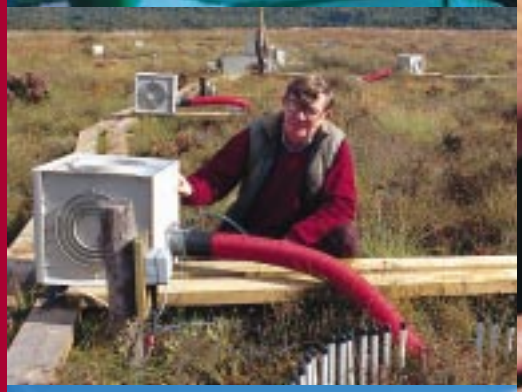
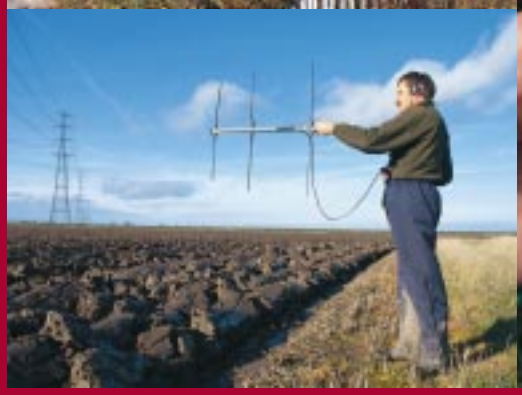
ENGLISH NATURE

Report Number
465

UK tachyine beetles (Coleoptera: Carabidae) with special reference to the status of *Tachys edmondsi* Moore

English Nature Research Reports





working today
for nature tomorrow

English Nature Research Reports

Number 465

UK tachyine beetles (Coleoptera: Carabidae) with special reference to the status of *Tachys edmondsi* Moore

Peter M. Hammond
The Natural History Museum, London

ISSN 0967-876X

Summary

‘Edmonds’ Ground Beetle’ is one of six tiny ground beetles (Coleoptera: Carabidae) of the genus *Tachys* (in the broad sense) known to be resident in the UK First described from the New Forest area in 1934, where it was collected in various years between 1912 and 1937, it has never been recorded from elsewhere in the UK or from any other country. In this latter respect it is unique amongst British Carabidae. Although one of several putatively endemic terrestrial macro-invertebrate species subject to fairly detailed appraisal by Hammond (1996), the status of *Tachys edmondsi* has remained “something of an enigma”. Hammond (l.c.) noted that, although the conditions in which the species had been found in the New Forest “do not immediately point to an introduction . . . this cannot be ruled out”. However, *Tachys edmondsi* continues to be listed, eg in the UK Biodiversity Action Plan, as an UK endemic species. To further assess its status and, in particular, to seek to clarify whether it owes its presence in the UK to introduction, perhaps from far afield, a thorough search of the literature and of the extensive collections of tachyine ground-beetles held in The Natural History Museum, London, was undertaken.

Examination of the hundreds of named species of Tachyina (ie members of the genus *Tachys* and related genera), of some thousands of named and un-named specimens of *Paratachys,* the subgenus (or genus) to which *Tachys edmondsi* proves to belong, and many published descriptions, uncovered no evidence that *T. edmondsi* has an extra-European origin. Indeed, all known taxa of the immediate species-group to which *T. edmondsi* turns out to belong appear to be native to the Palaearctic region and principally its western part. Unfortunately, current taxonomic understanding of this species-group, which includes two other British species – *Tachys bistriatus* and *Tachys micros* – is extremely poor. The investigation revealed much confusion in the naming of species, especially in the Mediterranean and neighbouring areas where many species of the group are found. There appear to be a number of as yet undescribed species in the group, several of which are represented in the collections of The Natural History Museum. A thorough taxonomic revision of the whole group is evidently needed but, equally clearly, this would be a major undertaking.

