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**Julio Arroyo & Thomas Bolger**
School of Biology and Environmental Science
University College Dublin,
Belfield, Dublin 4, Ireland

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**Grupo Ibérico de Aracnología (GIA)**
Grupo de trabajo en Aracnología
de la Sociedad Entomológica
Aragonesa (SEA)
Avda. Radio Juventud, 37
50012 Zaragoza (ESPAÑA)
Tef. 976 324415
Fax. 976 535697
C-elect.: amelic@telefonica.net

Director: Carles Ribera
C-elect.: cribera@ub.edu

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# *Serratoppia serrata* and *Eupelops major* (Arachnida: Acari: Oribatida), two new records for Ireland with some comments on their biogeography

Julio Arroyo & Thomas Bolger

**Abstract:**

The oribatid mite species *Serratoppia serrata* (Mihelčič, 1956) and *Eupelops major* (Hull, 1914) are recorded for the first time in Ireland. The presence of *E. major* in the country is expected because of its wide distribution in Southern and Central Europe as well as in England. However, the finding of *S. serrata* was less likely. Both species were collected in Sitka spruce (*Picea sitchensis*) stands located in Co Laois, Ireland. Information is given on the biology, habitat and biogeographical distribution of these taxa and congeneric species.

**Key words**: Acari, Oribatida, new records, Ireland.

***Serratoppia serrata* y *Eupelops major* (Arachnida: Acari: Oribatida), dos nuevos ácaros oribátidos para Irlanda, con comentarios sobre su biogeografía.**

**Resumen:**

Los ácaros oribátidos *Serratoppia serrata* (Mihelčič, 1956) y *Eupelops major* (Hull, 1914) son citados por primera vez para la isla de Irlanda. Mientras que el registro de *E. major* en el país no es inesperado dada la amplia distribución de la especie en Europa central y meridional así como en Inglaterra, el hallazgo de *S. serrata* ha sido más sorprendente. Ambas especies fueron colectadas en plantaciones de *Picea sitchensis* localizadas en Co Laois, Irlanda. Se ofrece información sobre la biología, ecología y distribución geográfica de estos taxones y de especies del mismo género.

**Palabras clave**: Acari, Oribatida, primeras citas, Irlanda.

## Introduction

Two new records of oribatid mites belonging to the genera *Serratoppia* and *Eupelops* are added to those of the Irish acarine fauna. These resulted from a study of oribatid and gamasid mites inhabiting canopies and edaphic in Sitka spruce stands [see Arroyo & Bolger, 2007; Arroyo *et al*. (*in press*)].

Both species, *Serratoppia serrata* (Mihelčič, 1956) and *Eupelops major* (Hull, 1914), are higher oribatids (Brachypylina Cohort *sensu* Hull, 1918).

The genus *Eupelops* Ewing, 1917 comprised of 64 species *sensu* Subías (2004) but, after updating and further study is believed to have 66 species (Luis S. Subías, pers. comm.). It is widely distributed being essentially cosmopolitan but not occurring in the Antarctic. By contrast, the genus *Serratoppia* Subías & Mínguez, 1985 only includes 6 species (Subías, 2004) and the biology and distribution of this genus is currently not well known.

In this paper we offer the new records as well as some discussion of their biology and distribution.

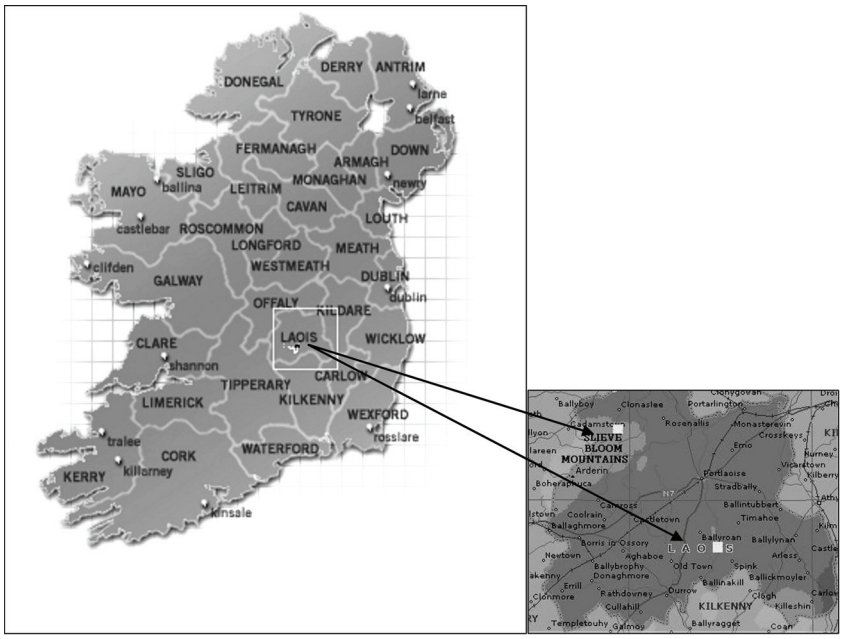


**Figure 1:** Geographical location of the Sitka spruce plantations (white squares) sampled in Co Laois, Ireland: Baunreagh and Dooary.

