

# On the genus *Nomada* Scopoli, 1770 (Hymenoptera, Apoidae) in Norway

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A faunistical survey of the Norwegian *Nomada* Scopoli, 1770 based on all known publications, museum material and private collections. A total of 2049 specimens have been examined, comprising 19 species. *Nomada argentata* Herrich-Schäffer, 1839, *N. goodeniana* (Kirby, 1802) and *N. integra* Brulle, 1832 are reported for the first time from Norway. Only half of the species are considered common, based on specimens and distribution. Four species; *N. panzeri* Lapeletier, 1841, *N. flavoguttata* (Kirby, 1802), *N. marshamella* (Kirby, 1802) and *N. ruficornis* (L. 1758), constitute 64% of the total Norwegian records. Of doubtful affinity to the Norwegian fauna are species with very few and old records; *N. argentata* Herrich-Schäffer, 1839, *N. armata* Herrich-Schäffer, 1839 and *N. integra* Brulle, 1832, while *N. villosa* Thomson, 1870 has recently been rediscovered. The Norwegian fauna seems to have less species compared to Sweden and Denmark.

Key words: Hymenoptera, Apoidae, *Nomada*, solitary bees, distribution in Norway.

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## Introduction

The Norwegian Hymenoptera fauna is poorly known, with 3500 species recorded of an estimated total of 8000 species (Ottesen 1993, SABIMA 1998). Publications on Norwegian bees during the last century have mainly been restricted to the family Apidae. However, recent interest among a few Norwegian entomologists has been concentrated on solitary bees (Hansen 1995, Hansen & Olmi 1996, Berg 2000, 2008). The aim of the present paper has been to validate all Norwegian specimens of *Nomada* Scopoli, 1770 from museum material and private collections, in order to give a revised and updated taxonomy and to extract biogeographic information.

The cleptoparasitic *Nomada* Scopoli 1770 is a very diverse genus, representing an estimated half of the species in Nomadinae. This subfamily contains of 33 genera and more than 1200 species worldwide. Although *Nomada* occur on all continents except Antarctica, most of them are

Holarctic, and are best known from the Western Palaearctic (Alexander 1994, Alexander & Schwarz 1994).

The cleptoparasitic nature of *Nomada* implies dependence on host bees, often a sole species. As some of these hosts have a specific habitat requirement, a decrease of available habitats has a detrimental effect on the abundance of solitary bees, including *Nomada*.

Records of *Nomada* from Norway are mentioned in several papers, but almost exclusively as minor parts of general lists. The first part of this paper give an overview of all published records, while the second part deals with more specific details on the faunistic records and species verifications

## Published records

The first reference to Norwegian *Nomada* was given by Siebke (1880), with his contribution to

«Enumeratio Insectorum Norvegicorum». This list of Norwegian insects includes several *Nomada*-species, mainly collected from the Oslo-area in the Southeast of Norway. Additional comments and records to Siebke's list were published by Schøyen (1880, 1887).

Embrik Strand published several general lists and notes on Norwegian insects, including records of *Nomada* (Strand 1898, 1900, 1901, 1903, 1904, 1906, 1910), often restating previous works. Friese (1902) published a few *Nomada* from «Lapland and Arctic Norway» together with records of previously published *Nomada*. New observations from North-Norway were published by Sparre Schneider (1906, 1909), Soot-Ryen (1925) and Hellén (1933).

Meidell (1934), who mainly worked on bumble bees and other bees from Rogaland in the Southwest of Norway, includes six species of *Nomada*. His work is the only systematic description of distribution and summarizes the ecology. A general overview of Norwegian *Nomada* was published by Stenlökk (2002). Ødegaard et al. (2009) listed ten common *Nomada* species among invertebrates from Norwegian hotspot habitats, while the Norwegian Red List 2010 includes eight species (Kålås et al. 2010).

### Existing material

Material from existing museum collections and private collections has been examined. A total of 2049 *Nomada* specimens were examined. All relevant museums in Norway have been requested for material. The Zoological Museum in Bergen (ZMB) houses the important collection from Meidell, while the Natural History Museum in Oslo (NHMO) houses published material collected by Sparre Schneider, Münster, Esmark, Schøyen, Siebke and Strand, and also more recent material. Eleven specimens were borrowed from The Norwegian Forest and Landscape Institute (NISK). The University of Tromsø (UIT) contributed with nine specimens published by Sparre Schneider (1909).

### Taxonomy and distribution

The taxonomic list includes all specimens examined from available museum material and private collections. Comments on published records from Norway are discussed where possible, and relevant synonyms are listed. For a more complete list of synonyms, refer to e.g. Nilsson (2003). Where data is available, distribution is plotted on EIS-maps according to Økland (1976) and tabulated as revised Strand-regions (Strand 1943, Økland 1981, Endrestøl 2005) (Table 1).

All specimens in this paper have been identified by the author, unless otherwise stated. The taxonomic diagnosis by Schmiderkenckt (1930) has been used, with additions given by Perkins (1919), Jørgensen (1921), Pittioni (1952) and Celary (1995). Recent publications with keys given by Scheuchl (1995, 2000) contain the exact text as in Schmiderkenckt (1930), but with additional line drawings. Taxonomic comments are given in the discussion on each species.

The distribution of *Nomada* in the taxonomic list for relevant countries outside Norway refers to work by Janzon et al. (1991) and Nilsson (2003) for Sweden, Jørgensen (1921) and Rasmussen (2010) for Denmark, Elfving (1968), Vikberg (1986), Söderman & Vikberg (2002) for Finland. Some information is also from Kloet et al. (1978) for England and Celary (1995) from Poland.

Due to habitat destruction and fragmentation, hosts and habitats for *Nomada* may be under threat for many species and populations. Several countries have issued "Red Lists" including *Nomada*, and reference is made to Gärdenfors et al. (2005) for Sweden, Rassi et al. (2001) for Finland, Maddock (2007) for England and Westrich et al. (1997) for Germany. *Nomada* is not listed in the Danish Red List of 1997 (Stoltze & Pihl 1998), nor in their revised list of 2004. While *Nomada* did not appear in the previous Norwegian Red List (Kålås et al. 2006), they are included in the revised edition (Kålås et al. 2010) with eight species; *Nomada alboguttata* Herrich-Schäffer, 1839 as "Vulnerable", *N. argentata* Herrich-Schäffer, 1839, *N. armata* Herrich-Schäffer, 1839, *N. intergra* Brulle, 1832 as "Regionally Extinct",

*N. flavopicta* (Kirby, 1802), *N. obtusifrons* Nylander, 1848, *N. striata* Fabricius, 1798 as “Near threatened” and *N. villosa* Thomson, 1870 as “Endangered”.

## The species

Species not previously recorded from Norway are marked with an asterisk (\*), and are commented on below. The following abbreviations for collectors have been used: AF = Arild Fjeldså, AFJ = Arne Fjellberg, AJN = Alf Jacob Nilsen, AL = Astrid Løken, BAK = Alf Bakke, BØK = Bjørn Økland, DAH = Anders Dahl, ENG = Jostein Engdal, ES = Embrik Strand, EM = E. Michaelsen, ESM = Lauritz M. Esmark, FAL = Morten Falck, GSØ = Geir E. E. Søli, HH = Halvard Hatlen, HEI = Erik Heibo, HK = Hans Kiær (ex coll), HKR = H. Kryvi, IS = Ivar Stokkeland, JBR = J. Breen, JE = J.E. leg., JGU = J. Gullaksen, JIB = Jan Ingar Iversen Båtvik, JON = Terje Jonassen, JAS = Jan A. Stenløkk, JL = J. Li, JST = Jogeir Stokkeland, JØR = Jørstad, BE = Kai Berggren, KMY = Kai Myhr, KMO = Kjell Magne Olsen, KN = Kari Noer, KNA = Nils Knaben, KRO = Knut Rognes, LG = Lita Greve, LOH = Lars Ove Hansen, LP = O.J. Lie-Pettersen, LUN = Ole Bernhard Lundetræ, LØN = Ole Lønnve, MEL = M. Elven, MHV = Magne-Henrik Velde, MOE = Nils Green, MUN = Thomas Georg Münster, NAG = Tony Nagypal, NISK = Norwegian Forest and Landscape Institute, OHA = Oddvar Hanssen, OM = Ove Meidell, RCH = Rune Christensen, RR = R. Rosendahl, SAG = Bjørn Sagvolden, SBK = Johan Heinrich Spalckhauer Siebke, SCH = Wilhelm Maribo Schøyen, SCN = Hans Jacob Sparre Schneider, SHÅ = Sigmund Hågvar, SKA = Skartveit, SL = Sverre Lundemo, SO = Stefan Olberg, SOH = Stig Otto Hansen, SR = Tron Soot-Ryen, SS = Svein Svendsen, SUN = Karsten Sund, SØR = Ove Sørlibråten, TA = Trond Andersen, TJO = Thor Jan Olsen, TN = Tony Nagypal, TNI = Tore Nielsen, UIT = University of Tromsø, VOI = Reidar Voith, ZMB = Zoological Museum, Bergen, NHMO = Natural History Museum, Oslo, ØB = Øistein Berg, ØDE = Frode Ødegaard, AAN = Johannes E. Aanonby, AAR = Leif Aarvik.

## *Nomada alboguttata* Herrich-Schäffer, 1839 (Fig. 1A)

*N. ochrostoma* Zetterstedt, 1838 (part)  
*N. baccata* Smith, 1844  
*N. quinquespinosa* (or *5-spinosa*) Thomson, 1870  
*N. laeta* Thompson, 1870

The taxonomic status of *Nomada alboguttata* Herrich-Schäffer, 1839 and *N. baccata* Smith, 1844 is disputed. Early papers (pre-1995) compile the two as forms of one species; e.g. Westrich (1989) has *N. baccata* as a morph of *N. alboguttata*, referring to transitional forms, while Celary (1995) use *N. baccata* as a synonym. Schwarz et al. (1996) take *N. baccata* to species level, but state the need for further clarification on taxonomy. His separation is based on four, mainly phenological morphs, where the females may be morphologically transitional. Nilsson (2003) split two distinct species based on characters and the exclusive host bee species for *N. baccata*. Scheuchl (2000) separate the species in the revised edition, in contrast to his 1995-edition (Scheuchl 1995). Sann et al. (2010) analysed DNA-sequences of two *N. alboguttata*-forms distinguishable by their characteristic coloration and which parasitize different *Andrena* Fabricius, 1775 hosts. The molecular analysis revealed nearly no differences between DNA-sequences and potentially indicate a complex of cryptic species or alternatively phenotypic plasticity.

Based on morphological characteristics, all examined specimens belong to *N. alboguttata*, based on Scheuchl (2000). The host for *alboguttata* is *Andrena barbilabris* (Kirby 1802), known from Norway, while the host for *baccata* is *A. argentata* Smith 1844, which has only recently been discovered in Norway (Berg 2008).

**Published records.** Sparre Schneider (1880) mentions two records of “*Nomada 5-spinosa*” from “Monte Ekeberg ad Christianiam, leg. Schøyen” (AK Oslo, Ekeberg, EIS 20). This has not been verified due to lack of material. He also reports Fr.hald 62, mense Augusto, which was verified by one female (NHMO): Ø Halden (EIS 20). Strand (1898) listed “*Nomada 5-spinosa* Ak. Sm 59-60”, probably referring to the same

material. However, the record in Strand (1899) for "*Nomada 5-spinosa* Klovimoen (Vefsen)" is a misidentification, being a female of *N. panzeri*. Friese (1920) mention "Lappland" (based on Zetterstedt 1838), and Hellén (1933) records "two male *N. alboguttata*" from "Alten, Vina" (FV). Again, these two specimens were revised by ZMT material to be *N. panzeri*.

**New records.** **TEY** Kragerø: Jomfruland (EIS 11) 2.VI.1992, 1♀ (SOH); **ON** Dovre: Faksfall (EIS 71), 1.VI.2009 9♂♂1♀ (ØDE); **STI** Trondheim: Bjørkmyr (EIS 92) 3.VII.2007 2♀♀ (ØDE), Tiller (EIS 92) 25.V.2008 5♂♂, 8♀♀ (ØDE).

One additional female from NHMO is labelled "22.5.88 Sand, Krøplingen" or "Grøplingen", but no further location details have been found for this specimen from year 1888, which may be from abroad.

**Comments.** As this species is distributed throughout Europe to 66°N (Celary 1995), and is known from Sweden (Endangered), Finland (Vulnerable) and Denmark, one would expect it to be more regular in Norwegian collections. It is surprising that only a few and widely separated specimens exist for this rather large and characteristic species, and also the lack of more material from the classic collectors. The distribution might however be less restricted than the known localities indicate. It is regarded as "Vulnerable" in the Norwegian Red List 2010.

#### \* *Nomada argentata* Herrich-Schäffer, 1839 (Fig. 1B)

*N. atrata* Smith, 1846

*N. brevicornis* Schmiedeknecht, 1882

**Published records.** Sparre Schneider (1880) mentions "*N. obtusifrons* specimen ad Tvedestrand mense Augusto 1876", as a male of uncertain taxonomic affinity ("*N. germanicam* dubie relatum"). A specimen from NHMO labelled «*Nomada goodiana* male? Tvedestrand, Aug. 1876, Schneider», is likely to be the one mentioned (AAY Tvedestrand: Tvedestrand, EIS 6). Dr. M. Schwarz, Austria kindly determined

this to be *N. argentata*, which is not previously recorded from Norway.

**New records.** One male from NHMO, also from AAY Arendal: Arendal, EIS 6, 25.VII.1953 (BAK) was also determined by Dr. M. Schwarz (pers. rec. 1997) to be *N. argentata*.

**Comments.** Widespread in Europe, except from the boreal and polar regions (Westerich 1989), with records from southernmost Sweden, where it is regarded as "Critically Endangered" with only eight specimens recorded from sandy meadows, and with the last record from Öland in 1971 (Gärdenfors 2005). Three records are mentioned from Finland by Elfving (1968), but they are not repeated in the later checklists of Vikberg (1986) or Söderman & Vikberg (2002). It is regarded as "Regionally Extinct" in the Norwegian Red List 2010.

With only two old records from Norway (1876 and 1953), this species needs to be verified with further collecting on the southern coast. However, it is notable that *Andrena marginata* Fabricius, 1777, being the sole host for *N. argentata* (Westerich 1989), has also been recorded from AAY Arendal: Tromøya (Ø. Berg pers. com.). If *N. argentata* exists in Norway, it might have a restricted and local distribution on the S-SW coast.

#### *Nomada armata* Herrich-Schäffer, 1839 (Fig. 1C)

*N. cincticornis* Nylander, 1848

**Published records.** Schøyen (1887) mentions one specimen taken collected in "Mandal, summer 1882". This is verified by one male labelled "Mandal, Schøyen" (VAY Mandal: Mandal, EIS 2), stored at NHMO. Strand (1898) mentions «*armata* L.o.M.». Unfortunately no specimen has been available for validation, but as this species is characteristic, the record may well be plausible. Strand (1901) mentions "*N. solidagnis*" from Lavik. This is verified to be a female *Nomada armata* in NHMO labelled "Lavik, Strand" (SFY Høyanger, Lavik, EIS 49).

**New records.** No further record has been found of this species, and the two specimens

collected by Schøyen (1882) and Strand (1901) are the only traceable specimens from Norway.

**Comments.** Distributed in the South and Central Europe, north to South Sweden and from several places in South Finland. It is redlisted as “Endangered” in Finland and Sweden, where it seems to have disappeared from large areas, requiring dry meadows with populations of the host *Andrena hattorfiana* (Fabricius, 1775) (Gärdenfors 2005). It is redlisted as “Vulnerable” in UK, with restricted populations (Hymettus 2006) and as “Endangered” in Germany due to habitat loss (Westrich et al. 1997). *N. armata* has uncertain status with regard to the Norwegian fauna, and further specimens are needed to validate its existence. It is regarded as “Regionally Extinct” in the Norwegian Red List 2010.

### *Nomada flavoguttata* (Kirby, 1802)

(Fig. 3A)

*N. minuta* Fabricius, 1804

**Published records.** Sparre Schneider (1880) mentions “*minuta*” from “Christianiam Tøien” (AK, Oslo), “Lillehammer” (OS), “nec non ad Bergen” (HOY), restated by Strand (1898), Strand (1901): “Skien” (TEY) and Strand (1903) from “Sireosen” (VAY). All specimens mentioned have been verified by examination of NHMO material. Meidell (1934) found several specimens from West Norway, of which many specimens have been verified by examination of material at ZMB, and are listed below.