Despite these difficulties, evidence that *Tachys edmondsi* is native to the western part of the Palaearctic region and does, in fact, occur in parts of Western Europe other than Britain, did emerge from the investigation. First, previously un-named specimens – from Spain and from Morocco – provisionally regarded as belonging to this species were located in The Natural History Museum collections. Second, if UK specimens of *T. edmondsi* are run through various published keys to members of its species-group that occur in France, Spain and Morocco, they run to other *named* taxa that have been described from those countries. Third, close examination of the original and other descriptions of various of these exotic species reveals few or no substantial points of difference with *T. edmondsi*. Three named taxa, in particular, present themselves as likely candidates to belong to the same species as *T. edmondsi*. These are *Tachys kabylianus,* described by Puel (1935) from Algeria and (apparently) France, *Eotachys bistriatus* ssp. *obtusiusculus,* described by Jeannel (1941) from France, and *Eotachys otini*, described by Antoine (1943) from Morocco. The type material of these and of other taxa that are possibly synonymous with *T. edmondsi* is deposited in a range of European museum collections, and not all of the material necessary for an appraisal has been gathered together as yet. Once fully assembled, this material will be carefully studied. There is a reasonable expectation that *T. edmondsi* will then be confirmed as a species present in countries other than the UK. It is also likely that *T. edmondsi*, a name dating from

1956, will prove to be preoccupied by a name (eg one or more of those listed above) of greater age. In line with current European and North American usage, the species should also be referred to the genus *Paratachys* Casey.

Paratachys edmondsi thus appears to be a species native to the UK that on the evidence emerging, as well as *a priori* (see discussion in Hammond, 1996), is *not* endemic to the British Isles. However, the condition of its flight wings suggests that it may be a poor disperser, collection data suggest that it may be extremely fastidious in its habitat requirements, and its rarity in collections suggests that it may be very patchily distributed throughout its range. On present evidence this may encompass parts of France, Spain, Morocco, Algeria and perhaps some neighbouring countries, but is unlikely to extend to Central Europe or, apart from the UK, to Northern Europe. Whatever the precise situation, UK populations are probably of a relict type and they may well be quite distant from the nearest extant populations on the European mainland. Against this background, a high UK conservation status continues to be appropriate for the species. The first task, after an interval of more than 60 years since the species was last collected in the UK, remains to rediscover *T. edmondsi* in its (former) New Forest haunts.

In the course of work on the status of *Paratachys edmondsi* a number of new findings were made with respect to the taxonomy, nomenclature and distribution of other species of Tachyina. A summary of those findings that are of particular relevance to the UK fauna are included in this report. These include a record of a single individual found at Bookham Common, Surrey, of a species (probably *Paratachys pallidulus* (Antoine)) not previously known from the British Isles. Recommendations for the future with respect to (1) nomenclature of British species of Tachyina, and (2) rarity/threat statuses appropriate for each of them, are also included.

Contents

1. Background

Tachys edmondsi ("Edmonds' Ground Beetle") is listed in the UK Biodiversity Action Plan as a supposed UK endemic species. It is known from relatively few specimens, all collected from a small area of the New Forest bogs. Last known to have been found in 1937, repeated searches over recent years have failed to relocate it. In a recent English Nature contracted report (Hammond, 1996), it was suggested that *Tachys edmondsi* is unlikely to be endemic in the UK, and that it could be a temporarily established non-indigenous species. To check the latter possibility, a comprehensive search among *Tachys* species from other parts of the world would be needed. Should *Tachys edmondsi* turn out to be an immigrant from far afield any allocation of resources to its conservation would not be justified. Against this background, I was commissioned to carry out taxonomic investigations to clarify the status of *Tachys edmondsi*. To this end, all possible close relatives and species of similar appearance to *T. edmondsi* were examined, using the collections of named and un-named ground beetles at The Natural History Museum, London, and all relevant literature on *Tachys* sensu lato scrutinised. In the course of this work information on the status and distribution of other species of Tachyina known from the UK and nearby European countries was assembled and new findings on some of these made. Results are presented below.

2. Introduction

Members of the subtribe Tachyina (tribe Tachyini in many works) are among the smallest of ground beetles (Carabidae). Traditionally, most species of the subtribe have been referred to a single genus: *Tachys*. Recent classifications vary in the extent to which the old concept of *Tachys* is split. However, even relatively conservative classifications of the group now incorporate the recognition that at least several genera are involved. Consistency with the ranking of ground-beetle taxa generally adopted in the UK (which resembles that adopted in Scandinavia and North America), now entails referring the British species of Tachyina to at least two or as many as four genera. The latter arrangement, following the classification of genera proposed by Erwin (1974, etc.) is adopted here, as this reflects current Central European usage (Müller-Motzfeld, 1998). These genera, along with others not represented in Europe (see Erwin, 1974 etc.), are here regarded as comprising a group of subtribal rank, the Tachyina.

