

# On the family Diadocidiidae (Diptera, Sciaroidea) in Norway

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This paper deals with distributional records for 4 species of Diadocidiidae (Diptera, Sciaroidea) in Norway. Remarks on their biology are given.

Keywords: *Diadocidia*, Diadocidiidae, Sciaroidea, Diptera, Faunistics, Norway.

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## INTRODUCTION

Diadocidiidae is a relatively small and homogenous family, with less than 25 recognized species worldwide. The family is found in most zoogeographic regions and seems to be widespread in Palaearctic. In Europe there are six species in the genus *Diadocidia* Ruthe, 1831; *Diadocidia trispinosa* Polevoi, 1996, *Diadocidia valida* Mik, 1874, *Diadocidia ferruginosa* (Meigen, 1830), *Diadocidia fissa* Zaitzev, 1994, *Diadocidia spinosula* Tollet, 1948, and *Diadocidia setistylus* Papp, 2003 (Chandler 2004, Papp 2003). *D. fissa* Zaitzev, 1994 has the most restricted distribution, present only in Central Russia. The other species seem to be widespread, but rare. Of the 43353 specimens of fungus gnats *sensu lato* caught during one year in 38 mailaise traps by Økland & Zaitzev (1997), only 66 were diadocidiids. The genus is divided into two subgenera; *Adidocidia* Lastovka, 1972 & *Diadocidia* Ruthe, 1831.

The systematics of this group has been debated, but current studies places it close to Keroplatidae, Bolitophilidae and Ditomyiidae (Hippa & Vilkamaa 2005, 2006; Amorim & Rindal in press). Genera like *Heterotracha* Loew, 1850

and *Sciarosoma* Chandler, 2002 are sometimes erroneously placed in this family, e.g. in Fauna Europaea.

The larvae seem to be associated with decaying wood, and develop within a slimy tube, where they feed on the hymenium of higher fungi (Zaitzev 1994). The larvae of *D. ferruginosa* are known to feed on *Peniphora* sp. (Chandler 1993). The larvae spin a silky tube and a pupal cocoon (Matile 1997). The adults occur mainly in forest habitats in shaded places alongside streams and on tree trunks.

Fossil records of this family are scarce. Diadocidiidae was though to be a relatively young family until the re-dating of Burmese amber from Cenozoic to Cretaceous (Grimaldi et al. 2002), and the subsequent description of *Docidiadia* (Blagoderov & Grimaldi 2004). Two species that apparently belong to *Diadocidia* are also recorded from Baltic amber, although their status are somewhat unclear.

Contributions to the Norwegian fauna are few. Søli (1994) listed 3 species from Jostedal and Økland (1996, 1999) and Økland & Zaitzev (1997) also listed 3 species from south-eastern Norway.



**Figure 1.** *Diadocidia spinosula* Tolle, 1948, male. Photo: K. Sund.

Ottesen (1993) estimated the number of species in Norway to 1. In Norway, specimens are recorded only from the southern parts, but based on records from Russia it is reasonable to believe that they could be found further north.

## MATERIAL & METHODS

The material studied by the authors is kept at Natural History Museum, University of Oslo (NHMO). The material from Økland (1994, 1996) is kept at The Norwegian Forest and Landscape Institute (NFLI). This material is no longer sorted to species and was not available to the authors. The material published by Søli (1994) is kept at Zoological Museum, Bergen. Table 1 shows detailed information about each locality.

List of material:

### *Diadocidia (Adidocidia) trispinosa* Polevoi, 1996

This species was published as *D. borealis* Coquillett, 1900 by Økland 1997.

**AK** Fjellsjøkampen, 15 May – 17 August 1993 (NFLI); Syverud, Årunge, 1♂, 23 October – 19 September 2003; **BØ**, 15 May – 17 August 1993 (NFLI); **OS** Hestekotjernet, 15 May – 17 August 1993 (NFLI); Skotjernfjellet, 15 May – 17 August 1993 (NFLI); Totenåsen, 15 May – 17 August 1993 (NFLI); Ormtjernkampen, 15 May – 17 August 1993 (NFLI); Helvete, 15 May – 17 August 1993 (NFLI); Tjuruverket, 15 May – 17 August 1993 (NFLI); Håkåseter, 15 May – 17 August 1993 (NFLI); **HES** Skvaldra, 15 May – 17 August 1993 (NFLI); **HEN** Tronkberget, 15 May – 17 August 1993 (NFLI).