**Records.** Ø Aremark: Bøensætra (EIS 21) 20.VI.1998 1♀ (TJO), Fredrikstad: Holteberg (EIS 20) 18.VI.1997 1♂ (TJO), Halden: Fredriksten Castle (EIS 20) 7.V.2010 2 ex. (ØDE), 27.VII.2010 2 ex. (ØDE), Moss: Jeløya, Fuglevik (EIS 19) 16.VII.1996 1♂ (LOH), Sarpsborg: Råkil i Tune (EIS 20) 24.VI.1993 1♀ (TJO), 10.VII.1996 1♀ (TJO), 7.VII.1993 1♀ (TJO), 30.VII.1994 1♂ (TJO), 2. VIII. 1999 1♀ (TJO), 20.VI.1998 1♀, 2. VIII.1999 1♀ (TJO), Sandbakken (EIS 20) 17.VII.1997 1♀ (TJO), Grimøya (EIS 20) 30.V.2009 1♂ (TJO), Kallnesskogen (EIS 20) 1♀ (TJO), Hvaler: Søndre Sandøy (EIS 12)

4.VI.2006 1♀ (OS); AK Oslo: Frogner (EIS 28) 9.VI.1853 4♀♀ (ESM), Oslo (EIS 28) 1♀ (ESM), 1♂ (SBK), 1? (SBK), 1? (ESM), 1♀ (NHMO), 1♂ (NHMO), Røa (EIS 28) 7.VII.1995 1♀ (ØB), Sørkedalen (EIS 36) 16.VI.1996 1♂ (ØB), Tøyen (EIS 28) 15.VII.1891 1♀ (SBK), 20.VI.1851 1♂ (SBK), 1♂ (SBK), 6.VI.1851 1♂ (SBK), Ekebergskråningen (EIS 28) 16.-19.V.2008 1♀ (LOH), Østensjøvannet (EIS 28) 24.VI-9.VII.1995 1♀ (FAL), Asker: Bjørkås (EIS 28) 2.VII-24.VIII.1995 1♂ (NHMO), Risenga (EIS 28) 4.VI.1989 1♀ (ØB), Solli skytebane (EIS 28) 5.VI.1990 3♂♂ (ØB), 28.V.1990 1♂ (ØB), 5.VI.1990 2♀♀ (ØB), Konglungen (EIS 28) 12.V.2008 2♀♀ (ØDE), Bærum: Oksenøya (EIS 28) 3.VI.2009 1♀ (ØDE), 21.V.2010 1 ex. (ØDE), Borøya (EIS 28) V.1994 1♂ (LOH), 28.VI-9.IX.1995 5♂♂ (LOH), 12.VII.1996 1♀ (LOH), Fleskumåsen (EIS 28) 18.VI.1999 1♂ (ØB), 7.V.2003 1♀ (ØB), Kjaglidalen (EIS 28) 26.V-11.VI.1990 2♀♀ (FAL), Lommedalen (EIS 36) 31.V.1999 1♀ (ØB), 14.VI.1999 1♀, Fet: Enebakkneset (EIS 29) 27.VI.1990 1♀ (ØB), Øya (EIS 29) 23.IV.1993 1♂ (RCH), Nannestad: Tømte (EIS 37) 11.VI.1953 1♀ (BAK), Nes: Kaffeholmen (EIS 37) 14.VI.2003 1♂ (ØB), Nesodden: Tusse (EIS 28) 17.VI.1957 1♀ (AL), Oppegård: Svartskog, Rødstein (EIS 28) 2.V-4.VI.2004 1♂ (KN), Sørurum: Sørumsand (EIS 37) 13.VI.2003 1♂ (OS), 21.VI.2005 1♀ (OS), Ullensaker: Sessvollmoen, Aurtjernet (EIS 37) 7.VII.2007 3♂♂ (LOH), Holtmarka-Holtsætra (EIS 37) 24.V.2000 1♂ (LOH), Vestby: Kroken (EIS 28) 27.V.2006 1♀ (OS), Skedsmo: Asakmoen (EIS 37) 1.VI.2010 1 ex. (ØDE); HES Eidskog: Leirsjøen (EIS 38) 3.VII.1991 6♀♀ (ØB), 29.VI.1992 1♀ (LOH), 22.VI.2010 1 ex. (ØDE), 3.VI.2010 4 ex. (ØDE), Sør-Odal: Gjersøymyra (EIS 37) 14.VI.2003 1♀ (ØB); OS Lillehammer: Lillehammer (EIS 54) 25.VI.1877 1♀, Vestre Toten: Einavoll (EIS 45) 9.VII.1999 1♀ (ØB), “Gudbrandsdalen” 1♀ (MOE); ON Lom: Lom (EIS 70) 1♂ (MOE), Nord-Fron: Kvam (EIS 62) 1♀ (SBK), Dovre: Faksfall (EIS 71) 1.VI.2009 1♂ (ØDE); BØ Drammen: Underlia (EIS 28) 20-31.V.1992 2♀♀ 1♂ (LOH), 26.V.1992 1♀ (LOH), 27.V.1992 1♀ (LOH), 1-30.VI.1992 2♀♀ (LOH), V.1993 3♀♀ 2♂♂

(LOH), V.1994 2♂♂ (LOH), VII.1994 1♀ (LOH), V.1995 1♂ (LOH), VI.1995 15♀♀1♂ 4♂♂ (LOH), 28.VI-9.IX.1995 1♀ (LOH), VI.1997 1♀ 2♂♂ (LOH), VI.1999 1♀ (LOH), 12.V.2008 1♀ (LOH), Hurum: Ertsvika (EIS 19) 31.V.1997 1♂ (ØB), Hole: Søhol (EIS 36) 8.V.2010 1 ex. (ØDE), 2.VI.2010 4 ex. (ØDE), Lier: Tranby (EIS 28) 12.V.2008 1♀ (ØDE), Nedre Eiker: Solbergfjell (EIS 28) V.1999 1♀ (LOH), Kongsberg: (EIS 27) 29.V.1992 1♂ (SAG), Røyken: Kinnartangen (EIS 28) 28.V.–6.VII.1991 1♂ (LOH), 17.VI.1989 1♀ (ØB), 6.VII-4.VIII.1991 1♀ (LOH), 1.-10.VI.2008 1♂1♀ (LOH), Krødsherad: Krødsherad (EIS 35) 13.VII.1859 1♀ (SBK), Ringerike: Tyristranda (EIS 36) 10.VII.1990 1♀ (DAH), Hole: Høymyr (EIS 28) 8.VIII.2003 1♀ (ØB); **BV** Flå: Rimeplassen (EIS 44) 8.VII 1992 1♀ (LOH), Rollag: Bråtåsen (EIS 35) V.1994 1♂ (LOH), Tråen saga (EIS 35) VI.1994 4♂♂ (SAG), Vårviken (EIS 35) V.1994 15♂♂ (LOH/SAG), Veggli (EIS 35) 29.VI.1995 1♂ (SAG), 9.VI.2002 1♂ (SAG); **VE** Borre: Løvøya NW (EIS 19) VI.1997 1♂ (LOH), Tjøme: Gon (EIS 19) 24.VI.1991 1♂ (AFJ), 3.VII.1991 1♀ (AFJ), Sønstegård (EIS 19) 21.V.1992 1♂ (AFJ), Tjøme (EIS 19) 14.VI.1967 1♀ (AFJ), Våle: Langøya (EIS 19) V.1990 1♂ (LOH), Langøya (EIS 19) V.1991 1♂ (NHMO), Nøtterøy: Midtre Bolærne (EIS 19) 16.VI.2007 1♀ (FAL); **TEY** Skien: Skien (EIS 18) 1♂ (ES), Nenset (EIS 18) 31.V.2010 2 ex. (ØDE); **TEI** Notodden: Lisleherad (EIS 27) 30.V-7.VII.1995 1♀ (BAK), 13–26.V.1994 1♂ (ZMT), Tinn: Rjukan-Mæl (EIS 26) 10.VI.1996 1♂ (SAG), Sauherad: Akkerhaugen (EIS 18) 25.VI.2001 1♂ (ØB), Seljord: Heggenes (EIS 17) 11.V.2009 1♂ (ØDE), 2.VI.2009 1♂ (ØDE), 18.V.2010 1 ex. (ØDE); **AAV** Lillesand: Grimenes (EIS 6) 16.VI.1996 1♂ (KBE); **AAI** Bygland: Heddevika (EIS 9) 16.V–11.VI.1997 1♂ (KBE), 1.-29.VII.1998 1♀ (KBE), Birkenes: Birkeland, Nordåsen (EIS 6) VI.2006 2♀♀ (SS); **VAY** Flekkefjord: Sireosen (EIS 4) 1♀ (ES), 1♂ (ES), Kristiansand: Stangenes (EIS 2) 26.VI.1976 1♀ (SS), 9.VII.1977 1♀ (SS), Nedre Timenes (EIS 2) 7.VI.2004 1♀ (KBE); **VAI** Kvinesdal: Gjemlestad (EIS 4) 4.VII.1945 1♂ (KNA), Sirdal: Lilandsdal (EIS 8) 25.VI.1989 1♀ (IS); **RI** Forsand: Meling (EIS 7) 28.V.1931 2♂♂ (OM), 23.V.1936 1♀ (OM), Sauda: Saudasjøen (EIS 23) 18.VI.1936 1♂ (OM), Roalkvam (EIS 24) 3.VI.1934 1♀ (OM), Sand (EIS 14) 26.V.1935 3♀♀ (OM); **RY** Bjerkreim: Hovland i Ørdsalen (EIS 8) 21.III.1936 1♂ (OM), Egersund: Birkeland (EIS 3) 15.VI.1938 1♂, Fotland (EIS 3) 5.VI.1973 1♂ (AF), 25.V.1973 1♂ (AF), Neset (EIS 3) 31.V.1973 1♂ (AF), Finnøy: Finnøy (EIS 14) 10.VI.1934 1♂ (OM), 10.VI.1934 1♂ (OM), Hå: Ognå (EIS 3) 1♂1♀ (SCH), Sandnes: Arboret (EIS 7) 17.VI.1982 1♀ (IS), Brattebø (EIS 7) 1.VI.1967 1♂ (TNI), Hana (EIS 7) 25.VI.1931 1♂ (OM), Hana-Lutsi (EIS 7) 1.VII.1931 1♂ (OM), 1.VII.1931 1♀ (OM), Melshei (EIS 7) 14.VI.1982 1♂ (TNI), Sokndal: Sokndal (EIS 3) 1♂ (OM), Sola: Joa (EIS 7) 7.VI.1931 1♂ (OM), Stavanger: Gosen (EIS 7) 17.VI.1977 1♀ (KRO), Myrland (EIS 7) 22.VI.1965 1♀ (TNI), 4.VII.1965 1♂1♀ (TNI), Suldal: Jelsa (EIS 14) 4.VIII.1931 3♀♀ (OM), Time: Eikeland (EIS 7) 1.VI.1932 1♂ (OM), Engjvatn (EIS 7) 6.VI.1995 1♂1♀ (ØB); **HOY** Askøy: Davangen (EIS 39) 21.VI.1959 1♀ (AL), Bergen: Bergen (EIS 30) 1♂ (SCN), VII-1896 1♀, VII.1896 1♀, Fana, Fantoft (EIS 30) 26.VI.1952 2♀♀ (AL), 7.VII.1952 1♀ (AL), 28.VII.1952 2♀♀ (AL), 30.VI.1953 1♂ (AL), 31.V.1954 2♀♀ (AL), 14.VI.1954 2♀♀ (AL), 17.VI.1954 1♀ (AL), Fana, Fjelltveitvann (EIS 31) 13.VI.1937 1♂ 2♀♀, Fana, Paradis (EIS 39) 15.VI.1967 1♂ (TNI), Fana, Stend (EIS 30) 12.VI.1958 1♀ (LG), 19.VI.1957 1♀ (AL), 19.VI.1967 4♀♀, Natland (EIS 31) VI.1910 10♀♀ 15♂♂ (LP), Åsane v/ Golfbanen (EIS 39) 17.VII.1966 1♀ (AL), Fitjar: Fitjar (EIS 22) VIII.1912 1♀ (LP), Lindås: Hodneli (EIS 39) 12.VI.1988 1♂ (LG), Lygra (EIS 39) 13.VI.2001 2♀♀ (OHA), Osterøy: Lonevåg (EIS 40) 10.V.1972 1♂ (TA), Stord: Leirvik (EIS 23) V.1920 1♂1♀ (MUN), Sund: Glesvær (EIS 30) 3.VI.1954 1♂ (AL), Vaksdal: Eidslandet (EIS 40) 24.VI.1973 1♀ (LG); **HOI** Granvin: Eide (EIS 41) 25.VI.1935 1♀ (SR), Kvinnerad: Varaldsøy (EIS 31) 8.VI.1958 1♂1♀ (AL), Odda: Røldal (EIS 24) 4.VII.1936 2♀♀ (OM), Ullensvang: Djonno (EIS 41) 5.VI.1938 1♂, 5.VI.1936 1♀; **SFI** Aurland: Aurland (EIS 51) 19.VI.1938 3♂♂ (KNA), 18.VI.1938 1♀ (KNA), Aurlandsvangen (EIS 51) 16.VI.1939 1♂ (KNA), Otternes (EIS 50) 14.VI.1939 1♂ (KNA), Balestrand: Flesje (EIS

50) 1.VI.1935 1♂ (OM), 10.VI.1935 1♂ (OM), Tue (EIS 50) 2.VI.1935 1♂ (OM), Tuftedal (EIS 50) 24.VI.1935 2♀♀ (OM), Hornindal: Hornindalseter (EIS 68) 25.VII.1957 1♀ (AL), Leikanger: Grinde (EIS 50) 27.V.-11.VI.1992 1♂ (AAN); **MRI** Rauma: Romsdalen (EIS 77) VI.1834 3♀♀ (MUN), Surnadal: Kvanne (EIS 85) 24.VI.2007 1♂1♀(ØDE), Tingvoll: Aksneset (EIS 85) 29.VII.2006 1♀ (ØDE). Sunndal: Litlfale (EIS 78) 30.V.2010 1 ex. (ØDE), Myra (EIS 78) 2.VII.2010 1 ex. (ØDE); **STI** Malvik: Vikhammeråsen (EIS 92) 25.V.2008 1♂ (ØDE), 22.VI.2007 4♀♀ (ØDE), Melhus: Gyllvatnet (EIS 87) 2.VII.2008 3♀♀ (ØDE) 4.VII.2009 1♀ (ØDE), Midtre Gauldal: Singsås (EIS 87) 3.VI.2007 1♂ (ØDE), Orkdal: Jakopsmyran (EIS 91) 18.VII.-17.VIII.2010 1 ex. (OHA), Oppdal: Myran (EIS 79) 10.VI.2007 1♀ (ØDE), Trondheim: Risvollan (EIS 92) 19. VI.2008 1♂ (ØDE), 5.VII.2007 4♀♀ (ØDE), Tiller (EIS 92) 7.VI.2007 1♂ (ØDE) 15.VII.2009 1♀ (ØDE), 19.VI.2008 2♀♀ (ØDE), Stokkanhaugen (EIS 92) 15.VII.2009 1♀ (ØDE); **NTI** Levanger: Åsen, Fætta (EIS 97) 25.VI.2007 1♀ (ØDE); **NSY** Meløy: Ørnes (EIS 125) 7.VII.1951 1♂ (SR); **FV** Alta: Vina (EIS 165) VI.1924 1♂ (ZMT).

**Comments.** Widespread in Europe, from the South and Central Sweden, Finland except in the north, and with several records from Denmark. This small *Nomada* has a wide distribution in Norway, and is often very common in South Norway, representing 17% of the total material from the country. Together with *N. panzeri*, they are the only two *Nomada* with (two old records) distribution in North Norway. The lack of more recent specimens from the northern regions is probably due to lack of collecting.

### *Nomada flavopicta* (Kirby, 1802) (Fig. 1D)

*N. jacobaeae* Panzer, 1799

**Published records.** Schøyen (1887) mentions “*jacobaeae*” from “Gudbrandsdalen and Tøyenhaven”, collected by Moe, and this is restated by Strand (1898) as «*jacobaeae* AK». Both

records are verified by examination of the NHMO material with one female and one male, bearing identical labels (“Gudbr.dalen, Moe”) from OS Gudbrandsdalen, and one male from AK Oslo: Tøyen, EIS 28 (MOE).

**New records.** **AK** Ullensaker: Aurtjernet (EIS 37) 16.VIII.2008 1♂ (OHA); **BØ** Ringerike: Ringerike 1♂ (EIS 36) (SCH), labelled “Ringerike, Schøyen” (NHMO), Busund (EIS 36) 26.VI.2008 1♂ (ØDE), Hole: Søhol (EIS 36) 24.VII.2010 2 ex. (ØDE).

One male from NHMO bears a label which is difficult to read and of uncertain location, collected July 1889 (“3/789, Haster... *A...nautia*”). This might be a specimen from abroad. Although none of the NHMO specimens have a collection date, they are probably from the late 18th century.

**Comments.** Widespread in Europe, with records from southern Sweden and several from South Finland, where it is considered endangered. It is regarded as “Near Threatened” in the Norwegian Red List 2010. It is remarkable that three Norwegian specimens have been collected in the late 18<sup>th</sup> century, and then none before the 2008-2010 specimens.

### *Nomada fulvicornis* Fabricius, 1793 (Fig. 1E)

*Nomada lineola* Panzer, 1798

*N. cornigera* (Kirby, 1802)

*N. subcoronata* (Kirby, 1802)

*Nomada fulvicornis* is very variable in appearance (e.g. Jørgensen 1921) and may even be difficult to separate from *N. marshamella* (e.g. Schmiedeknecht 1930). A discussion of synonyms for these species is given by Schwarz (1974, 1986a) and Falk (2005). *N. subcoronata* (Kirby, 1802) is sometimes regarded as a separate species, and might occur in Norway.

**Published records.** Sparre Schneider (1880) lists *N. lineola* from “Christianiam Kværner”, “Ormøen” and “Frogner”. All are labelled “*lineola*”, and from AK Oslo, verified by examination of the NHMO material. The specimen from “Frogner” was labelled “Vestre Aker”. His

paper also mentions observation from “Åmot in Østerdalen” which has not been verified, and would be far more inland than all other records. Strand (1898) also lists these localities.

