The bee fauna of northern Fennoscandia is still relatively poorly known. During the latter part of the last century, the alpine area of northern Europe revealed two species new to science: *Osmia svenssoni* Tkalců, 1983 and *Lasioglossum boreale* Svensson, Ebmer & Sakagami, 1977. During fieldwork in the vast and mainly unexplored Vindeln area in northern Sweden a single *Osmia* female was caught by a window trap in 2011. Initially the specimen caused some confusion as it was obvious that it did not belong to any known European species. Further investigations in museum collections revealed three more specimens, all collected in the boreal zone of northern Sweden, suggesting the existence of an undescribed species. However, when comparing the specimens with the available type material of Palaearctic *Melanosmia* species, the northern females corresponded well to the type specimens of *Osmia disjuncta* Tkalců, 1995, a species hitherto only known from Mongolia based on the type series.

The subgenus *Melanosmia* Schmiedeknecht, 1885 in northern Europe consists of eight previously recorded species which belong to three species groups: the *inermis* group, the *nigriventris* group and the *xanithomelana* group (Müller 2016, Rightmyer et al. 2010). The females within the *inermis* species group, which was originally defined by Tkalců (1983), can be readily identified by a completely shagreened propodeal area. From northern Europe six species of this group are known: *Osmia parietina* Curtis, 1828, *O. inermis* (Zetterstedt, 1838), *O. pilicornis* Smith, 1846, *O. uncinata* Gerstaeker, 1869, *O. laticeps* Thomson, 1872 and *O. svenssoni* Tkalců, 1983. Most of these can be identified using the keys of Amiet et al. (2004) and Scheuchl (2006). Since the European specimens of *O. disjuncta* exhibit some features not accounted for in the original description by Tkalců (1995), and the publication is hard to find and read (in German) for many Nordic entomologists, a complementary diagnosis is given for the species.
Materials and methods
In addition to the Fennoscandian specimens, we studied a part of the type series of *O. disjuncta* consisting of the holotype female (Fig. 1) and three paratype females. The morphological terminology used follows the glossary of the Hymenoptera Anatomy Ontology Portal (Hymenoptera Anatomy Consortium 2016). Numbering of mandibular teeth starts from the most apical tooth (first tooth) and ends to the most basal tooth (fourth tooth).

Material examined
♀ Sweden, Vb, Vindeln, Käringberget [“Old lady’s mountain”], window trap, 4.vi–1.viii.2011, leg. M. Larshagen [Sveaskog].
♀ Finland, InL, Ivalo, 8.–11.vi.1937, leg. A. Nordman;
♀ Finland, Kn, Paltamo [Leppikoski], 6.vi.1949, leg. E. Hellman;
♀ Russia, Murmansk Oblast, Lps, 2 km east of Nikel, 4.vii.2007, leg. M. Kozlov. All specimens are deposited in the collection of the Finnish Museum of Natural History, Helsinki, Finland.

Identification and ecology

**Diagnosis of female**
The female of *O. disjuncta* (Figs 1-3, 4a, c) can be distinguished from other European members...
of the *inermis* species subgroup by the combination of the following morphological features: 1) slender habitus (body more robust in e.g. *O. inermis*, *O. laticeps* and *O. uncinata*), 2) basal portion of T1 shagreened and dull (shiny in e.g. *O. laticeps*, *O. parietina* and *O. uncinata*), 3) pale setae ventrally on mesofemur longer than width of femur (shorter in e.g. *O. laticeps*, *O. parietina* and *O. uncinata*), and 4) clypeus with long pale setae (shorter in *O. parietina* and darker in *O. uncinata*). As stated in the original description (Tkalců 1995), the species is morphologically somewhat intermediate between *O. parietina* and *O. laticeps* (Table 1). While resembling *O. parietina* by its slender habitus, the long pale clypeal pilosity is similar to *O. laticeps*.

