimating abundances of the species, and therefore the numbers of specimens are reported only for species that are rare or new for the Kola Peninsula. Specimens are deposited in the Zoological Museum of the Finnish Museum of Natural History, University of Helsinki (FMNH).

We use the same numeric codes for the localities (Table 1) as in our earlier papers (Kozlov &



Fig. 2. – a. Seashore near the mouth of Makeevskij River (site 89). – b. Bolshaya Kumuzhya River (site 99). – c. Eroded sand dunes near the mouth of Bolshaya Kumuzhya River (site 99). – d. Seashore East of Chapoma (near the site 96). Photos by V. Zverev.

Table 1. Waypoints and collecting sites of the expedition along the White Sea shore, Kola Peninsula.

Code	Position <sup>1</sup>	Latitude	Longitude	Date – time	Stop type <sup>2</sup>	Habitats	Nr. of spp.
89	mouth of Makeevskij R.	66° 11' 22"	37° 24' 16"	29.06.04 18:00–19:15	short	seashore meadow	29
78	<b>Chavanga</b>	66° 07'	37° 46'	29.06.04 20:45–21:30, 02.07.04 16:40–17:20	technical	village	7
95	2 km N <b>Chapoma</b>	66° 06' 54"	38° 51' 18"	30.06.04 03:43–14:30	overnight	riverside forest	79
96	16 km NEE <b>Chapoma</b>	66° 08' 21"	39° 14' 03"	30.06.04 16:16–17:00	short	tundra-like seashore	23
98	<b>Pyalitsa</b>	66° 11' 20"	39° 31' 30"	30.06.04 17:40–18:10, 01.07.04 15:30–15:45	technical	village	8
99	Bolshaya Kumuzhya R.	66° 12' 45"	39° 43' 06"	30.06.04 19:00–21:00	short	riverside, heaths and willows	24
100	mouth of <b>Pulonga</b> R.	66° 15' 57"	39° 58' 17"	30.06.04 23:17 –01.07.04 13:30	overnight	riverside, birch woodland	58
97	5 km W <b>Pyalitsa</b>	66° 10' 17"	39° 25' 33"	01.07.04 16:05–16:45	short	forest on steep slope	17
94	mouth of <b>Strelina</b> R.	66° 04' 13"	38° 38' 20"	01.07.04 19:47–21:00	short	bush and flowering meadows	41
93	mouth of Kamenka R.	66° 03' 47"	38° 19' 54"	01.07.04 22:15 –02.07.04 12:30	overnight	forest, seashore meadows	76
92	8 km W <b>Tetrino</b>	66° 04' 56"	38° 03' 38"	02.07.04 13:30–14:00	short	bushy vegetation	20
91	mouth of Rombach R.	66° 05' 31"	37° 53' 27"	02.07.04 14:50–15:20	short	riverside, forest, heath, bogs	41
90	13 km NW <b>Chavanga</b>	66° 09' 43"	37° 30' 18"	02.07.04 18:00–18:45	short	seashore meadow, bushy vegetation	32

<sup>1</sup> Boldfaced are the locality names that can be found in The Times Atlas of the World.

<sup>2</sup> Technical stops were made for changing vehicles and for other reasons not related to scientific goals of the excursion, in contrast to other stops made in habitats most suited for collecting of insects.

Jalava 1994, Kozlov *et al.* 2000) and add the new localities to the end of the list (numbers 89–100). Taxonomy follows Kullberg *et al.* (2002); asterisks denote species that have not been previously reported from the Kola Peninsula. For collecting dates consult Table 1. Biogeographical provinces of Finland (*Le*, *Li*, *Lkoc*, *Lkor*, *Obb*, *Ks*, *Oba*, *Sb*, *Kb*) are given in italics; for a map of provinces, consult e. g. Kullberg *et al.* (2002). UTM grid for the Kola Peninsula was published by Kozlov & Jalava (1994); UTM grid zones of the World can be found at <http://www.dmap.co.uk/utmworld.htm>.

### 3. List of species

#### Micropterigidae

*Micropterix aureatella* (Scop.). 94, 95, 97, 98.

#### Nepticulidae

*Ectoedemia occultella* (L.). 91.

#### Adelidae

*Nematopogon swammerdamellus* (L.). 95.

*Nemophora bellela* (Wlk.). 91.

#### Incurvariidae

*Phylloporia bistrigella* (Hw.). 100.