**Records.** Ø Hvaler: Hvaler 20-25.V.1908 1♂ (SCH), Rygge: Sildebauen (EIS 19) 22.V.1994 1♀ (AAR), AK Oslo: Kværner (EIS 28) 1.VI.1851 1♀ (SBK), Ormøya (EIS 28) 29.V.1870 1♀ (SBK), Oslo (EIS 28) 1♀ (ESM), 1♀ (NHMO), Slottsparken (EIS 28) 14.V.1851 1♂ (ESM), Tøyen (EIS 28) 20.V.1846 1♀ (SBK), Vestre Aker (EIS 28) 22.V.1899 1♀ (SCN), Østensjøvannet (EIS 28) 7.V.1987 1♀ (FAL), Ostøya (EIS 28) 11.V.2008 1♀ (ØDE); BØ Hurum: Ertsvika (EIS 19) 25.V.1995 1♂ (ØB), 31.V.1997 1♀ (ØB), Ringerike: Busund (EIS 36) 21.V.2010 1 ex. (ØDE); VE Larvik: Stavern (EIS 19) 12.V.2009 1♀ (ØDE), Tjøme: Gon (EIS 19) 30.IV.1994 1♀ (AFJ), 26.IV.1993 1♀ (AFJ); TEI Seljord: Heggenes (EIS 17) 17.IV.2009 1♀ (ØDE); TEY Porsgrunn: Skjelsvik (EIS 18) 8.VI.1996 1♀ (GSØ), Skien: Nenset (EIS 18) 6.V.2010 1 ex. (ØDE); VAY Kristiansand: Eeg (EIS 2) 13.V.1996 1♂ (NHMO), Birkenes: Birkeland, Nordåsen (EIS 6) 25.IV.2006 1♂ (SS).

**Comments.** Widespread in Europe, from South and Central Sweden (Endangered), South Finland (Endangered) and from Denmark. It is also considered endangered with reduced populations in Germany during the last 15 years (Westrich 1989). The few Norwegian records are from the Oslo-area and south to Agder. It has probably a restricted distribution, as this large and spectacular bee would not be overlooked by collectors. Several of the localities are near the coast, often on calcareous soil.

\* *Nomada goodeniana* (Kirby, 1802)  
(Fig. 1F)

*Nomada succincta* Panzer, 1798  
*N. alternata* (Kirby, 1802) - part  
*N. fulvicornis* Fabricius, 1793

The taxonomic separation between *N. goodeniana* and *N. succincta* (= *fulvicornis* in part) has been discussed in several papers. Schwarz et al. (1996)

report a small but clear morphological distinction in coloration between the two, supported by Westrich (1989). Others treat them as two morphs, e.g. Celary (1995) and Scheuchl (2000). Based on biochemical analysis, phenology, and lack of morphological transition forms, Kuhlmann (1977) treat them as separate species, stating their close affinity. Diestelhorst & Lunau (2008) concludes that transitional forms exist, bases on colour morphology. However, females of the two species from different localities in Germany, including transitional forms, were clearly separated using a molecular marker. For Scandinavian specimens, Janzon et al. (1991) has all Swedish specimens as *Nomada goodeniana*. This is also the case in the checklist by Norén et al. (1998), and Söderman & Vikberg (2002). Nilsson (2003) split the Swedish specimens, stating their close affinity and they are “reported to occur in Sweden but is generally believed that the bee in question were misidentified *N. goodeniana*”. Based on the Norwegian material, it has not been possible to separate two species and they are all reported in this paper as *Nomada goodeniana sensu lato*.

**Records.** Ø Rygge: Sildebuen (EIS 19) 22.V.1994 2♀♀ (AAR), Sarpsborg: Sentralstasjonen (EIS 20) 4.VI.2003 2♀♀ (TJO); AK Oslo: Rambergøya (EIS 28) 8.V.1993 2♂♂ (ØB), Tryvannstårnet (EIS 36) 15.VI.1980 1♂ (AL), Ekebergskråningen (EIS 28) 16.-19.V.2008 1♂ (LOH), Hovedøya (EIS 28) 27.V.2005 1♂ (SO), 27.V.2007 1♀ (SO), Bærum: Fleskumåsen (EIS 28) 8.VI.1997 1♀ (ØB), Ostøya (EIS 28) 11.V.2008 2♀♀ (ØDE), Kalvøya (EIS 28) 27.V.2007 1♀ (SO), Sandvika, Løkkeåsen 3.VI.2009 2♀♀ (ØDE), Nesodden: Alvern (EIS 28) 1.VI.2003 1♀ (LØN), Lier: Tranby (EIS 28) 12.V.2008 2♀♀ (ØDE), Asker: Bjørkås (EIS 28) 4.VI-2.VII.1995 1♀ (LOH), Skedsmo: Asakmoen (EIS 37) 1.VI.2010 1 ex. (ØDE), 27.VI.2010 1 ex. (ØDE); BØ Drammen: Underlia (EIS 28) V.1994 1♀ (LOH), V.1999 1♀ (LOH), Hurum: Ertsvika (EIS 19) 25.V.1995 1♂ (ØB), Skatvedt (EIS 28) 26.V.1994 1♀ (ENG), 25.V.1995 2♀♀ (ØB), Verpen (EIS 28) 2.VI.1996 1♂ (JE), Ringerike: Busund (EIS 36) 16.VI.2009 1♀ (ØDE), Hole: Søhol (EIS 36) 2.VI.2010 5 ex. (ØDE); TEY Kragerø: Barlandskilen (EIS 11) 3.VI.1995



1♀ (FAL), 5.VI.1995 1♀ (FAL), Porsgrunn: Helleåsen (EIS 11) 31.V.2010 1 ex. (ØDE), Skien: Nenset (EIS 18) 31.V.2010 1 ex. (ØDE); **TEI** Seljord: Heggenes (EIS 17) 11.V.2009 2♂♂1♀ 2.VI.2009 1♀ (ØDE), 18.V.2010 3 ex. (ØDE); **AAY** Arendal: Flostad church (EIS 6) 21.VI.2006 1♀ (SO).

One additional verified male from NHMO was labelled "*succincta* Panz *goodeniana* Kib.", but with additional remark regarding doubtful Norwegian affinity ("Esmarks saml.: mon norsk?"). Five other "*goodeniana*" were also present in the NHMO collection, clearly labelled as foreign material.

**Comments.** Widespread in Europe, where it is regarded as endangered in several countries (e.g. the Netherlands and Ireland). Records from South Sweden, southernmost Finland (removed from Red List 2010) and Denmark. The Norwegian records are from the SW-area and mainly coastal localities, where it seems to be present but rare, often at calcareous habitats. It is surprising that all records are from mid-1990s and onwards. One would expect that this large and spectacular Hymenoptera should have been recorded earlier if present.

#### \* *Nomada integra* Brulle, 1832

(Fig. 1G)

*N. germanica* Panzer, 1799

*N. ferruginata* var. *cinctiventris* Friese, 1920

A discussion of synonyms are given by Schwarz (1986a).

**New records.** Four female specimens exist in the NHMO collection, without taxonomic labels, collected by Schneider from "Fr.hald" (Ø Halden: Halden, EIS 20). One specimen was determined by Dr. M. Schwarz (pers. com.) as *N. integra*. The other three females are identical. No further specimens are known from Norway.

**Comments.** Sparsely distributed in Europe (Scheuchl 1995, Westrich 1989). It is redlisted as Regionally Extinct in Finland, and Endangered in Sweden (18 specimens recorded). The Swedish locality from Bohuslän is interesting,

as this borders to South East Norway, not far from Halden. In Great Britain it is redlisted as Endangered, and it seems to have declined significantly since 1945, although there has been an increase in records since mid-1980s. It is regarded as Regionally Extinct in the Norwegian Red List 2010.

#### *Nomada lathburiana* (Kirby, 1802)

(Fig. 1H)

*N. rufiventris* (Kirby, 1802)

*N. alternata* (Kirby, 1802)

**Published records.** Sparre Schneider (1880) mentions two females as "*rufiventris*" from Siebke, taken at "horto botanico ad Christianiam" and from "Sølsberg ad Christianiam", restated by Strand as "*rufiventris*" (1901). Both are verified from examination of the NHMO material. Strand (1904) mention, erroneously, *N. lathburiana* as new to the Norwegian fauna, based on specimen from "Fredrikshald" (now Ø Halden). All records have been verified from examination of the NHMO material.

**Records.** Ø Halden: Orød (EIS 20) 19.IV.2009 8♂ 15.V.2009 7♀ (ØDE), Fredriksten Castle (EIS 20) 7.V.2010 2 ex. (ØDE), 1.VI.2010 1 ex. (ØDE), Halden (EIS 20) 1♂ (ES), Sarpsborg: Råkil i Tune (EIS 20) 7.V.2000 2♀♀ (TJO); **AK** Oslo: Aker (EIS 28) V.1878 1♀, Bygdøy (EIS 28) 14.V.1953 1♀ (BAK), Frogner (EIS 28) 13.V.1887 1♂ (HK), Frøen (EIS 28) 25.V.1887 1♀ (HK), Oslo (EIS 28) 1♂1♀ (ESM), 1♀ (SBK), 1♀ (SCN), 3♂♂ (MUN), 1♀ (NHMO), Svartkulp (EIS 36) 11.V.1990 1♀ (ØB), Tøyen (EIS 28) 1♀ (SCH), 1♂1♀ (MOE), 3♀♀ (SBK), Nordstrand (EIS 28) 4.V.2008 1♂ (SHÅ), Bærum: Fornebu (EIS 28), Maridalen, Skar (EIS 36) 2.VI.1999 1♀ (AAR), 9.VI.1998 1♀ (ØDE), Asker: Hvalstrand (EIS 28) 12.V.1994 1♀ (ØB), Nannestad: Maura (EIS 37) 3.VI.1997 2♀♀ (NHMO), Tømte (EIS 37) VI.1990 1♀ (NISK), Sørums: Lørenfallet, Egner (EIS 37) VI.1994 1♀ (LOH/SØR), Fet: Piggåsen (EIS 29) 15.VI.2007 3♀♀ (ØDE), Ullensaker: Sessvollmoen (EIS 37) 26.VI.2006 1♀ (LOH), Skedsmo: Asakmoen (EIS 37) 5.V.2010 1 ex.

(OHA), 1.VI.2010 3 ex. (ØDE); **HES** Elverum: Elverum (EIS 46) 26.V.1992 1♀ (SAG), Eidskog: Leirsjøen (Bryngel) (EIS 38) 3.VI.2010 2 ex. (ØDE), Magnor (EIS 38) 3.VI.2010 1 ex. (ØDE); **OS** Jevnaker: Bjellum, MM783827 (EIS 36) 20.V.1993 1♀ (JAS); **ON** Nord-Fron: Stordalsberget (EIS 62) 10.V.2008 2♂♂, 2♀♀ (ØDE); **BØ** Drammen: Underlia (EIS 28) V.1993 1♀ (LOH), Hurum: Ertsvika (EIS 19) 25.V.1995 2♀♀ (ØB), 31.V.1997 1♂. Ringerike: Busund (EIS 36) 12.V.2008 4♀♀ (ØDE), 22.IV.2008 2♂♂ (ØDE), 31.V.2010 1 ex. (ØDE), Hole: Søhol (EIS 36) 2.VI.2010 1 ex. (ØDE), Kongsberg: Labro (EIS 27) 4.VI.2001 1♀ (LOH); **BV** Rollag: Tråen saga (EIS 35) VI.1994 1♂ (SAG), Vårviken (EIS 35) V.1994 1♂ (SAG); **VE** Tønsberg: Ilane, Sem (EIS 19) 1.V.1993 1♂ (AFJ); **TEI** Seljord: Heggenes (EIS 17) 11.V.2009 3♀♀ (ØDE); **AAV** Arendal: Flostad church (EIS 6) 21.VI.2006 1♀ (SO); **RY** Finnøy: Finnøy (EIS 14) 10.VI.1934 1♀ (OM); **RI** Suldal: Sand (EIS 14) 26.V.1935 1♂ (OM), Suldalsosen (EIS 15) 4.VI.1934 1♀ (OM); **HOY** Kvinnherad: Varaldsøy (EIS 31) 8.VI.1958 1♂ (AL), Stord: Leirvik (EIS 23) V.1920 1♀ (MUN); **HOI** Granvin: Granvin (EIS 41) VII.1913 2♀♀ (LP), Ullensvang: Djonno (EIS 41) 5.VI.1938 2♂♂7♀♀; **SFI** Balestrand: Balestrand (EIS 50) 5.VI.1935 3♂♂2♀♀ (OM), Flesje, Stokkebø (EIS 50) 1.VI.1935 1♀ (OM), Kvamsøy (EIS 50) 6.VII.1935 1♀ (OM), Tuftedalen (EIS 50) 18.VI.1935 1♂ (OM).

**Comments.** Widespread in Europe, in South and Central Sweden and South Finland. The distribution of the Norwegian records is remarkable, with several recent records from South West Norway (also inland localities) and several, older records only from the west coast and fiords. Apart from one recent record in 2006, there are no records from the southern coast of Norway.

### *Nomada leucophthalma* (Kirby, 1802)

(Fig. 11)

*N. borealis* Zetterstedt, 1838

**Published records.** Sparre Schneider (1880)

mentions "*borealis*" from "circa Christianiam horto botanico" and "Hovind", both AK Oslo, and this has been verified from examination of the NHMO material. The species is also listed by Strand (1898). Friese (1902) mention "*borealis*" from Lapland, but this has not been verified due to lack of specimens.

**Records.** **Ø** Rygge: Sildebauen (EIS 19) 22.V.1994 1♀ (AAR), Sarpsborg: Minge in Tune (EIS 20) 28.IV.1996 1♀ (TJO), Råkil in Tune (EIS 20) 7.V.2000 1♀ (TJO), Oppstad (EIS 20) 19.IV.2009 1♀ (ØDE); **AK** Oslo: Bogstad (EIS 28) 1♂ (ESM), Bygdøy, Hengsenga (EIS 28) 15.VI.1985 1♂ (TRI), Ekeberg (EIS 28) 25.V.1876 1♀ (SCH), Frogner (EIS 28) 7.V.1887 1♀ (HK), 3.V.1887 1♀ (HK), 16.V.1887 1♀ (HK), Lysaker (EIS 28) 1♂1♀ (SCH), Oslo (EIS 28) 5♂♂ (ESM), IV.1931 1♀ (OM), 1♀ (NHMO), Tøyen (EIS 28) 20.V.1846 1♂ (SBK), 1♂ (SBK), III.1845 1♂ (SBK), Ullern (EIS 28) 3.V.1931 1♀ (OM), V. Aker (EIS 28) 1♂1♀ (SCH), Nøkle vann (EIS 28) 11.V.1980 1♀ (FAL), Nesodden: Alvern (EIS 28) 10.V.2006 2♂♂ (LØN), Asker: Gullhella st. (EIS 28) 30.III.1990 2♀♀ (ØB), Vardåsen (EIS 28) 30.III.1990 1♂ (ØB), Vollen (EIS 28) 23.IV.1990 2♂♂ (ØB), Bærum: Bærumsmarka (EIS 28) 31.III.1990 1♀ (LØN), Lommedalen (EIS 36) 31.V.1999 1♀ (ØB), Ostøya (EIS 28) 7.V.1977 1♀ (PO), Fet: Sniksanden NØ (EIS 29) 29.IV.1993 1♀ 1♂ (RCH), Øya (EIS 29) 25.IV.1993 1♀ (RCH), Nannestad: Tømte (EIS 37) 18-21.V.1998 1♀ (NHMO), Lørenskog: Losbydalen (EIS 29) 1.V.1997 1♀ (SØR), Sørum: Sørlibakken, Dammyra (EIS 37) 3.VII.1987 2♀♀ (SØR), Askim: Nedre Øyern (EIS 29) 29.IV.1984 1♀ (SUN), Fet: Piggåsen (EIS 29) 23.IV.2008 1♂ 2♀♀ (ØDE), Ås: Ås (EIS 28) 20.IV.2003 1♂ (BAK), Enebakk: Vangen (EIS 29) 24.VI.1991 1♂ (BØK), Skedsmo: Asakmoen (EIS 37) 1.VI.2010 1 ex. (ØDE); **HES** Elverum: Starmoen (EIS 55) 7.V-13.VI.2007 1♀ (ØDE), Kongsvinger: Bæreia (EIS 37) 25.V.2001 2♀♀ (LØN), Eidskog: Leirsjøen (Bryngel) (EIS 38) 3.VI.2010 2 ex. (ØDE), Magnor (EIS 38) 27.VI.2010 1 ex. (ØDE); **HEN** Stor-Elvdal: Nordstumo (EIS 64) 16.IV.2003 1♀ (ØB), 17-21.IV.2003 1♀ (ØB), Rendalen: Hanestad (EIS 72) 21.IV.2003 2♀♀ (ØB), 4km NW Elvål, Brenneset (EIS 73)