### *Diadocidia (Adidocidia) valida* Mik, 1874

**VE** Veggefjellet, Falkenstein, 1♂, July 1997; **TEY** Oksum, 1♀ 17 July – 5 August 1991; **TEI** Kviteseid, 11 – 20 July 1988; **SFI** Øyastrondi 1♂, 24 June – 12 July (ZMB); 17 August – 13 September (ZMB).

### *Diadocidia (Diadocidia) ferruginosa* (Meigen, 1830)

= *flavicans* Ruthe, 1831 (*Diadocidia*)

= *winthemi* Macquart, 1834 (*Macronevra*)

**Ø** Tjøstøl, 15 May – 17 August 1993 (NFLI); **AK** Danmark, 1♀, 17 May – 21 July 2004; Østensjøvannet, 1♂4♀♀, July 1996; Syverud, Årunge, 3♀♀, 15 August – 3 September 2003; Skår, Maridalen, 3♂♂, 25 – 29 August 2002; **HES** Abborhøgda, 1♂1♀, 10 August – 30 September 2003; Skvaldra, 15 May – 17 August 1993 (NFLI); Sølvdøbla, Grønmo, 1♂, 19 September – 23 October 2002; Storenga [N], Nesøya, 2♀♀, July – August 2003; **HEN** Tronkberget, 15 May – 17 August 1993 (NFLI); **OS** Hestekotjernet, 15 May – 17 August 1993 (NFLI); Skotjernfjellet, 15 May – 17 August 1993 (NFLI); Totenåsen, 15 May – 17 August 1993 (NFLI); Imsdalen, Ringeby, 15 May – 17 August 1993 (NFLI); **BØ** Lortholkollen, 15 May – 17 August 1993 (NFLI); **VE** Veggefjellet, Falkenstein, 4♀♀, July 1997; Revetal, Våle, 1♂, 8 – 10 September 2002; Adalstjernet, 1♂, 2 September – 24 October 2003; **TEI** Elferdalen, 15 May – 17 August 1993 (NFLI); **HOI** Tveit, Simadalen, 2♀♀, 1 May – 12 June 2004; **SFI** Fossen, 1♂, 24 June 1988 (ZMB); Øyastrondi, 5♂♂5♀♀, 24 June – 12 July 1988 (ZMB); 5♂♂3♀♀, 17 August – 13 September 1988 (ZMB).

### *Diadocidia (Diadocidia) spinosula* Tollet, 1948 (Fig. 1)

**Ø** Tjøstøl, 15 May – 17 August 1993 (NFLI); **AK** Stygvannet, 15 May – 17 August 1993 (NFLI); Tappenberg, 15 May – 17 August 1993 (NFLI); Fjellsjøkampen, 15 May – 17 August 1993 (NFLI); **HES** Abborhøgda, 2♂♂, 7 – 22 June 2003; 1♂2♀♀, 10 August – 6 September 2003; Åranstorpet, 1f, 16 May – 14 June 2004; **OS** Skotjernfjellet, 15 May – 17 August 1993 (NFLI); Totenåsen, 15 May – 17 August 1993 (NFLI); Ormtjernkampen, 15 May – 17 August 1993 (NFLI); Håkåseter, 15 May – 17 August 1993 (NFLI); **BØ** Lortholkollen, 15 May – 17 August 1993 (NFLI); **TEY** Skultrevassåsen, 2♂♂, 10 July – 8 August 1995; Dammane, 2♂♂, 26 June – 12 July 1988; Sandøya, 3♂♂, 20 June 1995; **TEI** Spjeldset, 1♂, 20 May – 11 July 2004; Elferdalen, 15 May – 17 August 1993 (NFLI);



**Table 1.** EIS- and UTM-references of records included in this study. Collector is given for each locality. Abbreviations: GS = Geir Søli, LOH = Lars Ove Hansen, BØ = Bjørn Økland, MF = Morten Falck, AB = Alf Bakke, ER = Eirik Rindal, SL = Sindre Ligaard, KS = Karsten Sund, OJL = Ole Jørgen Lønnve, LAa = Leif Aarvik, TD = Thorbjørn Darup, NFLI = The Norwegian Forest and Landscape Institute (Skog og Landskap), NHMO = Natural History Museum, University of Oslo.