## Materials and methods

The specimens were collected from two Sitka spruce [*Picea sitchensis* (Bong.)] plantations located in the Irish midlands (Co Laois). These sites (Fig. 1) were Baunreagh (~ 53º 07´N, 7º 34´W) which is an old plantation (85 years old) sampled in November 2005, and Dooary (~52º 57´N, 7º 15´W) a young plantation (18 years old) sampled in December 2006. More information about the sites is available in several works (e.g. Black *et al.,* 2007).

Both species were collected from moss samples from which the fauna was extracted using Berlese funnels. The mites were slide mounted in Hoyer liquid (Krantz, 1978) for storage and identification. All the voucher specimens are deposited in the School of Biology and Environmental Science (University College Dublin).

## Results and discussion

Both species are the first records for the country and are not cited in the lists of mites for Ireland (O´Connell, 1994; Heneghan, 1994; Luxton 1998).

***Serratoppia serrata*** Oppiidae Sellnick, 1937:
*Medioppinae* Subías & Mínguez, 1985

The first record of *S. serrata* in Ireland consists in an single individual (body size 295 µm long and 150 µm wide) collected from moss mats on the upper surface of fallen, decaying stems of Sitka spruce at Baunreagh. The size of the specimen is within the usual range for the species (Subías & Arillo, 2001). The moss mat was mainly *Hypnum cupressiforme* Hedw. Three more individuals of *S. serrata* have subsequently been collected from Irish Sitka spruce plantations.

The genus *Serratoppia* described by Subías & Mínguez (1985) has a Palearctic and Neotropical distribution (Subías, 2004). Three of species of the genus, *S. guanicola* Subías & Arillo, 1996, *S. intermedia* Subías & Rodríguez, 1988 and *S. minima* Subías & Rodriguez, 1988 are endemics of the Iberian Peninsula. The latter species has also been recorded in Costa Rica but this is believed by Subías & Arillo (2001) to have resulted from an accidental introduction.

Up to this point *S. serrata* was believed to be restricted to Mediterranean countries and Venezuela. This is probably a reflection of the poor knowledge of the real distribution of some oribatid taxa, especially the oppiids, due to the difficulty with their identification (Luis S. Subías, pers. comm.). In Ireland, this occurs particularly with invertebrates inhabiting forests of introduced exotic species such as Sitka spruce (Fahy & Gormally, 1998).

The only species of the genus *Serratoppia* previously recorded in the geographical area of Ireland and Britain is *Serratoppia duffyi* (Evans, 1954) (Luxton, 1998). The type material for this species and the only material found to date, consist of a single specimen collected from moss samples by J. Duffy in 1951 in The Burren (Co Clare, Ireland).

The illustration (Fig. 2) in Evans´s paper (1954) was drawn directly from the one and only slide and the description differs clearly from *S. serrata*, especially in the rostrum teeth disposition and the length of the sensilla branches. The characteristic "cross" that appears in the prodorsum of this genus is not mentioned in either the illustration or text. Another morphological characteristic, which appears in *S. serrata,* are the cuticle furrows located in the prodorsum and clearly displayed in our specimen (see Fig. 3) from Ireland, is not present in the *S. duffyi* description either. The original slide (deposited in the Natural History Museum of London) was checked

