

## **IRISH *EUPLECTUS* (COLEOPTERA: STAPHYLINIDAE: PSELAPHINAE) FROM THE KILLARNEY AREA IN THE E. F. BULLOCK COLLECTION**

Jervis A. Good<sup>1</sup> and Aidan O'Hanlon<sup>2</sup>

<sup>1</sup>*Glinny, Riverstick, Co. Cork, Ireland.*

e-mail: <Pygidicrana@gmail.com>

<sup>2</sup>*National Museum of Ireland - Natural History, Merrion Street, Dublin D02F627, Ireland.*

e-mail: <aohanlon@museum.ie>

### **Abstract**

*Euplectus* beetles collected in the Killarney area, County Kerry, Ireland, by E. F. Bullock, now in the National Museum of Ireland, were re-identified. Six species are recorded, including one male of *E. punctatus* Mulsant, confirming the occurrence of this old woodland species in Ireland in contradistinction to its sibling *E. tholini* (Guillebeau). *E. bescidicus* Reitter and *E. mutator* Fauvel, with Bullock literature records from Killarney, were not represented in the collection.

**Key words:** *Euplectus*, Killarney, Ireland, E. F. Bullock.

### **Introduction**

Edwin Bullock collected beetles in the Killarney area for over 50 years between approximately 1910 and 1960, amassing a large collection, now held in the National Museum of Ireland (NMI), which provides a unique historical biodiversity baseline for the area. While representatives of many species were identified by leading coleopterists of the day, in some genera, however, there were misidentifications and species concepts have since considerably changed. An example is the genus *Euplectus*, a group of small (1-2mm) pselaphine beetles which prey on mites in decaying wood and plant refuse, and many of which are associated with old woodland. As has been the case elsewhere (e.g. Vorst, 1995), many *Euplectus* specimens in the NMI Bullock Collection were found to be misidentified, and none of the males had been dissected.

### **Methods**

All Bullock NMI *Euplectus* specimens from Killarney were re-determined (by JAG), using Besuchet (1974), Hansen (1968), Jeannel (1950) and, to a lesser extent and with care due to confused names and reliance on dorsal external characters only, Pearce (1957), as well as English reference material in the Bullock Collection. Up to about 1920, Bullock specimens were labelled just 'Killarney'; thereafter, they were labelled 'Flesk, Killarney', 'Garden,

Killarney', etc. However, with the exception of *E. piceus* and *E. punctatus*, all records are combined below just as 'Killarney'. Also in the list below, the number after the dates refers to the number of specimens from that period.

## Results

### *Euplectus duponti* Aubé, 1833

**KERRY:** 3♂♂3♀♀, Killarney, EFB: 1909 - 1941.

### *Euplectus infirmus* Raffray, 1910

**KERRY:** 6♂♂1♀, Killarney, EFB; 1914 - 1954.

### *Euplectus karstenii* (Reichenbach, 1816)

**KERRY:** 1♂1♀, Killarney, EFB; 1917 - ? [date illegible].

### *Euplectus piceus* Motschulsky, 1835

**KERRY:** 10♀♀4♂♂, Killarney, EFB: 1910 - 1919 - 12, 1920 - 1929 - 2; 1♀, Garden, Killarney, April 1930, EFB, rotten branch; 1♀, M[uck]ross, Killarney, February 1938, EFB; 1♀, Cahirnane, Killarney, May 1951, EFB; 1♂, Flesk, Killarney, March 1954, EFB, under *P[inus]* bark.

### *Euplectus punctatus* Mulsant, 1861

**KERRY:** 1♂, Torc, Killarney, May 1950, EFB. See Plate 1.

### *Euplectus sanguineus* Denny, 1825

**KERRY:** 24♀♀21♂♂, 3 unsexed, Killarney, EFB: 1910 - 1919 - 9, 1920 - 1929 - 1, 1930 - 1939 - 7, 1940 - 1949 - 2, 1950 - 1959 - 29.

### *Euplectus bescidicus* Reitter, 1881

The sole Irish record for *Euplectus bescidicus*, from Killarney, cited by Alexander and Anderson (2012), appears to be incorrect. Bullock (1928), indeed, added *E. bescidicus* Reitter to the Irish list, from "an old tree riddled with the burrows of *Sirex gigas*". However, *E. bescidicus* Reitter is an obsolete synonym for *E. decipiens* Raffray (Pearce, 1957), and, in 1935, H. Britten determined two Bullock specimens, labelled "Garden, Killarney, 4.24, EFB", as "*Euplectus decipiens* Raffray". These were found standing over the '*bescidicus*' label in the Bullock Collection, and very probably are the '*E. bescidicus*' referred to by Bullock. Both specimens were re-determined as *E. duponti* Aubé, and *E. bescidicus* was consequently excluded from the revised staphylinid list in Good and Anderson (2019). In addition, a further specimen standing over the same label has now been determined as *E. punctatus* (see below).

### *Euplectus mutator* Fauvel, 1895 (= *fauveli* Guillebeau; = *falsus* Bedel; = *tomlini* Joy)

Alexander and Anderson (2012) cited a Bullock Killarney record for this species, based on

the *E. tomlini* Joy record published by O'Mahony (1929), provided by Bullock (*in litt.*). Pearce (1957) cited records from "Cos. Kerry and Waterford" for this species, as *falsus* Bedel. No specimens of *E. mutator* were located in the Bullock Collection in the NMI. Two specimens labelled '*Euplectus tomlini* Joy, t = H. Britten, 1935' (both ♂♂, March 1914 and April 1922) proved to be *E. infirmus* (determination based on aedeagal dissection). Dr Mark Pavett of the National Museum of Wales, where the E. J. Pearce collection is held, kindly examined the *mutator* material in the collection, but there were no specimens from Killarney, Kerry or Ireland present. Pearce also deposited material in the London (NHM) and Manchester Museums, and it is possible that there may be Irish *mutator* there, but there is as yet no available evidence that *E. mutator* was recorded from Killarney.