29.VI.2003 (ØB); **OS** VestreToten: Raufoss, Prøven (EIS 45) 26.IV.1983 1♀ (ØDE). Nordre Land: Dokka, sør (EIS 45) 6.V.2006 1♀ (HH); **ON** Nord-Fron: Vinstra (EIS 62) 22.V.1993 1♂ (TJO), Stordalsberget (EIS 62) 9.-16.V.2009 1♀ (ØDE), 9.V.2009 1♀ (ØDE). Dovre: Faksfall (EIS 71) 10.V.2008 1♀ (ØDE); **BØ** Drammen: Majordammen (EIS 28) 11.IV.1992 1♂ 2♀♀ (ØB), Solum, Åskollen (EIS 28) 15.IV.1991 1♀ (DAH), Underlia (EIS 28) V.1993 1♀ (LOH), V.1999 1♀ (LOH), Nedre Eiker: Solbergfjell (EIS 28) V.1999 1♀ (LOH), Ringerike: Busund (EIS 36) 22.IV.2008 2♀♀ (ØDE), Hole: Høyemyr (EIS 28) 26.V.2003 1♂ (ØB), Hurum: Ertsvika (EIS 19) 24.IV.1994 1♀ (ENG), Kongsberg: Misutjern (EIS 27) 17.V.1992 1♀ (SAG), Kongsgårdmoen (EIS 27) 17.IV.2009 1♂ (ØDE); **BV** Rollag: Rollag (EIS 35) 24.IV.1993 1♀ (SAG), Rollag-Veggli (EIS 35) 12.V.1996 1♂ (SAG), Stærnes (EIS 27) 20.IV.1994 1♀ (SAG), V.1994 1♀ (LOH), Tråen saga (EIS 35) V.1994 1♂ (LOH/SAG), Vårviken (EIS 35) V.1994 3♂♂ (LOH/SAG), **VE** Lardal: Brufoss (EIS 19) 16.V.1992 2♀♀ (AFJ), Sande: Kabretta (EIS 19) 22.V.1994 1♂ (AFJ), Larvik: Lerungsand (EIS 11) 17.V.2002 1♀ (ØB); **TEY** Drangedal: Rønnoaldalen (EIS 17) V.1999 1♀ (BAK); **TEI** Notodden: Lisleherad (EIS 27) 11.-30.V.1995 2♀♀ (NISK), Tinn: Hovin (EIS 27) 16.V.1851 1♂, Seljord: Heggenes (EIS 17) 17.IV.2009 7♂♂1♀ (ØDE), 11.V.2009 1♂1♀ (ØDE); **AAY** Birkenes: Birkeland (EIS 6) V.2002 1♂ (SS); **AAI** Evje og Hornnes: Evje skytefelt (EIS 5) 30.V.1977 1♀ (SS); **RY** Finnøy: Kyrkjøy (EIS 14) 4.V.1986 1♀ (JON), Kyrkjøy/Aubø (EIS 14) 27.IV.1986 1♀ (JON), Sevheim (EIS 14) 8-10.V.1992 1♀ (SKA), 18-21.-IV.1992 1♂ (SKA), at Sevheimsvatnet (EIS 14) 12.-27.IV.1993 1♂ (SKA); **RI** Sauda: Slettedalen (EIS 24) 21.V.1935 1♂ (OM); **HOY** Bergen: Nattland (EIS 31) VI.1910 4♀♀ (LP); MRI Rauma: Tokle (EIS 77) 19.IV.2002 1♀ (HH), Sunndalen: Hoelsand (EIS 78) 4.V.2008 1♀ (ØDE), Tingvoll: Aksneset (EIS 85) 4.V.2007 1♀ (ØDE); **STI** Midtre Gauldal: Støren (EIS 87) 19.IV.2003 2♀♀ (ØB), 30.IV.2008 2♀♀ (ØDE), Oppdal: Myran (EIS 79) 19.V.2007 5♀♀ (ØDE), Røros: Kvitsanda (EIS 81) 3.VI.2007 1♂ (ØDE), 23.V.2009 7♂♂ (ØDE), Trondheim: Bjørkmyr

(EIS 92) 21.VII.2007 1♂1♀ (ØDE), 24.IV.2008 2♀♀ (ØDE), Leuglo (EIS 92) 26.IV.2008 1♀ (ØDE), 30.IV.2008 1♂2♀♀ (ØDE), 11.IV.2009 2♂♂1♀ (ØDE), Tiller (EIS92) 11.IV.2009 1♂ (ØDE), Dragvoll (EIS92) 11.IV.2009 1♂ (ØDE), Lauset (EIS 92) 22.V.2007 1♀ (SL).

**Comments.** Distributed in Central and North Europe, Denmark, South Sweden and throughout Finland. The Norwegian records are widespread from South Norway, also with several recent records inland, but few specimens from the west coast.

### *Nomada marshamella* (Kirby, 1802)

(Fig. 2A)

*N. succincta* Panzer, 1798

*N. alternata* (Kirby, 1802) misid.

**Published records.** Sparre Schneider (1880) lists the species from "Habit circa Christianiam passim", "monte Ryenberg" and "Kværner", restated by Strand (1898). All are verified from examination of the material in NHMO. Meidel (1934) mention several records from West Norway, also verified by museum material.

**Records.** Ø Fredrikstad: Gransrød/Øra (EIS 20) 1.VII.1996 1♀ (TJO), north of Onsøy church (EIS 20) 28.V.1958 1♂ (AL), Halden: Orød (EIS 20) 15.V.2009 1♂1♀ (ØDE), Hvaler: Asmaløy, Huser (EIS 12) 27.V.1995 7♀♀ 2♂♂ (ØB), Onsøy: Hankø, Bloksberg (EIS 20) 3-29.VI.1995 2♀♀ (OHA/JIB), Rygge: Sildebauen (EIS 19) 15.V.1994 1♂ (AAR), 22.V.1994 1♂ (AAR), Sarpsborg: Råkil i Tune (EIS 20) 10.V.1993 1♀ (TJO), 11.V.1993 2♀♀ (TJO), 10.V.1998 1♀ (TJO), Solli (EIS 20) 22.V.1995 1♀ (TJO); **AK** Asker: Bjørkås (EIS 28) 4.VI.-2.VII.1995 1♀ (LOH/OHA), Asker: Brønnøya (EIS 28) 18.V.1980 1♀ (FAL), Bærum: Ostøya (EIS 28) 23.V.1992 1♀ (LØN), 23.V.1992 3♀♀ (ØB), 20.V.1993 2♀♀ (LOH), Oksenøya (EIS 28) 21.V.2010 1 ex. (ØDE), Oslo: Blindern (EIS 28) 10.V.1991 1♂2♀♀ (LOH), Frogner (EIS 28) 24.V.1842 1♀ (ESM), Gressholmen (EIS 28) 8.V.1993 1♀ 9♂♂ (ØB), Kvernner (EIS 28) 1.VI.1851 1♀ (SBK), Oslo (EIS 28) 2♀♀ (ESM), 1♀ (SBK), 1♀ (NHMO),

- Rambergøya (EIS 28) 8.V.1993 4♂♂ (ØB), Ryenberg (EIS 28) 16.V.1851 1? (SBK), Sentrum (EIS 28) 23.V.1992 1♀ (LOH), Slottsparken (EIS 28) 14.V.1851 1♂ (ESM), Tøyen (EIS 28) 22.IV.1886 1♂ (MOE), 22.IV.1886 1♂ (NHMO), 3.VI.1993 1♂ (LOH), Fet: Sniksand NØ (EIS 29) 29.IV.1993 1♀ (RCH); **OS** Lillehammer: Smedstad (EIS 54) 27.V.1978 1♀ (SS), Søndre Land: Odnes, Odnesbakken (EIS 45) 1.VIII.1992 1♂ (LOH); **BØ** Drammen: Underlia (EIS 28) 1-31.VIII.1992 1♀ (LOH), V.1993 1♂4♀♀ (LOH), 12.V.1994 1♀ (LOH), VI.1995 1♂ (LOH), VII.1997 1♀ (LOH), 28.V.1997 6♀♀ (LOH), Hole: Røyshalvøya, Søhol (EIS 36) 14.V.1998 1♀ (NHMO), Hurum: Ertsvika (EIS 19) 25.V.1995 1♂5♀♀ (ØB), Skatvedt (EIS 28) 25.V.1995 1♀ (ØB), Røyken: Hyggen, Kinnartangen (EIS 28) 19.V.1991 3♂♂ (LOH), 30.IV.1991 1♂ (LOH), 14.IV–2.V.1991 1♂ (LOH), Hole: Søhol (EIS 36) 8.V.2010 5 ex. (ØDE), 2.VI.2010 1 ex. (ØDE), Ringerike: Busund (EIS 36) 16.VI.2009 1♀ (ØDE); **BV** Rollag: (EIS 35) 31.VII.1989 1♀ (SAG); **VE** Larvik: Stavern 12.V.2009 1♀ (ØDE), (EIS 19) 5.V.2010 1 ex. (ØDE), Nøtterøy: Ekenes, Bruaskauen (EIS 19) 1.V.1991 1♂ (ØB), Sande: Bjørkøya (EIS 19) 27.V.1989 1♀ (ØB), Tjøme: Gon (EIS 19) 18.V.1992 1♀ (AFJ), 10.V.1993 2♀♀ (AFJ), 5.V.1994 1♀ (AFJ), 15.V.1994 1♀ (AFJ), Hvasser syd (EIS 19) 7.VI.1993 1♀ (ØB), Mo (EIS 19) 21.V.1965 1♂ (AFJ), Moutmarka (EIS 19) 29.IV.1993 2♀♀ (AFJ), Sønstegård (EIS 19) 21.V.1992 1♀ (AFJ), 25.IV.1993 1♂ (AFJ), Våle: Langøya (EIS 19) V.1992 1♂ (NHMO); **TEY** Kragerø: Jomfruland (EIS 11) 23.V.1992 1♂ (AFJ), 17.VI.2009 2♀♀ (ØDE), Stråholmen (EIS 11) 1.V.1993 1♂ (AFJ), Porsgrunn: Langangen (EIS 18) 11.VI.1984 1♂ (KBE), 29.VI.1995 1♀ (ØB), Langangen church (EIS 18) 12.VI.1994 1♀ (JAS), Helleåsen (EIS 11) 6.V.2010 4 ex. (ØDE), Skien: Nenset (EIS 18) 31.V.2010 1 ex. (ØDE); **TEI** Seljord: Heggenes (EIS 17) 17.IV.2009 1♂, 11.V.2009 6♂5♀ (ØDE), 18.V.2010 1 ex. (ØDE); **AAV** Grimstad: Dømmesmoen (EIS 6) 27.VII.1962, Fevik, Randvik (EIS 6) 1.VIII.1992 1♀ (ØB), Homborsund (EIS 6) 12.V.1996 1♀ (FAL); **AAI** Evje og Hornnes: Evje skytefelt (EIS 5) 5.V.1976 1♀ (SS), 14.V.1977 1♀ (SS), 19.V.1977 1♂2♀♀ (SS). (SS), 21.V.1977 1♂ (SS); **VAY** Farsund: Einarsneset (EIS 1) 23.V.1992 1♀ (KBE), 3.IV.1993 1♂ (LOH), Lindesnes: Revøy, Korshamn (EIS 1) 1.V.1993 1♀ (LOH); **RY** Eigersund: Egersund (EIS 3) 6.V.2000 1♂ 4♀♀ (ØB), Finnøy: Finnøy (EIS 14) 10.VI.1934 1♀ (OM), Kvitevik (EIS 14) 8.VI.1992 2♀♀ (SKA), 8.VI.1982 2♂♂ (SKA), Kyrkjøy (EIS 14) 22.V.1987 1♀ (JON), 6.V.1990 1♂1♀ (JON), Sevheim (EIS 14) 27.IV–4.V.1993 4♂♂ (SKA), 23.IV–10.V.1993 1♀ (SKA), Karmøy: Midtstokke (EIS 13) V.1995 1♂ (MHV), Klepp: Øksnevad (EIS 7) 24.V.1992 1♀ (TRI), Lund: Moi (EIS 4) 18.V.1936 1♀ (OM), Rennesøy: Dale (EIS 14) 2.VI.1931 1♀ (OM), 1.VI.1936 1♂ (OM), ca. 4.VI.1936 1♀ (OM), Mosterøy, Lumborn bridge (EIS 14) 11.V.1934 1♂ (OM), Sandnes: Dale (EIS 7) 30.V.1967 1♀ (TNI), Sola: Joa (EIS 7) 24.V.1931 4♂♂1♀ (OM), 7.VI.1931 2♀♀ (OM), Stavanger: Krossberg (EIS 7) 22.V.1977 3♂1♀ (KRO), Lindøy (EIS 7) 5.V.1935 1♂ (OM), 4.V.1935 2♂♂ (OM), Stavanger (EIS 7) 1♂ (ZMT), Stokka (EIS 7) 7.V.1931 1♂ (OM), 13.V.1931 3♂♂ (OM), 8.VI.1931 1♀ (OM), 3.V.1933 1♂ (OM), V.1934 1♂ (OM), 10.V.1935 2♂♂ (OM), Strand: Tau (EIS 7) 29.V.1932 1♀ (OM); **RI** Forsand: Lerang (EIS 7) 23.V.1936 1♀ (OM), 29.VI.1934 1♀ (OM), Meling (EIS 7) 28.V.1931 1♂1♀ (OM), Songesand skule (EIS 7) 27.V.1984 1♂ (JON), Hjelmeland: Hjelmeland (EIS 14) 20.V.1934 5♂♂ (OM), Årdal (EIS 14) 7.V.1935 9♂♂ (OM), Sauda: Hellelandsbygda (EIS 24) 21.V.1935 2♂♂ (OM), Saudasjøen (EIS 23) 15.V.1935 1♂ (OM), 18.V.1935 3♂♂ (OM), 21.V.1935 3♂♂ (OM), 22.V.1935 1♀ (OM), Svandalen (EIS 23) 20.V.1935 1♂ (OM), 22.V.1935 1♀ (OM), Suldal: Sand (EIS 14) 5.VI.1934 1♀ (OM), 25.V.1935 1♀ (OM); **HOY** Bergen: Appeltunvann, Fana (EIS 30) 2.V.1937 1♂ (KNA), Arna (EIS 40) 2.VI.1935 1♂ (KNA), Bellevue (EIS 39) 20.V.1935 1♀, Fana, Paradis (EIS 39) 10.VI.1951 1♀ (AL), Landås (EIS 31) 7.V.1936 1♂, Os: Halgjem (EIS 31) 29.V.1963 1♀ (AL), Osterøy: Lonevåg (EIS 40) 10.V.1972 1♂ (TA), Åsane: Åsane (EIS 39) 28.V.1967 1♂ (AFJ); **HOI** Eidfjord: Isdalen 920 moh (EIS 42) 25.VI.1969 1♂ (JØR), Kvam: Bergeskogen (EIS 31) V.1969 1♀ (AF), Kvinnherad: Varaldsøy syd (EIS 31) 31.V.1969 1♀, Ljosmyr (EIS 23)

13.V.1971 1♂, Rosendal (EIS 31) 2.VI.1964 1♂, 22.V.1969 3♂♂, 12.V.1975 1♂, 18-22.V.1992 5♂♂4♀♀ (SKA), Ullensvang: Djonno (EIS 41) 5.VI.1938 1♀, Fresvik (EIS 32) 10.V.1952 1♀ (AL), Lofthus (EIS 32) 27.V.1952 1♀ (AL), Ulvik: Ulvik (EIS 41) 28.V.1939 1♂; **MRI** Sunndal: Hoelsand (EIS 78) 8.VII.2010 2 ex. (ØDE); **SFY** Gloppen: Lotsberg (EIS 67) 11.VI.1949 1♀ (AL); **SFI** Balestrand: Fidje (EIS 50) 30.V.1935 1♀ (OM), Flesje, Storhagen (EIS 50) 13.VI.1935 1♂ (OM), Kvamsøy (EIS 50) 6.VII.1935 1♀ (OM), Tue (EIS 50) 2.VI.1935 1♀ (OM), Leikanger: Fylkesgården (EIS 50) 15.V.1948 2♂♂ (AL), 16.V.1948 1♀ (AL), Njøs (EIS 50) 14.V.1948 1♂ (AL), 31.V.1948 1♂ (AL), 21.V.1949 1♂ (AL), 1.VI.1949 2♂♂ (AL), 3.VI.1949 1♀ (AL), Sogndal: Slinde (EIS 50) 24.V.1948 3♂♂ (AL), 31.V.1949 5♂♂4♀♀ (AL), Åberget (EIS 50) 29.V.1948 1♂ (AL).

**Comments.** Widespread in Europe, South and Central Sweden, South Finland and Denmark. It has several records from South Norway, representing 17% of the total Norwegian material.

### *Nomada obscura* Zetterstedt, 1838

(Fig. 2B)

**Published records.** Sparre Schneider (1880) from "Hortus botanico" restated in Strand (1898) and confirmed with record of a female from NHMO, labelled "Tøien" (AK Oslo, EIS 28). Friese (1902) mention "Lappland?", but this is not verified.

**Records.** **AK** Asker: Skaugumsåsen (EIS 28) 12.V.1988 1♀ (ØB), Solli (EIS 28) 28.V.1990 1♀ (ØB), Vardåsen (EIS 28) 30.III.1990 1♀ (ØB), Bærum: Lommedalen (EIS 36) 31.V.1999 1♀ (ØB), Oslo: Tøyen (EIS 28) IV.1846 1♀ (SBK), Sørum: Lørenfallet, Egner (EIS 37) V.1994 1♀ (LOH/SØR), Skedsmo: Asakmoen (EIS 37) 1.VI.2010 1 ex. (ØDE); **ON** Skjåk 27.V.1978 1♂ (AFJ), Nord-Fron: Stordalsberget (EIS 62) 9.-16.V.2009 1♀ (ØDE); **BØ** Drammen: Bragernesåsen (EIS 28) 28.IV.1990 1♀ (ØB), Underlia (EIS 28) V.1995 1♂ (LOH), Majordammen (EIS 28) 11.IV.1992 1♀ (ØB), Hole: Lamoen (EIS 36) 9.V.1991 1♀ (ØB), Øvre Eiker: Jungeren, Seteråsen (EIS 27) VIII.1998 1♀ (NHMO); **BV** Rollag: Tråen saga

(EIS 35) V.1994 1♀ (SAG), Vårviken (EIS 35) V.1994 1♂ (LOH/SAG); **HES** Eidskog: Leirsjøen (Bryngel) (EIS 38) 3.VI.2010 2 ex. (ØDE); **HEN** Folldal: Borkhus (EIS 71) 4.VI.2010 1 ex. (ØDE); **VE** Lardal: Brufoss (EIS 19) 16.V.1992 1♀ (AFJ); **TEI** Seljord: Heggenes (EIS 17) 17.IV.2009 1♀ (ØDE); **RY** Finnøy: Eidssund (EIS 14) 29.V.1977 1♀ (TNI); **HOY** Bergen: Bjørndalsvann (EIS 30) 3.V.1962 1♀ (AL), Isdalen (EIS 30) 9.V.1971 1♂ (TNI), Kobbeltveit (EIS 40) 31.V.1976 1♀ (JBR); **HOI** Kvinnherad: Gjermundshavn (EIS 31) 3.V.1975 1♀; **MRI** Rauma: Isfjorden, Tokle (EIS 77) 8.V.1997 1♂ (HH), Tingvoll: Aksneset (EIS 85) 4.V.2007 3♀♀ (ØDE), Sunndal: Gravem (EIS 78) 2.VII.2010 1 ex. (ØDE); **STI** Melhus: Søberg (EIS 92) 7.VI.2007 1♀ (ØDE), 7.VII.2007 1♂ (ØDE), 21.IV.2008 3♂♂ (ØDE), Oppdal: Myran (EIS 79) 19.V.2007 1♀ (ØDE), Trondheim: Bjørkmyr (EIS 92) 21.VII.2007 1♂ (ØDE), Røros: Kvitsanden (EIS 81) 23.V.2009 1♂ (ØDE).