*Incurvaria oehlmanniella* (Hb.). 91, 95.

*Incurvaria vetulella* (Zett.). 91.

*Incurvaria circulella* (Zett.). 93, 95.

#### Prodoxidae

\**Lampronia standfussiella* (Z.). 93: 2 exx. A rare species living on *Rosa majalis* Herrm., usually occurring on river meadows and sandy places. In Northern Europe, this species was known only from the vicinity of Petrozavodsk, until it was discovered in 1994 in Finland in the vicinity of Rovaniemi, *Obb* (Itämies *et al.* 1996); in 2004 it was also found in Sweden on an island in the Tornionjoki River (N. Ryrholm, pers. comm.).

#### Tineidae

*Myrmecozela ochraceella* (Tengstr.). 95.

#### Gracillariidae

*Callisto coffeella* (Zett.). 97.

*Phyllonorycter hilarellus* (Zett.). 95, 99.

#### Yponomeutidae

*Paraswammerdamia conspersella* (Tengstr.). 95.

#### Argyresthiidae

*Argyresthia conjugella* Z. 99.

#### Plutellidae

*Plutella xylostella* (L.). 89, 90, 92, 93, 94, 95, 96, 99, 100.

#### Oecophoridae

*Pleurota bicostella* (Cl.). 89, 91, 92.

*Denisia stipella* (L.). 90.

#### Elachistidae

*Elachista diderichsiella* E. Hering. 94.

*Elachista nobilella* Z. 89, 93.

*Elachista apicipunctella* Stt. 89, 95.

*Elachista subalbidella* Schl. 89, 95.

*Cosmiotes freyerella* (Hb.). 89.

#### Coleophoridae

*Coleophora lusciniapennella* (Tr.). 98.

*Coleophora alticolella* Z. 93.

*Coleophora virgaureae* Stt. 94.

*Coleophora saxicolella* (Dup.). 93.

*Coleophora atriplicis* Meyr. 93.

*Coleophora trochilella* (Dup.). 100.

*Coleophora striatipennella* Nylander. 89, 93, 95, 100.

#### Momphidae

*Mompha raschkiella* (Z.). 93.

\**Mompha sturnipennella* (Tr.). 93: 1 ex. The northernmost record for Russia; so far, was known from Arkhangelsk and Petrozavodsk (S. Sinev, pers. comm.) and from the Krasnyi Kamen in Polar Ural near the Arctic Circle (J. Kullberg, pers. obs.). The species is occurring in Finland up to the northernmost province *Li* (Kullberg *et al.* 2002).

#### Gelechiidae

\**Xystophora pulveratella* (H.-S.). 93: 1 ex. One of the northernmost records for this species; in Finland, occurs in *Ks* and southwards (Kullberg *et al.* 2002). This species is considered common in most of its range in Finland, and

was to be expected in the Kola Peninsula. The larva feeds on several legume species e.g. *Vicia cracca* L., *Lathyrus pratensis* L. and *Medicago* spp. (Kaitila 1996).

\**Monochroa saltenella* (Benander). 95: 2 exx.

Very uncommon species; in Finland, recorded once in Kilpisjärvi, *Le* (Kullberg *et al.* 2002). The species is relatively widespread, but rarely collected in the Scandinavian mountains (Aarvik *et al.* 2000; Gustafsson 2004). In Russia, it has only been collected in the Polar Ural and the Altai mountains (Karsholt 2004, J. Kullberg, pers. obs.). The biology is unknown, but *Rumex acetosa* L. is supposed to be the food plant (Svensson 1993). Specimens have been found in wet meadows in the Polar Ural at 250 m a.s.l. (J. Kullberg, pers. obs.), and in mountain meadows in Scandinavia – mainly in the birch zone (Gustafsson 2004). On the Kola Peninsula, specimens were collected from riverside vegetation at about sea level.

*Bryotropha galbanella* (Z.). 93.

\**Bryotropha senectella* (Z.). 94: 1 ex. The northernmost record for this species; in Finland, it occurs in *Sb*, *Ks* and *Kb* and southwards (Kullberg *et al.* 2002, 2005; Karsholt & Rutten 2005). A species living in moss; and may be easily overlooked in the north.

*Teleiodes proximella* (Hb.). 90, 91, 93.

*Teleiopsis diffinis* (Hw.). 100.