Four species of *Tachys* sensu lato (see Table 1) have been shown to be resident in the British Isles. However, two further species have been reported from the UK. One of these, *Tachys quadrisignatus*, has been found in Britain only once, in the 1860s, when a single individual was collected at South Shields, almost certainly the result of a chance introduction. The second, *Tachys bisulcatus,* was found, also at South Shields, in 1863. Although likely to have been introduced to the locality by human agency (possibly in ballast), a population of the species persisted there for at least a few years. There is no evidence of the occurrence of *T. bisulcatus* in Britain for some 130 years, but the establishment of the species here in due course (see below) cannot be ruled out. The number of native species of Tachyina present in the UK is thus comparable to that of other north European countries. For example, just two species of Tachyina are known from Denmark, three from southern Sweden and four from Fennoscandia as a whole, but as many as eight or nine in Germany (Lucht, 1987). Further to the south in Europe and in the Mediterranean region the fauna of Tachyina is substantially richer.

Table 1. Checklist and recorded status of British *Tachys* sensu lato species, as of 1999

1 = Joy (1932); 2 = Pope (1977); 3 = Hyman & Parsons (1992).

	1	2	3
bistriatus (Duftschmid, 1812)	local	+	Nb
****bisulcatus*** (Nicolai, 1822)	v. rare	Introduced	-
= *focki* (Hummel, 1822)			
edmondsi (Moore, 1956)	-	SH	RDB1
= *piceus* Edmonds, 1934 nec Dalla Torre, 1877			
micros (Fischer von Waldheim, 1828)	v. local	DT, SX	Na
= *gregarius* Chaudoir, 1846			
parvulus (Dejean, 1831)	v. rare	+	Nb
****quadrisignatus*** (Duftschmid, 1812)	-	Introduced	-
scutellaris Stephens, 1828	v. local	+	Na
walkerianus Sharp, 1913	Rare	SH, SR	RDB1

3. History of study of UK Tachyina (= *Tachys* sensu lato)

Despite their small size, restricted distribution and generally patchy occurrence in the British Isles, two species of Tachyina were known to the earliest British entomologists to work intensively with the beetle fauna. J.F. Stephens (1828) described *Tachys scutellaris* from England, while both Curtis (1824) and Stephens, the latter twice over! (1828, 1839) described as new the species that Duftschmid in Austria had first named some years previously as *Elaphrus bistriatus* (Duftschmid, 1812). Waterhouse (1858) listed just these same two species under *Tachys* in his catalogue of British Coleoptera, along with a third species that is now placed in *Bembidion*.

By the time of Fowler's (1887) comprehensive treatment of the British fauna, three further species had been reported from the UK Thomas Bold discovered a population of *Tachys bisulcatus* (Nicolai) (then referred to as *T. fockii* (Hummel)) on the beach at South Shields in 1863, and also detected a single individual of *Tachys quadrisignatus* (Duftschmid) at the same locality. Both species are likely to have been introduced accidentally from Continental Europe. No further British records for *T. bisignatus* have been forthcoming, but the population of *T. bisulcatus* appears to have persisted at South Shields for a few years. *Tachys parvulus* (Dejean) was first reported from the British Isles by Smedley who found a single individual at Wallasey, Cheshire in 1884 (Fowler, 1887).

A fourth native British species – *Tachys walkerianus* – was described on the basis of specimens from the New Forest by Sharp (1913), and a fifth – *Tachys micros* Fischer von Waldheim was recorded from Britain for the first time by Allen & Nicholson (1924) who discovered the species in numbers near Charmouth, Dorset. Finally, a sixth apparently native British species was recognised by Edmonds (1934), who described *Tachys piceus* new on the basis of specimens from a locality in the New Forest where *T. walkerianus* was also present. Edmonds' name was later found to be preoccupied and the species was renamed *Tachys edmondsi* by Moore (1956).

Since 1934, further locality data with respect to the British species of Tachyina have been assembled, culminating in the status reports provided for all six native British species of Tachyina by Hyman & Parsons (1992), and the distribution summaries given in Luff's (1998)

atlas. All six of the native British species are currently regarded as of at least Nationally Notable (Nb) status, and one – *Tachys edmondsi* – remains unknown outside of the UK or indeed the New Forest. The status of this species was considered by Hammond (1996), but remains equivocal and is the main focus of the present report.