**Comments.** Scattered records from North and Central Europe, throughout Sweden, and South and Central Finland. It has a clustered occurrence in Norway; from the greater Oslo-area, the west coast and from Central Norway, with no records from the southernmost coast of Norway. The distribution is probably more homogenous, due to lack of collecting, but it is remarkable that only a few old records exist.

### *Nomada obtusifrons* Nylander, 1848

(Fig. 2C)

**Published records.** Sparre Schneider (1880) mentions a female from "Christianam" (AK; Oslo), restated by Strand (1898). Recorded by Strand (1903) from "Austad" (AAI, female). All records have been verified. Meidell (1934) has several observations from West Norway. Sparre Schneider (1880) also mentions *N. obtusifrons* "ad Tvedestrand mense Augusto 1876", a male of uncertain identity probably a specimen revised to be *Nomada argentata*.

**Records.** **AK** Oslo: Oslo (EIS 28) 1♀ (ESM), Tøyen (EIS 28) 1♂ (SBK); **HES** Grua: Nessesetra (EIS 37) VI-VII.1997 1♂ (JST); **OS** Lunner: Knarud, Roa (EIS 36) 10.VII.1968 1♂1♀ (FAL),

Sør-Aurdal: Sør-Aurdal (EIS 44) VII.1887 1♂ (SCH), Øyer: Øyer (EIS 54) 1♀ (SBK), "Gudbrandsdalen" 1♀ (MOE), Lillehammer: Kasterrud (EIS 54) 17.VII.2008 1♀ (ØDE); **ON** Lom: Lom (EIS 70) 1832 1♂ (ESM), Nord-Fron: Kvam (EIS 62) 1♀ (SBK); BØ Nedre Eiker: Solbergfjell nat.reserve (EIS 28) VII.1999 1♂ (NHMO), Flesberg: Kronset (EIS 27) 26.VI.2000 1♂ (SAG); **AAI** Bygland: Austad (EIS 9) 1♀ (ES); **VAY** Kristiansand: Kjevik (EIS 2) 23.VII.2008 2♂♂ (ØDE); **RY** Sandnes: Ganddal (EIS 7) 4.VIII.1930 1♀ (OM), Sola: Slettehei (EIS 7) 21.VII.1963 1♂ (TNI); **HOY** Bergen: Bergen (EIS 30) 4.VII.1896 1♂, VII.1896 1♂3♀♀, 29.VI.1896 1♀, Fana, Nordås (EIS 30) 5.VII.1981- 1♀ (LG), Museumshagen (EIS 30) 5.VII.1950 1♂ (AL), 7.VII.1950 1♀, Natland (EIS 31) VI–1910 2♀♀ (LP), Skjold (EIS 30) 29.VII.1936 1♀, Svartediket 23.VII.1950 1♂ (AL); **HOI** Odda: Håra (EIS 24) 6.VII.1936 1♂ (OM), Røldal (EIS 24) 4.VII.1936 1♂ (OM); **SFI** Aurland: Vassbygda near Belle (EIS 51) 22.VII.1981 1♂ (LG); **MR** "Sundmøre" 1♀ bearing a very old label.

**Comments.** Widespread in Europe, except in the south. It is redlisted as Endangered in Germany, only recorded from a few localities in South Sweden ("Near Threatened"), reported from South Finland ("Endangered") and Denmark. It is regarded as "Near Threatened" in the Norwegian Red List 2010. Much of the Norwegian material is old, with many inland records from the 18<sup>th</sup> century. It seems to have a distribution including inland areas of south Norway, but remarkably absent along the southeast coastline.

### *Nomada panzeri* Lepeletier, 1841 (Fig. 3B)

*N. ruficornis* L., 1758  
*N. glabella* Thomson, 1870

*Nomada panzeri* is a variable species, with several forms and transitional specimens described (e.g. Jørgensen 1921, Scheuchl 1995, Schwarz 1986c). A new species (*N. fusca*) with close affinities to *panzeri* was described by Schwarz (1986d), but males are "problematic and with no clear

differences".

**Published records.** Sparre Schneider (1880): "*ruficornis*" and "*glabella*" from "Christianiam in Bækkelaget" (AK), "monte Grefsen" (AK), "circa Christianiam" (AK) and "Bergen" (HOY). All are verified (NHMO). Sparre Schneider (1906) records several *panzeri* (as *ruficornis*) from North Norway: Tysfjord, Bjerkgeng in Maalselven, Nordmo, south on Tromsø-peninsula, Tromsø, and Storjord in Saltdalen (as *ochrostoma*). All have been verified (NHMO) except the record from Tromsø, mentioned as "lost when sent to Germany, det. *glabella* of Thompson". Strand 1899: "*5-spinosa*" from "Klovimoen (Vefsen)" (NSI), two specimens in NHMO were both misidentified, and are *N. panzeri*. Strand (1901) records "*ruficornis*" from "Tysfjorden" (NNØ) and "Porsgrunn" (TEY), both verified (NHMO). Strand 1903: "*ruficornis*" from "Odnes" (OS) and "Siredal" (VAI) verified (NHMO). Strand (1910) lists a female "*N. ruficornis* L. v. *glabella* Th." from Lillestrøm, which is not verified. Hellén (1933) records "*ruficornis*" (1♀) and "*alboguttata*" (2♂) from "Alten, Vina" (FV). Both specimens were kept at ZMT, revised to *N. panzeri*. Meidel (1934): records "*ruficornis*" and "*glabella*" from several locations in West Norway, which have been verified by museum material (ZMB).

**Records.** Ø Halden: Kirkevannet (EIS 12) 20.VII.1996 1♀ (JAS), Berby (EIS 12) 21.VII.1996 1♀ (JAS), Fredriksten Castle (EIS 20) 1.VI.2010 1 ex. (ØDE), Rakkestad: Skjølja (EIS 20) 5.VI.1994 1♀ (TJO), Rygge: Sildebauen (EIS 19) 26.V.1996 1♀ (LAA), Sarpsborg: Råkil i Tune (EIS 20) 20.V.1994 1♀ (TJO), 30.V.2009 1♂ (TJO), Kurland (EIS 20) 15.VI.1998 1♂ (EM), Fredrikstad: Foten (EIS 20) 25.VI.2003 1♂ (LØN), Trøgstad: Kallakmosen (EIS 29) 10.VI.2002 1♀ (HEI), Nes i Torsnes (EIS 20) 14.VI.2009 1♀ (TJO), Øra/Gansrød (EIS 20) 28.V.2009 1♂ (TJO); **AK** Oslo: Oslo (EIS 28) 1873 2♀ (SCN), 2♂♂2♀♀ (ESM), 4♂♂4♀♀ (SBK), 2♂♂ (MUN), 1♀ (OM), 2♀ (NHMO), Ormøya (EIS 28) 2.VI.1872 1♀ (SBK), 2.V.1872 1♀ (SBK), Frogner (EIS 28) 19.VI.1849 2♀♀ (ESM), Grefsen (EIS 28) 29.V.1851 2♀♀ (SBK), Bekkelaget (EIS 28) 30.VI.1852 1♀ (SBK), 20.

VI.1892 1♀ (SBK), Tøyen (EIS 28) 5.IV.185? 1♂ (SBK), VI.1845 1♂ (SBK), Nordstrand (EIS 28) ca 1906 1♀ (SCH), Østmarka (EIS 28) V.1963 1♀ (FAL), 24.V.1965 1♂, 17.V.1969 2♀♀ (FAL), Tveita (EIS 28) 1.V.1984 1♂ (FAL), Turter/Maridalen (EIS 36) 14.VI.2003 1♀ (LØN), Asker: Solli skytebane (EIS 28) 28.V.1990 1♂ (ØB), 5.VI.1990 1♂ (ØB), Konglungen (EIS 28) 4.VI.1997 1♀ (NHMO), Aurskog-Høland: Setten, Bråteøya (EIS 29) 20.V.1991 1♀ (ØB), Bærum: Lommedalen (EIS 36) 31.V.1999 1♀(ØB), 14.VI.1999 1♂1♀ (ØB), Kjaglidalen (EIS 28) 18.VI.1999 1♀ (LØN), Lørenskog: Losby (EIS 29) 20.VI.1991 1♀ (BØK), 22.V.1996 1♂ (MEL), Nannestad: Tømte (EIS 37) 18–21.V.1998 1♀ (NHMO), Nesodden: Tusse (EIS 28) 17.VI.1957 1♀ (AL), Sørums: Sørliløkka, Dammyra (EIS 37) 20.VII.19-- 1♀ (SØR), 29.V.1991 1♂ (SØR), Egner (EIS 37) VI.1995 1♀ (LOH), 14.VI.1998 1♀ (OS), Åmot: Rælingen (EIS 29) 4.VII.1993 1♀ (RCH); **HES** Eidskog: Leirsjøen (EIS 38) 3.VII.1991 1♀ (ØB), 3.VI.2010 1 ex. (ØDE), Elverum: Starmoen south (EIS 46) 11.VI.2000 1♀ (ØB), Starmoen (EIS 55) 13.VI–19.VII.2007 1♀ (ØDE), Løvbergmoen (EIS 55) 7.V–13.VI.2007 1♂ (ØDE), Hamar: Hamar (EIS 46) 15.V.1949 1♂, 29.VII–14.X.2004 1♀ (LOH), Kongsvinger: Bæreia (EIS 37) 25.V.2001 1♀ (LØN); **HEN** Eidskog: 9.VI.1975 1♀ (NISK), Rendalen: Misteregg (EIS 64) 15.VII.1991 1♀ (ØB), Fuggdalen (EIS 64) VI–VII 1997 1♀ (JST), Øvre Rendal (EIS 73) 5.VII.2005 1♀ (FAL), Stor-Elvdal: Nordstumo (EIS 64) 11.VI.2000 1♀ (ØB), Trysil: Rundfloen (EIS 56) 16.VI.1991 1♀ (ØB), Smoldalen (EIS 65) 20.V.–5.VII.1998 1♂ (AAR), Åmot: Åkre (EIS 55) 12.VI.2000 2♀♀ (ØB), 27.VI.2003 2♀♀ (ØB), Follidal: Borkhus (EIS 71) 4.VI.2010 2 ex. (ØDE), Løset (EIS 64) 12.VI.2000 1♀ (ØB); **OS** Gausdal: Dalhaugen (EIS 62) 17–18.VII.1993 1♀ (TRI), Gran: Brandbu, n.Rud (EIS 36/45) 17.V.1961 1♀ (AL), Nord-Aurdal: V.Slidre, Eggstøl (EIS 44/53) 31.VII.1944 1♀ (KNA), n. Dalen (EIS 44) 21.VI.1962 1♀ (AL), Søndre Land: Odnes (EIS 45) 4♀ (ES), Vestre Toten: Einavoll (EIS 45) 9.VII.1999 1♀ (ØB); **ON** Lom: Lom (EIS 70) 1♂ (MOE), 1♂ (MOE), Nord-Fron: Vinstra (EIS 62) 25.V–30.VI.1992 1♀ (LOH/KMY), Stordals-

berget (EIS 62) 9.V.2009 1♂ (ØDE), Sel: Høvringen (EIS 71) 10.VII.1978 1♀ (TNI), Skjåk: Skjåk (EIS 70) 27.V.1978 1♂ (AFJ), Vestre Slidre: Vaset senter (EIS 52) 2.V.1998 1♂ (OS); **BØ** Drammen: Underlia (EIS 28) VI.1999 2♀♀ (LOH), Nedre Eiker: Solbergfjell (EIS 28) V.1999 1♂ (LOH), Hurum: Østnestangen (EIS 19) 26.V–6.VII.1995 1♂ (LOH), Modum: Vestre Sponeverstad (EIS 28) V–X.2004 1♂ (LOH), Vikersund (EIS 28) 10.VI.1891 2♀♀ (HK), Hovlandsfjell (EIS 28) 16.VI.1990 1♀ (ØB), Finnemarka, Djupengrop P-plass, 500 moh (EIS 28) 10.V.1990 3♀♀ (ØB), Finnemarka, Gudbrandstjern (EIS 28) 10.V.1990 1♂ (ØB), Nedre Eiker: Hagatjern-Ryggsætra (EIS 28) 12.V.1994 1♂ (LOH), Ringerike: Hønefoss (EIS 36) 10.VII.1869 2♀♀ (SBK), Lutevollen (EIS 36) VI–VII.1997 1♀ (JST), Busund (EIS 36) 16.VI.2009 1♂ (ØDE), Sigdal: Ramstadsetra 2.VII.2008 1♀ (AFJ); **BV** Rollag: Vårviken (EIS 35) 20.VI.1991 1♂ (LOH/SAG), 1–31.V.1992 2♀♀ (LOH/SAG), V.1994 12♂♂4♀♀, 3.VII.1994 1♀ (SAG), Tråen saga (EIS 35) VI.1994 1♂2♀♀ (SAG), VII.1994 1♀ (SAG), Rollag-Veggli: (EIS 35) 1.VI.1997 1♀ (SAG); **VE** Larvik: Brunlanes, Lerungsand (EIS 11) 15.VI.1997 1♀(ØB), 10.VII.1999 1♀(ØB), Lardal: Bergandammen (EIS 18) 7.VI.1980 1♀ (NISK), 15.V.1980 1♂ (ZMT), 3.VI.1980 1♂ (ZMT), Sande: Kabretta (EIS 19) 22.V.1994 1♀ (AFJ), Våle: Langøya (EIS 19) V.1991 1♂ (NHMO); **TEY** Kragerø: Jomfruland (EIS 11) 17.VI.2009 1♀ (ØDE), Porsgrunn: Porsgrunn (EIS 18) 2♂♂ (ES), Skien: Nenset (EIS 18) 31.V.2010 8 ex. (ØDE), Siljan: (EIS 18) 25.V.1964 1♂ (BAK), 28.V.1964 1♂ (BAK), 29.V.1964 1♀ (BAK), 30.V.1964 2♀♀ (BAK), Drangedal: Sandnes (EIS 10) 1♀ (MUN), Midtre Lustjern (EIS 11) 8.VI.1996 1♂ (ZMT); **TEI** Bø: Jønnebu, 850 moh (EIS 18) 2.VII.2000 2♀♀ (ØB), Notodden: Lisleherad (EIS 27) 26.V.30.VI.1994 1♀ (NISK), 30.V–7.VII.1995 1♀ (NISK), 11–30.V.1995 1♂ (ZMT), Seljord: Heggnes (EIS 17) 3.VII.2008 1♂ 2♀♀ (ØDE), 11.V.2009 3♂♂ (ØDE), 18.V.2010 1 ex. (ØDE), Tinn: Hovin, Sjeldset (EIS 27) 31.V.2004 2♂♂ (LØN); **AAY** Arendal: Tromøya, Hefte (EIS 6) 22.V.1983 1♂1♀ (NHMO), Lillesand: Storemyr (EIS 6) 15.IV.1989 1♀ (KBE); **AAI** Evje og