*Chionodes viduella* (F.). 96, 98.

*Lita sexpunctella* (F.). 78, 95.

\**Gnorimoschema epithymellum* (Stgr.). 93: 1 ex.

Expected species that occurs on sandy and rocky places northwards up to *Lkoc* and *Lkor* in Finnish Lapland. In northern Europe it is represented by ssp. *brunneomaculellum* (Hackman, 1946). In Finland, the food plant is *Solidago* (Kaitila 1996), possibly also *Erigeron* (J. Kullberg, pers. obs.).

*Scrobipalpa murinella* (Dup.). 95.

*Scrobipalpa obsoletella* (F.R.). 93.

*Scrobipalpa atriplicella* (F.R.). 93, 100.

#### Tortricidae

*Choristoneura albaniana* (Wlk.). 95.

*Syndemis musculana* (Hb.). 95.

*Clepsis senecionana* (Hb.). 93, 94, 95, 100.

*Clepsis rogana* (Gn.). 89, 90, 91, 92, 93, 94, 95,

100. The populations of both the Kola Peninsula and the Polar Ural differ from those in central Europe and southeast Finland (Kullberg *et al.* 2002) by their smaller size and darker coloration.
- Eulia ministrana* (L.). 91, 95, 99, 100.  
*Trachysmia vulneratana* (Zett.). 93.  
*Aethes deutschiana* (Zett.). 95, 99, 100.  
*Aethes triangulana* (Tr.). 92, 95.  
*Aethes smeathmanniana* (F.). 78, 93, 95.  
*Cochylidia subroseana* (Hw.). 93, 94, 95, 100.  
*Cochylis dubitana* (Hb.). 93, 95.  
*Celypha cespitana* (Hb.). 91.  
*Olethreutes ledianus* (L.). 91, 96.  
*Olethreutes obsoletanus* (Zett.). 90, 94, 95, 100.  
*Olethreutes lacunanus* (Den. et Schiff.). 93, 94, 95, 100.  
*Olethreutes bipunctanus* (F.). 90, 91, 93.  
*Olethreutes metallicanus* (Hb.). 93, 94, 95.  
*Olethreutes schulzianus* (F.). 91, 92, 93, 95, 96, 97, 99, 100.  
*Olethreutes septentrionana* (Curt.). 90.  
*Hedya atropunctana* (Zett.). 90, 96, 99, 100.  
*Apotomis sauciana* (Fröl.). 91.  
*Apotomis demissana* (Kenn.). 100.  
*Ancylis comptana* (Fröl.). 93, 95.  
*Ancylis unguicella* (L.). 78, 90, 91, 93, 95, 99, 100.  
 \**Ancylis diminutana* (Hw.) 100: 2 exx. The northernmost record for this species, but expected because the species occurs in Finland up to *Oba* province (Kullberg *et al.* 2002).  
*Ancylis subarcuana* (Douglas). 93, 99.  
*Ancylis badiana* (Den. et Schiff.). 95, 97.  
*Ancylis myrtillana* (Tr.). 91, 95, 96, 97, 100.  
*Epinotia subocellana* (Don.). 90, 91, 93, 94, 97.  
*Epinotia tetraquetra* (Hw.). 93, 94, 95, 96, 97, 98, 99, 100.  
*Epinotia nemorivaga* (Tengstr.). 99.  
*Eriopsela quadrana* (Hb.). 95, 100.  
*Eucosma guentheri* (Tengstr.). 93.  
*Eucosma aspidiscana* (Hb.). 93, 94, 95, 96.  
*Pammene clanculana* (Tengstr.). 99.  
*Pammene aurana* (F.). 89, 90.  
 \**Cydia nigricana* (F.). 89: 1 ex. The northernmost record: in Russia, previously known from Petrozavodsk (Danilevskij & Kuznetsov 1968). In Finland, reported from *Oba* province and southwards (Kullberg *et al.* 2002).  
*Cydia indivisa* (Danil.). 90, 95. Previously known from one specimen collected near Monchegorsk (Kozlov *et al.* 2000).  
*Cydia orobana* (Tr.). 89, 90.  
*Cydia aureolana* (Tengstr.). 89, 90, 91, 93, 94, 95, 97, 100.  
*Dichrorampha cinerascens* (Danil.). 89, 90, 93, 95.
- Sesiidae  
 \**Synanthedon polaris* (Stgr.). 91: 1 ex., 92: 1 ex. A northern species widely distributed in neighbouring areas westward (Kullberg *et al.* 2002).
- Pterophoridae  
*Amblyptilia punctidactyla* (Hw.). 95, 100.  
*Platyptilia calodactyla* (Den. et Schiff.). 94.  
*Platyptilia pallidactyla* (Hw.). 94.  
*Leioptilus osteodactylus* (Z.). 93, 95, 100.
- Pyralidae  
*Polopeustis altensis* (Wck.). 89, 90, 92, 93, 95, 96, 98, 99, 100.  
*Crambus ericellus* (Hb.). 93.  
 \**Crambus heringiellus* H.-S. 95: 1 ex. The nearest records from the southern provinces of Finnish Lapland: *Lkoc* and *Lkor* (Kullberg *et al.* 2002).  
*Crambus lathoniellus* (Zinck.). 78, 89, 90, 91, 93, 94, 95.  
*Crambus perlellus* (Scop.). 91.  
*Gesneria centuriella* (Den. et Schiff.). 95.  
*Eudonia alpina* (Curt.). 95, 99.  
 \**Evergestis aenealis* (Den. et Schiff.). 90: 2 exx. One of the northernmost records for this species; in Finland, reported from province *Lkor* and then in *Oba* and southwards (Kullberg *et al.* 2002). The species seems to be expanding northwards recently.  
*Pyrausta porphyralis* (Den. et Schiff.). 78, 93, 95.  
*Loxostege commixtalis* (Walker). 95.  
*Algedonia terrealis* (Tr.). 91, 93.  
*Anania funebris* (Ström). 90, 91, 92, 93, 94, 95, 96, 100.  
*Opsibotys fuscalis* (Den. et Schiff.). 89, 90, 93, 94, 95.  
 \**Udea nebulalis* (Hb.). 94: 1 ex. Likely the first reliable record for Russia; so far, only doubtful records from Southern Russia have been