Locality	Municipality	EIS	UTM [WGS84]	Leg/coll
<b>ØSTFOLD (Ø)</b>				
Tjøstøl	Aremark	21	32VPL572786	BØ/NFLI
<b>AKERSHUS (AK)</b>				
Østensjøvannet	Oslo	28	32VPM021408	MF/NHMO
Stygvannet	Lørenskog	29	32VPM119424	BØ/NFLI
Fjellsjøkampen	Hurdal	36	32VPN062049	BØ/NFLI
Tappenberg	Rælingen	29	32VPM144358	BØ/NFLI
Syverud, Årungen	Ås	28	32VNM988180	ER, LAa/NHMO
Skar, Maridalen	Oslo	36	32VNL988560	ER/NHMO
Sølvdobla, Grønmo	Oslo	28	32VPM053355	ER/NHMO
Storenga [N], Nesøya	Asker	28	32VNM859376	LOH/NHMO
Danmark	Frogn	28	32VNM969187	ER, LOH/NHMO
<b>HEDMARK Southern (HES)</b>				
Skvaldra	Ringsaker	54	32VPN013903	BØ/NFLI
Abborhøgda	Kongsvinger	38	33VUG591746	KS/NHMO
Åranstorpet	Kongsvinger	38	33VUG578768	KS/NHMO
<b>HEDMARK Northern (HEN)</b>				
Tronkberget	Stor-Elvdal	64	32VPP124132	BØ/NFLI
<b>OPPLAND Southern (OS)</b>				
Hestekotjernet	Jevnaker	36	32VNM854737	BØ/NFLI
Skotjernfjellet	Lunner	36	32VNM996797	BØ/NFLI
Totenåsen	Østre Toten	45	32VPN133163	BØ/NFLI
Ormtjernkampen	Gausdal	53	32VNN454841	BØ/NFLI
Hååkåseter	Sør-Fron	62	32VNP399099	BØ/NFLI
Helvete	Gausdal	54	32VNP364034	BØ/NFLI
Tjuruverket	Gausdal	54	32VNN416873	BØ/NFLI
Imsdalen, Ringebu	Ringebu	63	32VNP867260	BØ/NFLI
<b>BUSKERUD Eastern (BØ)</b>				
Lortholkollen	Ringerike	36	32VNM846679	BØ/NFLI
<b>VESTFOLD (VE)</b>				
Veggefjellet, Falkenstein	Horten	19	-	LOH/NHMO
Adalstjernet	Horten	19	32VNL816821	ER/NHMO
Revetal, Våle	Re	19	32VNL725816	ER/NHMO
<b>TELEMARK Coastal (TEY)</b>				
Oksum	Porsgrunn	18	-	GS/NHMO
Skultrevassåsen	Drangedal	11	32VNL154486	AB/NHMO
Dammane	Porsgrunn	11	32VNL391469	GS/NHMO

Table 1. Continued

Locality	Municipality	EIS	UTM [WGS84]	Leg/coll
Sandøya	Porsgrunn	11	-	GS/NHMO
<b>TELEMARK Interior (TEI)</b>				
Elferdalen	Notodden	27	32VNM177124	BØ/NFLI
Spjeldset	Tinn	27	32VNM021449	OJL/NHMO
Kviteseid	Kviteseid	17	-	SL/NHMO
<b>HORDALAND Interior (HOI)</b>				
Tveit, Simadalen	Eidfjord	41	32VMN006086	ER, TD/NHMO
<b>SOGN &amp; FJORANDE Interior (SFI)</b>				
Fossen	Luster	60	32VMP0824	GS/NHMO
Øyastrondi	Luster	60	32VMP139448	GS/NHMO

**HOI** Tveit, Simadalen, 1♀, 12 June – 12 July;  
**SFI** Øyastrondi, 1♂, 24 June – 12 July (ZMB);  
 1♂, 12 July – 17 August (ZMB); 1♂, 17 August  
 – 13 September (ZMB).

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## IDENTIFICATION

The basic characteristics of the family were recently given by Krivosheina (1988), Zaitzev (1994) and Søli et al. (2000): Head with three ocelli; antenna with scape and pedicel short, flagellum with 14 segments. Thorax hump-backed, long coxae, and narrow abdomen. Wings without dark markings, wing membrane covered with macrotrichia. Sc ending in C or free, cross-veins r-m and M-Cu in a straight vertical line. Presently the species can only be identified based on the genitalia. Identification of European species is possible using the keys and figures by Laštovka & Matile (1972), Zaitzev (1994) and Papp (2003). Papp & Ševčík (2005) gives keys to new species from Europe and Taiwan.

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