**Description of female (based on all studied specimens)**

*Structure:* Body length 9 mm, forewing length 5.5 mm. Labial palpus four-segmented. Mandible with outer and inner condylar ridges of equal thickness, parallel to slightly diverging towards base of mandible. Mandible, when unworn, with...
third tooth clearly separated from fourth (Fig. 4c). Third tooth broadly rounded, slightly longer than fourth tooth. Third and fourth tooth clearly separated by distinctly sinuate incision. Basal ridge between second and fourth tooth elongated, not semicircular. First tooth longer than second tooth. Vertex behind lateral ocelli 2.5 ocellar diameters in length (Fig. 3d). POL:OOL = 1.2. Face relatively narrow, similar to *O. parietina*. Genal width 1.5x that of compound eye in lateral view (Fig. 3a). Protarsal segments excluding basitarsus and apical segment with anterior lobes distinctly longer than posterior (Fig. 2a). Metasomal segments mostly slender, elongate. Width of second tergite about 2.5 times its length (Fig. 3b).

Figure 3. *Osmia disjuncta* (same specimen as in Fig. 2): – a) Head lateral view, – b) Metasoma dorsal view, – c) Pilosity of metafemur, – d) Head frontal view. Photo: Magnus Persson.

*Osmia disjuncta* (samma exemplar som i Fig. 2) – a) Huvud sett från sidan, – b) Mellankropp sedd ovanifrån – c) behåring baklår, – d) huvud framifrån. Foto: Magnus Persson.

Figure 4. a-b) Basal portion of tergite 1, – a) *Osmia disjuncta*, – b) *Osmia parietina* – c) Mandibular dentition *Osmia disjuncta*. Photo: Magnus Persson.

a-b) Första tergitens (bakkroppens ovansida) basala del på – a) *Osmia disjuncta*, – b) *Osmia parietina*, – c) mandibelspets *Osmia disjuncta*. Foto: Magnus Persson
**Pilosity**: Clypeus below apical margin with lateral tuft of golden, medially directed setae (Fig. 4c). Clypeal surface with long light, golden brown setae intermixed with a few black setae, but lacking any longer bristle-like setae (Fig. 3d). Pilosity not denser towards apical margin. Frons with long light brown setae (Figs 3a, d). Scape with long light brown pilosity about three times diameter of scape (Fig. 3d). Genal area with long light brown and black setae that observed in frontal view form a quite dense collar (Figs 3a, d). Galea and basal two labial palpal segments with setae on lateral margins short, straight. Metafemur and metacoxa ventrally, apart from shorter, denser setae also with long, yellowish setae about as long as width of femur (Fig. 3c). Metafemur dorsally with conspicuous long, bent setae (Fig. 3c). Mesofemur and profemur and adjacent coxae ventrally with long yellowish setae about 1.2–1.3 femoral width. All tibiae and tarsal segments covered with short rather dense, bristle-like pilosity (Fig. 2a). Mesosoma dorsally with long golden-red pilosity, and laterally and ventrally with yellowish pilosity (Figs 2a, b). Metasoma on tergite 1 with long golden pilosity, on tergite 2 setae clearly shorter and sparser, basally, especially on the sides, distinctly golden brown, gradually turning black towards apical margin (Figs 2a, b, 3b). Tergites 3–6 with black pilosity, on tergite 6 relatively dense. Scopa black, bristles thinner and slightly longer than in *O. parietina* (Fig. 2a).

**Punctuation**: Head and mesosoma with punctures nearly contiguous, more or less rounded. Clypeus with distinct round punctures with narrow shining interstices (Fig. 4c). Punctuation becoming denser and less well defined towards the apical margin. Lower frons on sides of clypeus shagreened with distinct punctures of equal size compared to the more irregular punctuation of upper clypeus (Fig. 3d). Frons below ocelli with dense punctures without distinct interstices (Fig. 3d). Mesopleuron ventrally more or less shagreened, mainly with indistinct punctures, thereby dull. Metapleuron with scarce punctures, medioventrally with interstices 1–2 times
diameter of punctures. Basal portion of metasomal tergite 1 densely shagreened, dull with a silky lustre, like in O. inermis (Fig. 4a). Adjoining area on tergite 1 mediadorsally shagreened with small punctures which become larger and more scattered towards the hind margin of the tergite. Surface of tergites 2-4 shiny, almost polished (Fig. 3b). Apical margin on tergites 1-3 impunctate, vaguely shagreened, strongly shining (Fig. 3b). Propodeal triangle with dorsal sixth finely areolate to lineate, ventral 4/5 regularly granulose, dull. Stermites 1-3 with regular, well defined and relatively large punctures, hereby slightly differing from the more irregular, indistinct punctation of O. parietina.