available (Nuss *et al.* 2004). However, the species had long been known to occur in Russia, although the following old records from the FMNH collection (total of 25 exx.) have not been previously published: St. Petersburg region: Sosnovo (Rautu), Solnetshnoje (Ollila), Gogland (Suursaari), Bol'shoi Tyuters (Tytärsaari); Republic of Karelia: Lahdenpohja, Harlu, Impilahti, Kirjavalahi, Petrozavodsk, Tiudia (Tiuti) near Kondopoga (Kontupohja), Kosmozero (Kuosmajärvi) north of Petrozavodsk. In Finland, this species has been reported from the province Ks and southwards (Kullberg *et al.* 2002).

*Udea decrepitalis* (H.-S.). 91, 92, 93, 94, 95, 97, 100.

#### Zygaenidae

*Zygaena exulans* (Hochenw.). One specimen observed by V. Zverev between 95 and 96.

#### Pieridae

*Aporia crataegi* (L.). 100 (visual observation by S. Koponen); also collected in Kandalaksha (60) on 4.VII.2004 by L. Huldén (pers. comm.).

*Pieris napi* (L.). 94, 96, 97, 98.

#### Lycaenidae

*Callophrys rubi* (L.). 91, 95.

*Lycaena phlaeas* (L.). 89.

*Vacciniina optilete* (Knoch). 89, 90, 91, 92.

#### Nymphalidae

*Vanessa cardui* (L.). 89, 92, 93, 95.

*Aglais urticae* (L.). 89, 90, 93.

*Clossiana freija* (Thnbg.). 96.

*Clossiana euphrosyne* (L.). 90, 91, 92, 93, 94, 95, 96.

#### Drepanidae

*Falcaria lacertinaria* (L.). 93, 100.

*Drepana falcataria* (L.). 95.

#### Geometridae

*Jodis putata* (L.). 90, 91, 93, 95, 99.

*Cyclophora albipunctata* (Hufn.). 90, 92, 93.

*Scopula ternata* (Schrank). 93, 95.

*Xanthorhoe munitata* (Hb.). 100.

*Xanthorhoe spadicearia* (Den. et Schiff.). 93, 94, 95, 100.

*Xanthorhoe ferrugata* (Cl.). 93, 94, 95, 100.

*Xanthorhoe montanata* (Den. et Schiff.). 89, 93, 94, 95, 97.