- Hornnes: Evje skytefelt (EIS 5) 5.V.1977 1♀ (SS), 21.V.1977 2♂♂ 2♀♀ (SS), 30.V.1977 1♀ (SS), Åmli: Sandå (EIS 10) 28.VI.1978 1♀ (KRO), Bygland: Heddevika (EIS 9) 1.-29.VII.2998 1♀ (KBE), 16.V.-11.VI.1997 1♀ (KBE); **VAY** Flekkefjord: Hidra, Dragøy (EIS 4) 6.V.-20.VI.1982 2♂ (AJN), Sirdal: Sirdal (EIS 8) 1♀ (ES), Vennessla: Eikeland v/ Hægeland (EIS 5) 18.V.1977 1♂ (SS), Kristiansand: Stangenes (EIS 2) 30.V.2004 1♀ (SS), Hamresanden (EIS 2) 5.VI.1998 1♂ (FAL), Flekkerøy/Belteviga (EIS 2) 19.-26.V.2002 1♂ (KBE), Nedre Timenes (EIS 2) 15.V.2009; VAI 1♀ (KB), Sirdal: Sirdal (EIS 8) 1♀ (ES), Lilandsdal (EIS 8) 25.VI.1989 1♀ (IS); **RY** Egersund: Grøssfjell v/ Helleland (EIS 3) 18.V.1937 1♂ (OM), Fotland (EIS 3) 25.V.1973 1♂ (AF), Finnøy: Kvitevik (EIS 14) 8.VI.1992 1♀ (SKA), Lund: Moi, Skjeggstad (EIS 4) 19.V.1936 1♀ (OM), Rennesøy: Vikevåg (EIS 14) 29.V.1981 1♂, Sandnes: Horve, Ims (EIS 7) 4.VIII.1938 1♀ (OM), Melshei (EIS 7) 14.VI.1982 1♀ (JON), Hana (EIS 7) 25.VI.1931 1♀ (OM), Stavanger: Myrland (EIS 7) 1.VI.1965 2♀♀ (TNI), Stokka (EIS 7) 28.V.1932 1♀ (OM), 11.XI.1938 1♂ (OM), Time: Engjavatn (EIS 7) 6.VI.1995 2♀♀ (ØB), Hå: Brusand 2.V.2008 (EIS 3) (ØDE); **RI** Forsand: Meling (EIS 7) 3.VII.1931 1♀ (OM), Sauda: Saudasjøen (EIS 23) 18.V.1935 2♀ (OM), 20.V.1935 1♂ (OM), 21.V.1935 4♀♀ (OM), 24.V.1935 1♂ (OM), Svandalen (EIS 23) 23.V.1935 2♂♂ (OM), Suldal: Roalkvam (EIS 24) 3.VI.1934 1♀, Sand (EIS 14) 5.VI.1934 3♀♀ (OM), 25.V.1935 1♀ (OM), 24.IV.2002 3♂♂ (VOI), Jonstøl (EIS 24) 21.VI.1936 2♀ (OM), Bråtveit (EIS 24) 2.VII.1940 1♀ (OM), Håvarstøl (EIS 24) 29.VI.1936 1♀ (OM), Mostøl (EIS 24) 20.VI.1936 1♀ (OM), Hovestøl (EIS 24) 26.VI.1936 2♀♀ (OM), Bråtveit, Matoskjebekk, Svortebekkli (EIS 24) 27.V.1934 1♂ (OM), Nesflaten (EIS 24) 18.V.2010 1 ex. (ØDE); **HOY** Bergen: Bergen (EIS 30) 22.V.1870 2♀ (SCN), Natland (EIS 31) V.1910 2♀♀ (LP), VI.1910 10♀♀ (LP), Landås (EIS 31) 7.V.1936 3♂♂ (KNA), Appeltunvann, Fana (EIS 30) 2.V.1937 2♂♂ (KNA), Sandviken (EIS 39) 14.V.1954 2♀ (AL), Fana, Fantoft (EIS 30) 26.VI.1952 2♀ (AL), 12.V.1954 1♀, 14.VI.1954 1♀ (AL), 13.V.1965 1♀, 23.V.1967 1♂, Fana, Sædalen (EIS 31) 12.V.1965 1♀ (AF), Fana, Myrevann (EIS 30) V.1968 1♀ (AF), Fana, Skjold (EIS 30) 30.VI.1959 1♀ (HKR), Fana: Sørås (EIS 30) 22.V.1957 1♀ (AL), Fana, Stend (EIS 30) 5.VI.1965 1♀ (AL), 19.VI.1957 1♀ (AL), 18.V.1958 1♂ (AL), Eidsvåg (EIS 39) 30.V.1955 1♀ (AL), Fana, Sandal (EIS 30) 15.V.1971 1♀ (AL), Isdalen (EIS 30) 19.VI.1966 1♀ (TNI), Paradis (EIS 39) 19.V.1966 1♂ (TNI), Lindås: Lindås (EIS 39) 6.VI.1965 1♀ (AL), Vollom, Alversund (EIS 39) 10.VI.1966 1♂ (LG), Os: Telleviki (EIS 31) 13.VI.1982 1♀ (AF), Osterøy: Kleppe (EIS 40) 2.VII.1971 1♀ (TA), Åsane: Åsane (EIS 39) 28.V.1966 1♀ (AFJ); **HOI** Granvin: Granvin (EIS 41) VI.1910 2♀♀ (LP), VII.1910 2♀♀ (LP), Eide (EIS 41) 25.VI.1935 1♀ (SR), Kvam: v/ Langevatn, Kvamskogen (EIS 31) 15.V.1950 1♀, Bergehagen (EIS 31) V.1969 1♂ (AF), Kvinnherad: Rosendal (EIS 31) 1.VI.1957 1♂, 22.V.1969 1♀, 17.V.1981 1♂ (AF), Gjermundshavn (EIS 31) 30.V.1968 1♂, 23.V.1985 1♀ (LG), Ljosmyr, Berget (EIS 23) 25.V.1968 1♀, W. Staffvatn (EIS 23) 28.V.1969 1♀, Sunndal (EIS 31) 26.V.1968 1♂ (LG), Ullensvang: Fresvik (EIS 32) 25.V.1953 1♂ (AL), Lofthus (EIS 32) 28.V.1950 1♀ (AL), 30.V.1951 1♀ (AL), 3.VI.1951 1♀ (AL), 23.VI.1954 1♀ (AL), Djonno (EIS 41) 5.VI.1938 2♀♀; **SFY** Naustdal: Øvre Hella (EIS 58) 3.VII.1963 1♀ (AL); **SFI** Balestrand: Brekka (EIS 50) 21.VI.1935 2♀♀ (OM), 23.VI.1935 1♀ (OM), Fjærland (EIS 59) 9.VI.2002 3♀♀ (HEI), Flesje (EIS 50) 6.VI.1935 1♂2♀♀ (OM), 5.VI.1935 2♀♀ (OM), Tuftedalen (EIS 50) 24.VI.1935 3♀♀ (OM), Tue (EIS 50) 2.VI.1935 1♀ (OM), Bøyum (EIS 59) 30.VI.1939 1♀ (KNA), Supphelledalen (EIS 59) 28.VII.1994 1♀ (ØB), Leikanger: Njøs (EIS 50) 13.V.1949 1♀ (AL), Fosse (EIS 50) 2.VII.1939 1♀ (KNA), Gloppen: Vereide (EIS 67) 11.VI.1999 1♂ (AAN), 12.V.1991 1♂ (AAN); **MRY** Tingvoll: Aksneset (EIS 85) 4.V.2007 1♀ (ØDE); **MRI** Rauma: Isfj. Pundet (EIS 77) 6.VI.2000 1♀ (HH), 27.V.1999 1♂ (HH), Grøvdalen (EIS 77) 8.VII.2006 1♀ (HH), Isfjord, Hen (EIS 77) 14.V.1998 1♀ (HH), Sunndal: Gravem (EIS 79) 8.VII.2010 1 ex. (ØDE), Hoelsand (EIS 78) 30.V.2010 6 ex. (ØDE), Oreiman (EIS 78) 30.V.2010 1 ex. (ØDE); **STI** Melhus, Gyllvatnet



(EIS 87) 19.V.2009 3♀♀ (ØDE), Malvik: Vikhammeråsen (EIS 92) 22.VI.2007 1♀ (ØDE), 8.VII.2007 1♀ (ØDE), Oppdal: Myran (EIS 79) 6.VII.2007 2♀♀ (ØDE), 10.VI.2007 2♀♀ (ØDE), Røros: Kvitsanda (EIS 81) 3.VI.2007 2♀♀ (ØDE), Trondheim: Stokkanhaugen (EIS 92) 7.VI.2003 1♀ (ØDE), 29.VII.2008 1♀ (ØDE), 15.VII.2009 1♀ (ØDE), Leuglo (EIS 92) 30.IV.2008 1♂1♀ (ØDE), Risvollan (EIS 92) 5.VII.2007 2♀♀ (ØDE), 19.VI.2008 3♀♀ (ØDE); **NTI** Stjørdal: Vikan (EIS 92) 8.V.2008 1♂ (ØDE); **NSY** Meløy: Ørnes (EIS 125) 7.VII.1951 1♀ (SR), Sømna, Gjerdevatn (EIS 110), 11.VII.1946 1♀ (SR); **NSI** Rana: Dunderland (EIS 123) 20.VI.1981 1♀ (TRI), Saltdal: Storjord (EIS 127) VI.1898 1♂2♀ (SCN), VII.1899 1♀ (SCN), 26.VI.1898 1♂ (SCN), Vefsen: Kløvimoen (EIS 115) 2♀ (ES); **NNØ** Tysfjord: Tysfjord (EIS 139) 2♂2♀ (ES); **TRY** Skjervøy: Ravelseidet (EIS 171) 20.VII.1955 1♀ (AL), Tromsø: South part of Tromsø penninsula (EIS 162) 18.VI.1895 1♀ (SCN); **TRI** Balsfjord: Skjåvikør (EIS 154) 11.VI.1943 2♀♀ (SR), 12.VI.1943 3♀ (SR), Målselv: Nordmo (EIS 154) VII.1902 1♀ (SCN), 22.VI.1906 1♀ (SCN), Bjerkeng (EIS 154) 17.VI.1897 1♀ (SCN); **FV** Alta: Detsika, Buolamalia (EIS 173) 24.VI–16.VII.1996 1♀ (LOH), Gargia (EIS 165) 11.VI.1995 1♀ (LOH) Eiby, Valsetmoen (EIS 173) 10.VI–8.VII.1995 1♀, Vina (EIS 165) VI.1924 1♂1♀ (ZMT), Loppa: Frakfjord (EIS 173) 22.VI.1997 1♀ (NHMO); **FI** Karasjok: Buddasnjarga (EIS 159) 6.VII.1995 2♀♀ (KBE/KMY); **FØ** Sør-Varanger: Pasvik, Gjøkåsen (EIS 160) 6.VII.1997 1♀ (NHMO); **FN** Porsanger: Lakselv (EIS 174) 15.VI.1992 1♀ (ØB), Tana: Holmesund (6 km S. Tana bridge) (EIS 176) 9.VII.1990 2♀♀ (ØB/VOI), Lisma (EIS 176) 9.VII.1990 4♀♀ (ØB/VOI).

**Comment.** Widespread in Europe, except in the south. It is recorded from Sweden, Finland and Denmark. *Nomada panzeri* is the most common *Nomada* in Norway with 20% of the total records. Together with *N. flavoguttata* (a few and old records), they are the sole representatives of *Nomada* from North Norway.

***Nomada roberjeotiana* Panzer, 1799**  
(Fig. 2D)

*N. montana* (Mocsary, 1894)

*N. roberjeotiana tormentillae* Alfken, 1901

Alfken (1901) treated *N. roberjeotinana* as two distinct morphs. According to Schwarz (1986a) *N. montana* is a synonym for *N. roberjeotiana*, and e.g. Westrich (1986) and Celary (1995) treat *N. montana* and *N. tormentillae* as one species. However, other authors treat *N. montana* as a distinct species, based on host preference, e.g. Scheuchl (2000) and Nilsson (2003). Both forms are very similar, and are treated as *N. roberjeotiana* sensu lato in this paper.

**Published records.** Sparre Schneider (1880) mentions a female collected by Siebke at “Sundvolden in Ringerike mense Augusto“, confirmed by one female from NHMO (BV Sundvollen (EIS 36) VIII.1845). The species is also listed by Strand (1898). Meidell (1934) recorded this species from several localities in West Norway, confirmed by examination of museum material.

**Records.** Ø Halden: Bergheim (EIS 20) 30.VII.1970 1♂1♀ (TA), Enningdalen (EIS 12) 6.VII.1997 1♀ (TJO); **HES** Elverum: Starmoen (EIS 55) 19.VII.2007 1♀ (ØDE), Eidskog: Magnor (EIS 38) 2.VII.2009 1♂ (ØDE), Leirsjøen (Bryngel) (EIS 38) 28.VII.2010 1 ex. (ØDE); **ON** Nord-Fron: Kvam (EIS 62) 1♀ (SBK), ”Fron” (EIS 62) 1♂ (SBK); **BV** Rollag: Selsteigen (EIS 27) 9.VII.1992 1♀ (LOH), Drammen: Underlia (EIS 28) 1–30.VI.1992 1♀ (LOH), Hole: Sundvollen (EIS 36) VIII.1845 1♀ (SBK), Kongsberg: Kongsberg (EIS 27) 1♀ (MUN); **TEI** Notodden: Lisleherad (EIS 27) 30.VI–29.VII.1994 1♀ (NISK); **VAY** Audnedal: Sveindal (EIS 5) 1.VII.1976 1♀ (SS), Hidra: Dragøya (EIS 4) 3–11.VII.1982 1♀ (AJN), Kristiansand: Oddenes (EIS 2) 24.VI.1967 1♀ (AFJ), Kalkheia (EIS 2) 2.VII.2004 1♀ (KBE), Vennessla: Eikeland at Hægeland (EIS 5) 30.VI.1976 2♀♀ (SS); **VAI** Kvinesdal: Gjemlestad (EIS 4) VI.1936 1♀, VII.1936 1♀; **RY** Gjesdal: Ålgård (EIS 7) 30.VIII.1931 2♀♀ (OM), Hå: Oгна-Brusand (EIS 3) 9.VIII.1938 1♀, 5.VII.2008 2♀♀ (ØDE),

Sandnes: Hana (EIS 7) 4.VIII.1931 4♀♀ (OM), Ims (EIS 7) 4.VIII.1938 1♂ (OM), Sviland (EIS 7) 9.VII.1982 2♀♀ (JON), Stavanger: Madla (EIS 7) 15.VIII.1931 1♀ (OM), Myrland (EIS 7) 22.VI.1965 2♂♂ (TNI), 5.VII.1964 1♂ (TNI), Vindafjord: Frøvik (EIS 14) 18.VII.1936 1♂ (OM), Karmøy: Vea (EIS 13) 22.VIII.1993 1♀ (ØB); **RI** Forsand: Lerang (EIS 7) 8.VII.1934 1♀ (OM), 16.VII.1934 1♀ (OM), 5.VIII.1938 2♀ (OM), Meling (EIS 7) 12.VIII.1931 1♀ (OM), 9.VII.1984 1♀ (JON), Suldal: Hovestøl (EIS 24) 26.VI.1936 2♀♀ (OM), 29.VI.1936 1♀, Nesflaten (EIS 24) 16.VI.1933 1♂ (OM); **HOY** Askøy: Herdla (EIS 39) 27.VI.1936 1♀ (KNA), Bergen: Bergen (EIS 30) 23.VII.1950 1♂ (AL), N. golfbanen (EIS 39) 17.VII.1966 2♂♂ (AL), Natland (EIS 31) VI.1910 1♀ (LP), Sund: Tyssøy (EIS 30) 24.VII.1952 1♂ (AL); **SFY** Gaular: Bygstad (EIS 58) 1.VII.1963 1♀ (AL); **SFI** Balestrand: Bøyum (EIS 59) 22.VI.1939 1♀ (KNA), Tuftedal (EIS 50) 13.VII.1935 2♀♀ (OM); **STI** Trondheim: Stokkanhaugen (EIS 92) 11.VII.2007 1♀ (ØDE), Tiller (EIS 92) 15.VII.2009 1♀ (ØDE), Melhus: Gyllvatnet (EIS 87) 4.VII.2009 1♂ (ØDE).

**Comments.** Widespread in North and Central Europe, Denmark, Sweden and southern Finland (“Near Threatened”). The majority of recent Norwegian records are along the coast to mid-Norway, being absent along the coast from Oslo to southern Norway. There are old records only from inland areas in West Norway.

### *Nomada ruficornis* (L., 1758)

(Fig. 2E)

*N. bifida* Thomson 1894

**Published records.** Sparre Schneider (1880) mentions “*ruficornis*” collected by Schøyen from “Ringebo Gudbrandsdaliae”, restated by Strand (1898). This is confirmed as (*N. bifida*) with a female specimen from NHMO (OS; Gudbrandsdalen, without collecting date). Further records from “Bækkelaget, Oslo” and from “Grefsenåsen mense Junio (Siebke)” was *N. panzeri*. Meidel (1934) records *N. bifida* from

several localities in western Norway, confirmed by examination of material from ZMB. Several other authors list “*ruficornis*” from Norway (Strand 1901, 1904 and 1910, Hellén 1933). In those cases where it was possible to verify the statements with original material, the specimens were all *N. panzeri* (“*ruficornis*” being used as a synonym) and localities for those are mentioned in the list below.