4. Current classification and nimenclature of Tachyina with special reference to western Palaearctic species

In order to make a search for species similar to or that might be identical with *Tachys edmondsi* efficient, it proved necessary to examine current ideas on the phylogeny of tachyine ground-beetles and their classification with some thoroughness. As a result it proved possible to rule out the possibility of the identity of many species currently standing as *Tachys* or in other genera of Tachyina, with *Tachys edmondsi* or, in many instances, any other known British species of Tachyina.

While engaged in this work, a number of findings were made that proved to be of some relevance to other British species of *Tachys* sensu lato, or to the way in which the species of Tachyina might best be listed and categorised in conservation terms within the UK Taxonomic and nomenclatural findings that are not of direct relevance to the UK fauna were also made. Only the results most relevant to the British fauna are summarised here, but others will be included in one of the contributions (see below) that will be submitted for publication at a later date.

4.1 Classification and nomenclature above the species level

Recent studies of the taxonomy and phylogeny of the Tachyina centre on the work of Erwin (1971, 1972, 1973, 1974a, 1974b, 1975, 1978) whose revisional studies of the group have been planned to embrace the world fauna as a whole. To date, these have dealt with many of the outstanding problems of classification and nomenclature at genus-group level, the allocation of all described New World species to genera (Erwin, 1974b), and revisions of several individual genera. However, all of the generic revisions treat groups confined to the Neotropical and Australasian regions (Erwin, 1972, 1973, 1974a, 1974b, 1978), except for that of the genus *Tachyta* (Erwin, 1975) which includes Old World species.

Within the Bembidiini, the Tachyina are best characterised by the possession of biperforate procoxal cavities, a complete sutural stria, and a recurrent groove on the elytral apex, all of which are absent in *Bembidion* and its close allies according to Erwin (1973: 37). However, the position of a few genera, including one represented in Europe – *Ocys* – remains to be resolved. No firm conclusions with respect to the internal phylogeny of the Tachyina as a whole have so far been forthcoming, but it is evident from the work of Erwin and others, that the genera employed by Erwin (1974b, etc.) largely represent monophyletic groups, and that some of the more obvious groupings of genera may also be monophyla. Leaving to one side the few genera that are of doubtful placement within the tribe Bembidiini, but may eventually find placement within the Tachyina, three principal groupings of genera (using those recognised by Erwin) are evident, as follows:

1. Those in which the protibia is truncate distally (a presumed primitive character in Tachyina), rather than notched (see fig. 1):

   Xystosomus, Mioptachys, Inpa, one Australian species of **'*Tachys*'**.

2. Those in which the protibia is notched distally (see fig. 1), but lack mental foveae:

   Tachyta, Costitachys, Elaphropus, Lymnastis, Straneoites, Micratopus.

3. Those in which the protibia is notched distally, and which possess a pair of large foveae on the mentum (see fig. 1):

   Tachys, Paratachys, Polyderis, Porotachys, Pericompsus, Liotachys, Meotachys.

Of these three groups, the most likely to be in major part monophyletic is the third, as there appears to be no clear evidence that the mental foveae characteristic of the group are absent in any other Tachyina because of loss.

Of the genera listed in Table 2 (below), *Lymnastis* and *Tachyta* have been widely recognised as distinct genera for many years, while *Xystosomus*, *Mioptachys* (= *Tachymenis* auctt.) have also been recognised by some earlier authors. However, except in the works of notoriously "splitting" authors such as Jeannel (1941, etc.), few other genera have been recognised in Europe until recently. For example, Freude (1976), Lucht (1987) and Lohse & Lucht (1989) all maintain *Tachys* (with various subgenera) as the sole genus, apart from *Lymnastis* and *Tachyta,* for Central European Tachyina. However, the Erwin system (Table 2) has now been adopted in the most recent works on the Central European fauna (eg Lucht & Klausnitzer, 1998). Other recent European usages have been varied. For example, Kryzhanovskij (1970) employs a 'hybrid ' system in which *Eotachys* and *Polyderis* are referred to *Tachys* as subgenera, but *Porotachys, Elaphropus, Tachyura* and *Tachyta* stand as good genera.

Kryzhanovskij *et al* (1995) use much the same arrangement, except that *Polyderis* is also used as a good genus. Bruneau de Miré (1963), largely following Antoine (1955), uses a broad definition of *Polyderis* and includes in it some species (eg *algiricus*) formerly referred to *Eotachys*. A few genera, mostly ones described from Africa by Basilewsky (eg *Afrotachys* Basilewsky 1958, *Merotachys* Basilewsky 1965), remain to be evaluated, but are likely to fall as synonyms.