### ***Euplectus punctatus* Mulsant, 1861**

The County Kerry record for *Euplectus punctatus*, in Pearce (1957), was doubted as reliable by Pearce (1974). The Power (1878) Kerry record, cited in Alexander and Anderson (2012), appears to be an error, as Power (1878) does not mention *Euplectus*. However, a single 1950 Bullock male specimen from Torc (in the National Park) was determined as *E. punctatus* (see Plate 1). It was standing over the '*E. bescidicus*' label. *E. punctatus* sensu lato has been recently split into two species, *punctatus* sensu stricto and *tholini* (Guillebeau, 1888).

According to Alexander and Anderson (2012), *E. punctatus* is primarily a relict species of old growth forest, so the Torc record is ecologically significant for the woodland in Killarney National Park. The distribution of *punctatus* is more northerly in Europe and Asia, occurring in Finland, Norway, northern Russia and Siberia, where *tholini* is not recorded (Schülke and Smetana, 2015). This is also reflected in the British distribution of the two species, with *punctatus* recorded locally from the Scottish Highlands and England, while *tholini* has a more eastern distribution in England only (Johnson, 1977; National Biodiversity Database, 2022).

Although Koch (1989) stated that *E. tholini* occurs in pine (*Pinus* spp), and *E. punctatus* is found in a range of broadleaf trees, the habitat preference of this species is somewhat ambiguous. Johnson (1977) originally recorded *punctatus* from old Caledonian pine forest in Scotland, although he noted that "some" of his *punctatus* specimens were from oak and beech at the edge of the pine forest. Hjältén *et al.* (2017) recorded *punctatus* in large numbers (n>100) in window traps in a Swedish forest dominated by Norway spruce (*Picea abies*) and Scots pine (*Pinus sylvestris*) with lesser cover of birch (*Betula* spp) and aspen (*Populus tremula*). Bekchiev (2011) recorded it from under bark of both *P. abies* (n=2) and *P. sylvestris* (n=1).

The Torc area was extensively planted with Norway spruce (*Picea abies*) during the twentieth century, with many mature and regenerating trees currently present in the Torc woodland. For *Euplectus punctatus*, the question arises as to the importance of this non-native

tree to its survival (The possibility of *punctatus* having been imported into Ireland with spruce plants can be dismissed, as Norway spruce was imported as seed (Jansen, Konrad and Geburek, 2017)). Norway spruce is unlikely to be important, however, for three reasons. Firstly, *E. punctatus* clearly occurs in many sites without spruce or pine, and in Killarney could have occurred in broadleaf woodland before spruce and pine planting (Scots pine was reintroduced to Killarney in the early nineteenth century (Roche, Mitchell and Waldren, 2009)). Secondly, *E. punctatus* disperses by flight, so would be expected to occur in small numbers in conifers, even if it only breeds in broadleaf trees. Thirdly, the species has been recorded from birch (e.g. Telnov and Kalniņš, 2003), which, even if not dominant, could have been the source of the large numbers recorded in window traps by Hjältén *et al.* (2017). Nevertheless, this question can only be definitively resolved by field data from the Torc area.

## Discussion

*Euplectus* beetles are often difficult to find, and it is a tribute to Edwin Bullock's proficiency as an entomologist that he found so many individuals (82) and species (6) near Killarney. Flight interception traps are probably now the best modern method of capturing these beetles for the more time-bound field entomologist.

The subset of *Euplectus* species which are saproxylic is typical of Killarney woodland biodiversity, being rich in species little known elsewhere in Ireland (*infirmus*, *piceus*, *punctatus*), but missing a suite of species recorded from woodlands in southern, central and eastern England (*bescidicus*, *bonvouloiri* Reitter, *brunneus* (Grimmer), *kirbii* Denny, *nanus* (Reichenbach), *tholini*). Given the monumental collecting effort by Bullock in the Killarney area over a half a century, it is nevertheless surprising that there is only a single record of *E. punctatus*. While this could suggest the importance of scenic Torc in providing a refuge for woodland while much of the Killarney woodlands were felled in the early nineteenth century, we must also remember that Bullock exchanged specimens widely, and further Bullock examples of this species from elsewhere in the National Park may exist in other British and even continental collections.

In the above records, we have included the numbers of specimens per decade for *E. piceus* (a predominantly woodland species) and *E. sanguineus* (a predominantly synanthropic species), as they show a noticeable lack of overlap, those of the former being mostly before the 1920's, and those of the latter being mostly after. This may be due as much to a change in Bullock's lifestyle (see Beirne, 1984), rather than an actual change in relative abundance of these two species. It may therefore be a sampling bias to bear in mind when interpreting his records in other taxa.

Finally, a technical point regarding identification. The 4<sup>th</sup>-6<sup>th</sup> sternites of males of several species have characteristic impressions, indentations or pits. These are described by Besuchet

(1974), and illustrated by Hansen (1968) for *E. karstenii* and *E. mutator*, but unfortunately have not been illustrated comprehensively for the genus (Raffray (1910) did illustrate these features for all species known at the time, but the figures are partly inaccurate and were even dismissed as ‘illusory’ by Jeannel (1950)). These ventral features are seen much more clearly in spirit (after rehydrating the mounted specimens), and, in some cases, this may be useful if it can avoid the necessity for dissection of old specimens.

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**PLATE 1.** ♂ *Euplectus punctatus* from Torc, Killarney, Ireland, showing fore-dorsum and aedeagus, from the E. F. Bullock Collection in the National Museum of Ireland. Photograph: Jervis Good.