DNA barcode
The full DNA barcode sequence of the Swedish O. disjuncta specimen is available at GenBank (www.ncbi.nlm.nih.gov/genbank, accession number MF040883) and BOLD systems database (www.boldsystems.org, dataset code DS-OSMDIS). In animals, a DNA barcode is a DNA segment of 658 base pairs of the mitochondrial gene cytochrome oxidase I (COI), and is commonly used for species identification and delimitation. With a divergence of 6%, O. uncinata was found to have the most similar DNA barcode of Nordic Osmia species (Fig. 5). Of all DNA barcoded species, the Nearctic O. tersula Cockerell, 1912, has the most similar barcode with a divergence of 5.5%. These large divergences indicate a long evolutionary differentiation of O. disjuncta from other congeneric species.

Distribution
The Swedish female of O. disjuncta was caught by a window trap placed on a high Scots pine stump in Vindeln, northeast Sweden (Fig. 7). The species is also known from central and northern Finland as well as northwestern Russia (Murmansk Oblast) (Fig. 6). All known localities are in Fennoscandia and within the western part of the vast boreal forest zone known as the taiga. An attempt to collect complementary material at the Swedish site by a Malaise trap, yellow pan traps and sweep netting, was unsuccessful indicating that the species occurs in low densities.

Phenology
The dates on the labels indicate that the females fly from early June to at least the beginning of July in Europe. Osmia disjuncta, as other woodland Osmia species in the area, are probably slightly protandric and males can be expected to emerge as early as late May.

Biology
No detailed information on the biology of O. disjuncta is known. However, the poor plant community on the Swedish locality (Fig. 6), in combination with the phenology, strongly suggests that the species forages on flowering Vaccinium. Unfortunately, none of the European specimens show any trace of pollen grains. The Russian locality consists of an industrial barren in an open subarctic landscape. This record, together with the observations from the type-locality in Mongolia, suggests that the species probably has a preference for open or semi-open habitats.
Remarks
The European specimens of *O. disjuncta* are all females. We have noted that there are some small but consistent discrepancies between the European and the Mongolian females, primarily concerning the shape of the mandibular denticion and the shape of the protibial spur. The incision between the third and fourth mandibular tooth is deeper and the semitransparent spur of the protibia is more concave dorsally in the European specimens. We consider this to be intraspecific variation and what could be expected from specimens collected from such widely separated populations. An attempt to produce a DNA barcode sequence of one of the paratype females to compare it to the Swedish specimen unfortunately failed. We have not been able to identify any males of the species in Nordic collections.

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Sammanfattning


De nordiska honorna skiljer sig en aning från de exemplar som arten beskrevs efter. Skillnaderna är dock inte större än att vi tror det är inomartsvariation som kan förväntas med så stora geografiska avstånd. Hanliga exemplar från Norden skulle dock kunna bringa mer klarhet, men någon sådan har ej kunnat hittas, vare sig i museer eller genom sökande på fyndlokalen i Vindeln eller liknande platser. Tyvärr misslyckades också försöken att sekvensera DNA från bin fångade i Mongoliet.

Eftersom de nordiska exemplaren ser lite annorlunda ut och beskrivningen av arten är svår att finna och skriven på tyska, så ges här en detaljerad beskrivning av hur arten ser ut. Att arten är skiljd från andra närstående arter stöds av genomförd DNA-sekvensering.