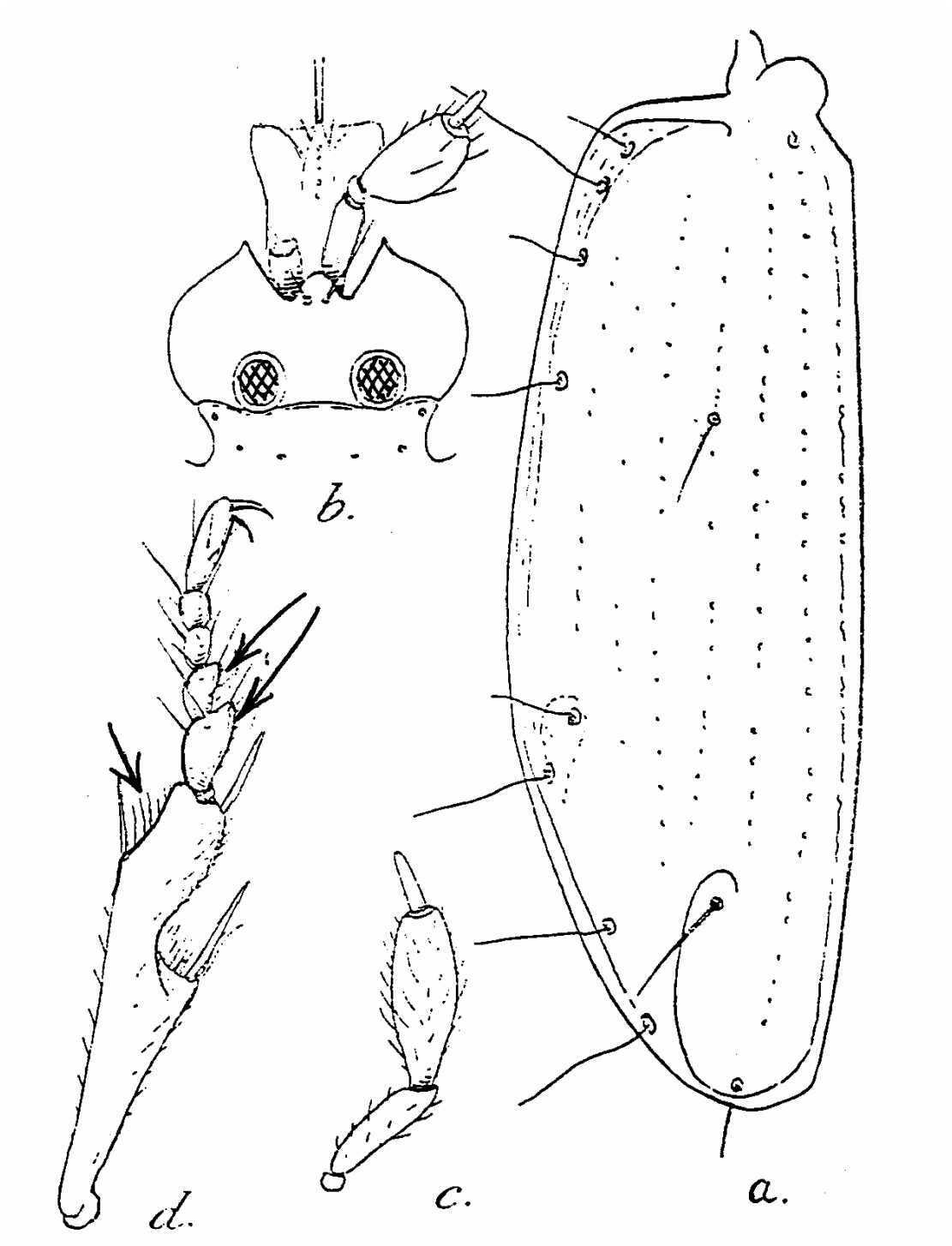


Figure 1 ***Paratachys bistriatus*** **(Duftschmid): (a) elytra showing recurved stria and arrangement of pores, (b) mentum showing foveae (cross-hatched), (c) maxillary palpi, (d) male anterior leg showing distally notched tibia (arrowed) and asymmetrically expanded basal tarsomeres (arrowed) (after Jeannel, 1941).**

Table 2. Currently recognised genera of extant Tachyina

Those marked with an asterisk are represented by species that occur in Europe. Currently accepted valid names are in bold type.