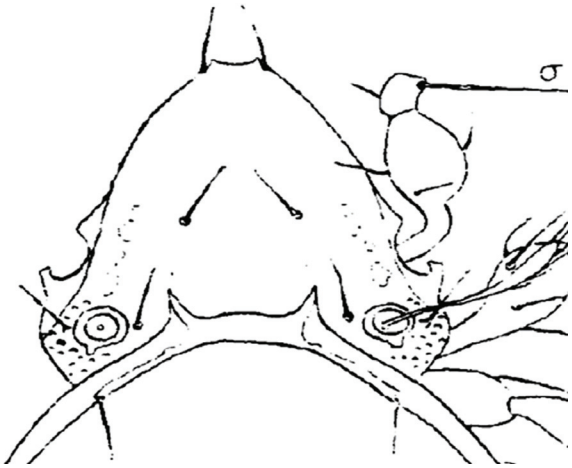

**Figure 2**: Original drawing of the prodorsum of *Serratoppia duffyi* (from Evans, 1954).

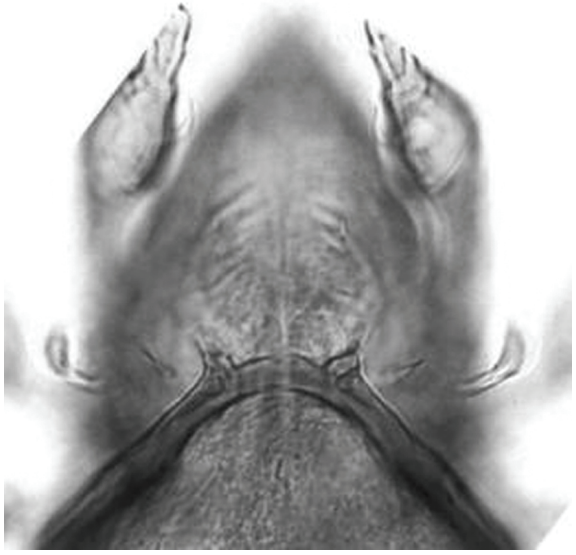

**Figure 3:** Prodorsum of *Serratoppia serrata* collected in Ireland (Picture: Arroyo, 2008).

by Frank Monson (pers. comm.) and this author confirmed the opinion that this species had never been found in Britain or Ireland apart from the type specimen but Monson has recently found *Serratoppia serrata* in England, specifically in barns and on salt marsh (all in deep, damp rotten vegetation) (unpublished data).

*Serratoppia serrata* was described as Mediterranean by Subías & Gil-Martín (1997) but the records found for the species in Spain, France, Belgium and Romania (Subías & Balogh 1989) and Italy (Bernini *et al.*, 1988) changed the distribution to Western Palearctic (Subías & Arillo, 2001) or even wider as the species was recorded in Venezuela (Subías, 2004).

The biology of *Serratoppia serrata* tends to inhabit environments with a large amount of decaying organic matter (Subías & Arillo, 2001). This fits with the ecological niches in which it was found in the old Sitka stand of Baunreagh.

Finally, to mention the other species of the genus, *S. mitrofanovi* (Goordeeva & Karpinnen, 1988), which has only been found in the Ukraine, confirms the need for more research in oppiid mites in order to achieve a more realistic distribution of these animals.

***Eupelops major*** (Phenopelopidae Petrunkevitch, 1955)

The first record of *E. major* in Ireland consists of a single individual (body size 1110 µm long and 905 µm wide) collected from edaphic moss mats on the soil surface of the Sitka spruce plantation located at Dooary, Co Laois. The size of the specimen is slightly bigger than the usual range for the species (Pérez-Íñigo, 1993). The moss was primarily *Hypnum cupressiforme* Hedw.

The genus *Eupelops* Ewing, 1917 has a wide distribution as was stated in the introduction of this paper. *Eupelops major* has usually been recorded as *Eupelops hirtus* Berlese, 1916 as was listed for Britain by Luxton (1996) but was not in the specific list for Ireland (Luxton, 1998). The recent taxonomic review of Subías (2004) confirms the correct status of this species as *E. major.*

The species comprises of two subspecies *E. major major* (Hull, 1914) and *E. major franconia* (Jacot, 1939). We believe our specimen belongs to *E. major major* as the other subspecies is restricted to New Hampshire (USA) only.

*Eupelops major* is the largest species of the genus found in Europe. Subías (2004) describes the species distribution as Holarctic, having been recorded in Central and Southern Europe, Pakistan and Canada. The fact that *E. major* has now been recorded in Ireland is not surprising because it is a very common species in Northern Europe (Subías, pers. comm.).

Rajski (1968) reports the species preference for inhabiting forests moss and litter, requiring certain humidity content, factors that are constants in coniferous plantations. This record adds a new *Eupelops* species to Ireland, as some other common congenerics such as *E. acromios* (Hermann, 1804) and *E. plicatus* (Koch, 1835) were recorded previously in the country and have also been found in Sitka spruce plantations by our research team.

We can conclude that further work in Sitka spruce forests and other Irish habitats will be required to provide a more realistic list of mite biodiversity than is represented in the current inventory of mites for the country.

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