**Records.** **Ø** Moss: Alby (EIS 19) 7.VI.1980 1♀ (NISK), Hvaler: Ørekroken (EIS 12) 8.V-14.VI.2007 1♀ (ØDE), Halden: Fredriksten Castle (EIS 20) 7.V.2010 1 ex. (ØDE), Fredrikstad: Øret (EIS 20) 5.VI.2009 1♀ (ØDE); **AK** Bærum: Avløs (EIS 28) 20.V.1999 1♀ (ØB), Fet: Øya (EIS 29) 29.IV.1993 1♀ (RCH), Oslo: Oslo (EIS 28) 1♀ (SBK), Slottsparken (EIS 28) 1♀ (ESM), 16.V.1851 1♂ (ESM), Tøyen (EIS 28) VI.1843 1♀ (SBK), V. Aker (EIS 28) 14.V.1932 1♀ (OM), Østmarka (EIS 28) 24.V.1970 1♀ (FAL), Sørum: Lørenfallet, Egner (EIS 37) 7.VII.1994 1♀ (OS); **HES** Sør-Odal: Odalen (EIS 37) 1♀ (SBK); **OS** Gran: Buhammaren (EIS 36) 7.VII.1991 1♀ (LØN), Lunner: Grindvoll (EIS 36) 3.VI.1997 1♀ (NHMO), Ringeby: Ringeby (EIS 63) 1♀ (SCH); **ON** Vang: Ø. Vennis 8.VI.2008 1♀ (AFJ), Nord-Fron: Stordalsberget (EIS 62) 21.IV.2009 3♂♂2♀♀ 9.V.2009 1♀ (ØDE); **BØ** Drammen: Underlia (EIS 28) V.1995 1♂1♀ (LOH), Kongsberg: Skollenborg, Labro (EIS 27) 30.V-9.VII.2008 1♀ (LOH), M. Sutjern (EIS 27) 17.V.1992 1♀ (SAG), Røyken: Kinnartangen (EIS 28) 9.V.1993 1♀ (LOH), Nedre Eiker: Konnerudmarka (EIS 28) 10.V.2000 1♂ (NAG); **BV** Rollag: Rollag (EIS 35) 6.VI.1997 1♀ (SAG), Sigdal: Nes-Prestfoss (EIS 35) 12.VI.1996 1♂ (SAG); **VE** Larvik: Lerungsand (EIS 11) 10.VII.1999 1♀ (ØB), 17.V.2002 2♀♀ (ØB), Oddberg, Lågendalen (EIS 19) 31.V.2008 1♀ (AFJ), Tjøme: Gon (EIS 19) 5.V.1994 1♀ (AFJ); **TEI** Seljord: Heggnes (EIS 17) 17.IV.2009 1♀ (ØDE), 11.V.2009 1♂1♀ (ØDE), 2.VI.2009 1♀ (ØDE); **AAV** Tromøya: Tromøya (EIS 6) 22.VI.1983 1♀ (JAS), Gjerdevatn (EIS 6) 11.VII.1946 1♀ (SR), Birkenes: Birkeland, Nordåsen (EIS 6) 2.V.2005 1♀ (SS), VI.2005 1♀ (SS), V.2006 4♂♂2♀♀ (SS) VI.2006 2♀♀ (SS), Tvedestrand: Gjerving (EIS 11) 26.V.2000

1♀ (LOH); **AAI** Bygland: Heddevika (EIS 9) 29.V.2004 1♂ (KBE); **VAY** Farsund: Einarsneset (EIS 1) 30.IV.1993 1♂ (LOH), Kristiansand: Presteøya (EIS 2) 31.V.1981 1♂ (KBE); **RI** Forsand: Meling (EIS 7) 24.VI.1934 1♀ (OM), Hjelmeland: Fister (EIS 14) 15.V.1981 1♀ (OM), Årdal (EIS 14) 7.V.1935 2♂♂2♀♀ (OM), 01.V.1935 1♂ (OM), Sauda: Saudasjøen (EIS 23) 18.V.1935 1♂ (OM), 22.V.1935 1♀ (OM), 24.V.1935 1♀ (OM), Suldal: Myrbekken (EIS 24) 17.V.1939 2♂♂ (OM), Sand (EIS 14) 5.VI.1934 2♀♀ (OM), 25.V.1935 1♀ (OM), 26.V.1935 2♀♀ (OM), Århus (EIS 24) 25.V.1935 1♂1♀ (OM), 2.VI.1939 1♂ (OM); **RY** Eigersund: Egersund (EIS 3) 2.VI.1973 1♀ (AF), Finnøy: Bjergøy (EIS 14) 23.V.1987 1♂ (JON), Sevheim (EIS 14) 15-24.IV.1993 1♂ (SKA), 27.IV-11.V.1993 7♂♂2♀♀ (SKA), 1-11.V.1993 3♂♂ (SKA), Sevheimsvann (EIS 14) 27.IV-11.V.1993 1♀ (SKA), Gjesdal: Ålgård (EIS 7) 1.VI.1981 1♂ (TRI), Randaberg: Goa (EIS 7) 1.V.1934 1♂1♀ (OM), Sandnes: Fløysvik near Høle (EIS 7) 30.IV.1♂ (OM), Hinna (EIS 7) 22.V.1931 4♂♂ (OM), Lussi (EIS 7) 30.IV.1♂ (OM), Sola: Joa (EIS 7) 24.V.1931 3♂♂ 2♀♀ (OM), Solastrand (EIS 7) 19.V.2010 1 ex. (ØDE), Stavanger: Krosshaug (EIS 7) 1.V.1980 1♀ (KRO), Stavanger (EIS 7) 2.V.1930 1♀ (OM), Stokka (EIS 7) 7.V.1931 1♂ (OM), 8.VI.1931 1♀ (OM), 3.V.1933 1♂ (OM), V.1934 2♀♀ (OM), 1934 1♀ (OM), 10.V.1935 1♂1♀ (OM), Ullandhaug (EIS 7) 2.V.1978 2♀♀ (KRO), Strand: Tau (EIS 7) 29.V.1932 2♂♂ (OM), Time: Engjavatn (EIS 7) 6.VI.1995 1♀ (ØB); **HOY** Bergen: Skansemyren (EIS 39) 24.V.1975 1♀ 2♀♀ (AL), Fana, Blomsterdalen (EIS 30) 1.V.1954 1♀ (RR), Fana, Fantoft (EIS 30) 12.V.1954 1♀ (AL), 31.V.1954 1♀ (AL), Fana, Steinsvik (EIS 30) 12.V.1959 1♂ (AL), Fana, Stend (EIS 30) 12.VI.1958 1♀ (JGU), Landås (EIS 31) 7.V.1936 1♂, 1♀, Nattland (EIS 31) V.1910 7♀♀ (LP), VI.1910 14♀♀ (LP), Nestun (EIS 30) 20.V.1935 1♂ (ZMB), Fitjar: Fitjar (EIS 22) VII.1912 2♂♂ (LP), VIII.1912 1♂ (LP), Os: Halgiem (EIS 31) 29.V.1963 1♀ (AL), Osterøy: Kleppe (EIS 40) 2.VI.1972 1♀ (TA), **HOI** Kvam: Torvikbygd (EIS 31) 17.V.1959 1♀ (AL), Kvinnherad: Lia (EIS 23) 30.V.1969 1♂ (ZMB), Rosendal Baroniet (EIS 31) 20-

21.V.1992 1♂ (SKA), Rosendal, Hattebergselva (EIS 31) 22.V.1995 1♂ (NHMO), Varaldsøy south (EIS 31) 23.V.1969 1♂1♀ (ZMB), Varaldsøy: Varaldsheiane (EIS 31) 11.V.1971 1♂ (ZMB), Ullensvang: Djonno (EIS 41) 2.VI.1941 1♀ (KNA), 5.VI.1938 2♀♀ (ZMB), 3.VIII.1939 1♂ (LUN), Fresvik (EIS 32) 25.V.1951 1♀ (AL), 18.V.1951 1♀ (AL), 2.VI.1951 4♂♂ (AL), 12.V.1952 1♀ (AL), Lofthus (EIS 32) 9.V.1948 1♂ (AL), 26.VI.1953 1♀ (AL), Sekse (EIS 32) 26.VI.1949 1♀ (AL), 10.V.1952 1♂ (AL); **SFI** Balestrand: Flesje (EIS 50) 1.VI.1935 1♂1♀ (OM), 06.VI.1935 1♂ (OM), Flesje, Storhagen (EIS 50) 12.VI.1935 1♀ (OM), Stokkebø (EIS 50) 10.VI.1935 1♀ (OM), Tufteidalen (EIS 50) 5.VI.1935 1♂ (OM), Leikanger: Eitorn (EIS 50) 28.IV.1991 1♀ (AAN), Fylkesgården (EIS 50) 16.V.1948 1♀ (AL), Njøs (EIS 50) 14.V.1949 1♂ (AL), 19.V.1948 1♂ (AL), Sogndal: Slinde (EIS 50) 31.V.1949 1♂ (AL), Malvik: Vikhammeråsen (EIS 92) 12.VII.2010 1 ex. (ØDE); **MRI** Rauma: Isfjorden, Pundet (EIS 77) 4.V.2000 1♀ (HH), Sunndalen: Hoelsand (EIS 78) 20.IV.2008 1♂ (ØDE); **STI** Malvik: Vikhammeråsen (EIS 92) 22.VI.2007 2♀♀ (ØDE), 25.V.2008 5♀♀ (ØDE), Rissa: Fevåg (EIS 96) 6.V.2008 2♀♀ (ØDE).

**Comments.** Widespread in Europe, including mainly southern Sweden and South Finland. It is rather common in South Norway, also on inland localities, representing 11% of the total records of total *Nomada* specimens.

### *Nomada rufipes* Fabricius, 1793

(Fig. 2F)

*N. solidaginis* Panzer, 1799

*N. fennica* Alfken, 1924

**Published records.** Recorded as “*solidagnis*” by Sparre Schneider (1880) from “marem ad Christianiam” and restated by Strand (1898) and “Austad” (AAI) according to Strand (1903). Also several records from Rogaland, West Norway as “*rufipes*” according to Meidell (1934). All records are confirmed by examination of museum material. Strand (1901) records “*N. solidaginis*” from Lavik was revised to *N. armata*, while Strand (1903)

“*N. solidaginis* Pz.” from “Sireosen” (VAY) was revised to *N. flavoguttata*. No *N. rufipes* have been possible to verify from Strands localities.

**Records.** Ø Halden: Halden (EIS 20) 1♂ (SBK) 28.VII.2009 3♂♂1♀ (ØDE), Orød (EIS 20) 27.VII.2009 1♀ (ØDE), Fredriksten Castle (EIS 20) 27.VII.2010 1 ex. (ØDE), Idd, Hofsrød (EIS 20) 1♀ (MUN), Hvaler: Vesterøy (EIS 20) 2.VIII.1992 3♂♂7♀♀ (SAG). Asmaløy, Huser (EIS 12) 1.VIII.2005 1♂1♀ (OS); **AK** Oslo: Oslo (EIS 28) 1♀ (MOE), 1♂ (SBK), Ullensaker: Aurtjernet (EIS 37) 16.VIII.2008 1♀ (OHA), 25.VIII.2007 3♀♀ (LOH), Skedsmo: Asakmoen (EIS 37) 18.VII.2010 1 ex. (ØDE), 21.VIII.2010 1 ex. (ØDE); **HEN** Stor-Elvdal: Nordstumoen (EIS 64) 27.VII.1999 1♀ (ØB); **HES** Elverum: Starmoen south (EIS 46) 13.VIII.1999 3♀♀ (ØB), Starmoen (EIS 55) 19.VII.2007 2♀♀ (ØDE), 23.VIII.2007 5♀♀ (ØDE), 29.VII–14.X.2004 6♀♀ (LOH), 11.VI–29.VII.2004 2♀♀ (LOH), 4.VIII.2006 9♀♀ (ØDE), Grunnset (EIS 55) 4.VIII.2006 9♀♀ (ØDE), Løvbergmoen (EIS 55) 4.VIII.2006 2♀♀ (ØDE), Eidskog: Magnor (EIS 38) 28.VII.2010 2 ex. (ØDE); **BØ** Flesberg: Varåsmogen (EIS 27) 2.VIII.1993 2♀♀ (SAG), 18.VIII.2001 1♀ (LOH), Ringerike: Væleren (EIS 36) VI–VII.1997 1♂ (JST), Ringerike (EIS 36) 1♀ (SCH), Øvre Eiker: Jungeren, Seteråsen (EIS 27) VII.1999 1♀ (NHMO); **BV** Flå: Austvoll (EIS 44) 14.VIII.1996 3♀♀, Rollag: Vårviken (EIS 35) VII.1994 1♀ (NHMO), VII.1995 1♀ (NHMO); **VE** Larvik: Oddanesand (EIS 11) 6.VIII.1999 4♂♂ (ØB), Brekkeseter (EIS 19) 11.VIII.2006 2♂♂1♀ (ØDE), Tjøme: Gon (EIS 19) 18.VIII.1991 1♀ (AFJ); **TEI** Notodden: Lisleherad (EIS 27) 22.VII–01.X.1995 1♀ (NISK); **AAV** Lillesand: Storemyr (EIS 6) 22.VIII.1999 2♀ (KBE); **AAI** Bygland: Austad (EIS 9) 1♂1♀ (ES); **VAY** Kristiansand: Vågsbygd (EIS 2) 2♂♂1♀ 20.VI.1973 1♀ (AF), Bråvann (EIS 2) 15.VIII.1995 1♂ (KBE), Kjevik (EIS 2) 23.VII.2008 1♂1♀ 25.VII.2009 2♂♂1♀ (ØDE), 26.VII.2004 1♂ (KBE), Søgne: Lyngmyr (EIS 2) 28.VII.2000 1♀ (ØB), 31.VII.2000 1♀ (ØB). Mandal: Eskelundsmyra (EIS 2) 21.VII–06.VIII.1982 1♂ (AJN), Lyngdal 2♀♀ (ZMT); **VAI** Kvinesdal: Gjemlestad (EIS 4) VII.1936 1♂♀; **RY** Hå: NE Homsevann (EIS 7) 3.VIII.1997 1♂ (JAS), Oгна (EIS 3) 14.VIII.2008 1♀ (OHA);

Rennesøy: Rennesøy (EIS 14) 20.VIII.1933 1♀ (OM), Sandnes: Hana (EIS 7) 4.VIII.1931 1♂ (OM), 12.VIII.1931 1♂ (OM), Stavanger: Stokka (EIS 7) 14.VIII.1931 1♂ (OM); **RI** Forsand: Meling (EIS 7) VII.1930 1♀, 12.VIII.1931 2♂♂ (OM), VII.1929 1♂2♀♀ (OM), Forsand: Lerang (EIS 7) 31.VII.1934 2♂♂2♀♀ (OM), 2.VIII.1934 2♂♂ (OM), 4.VIII.1934 2♀♀ (OM), 30.VII.1934 3♂♂ (OM), 5.VIII.1938 1♀ (OM), Suldal: Vanvik (EIS 24) 29.VII.1940 2♀♀ (OM); **HOY** Bergen: Åstveit (EIS 39) 22.VIII.1971 1♂ (LG), Fitjar: Fitjar (EIS 22) VII.1912 1♂ (LP), Os: Halgjem (EIS 31) 19.VIII.1962 1♀ (AL); **SFY** Høyanger: Lavik (EIS 49) 1♀ (ES).

**Comments.** Widespread in Europe, South and Central Sweden, South Finland and Denmark. There are several records along the coast of South and West Norway, and also further inland in the southeast. It is probably widespread in South Norway, but with restricted distribution further north.

### *Nomada striata* Fabricius, 1798 (Fig. 2G)

*N. punctiscuta* Thomson, 1870

*N. hillana* (Kirby, 1802)

*N. ochrostoma* (Kirby, 1802) - part

**Published records.** Sparre Schneider (1880) mention a male “*punctiscuta*” from Sarpsborg, restated by Strand (1898), and verified by examination of museum material in NHMO. Several localities are mentioned from West Norway (as *hillana*), but the species is considered more common inland (Meidell 1934), verified by many specimens in the collections in ZMB.

**Records.** Ø Sarpsborg: Sarpsborg (EIS 20) 1♀ (SCN); **AK** Oslo: Tøyen (EIS 28) 1♀ (MOE), Ullensaker: Sessvollmoen (EIS 37) 11.–26.VI.2007 2♀♀ (LOH), Skedsmo: Asakmoen (EIS 37) 18.VII.2010 1 ex. (ØDE); **OS** Ringeby: Fåvang st. (EIS 63) 14.VII.2001 1♀ (ØB); **ON** Nord-Fron: Stordalsberget (EIS 62) 25.VI.2008 1♀ (ØDE), 27.VI.2008 1♂2♀♀ (ØDE); **BØ** Kongsberg: Skollenborg (EIS 27) 2.VII.2001 1♀ (LOH), Ringerike: Busund (EIS 36) 16.VI.2009 1♂2♀♀

(ØDE); **BV** Rollag: Veggli (EIS 35) 9.VI.2002 1♀ (SAG); **TEI** Notodden: Lisleherad (EIS 27) 26.V-30.VI.1994 1♀ (NISK), Seljord: Svartdal, Blika (EIS 26) 26.VI.2005 1♂ (LOH); **TEY** Skien: Nenset (EIS 18) 24.VI.2010 1 ex. (ØDE); **AAY** Arendal: Arendal (EIS 6) 1♀ (BAK); **VAY** Mandal: Mandal (EIS 2) VIII.1871 1♀ (SBK); **RY** Finnøy: Finnøy (EIS 14) 10.VI.1934 4♀♀ (OM), Stavanger: Stavanger (EIS 7) XII.1930 (probably from hatching) 1♂ (OM), Tysvær: Nedstrand (EIS 14) 9.VII.1931 1♀ (OM); **RI** Forsand: Lerang (EIS 7) 29.VI.1934 1♂1♀ (OM), 1.VII.1934 2♀♀ (OM), 5.VII.1934 1♀ (OM), 9.VII.1934 1♀ (OM), 10.VII.1934 1♀ (OM), 5.VIII.1938 1♀ (OM), Meling (EIS 7) 3.VII.1931 6♀♀ (OM), 4.VII.1931 1♀; **HOY** Bergen: Fana, Fantoft (EIS 30) 26.VI.1952 1♂ (AL); **HOI** Ullensvang: Sekse (EIS 32) 23.VI.1949 2♀♀ (AL); **MRI** Rauma: Isfjord, Stein (EIS 77) 5.VI.1997 2♀♀ (HH); **SFI** Aurland: Aurland (EIS 51) 18.VI.1938 4♂♂ (KNA), 19.VI.1938 1♂2♀♀ (KNA), 16.VI.1939 3♂♂ (KNA), Aurlandsvangen (EIS 51) 16.VI.1939 4♂♂1♀ (KNA), 18.VI.1939 1♂ (KNA), Balestrand: Flesje (EIS 50) 1.VI.1935 2♀♀ (OM), Sogndal: Slinde (EIS 50) 31.V.1949 1♂ (AL), Årdal: Øvre Årdal, Utladalen (EIS 60) 10.VII.1939 1♀ (KNA).

**Comments.** Widespread in Europe, but the species is declining due to degrading population of the host species *Andrena intermedia* and *A. wilkella*. It is recorded from South Sweden, large parts of Finland and from Denmark. In Norway with scattered records from the southeast and from further inland localities to the northwest, but with only old records from the coastal areas and from fjords in West Norway. It is regarded as “Near Threatened” in the Norwegian Red List 2010.

### *Nomada villosa* Thomson, 1870

(Fig. 2H)

**Published records.** Sparre Schneider (1880) mentions a female *Nomada villosa* from “Christianiam” in Norway (AK Oslo), collected by Siebke. This is restated by Strand (1898), but unfortunately, no specimen has been found for verification. As *N. villosa* is difficult to separate

from *N. striata*, which has several records from Norway, thus misidentified is plausible.