GROUP 1
Xystosomus Schaum 1863
Mioptachys Bates 1882
Tachymenis Motschulsky 1862, not Weigmann 1835
Inpa Erwin 1978

GROUP 2
****Tachyta*** Kirby 1837
*sg. ***Tachyta*** s.str.
*sg. ***Paratachyta*** Erwin
Costitachys Erwin 1974
****Elaphropus*** Motschulsky 1839
*sg. ***Elaphropus*** s.str
*sg. ***Tachyura*** Motschulsky 1862
Amaurotachys Jeannel 1946
sg. ***Tachyphanes*** Jeannel 1946
sg. ***Tachylopha*** Motschulsky 1862
sg. ***Barytachys*** Chaudoir 1868
*sg. ***Sphaerotachys*** G. Müller 1926
Trepanotachys Alluaud 1933
sg. ***Anomotachys*** Jeannel 1946
sg. ***Physotachys*** Jeannel 1946
Micratopus Casey 1918
Blemus LeConte 1848,not Stephens
****Lymnastis*** Motschulsky 1862
Zuphiolum Fairmaire 1896
Paralimnastis Jeannel 1932
Straneoites Basilewsky 1947

GROUP 3
****Paratachys*** Casey 1918
Eotachys Jeannel 1941
Macrotachys Kult 1961
****Polyderis*** Motschulsky 1862
Microtachys Casey 1918
Neotachys Kult 1961
Polyderidius Jeannel 1962
****Tachys*** Stephens 1829
Isotachys Casey 1918
Liotachys Bates 1871
****Porotachys*** Netolitsky 1914
Meotachys Erwin 1974
Pericompsus LeConte 1861
sg. ***Pericompsus*** s.str.
Tachysops Casey 1918
Tachysalia Casey 1918
Leiotachys Jeannel 1962
Leptotachys Jeannel, 1962
sg. ***Eidocompsus*** Erwin 1974

4.2 Taxonomy and nomenclature of European *Tachys* and related genera

From a New World perspective, employing the characters used in Erwin's (1974b, 1978, etc.) keys, *Tachys*, *Paratachys* and other genera listed under Group 3 in Table 2 (above), are relatively distinct. However, some Old World species that I have examined suggest that the limits of *Tachys* sensu stricto, *Paratachys*, *Polyderis* and *Porotachys* may be less clear cut. Eventually, a system of ranking all or some of the latter three genera as subgenera of *Tachys* may prove to have merit. However, for the moment all of them are employed as good genera. Using the genera listed in Table 2 (above) a revised list of British Tachyina is provided here (Table 3). Although *Eotachys* Jeannel 1941 has continued to be used by some European authors as a good genus, it was pointed out by Erwin (1971) that Jeannel's concept corresponds well with *Paratachys* Casey 1918, the last-mentioned name taking precedence.

Table 3. Current nomenclature and status of species of Tachyina recorded from the UK An asterisk indicates species not established or of uncertain status in the UK

TACHYS Stephens 1829
scutellaris* Stephens *1829

PARATACHYS Casey 1918
EOTACHYS Jeannel 1941
***bistriatus* (Duftschmid**
***edmondsi* (Moore 1956)**
piceus (Edmonds 1934), not (Dalla Torre 1877)
? obtusiusculus (Jeannel 1941)
? otini (Antoine 1943)
***micros* (Fischer von Waldheim, 18)**
****pallidulus* (Antoine 1943)**
POROTACHYS Netolitsky 1914
****bisulcatus*** (Nicolai 1822)

ELAPHROPUS Motschulsky 1839
sg. **TACHYURA Motschulsky 1862**
parvulus (Dejean 1831)
****quadrisignatus*** (Duftschmid 1812)
walkerianus (Sharp, 1913)
dubius (Mateu, 19530)

4.3 Species identification in the genus *Paratachys* Casey

In general, species identification in *Paratachys* is not easy. Erwin (1974b) claims to have seen some 300 New World species, most of which are undescribed. Many Old World species also await description but, at the same time, there is little doubt that as yet undetected synonymy is to be found among the species referable to *Paratachys* (see Appendix 1).