*Epirrhoe alternata* (Müll.). 93, 94, 97, 100.

*Colostygia turbata* (Hb.). 94.

*Hydriomena imphuviata* (Den. et Schiff.). 93, 100.

*Hydriomena ruberata* (Freyer). 95.

*Rheumaptera hastata* (L.). 100.

*Epirrita autumnata* (Bkh.). 78, 91, 93, 97, 100 (all records based on larvae).

*Perizoma affinitatum* (Stph.). 89, 91, 93, 94.

*Perizoma blandiatum* (Den. et Schiff.). 78, 89, 90, 94, 96, 100.

*Eupithecia pygmaeata* (Hb.). 93, 99.

*Eupithecia satyrata* (Hb.). 91, 93, 94, 95, 96, 100.

*Eupithecia vulgata* (Hw.). 91, 93, 95.

*Eupithecia gelidata* Möschl. 93, 94.

*Eupithecia virgaureata* Doubl. 91, 93, 97, 100.

*Lomaspilis marginata* (L.). 95.

*Ematurga atomaria* (L.). 90, 92, 93, 95, 96, 97, 98, 99, 100.

*Cabera exanthemata* (Scop.). 91.

*Parietaria vittaria* (Thnbg.). 92, 100.

#### Arctiidae

*Diacrisia sannio* (L.). 90 (common). Previously reported from the Kola Peninsula on the basis of two specimens collected between Umba and Kandalaksha (Kozlov & Jalava 1994).

*Phragmatobia fuliginosa* (L.). 94.

#### Noctuidae

*Polypogon tentacularius* (L.). 91, 92, 93, 94, 95, 98.

*Euclidia glyphica* (L.). 94.

*Syngrapha hochenwarthi* (Hochenw.). 100.

*Acronicta auricoma* (Den. et Schiff.). 93.

*Hyppa rectilinea* (Esp.). 100.

## 4. Discussion

Contrary to our expectations, we did not collect any species characteristic of the eastern part of the European North. The fauna of the explored habitats resembles that of the more western part of the White Sea shore between Umba and Varsuga. All species new for the Kola Peninsula are characteristic of the boreal zone, except for *Monochroa*

*saltenella* that merely belongs to the subarctic meadows. Interestingly, some of the species that have recently been discovered in the Kola Peninsula may be expanding northward over the past decades: they have been recorded in Northern Finland only recently (Kullberg *et al.* 2002).

Summarizing our records for three UTM grid cells (approx. 50 km × 50 km) visited in the course of our excursion, we found 43 species in DP2 (sites 78, 89, 90), which increased the total number of species in this grid cell from 5 to 48; 119 species in DP4 (sites 91–95) in addition to the three species recorded earlier, and 65 species in EP2 (sites 96–100), from which no Lepidoptera have been reported earlier (Kozlov & Jalava 1994). The low number of species recorded in DP2 results from low collecting effort (we focused on sampling the most distant localities).

Although our data are not strong enough to make quantitative assessments of the diversity of Lepidoptera in the surveyed sites, the general impression is that the diversity declines from West to East, with the lowest number of species (adjusted for sampling effort) recorded in Pulonga: some 12 person-hours of collecting brought only 58 species, while 1.5 person-hours in the mouth of Rambach River resulted in sampling 41 species (Table 1). This is most likely explained by an overall decrease in habitat diversity, in particular by the absence of conifers and other plants associated with taiga forests.

The knowledge on the fauna of moths and butterflies of the Kola Peninsula, with 688 species recorded so far, is now at about the same level as that of Northern Fennoscandia, with 602 species listed by Linnaluoto & Koponen (1980). However, comparison with the mentioned study and with recent Finnish catalogue (Kullberg *et al.* 2002) suggests that some 50–80 additional species are almost certainly to be found in the Kola Peninsula.

*Acknowledgements.* We thank E. Melnikov and V. Zverev for collecting of Lepidoptera, S. Koponen and L. Huldén for sharing data on species that they have observed or collected during this excursion, V. Lavrits for numerous practical arrangements, and local resident Alexey for safe driving of the army truck and tracked tank. We want to express our gratitude to L. Kaila, V. Mironov and S. Sinev for identification of difficult taxa and providing useful information on species distribution, and to C. Schmidt for commenting

an earlier draft of the manuscript. The travel was partially supported by the Universities of Joensuu and Turku, Finland.

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