**New records.** **TEI** Seljord: Heggenes (EIS 17) 2.VI.2009 1♀ (ØDE), flying with *Andrena lathyri*. **HES** Eidskog, Leirsjøen (EIS 38) 3.VI.2010 1♂ (ØDE), 22.VI.2010 1♀ (ØDE).

The above three specimens have been determined by the collector, Frode Ødegaard.

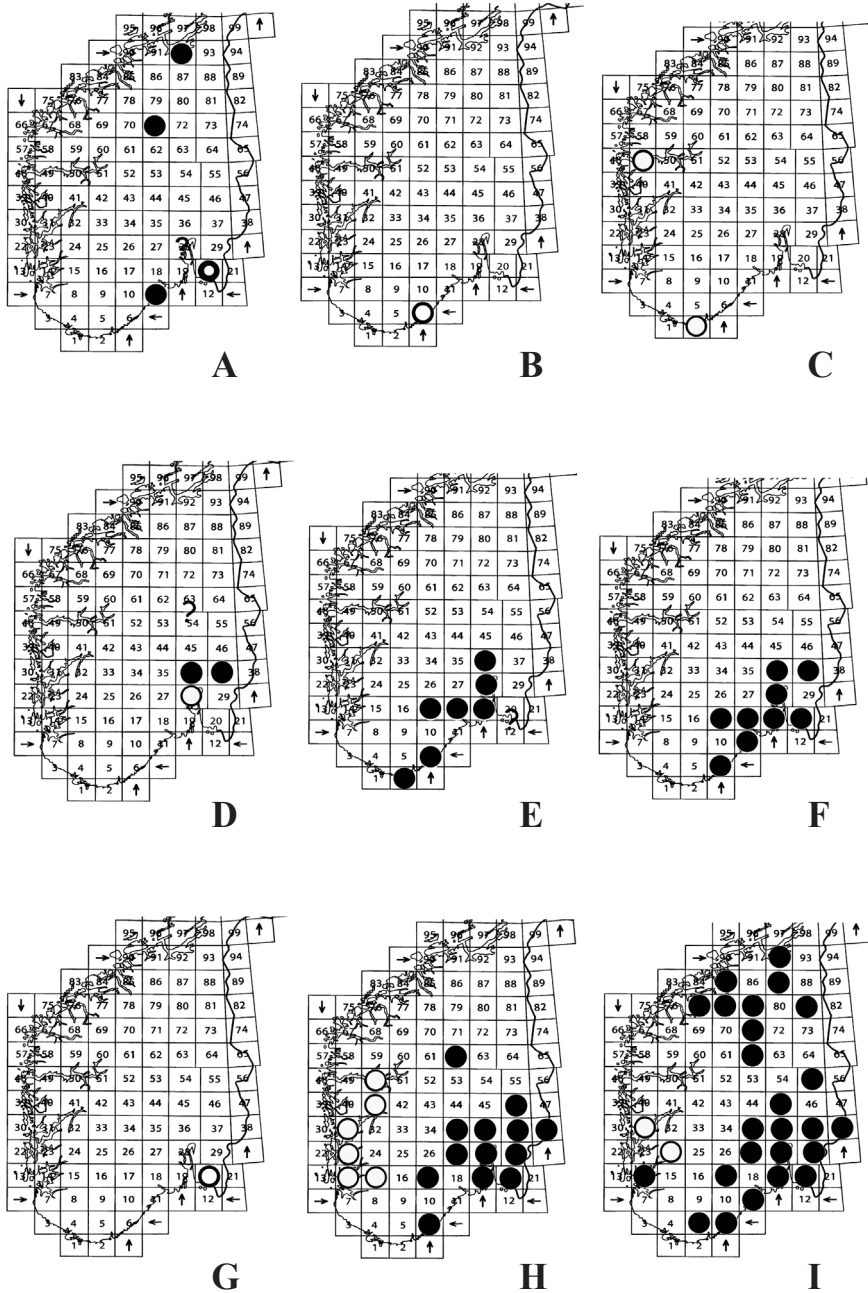
**Comments.** Distributed in Europe, but mainly single records (Westrich 1989). It is recorded from a few localities in southern Sweden, where it is regarded as “Near Threatened” due to habitat fragmentation. It is not recorded from Finland, Denmark or England. It is regarded as “Endangered” in the Norwegian Red List 2010, and the distribution is probably very restricted and fragmented.

### Discussion

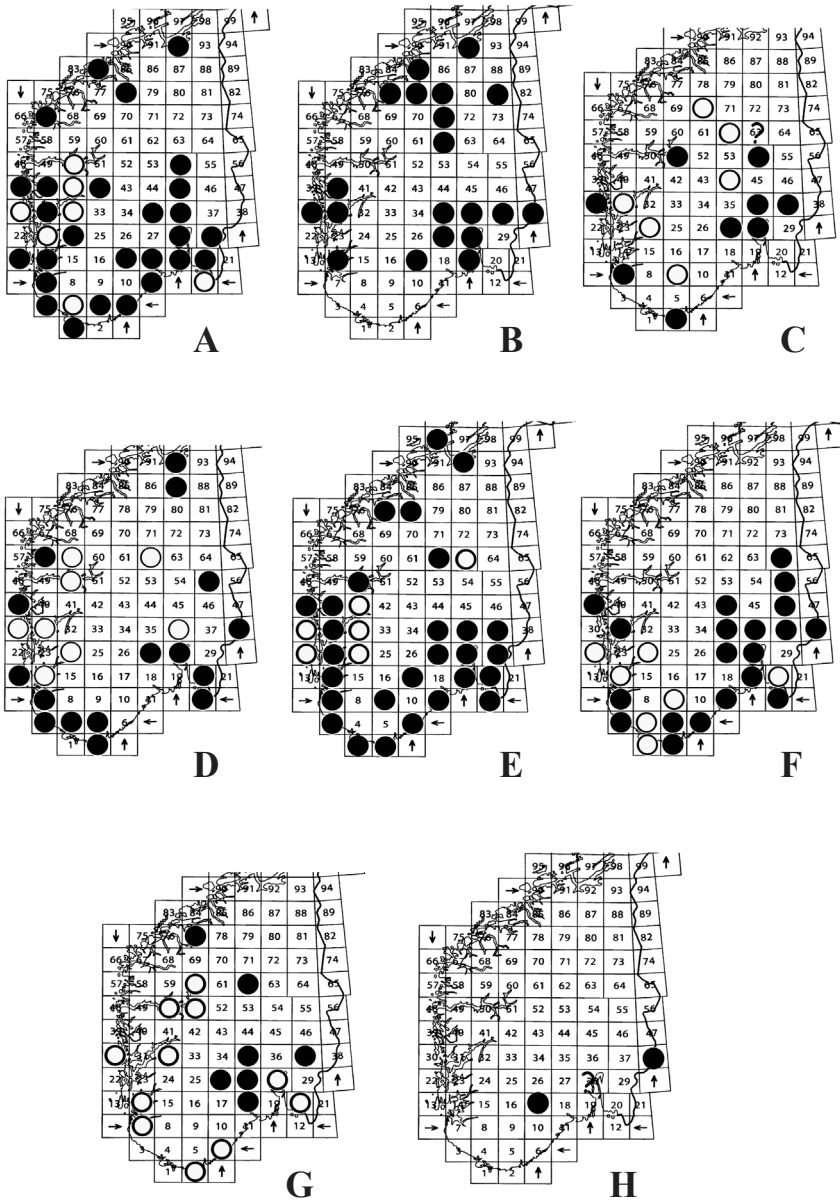
The records and specimens of collected Norwegian *Nomada* are mainly from southern Norway, while large areas of Central Norway have old records, or has been substantially less collected. For northern Norway only old records exist. The areas around Oslo, Bergen and Stavanger have relatively extensively been sampled.

A total of 2049 specimens have been identified to species level, of which 19 species of *Nomada* are recorded from the Norwegian fauna. Half of these species are considered to be common, based on number of specimens and distribution. Four species constitute a total of 64% of the total Norwegian specimens recorded; *N. panzeri* 20%, *N. flavoguttata* 17%, *N. marshamella* 17% and *N. ruficornis* 10%.

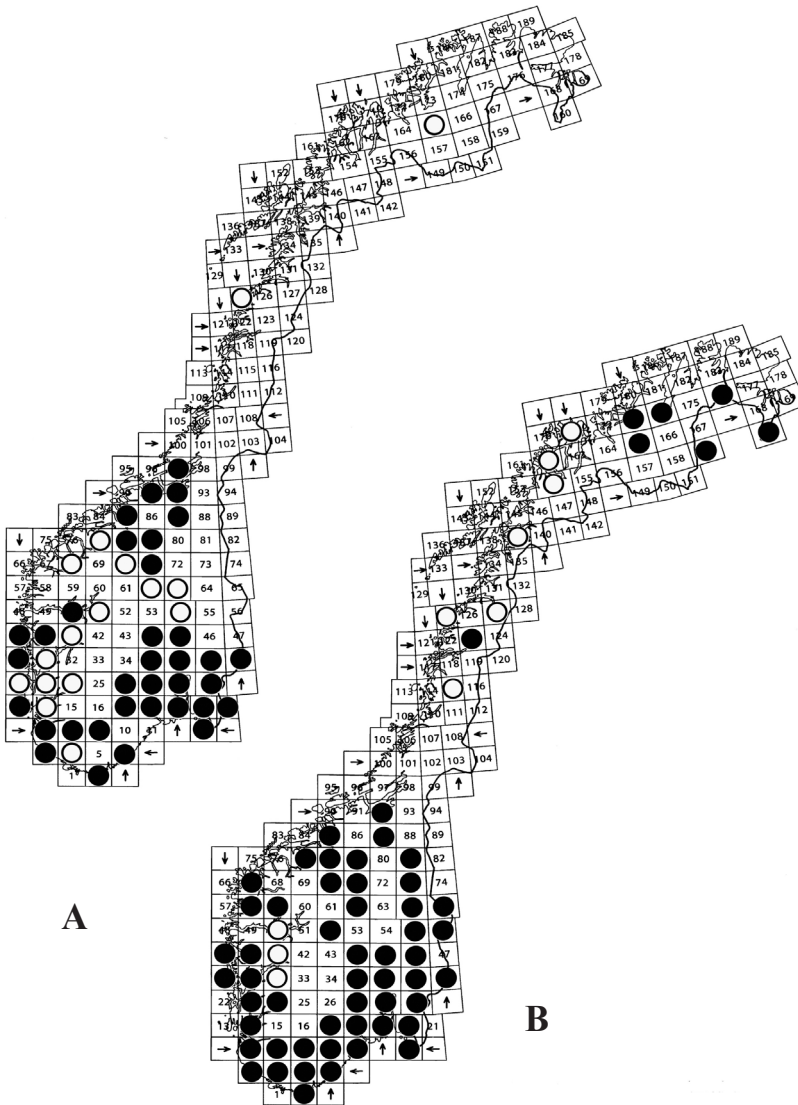
Only two species are recorded from northern Norway; *N. panzeri* and *N. flavoguttata*, with the latter having old records only. Further south, including Trøndelag, are *N. ruficornis*, *N. leucophthalma*, *N. roberjeotiana*, *N. marshamella* and *N. obscura* the most common species. *N. lathburiana* (although lacking recent records from the West of Norway), *N. rufipes*, *N. striata* and *N. obtusifrons* seem to be somewhat more confined to southern Norway. A restricted, southeastern distribution is found for *N. goodeniana*, *N.*



**FIGURE 1** A-I. Distribution of *Nomada* Scopoli, 1770 plotted on EIS-grid according to Økland (1976). A. *N. alboguttata* Herrich-Schäffer, 1839. B. *N. argentata* Herrich-Schäffer, 1839. C. *N. armata* Herrich-Schäffer, 1839. D. *N. flavipicta* (Kirby, 1802). E. *N. fulvicornis* Fabricius, 1793. F. *N. goodeniana* (Kirby, 1802). G. *N. integra* Brulle, 1832. H. *N. lathburiana* (Kirby, 1802). I. *N. leucophthalma* (Kirby, 1802).



**FIGURE 2 A-H.** Distribution of *Nomada* Scopoli, 1770 plotted on EIS-grid according to Økland (1976). **A.** *N. marshamella* (Kirby, 1802). **B.** *N. obscura* Zetterstedt, 1838. **C.** *N. obtusifrons* Nylander, 1848. **D.** *N. roberjeotiana* Panzer, 1799. **E.** *N. ruficornis* (Linnaeus, 1758). **F.** *N. rufipes* Fabricius, 1793 **G.** *N. striata* Fabricius, 1793 **H.** *N. villosa* Thomson, 1882.



**FIGURE 3 A-B.** Distribution of *Nomada Scopoli*, 1770 plotted on EIS-grid according to Økland (1976). **A.** *N. flavoguttata* (Kirby, 1802). **B.** *N. panzeri* Lapeletier, 1841.

*flavopicta* and *N. fulvicornis*, while *N. albuguttata* is considered rare, but might have a wider distribution than indicated. Of doubtful affinity to the Norwegian fauna are species with very few and old records; *N. argentata*, *N. armata* and *N. integra*. However, *N. villosa* has recently been rediscovered in Norway.

The Norwegian *Nomada* fauna is remarkably

poor compared to Sweden and Denmark with respectively 34 and 41 species, of which 11 are unlikely to be present in Norway. In addition, these countries include species complexes which are split in separate species. e.g. *N. roberjeotiana/N. montana*. 23 species are recorded from Finland (Elfving 1968, Vikberg 1986, Söderman & Vikberg 2002), which is similar to the Norwegian



TABLE 1. Distribution of *Nomada* Scopoli, 1770 within Norway, tabulated as revised Strand-regions (Strand 1943, Økland 1981, Endrestøl 2005)

	Ø	AK	HES	HEN	OS	ON	BØ	BV	VE	TEY	TEI	AAV	AAI	VAY	VAI	RY	RI	HOY	HOI	
<i>N. alboguttata</i>	0					0				0										
<i>N. argentata</i>											0									
<i>N. armata</i>												0								
<i>N. flavoguttata</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>N. flavopicta</i>		0		0																
<i>N. fulvicornis</i>	0	0			0	0	0	0	0	0	0		0							
<i>N. goodeniana</i>	0	0			0	0	0	0	0	0	0									
<i>N. integra</i>	0																			
<i>N. lathburiana</i>	0	0	0		0	0	0	0	0	0	0		0			0	0	0	0	0
<i>N. leucophthalma</i>	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0
<i>N. marshamella</i>	0	0			0		0	0	0	0	0	0	0		0	0	0	0	0	0
<i>N. obscura</i>		0	0			0	0	0	0	0	0									
<i>N. obtusifrons</i>		0	0			0	0	0	0	0	0		0		0	0	0	0	0	0
<i>N. panzeri</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>N. roberjeotiana</i>	0		0			0		0		0	0			0	0	0	0	0	0	0
<i>N. ruficornis</i>	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>N. rufipes</i>	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>N. striata</i>	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>N. villosa</i>		?	0								0									0

TABLE. 1. continued

	SFY	SFI	MRY	MRI	STY	STI	NTY	NTI	NSY	NSI	NNØ	NNV	TRY	TRV	FV	FI	FN	FØ
<i>N. alboguttata</i>						0												
<i>N. argentata</i>																		
<i>N. armata</i>	0																	
<i>N. flavoguttata</i>								0	0					0				
<i>N. flavopicta</i>																		
<i>N. fulvicornis</i>																		
<i>N. goodeniana</i>																		
<i>N. integra</i>																		
<i>N. lathburiana</i>																		
<i>N. leucophthalma</i>					0													
<i>N. marshamella</i>	0				0													
<i>N. obscura</i>					0													
<i>N. obsifrons</i>																		
<i>N. panzeri</i>	0				0			0	0	0	0	0	0	0	0	0	0	0
<i>N. roberjeotiana</i>	0				0													
<i>N. ruficornis</i>					0													0
<i>N. rufipes</i>	0																	
<i>N. striata</i>																		0
<i>N. villosa</i>																		

diversity.

*Nomada opaca* Alfken, 1913, with the last specimen in Sweden from 1938 according to Janzon et al. (1991), has recently been collected by Frode Ødegaard (HES Eidskog EIS 38 27.VI.2010) according to the Norwegian newspaper "Dagbladet" (24.08.2010, <http://www.dagbladet.no/a/13091424/>). This record has not been verified by the author and awaits further publication, and is not discussed.

There might be possible new species for the Norwegian fauna as several additional species are recorded from neighboring countries. Relevant Swedish species are either very rare, old records or with an extreme southern distribution (Janzon et al. 1991). Some additional Swedish specimens are mapped in the Swedish Species Information Centre (<http://www.artportalen.se>), but the main distribution patterns remain: *N. facilis* Schwarz, 1967 (a few from SE-Sweden), *N. flava* Panzer, 1798 (male from Skåne), *N. guttulata* Schenck, 1861 (female from Gotland 1942), *N. sexfasciata* Panzer, 1799 (old record without date) and *N. similis* Morawitz, 1872 (published in 1984, locally common in Öland). *N. fucata* Panzer, 1798 was first recorded in Sweden in 2001, with frequent records at the same site in Skåne the following year (Nilsson 2003). It was reported new for Denmark at the same time (Madsen 2000). The exclusive host is *Andrena flavipes*, also recently recorded in Sweden, but is not found in Norway (Ø. Berg pers.comm.). *N. fabriciana* (L., 1767) has not yet been reported from Norway, although the host, *Andrena bicolor*, is common in the Oslofjord region (Ø. Berg pers. comm.).

Furthermore, the species-complexes such as *roberjeotinana/montana*, *goodeniana/succincta*, *alboguttata/baccata* and *panzeri/fusca* may be further worked on when more Norwegian material becomes available.

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