Characters that appear to be useful for description of *Paratachys* species include size, colour, size and shape of eyes, the extent to which various body parts are convex or depressed, form of pronotum, length and proportions of antennomeres, and the length and form of tarsomeres. The more basad protarsomeres of male *Paratachys* are generally asymmetrically expanded (see fig. 1d). The extent of this expansion varies considerably and provides some useful species characters. Although often extremely fine and, on the pronotum and elytra at least, very transverse, variation in surface microsculpture also provides reliable characters for the separation of some species of similar general appearance. Flight wing development is variable in *Paratachys*, with some species polymorphic in this respect. With sufficient material available for wing condition to be properly evaluated, this also provides useful diagnostic characters. Finally, male genitalic features are potentially of the greatest value for species separation, but have been employed only occasionally and somewhat uncritically to date (see fig. 2). The form of the internal ‘armature’ of the median lobe is likely to be particularly diagnostic, but this needs to be studied carefully and in a consistent manner.

The British species of *Paratachys* are by no means easy to distinguish. Most specimens of *P. micros* may be picked out on their light colour, but the characters of pronotal shape given in many keys are easy to misinterpret (see Lindroth, 1974). However, the form of the pronotum does differ consistently in detail between species. In *P. micros* the pronotum as a whole is

flatter, the sides are distinctly sinuate in the posterior half, and the hind angles are relatively sharp. In *P. edmondsi* there is a hint of sinuation in front of the hind angles. *P. bistriatus* is unique among the British species in the way in which the narrow explanate border of the pronotum continues backwards almost to its posterior margin. This border stops well short of the hind margin in *P. edmondsi, P. micros* and *P. pallidulus*. Apart from its large size (see fig. 3), the latter species differs from other British *Paratachys*, and from *P. micros* in particular, by the shape of the posterior angles of the pronotum, which are blunt and effaced. Surface microsculpture is also useful for identification, especially if reliably named specimens are available for comparison. The sculpture of pronotum and elytra is finest and closest in *P. micros* and coarsest in *P. edmondsi*. Among the British species, overall body size is smallest in *P. edmondsi* and largest on average in *P. micros* (fig. 3). *P. bistriatus*, however, is rather variable in size and widely overlaps both *P. micros* and *P. edmondsi* in this respect (fig. 3).

5. Identity and status of *Paratachys edmondsi* (Moore)

This species was first described in 1934, as *Tachys piceus* (a name later found to be preoccupied) by T. Edmonds on the basis of eight specimens from the New Forest, Hampshire, UK. All of these were obtained from *Sphagnum* in one boggy area of the Forest, where the presence of this tachyine beetle, passed over until then as a variant of *Tachys bistriatus*, had been known for some years. Never since reported from other countries nor elsewhere in the UK, the status of the species was addressed by Hammond (1996), who confirmed earlier views that *T. edmondsi* was indeed distinct from *T. bistriatus*, but left its status unresolved, and the following questions in particular unanswered. Is *Tachys edmondsi* native to the UK? Does *Tachys edmondsi* occur beyond the shores of the British Isles?

The search among described species of Tachyina described above revealed no evidence that *Tachys edmondsi* (hereafter referred to as *Paratachys edmondsi*) might have been introduced to Britain from far afield. With one exception, *Paratachys potomaci* Erwin (see below), none of the numerous described (see Appendix 1) and undescribed species of *Paratachys* or closely related genera examined from continents other than Europe at all closely resembled *P. edmondsi*. On the other hand, a number of described and some probably as yet undescribed species bearing relatively close resemblance to *P. edmondsi* are to be found in the western part of the Palaearctic region, including Europe, with the greatest number of these in the Mediterranean area. This group of species, loosely referred to here as the '*bistriatus*-group', is badly in need of revision. Close study of material in the collections of The Natural History Museum revealed considerable confusion with respect to species identification. For example, named series of both *Paratachys bistriatus* (Duftschmid) and *Paratachys micros* (Fischer von Waldheim) proved to include at least six or seven species each, while previously unidentified material included yet more species of the *bistriatus*-group. The lists of synonyms (see Appendix 1) currently attributed to 'well-known' *Paratachys* species such as *P. bistriatus*, *P. micros* and *P. fulvicollis* are also likely to prove incorrect in some instances. Also, not all of the currently accepted names for European species, notably *Paratachys micros* - first described from the Caucasus, are sure to be appropriate.

However, close study of UK material of *P. edmondsi* revealed that this species exhibits a series of features *not* found in most other described or undescribed *Paratachys* of the *bistriatus*-group. These features include: small size, small eyes, *relatively* coarse sculpture of the upper surface, and reduced flight wings. Restricting the search for *P. edmondsi* to

described western Palaearctic species that possessed all or most of these features produced a short list of possible candidates.

First, the description of Jeannel's (1941) new taxon *Eotachys bistriatus* ssp. *obtusiusculus* (overlooked by Hammond (1996) as it was not listed or keyed out as a full species) fits *P. edmondsi* extremely well. Jeannel (l.c.) referred specimens of what he called a 'dwarf race' (of *bistriatus*) of dark colour and narrow form, with small eyes and flight wings absent from the Forêt de Sorède, Pyrenées-Orientales to his new subspecies. Jeannel somewhat complicated the issue by noting that Puel's (1935) material of *Paratachys kabylianus* from Ria (also in the French Pyrenees) belonged to the same species, while opining that the type of *P. kabylianus* (from Algeria) belonged to a species of *Tachyura*. Finally, Jeannel suggested that specimens described by Puel (l.c.) as perhaps a form of *P. bistriatus* that had been collected by Chobaut from Mont Ventoux also belonged 'sans doute' to *obtusiusculus*.

Second, recourse to Puel's (1935) discussion of members of the'*bistriatus*-group', reveals that his description of *Tachys kabylianus* does not support Jeannel's contention that Puel's original material of the species from Algeria (39 specimens in all) belong to *Tachyura*. Indeed, it remains difficult to see how Jeannel reached this conclusion; Antoine (1955) later expressly refers *T. kabylianus* to *Eotachys* (ie *Paratachys*) on the basis of examination of original Puel material of the species. Most of the diagnostic features listed by Puel for his *T. kabylianus* (including small eyes and flight wings rudimentary) fit *P. edmondsi* well, although no difference in size from *Paratachys bistriatus* is mentioned by him. Incidentally, but for no particular stated reason, Puel (l.c., p. 7) expressed uncertainty about the correctness of the locality data associated with the single specimen from the French Pyrenees that he included under *T. kabylianus*. The 'race' of *Paratachys bistriatus* from Mont Ventoux discussed by Puel (l.c., p. 8) and remarked upon by Jeannel (see above) does indeed fit *P. edmondsi* very well. The 'enormous quantity' of this 'race' collected by A. Chobaut from moles' nests in February 1919 are described by Puel as being smaller than typical *P. bistriatus*, with smaller eyes and shorter antennal segments. Finally, with respect to *P. kabylianus*, on the interpretation of this species made by Antoine (1955) and followed by others, this taxon shares with *P. edmondsi* one further feature that appears to distinguish it from *P. bistriatus* and many other species of its group, namely bisetose (fig. 2c, 2d, 2f) rather than trisetose (fig. 2a, 2b, 2e, 2g, 2h) right parameres of the male genitalia. Antoine (l.c.), however, equates *P. kabylianus* with Jeannel's (1941) incorrect interpretation of *Polyderis algiricus* (Lucas), at least in part, rather than to Jeannel's *P. bistriatus* ssp. *obtusiusculus*. On the basis of Antoine's (1955) comment that French (as opposed to Algerian) specimens referred to *T. algiricus* by Jeannel (1941) were not *P. kabylianus* (nor the true *algiricus* of Lucas) but probably a new species, Bonadona (1971, p. 80) provides a "new name" for 'French *algiricus*' sensu Jeannel (1941). This 'new name' – *Tachys jeanneli* - which is not a replacement name for a preoccupied homonym, lacks any accompanying description or reference to any unambiguous diagnosis, so is probably not available. In any case, the name is preoccupied by an earlier *Tachys jeanneli*.

Third, the original and later descriptions of *Tachys (Eotachys) otini* provided by Antoine (1943 and 1955) indicate that this species is extremely similar to if not identical with *P. edmondsi*. The small size, small eyes, microptery, and the form of the male genitalia (fig. 2d and 2f), as well as other details are very suggestive of *P. edmondsi*. Antoine (1955) records the species only from the Middle Atlas of Morocco, and supposes that it may be endemic to this area.

Finally, at least one additional species, described as *Eotachys vandeli* by Mateu & Colas (1954) possesses some of the unusual features of *P. edmondsi*, namely smallish eyes as compared with *P. bistriatus*, and bisetose right parameres of the male genitalia. However, Mateu & Colas describe *E. vandeli* as constantly full-winged, note that it is larger than both *P. otini* and *P. kabylianus*, and give other diagnostic features, for example shape of pronotum, that appear not to fit *P. edmondsi*.

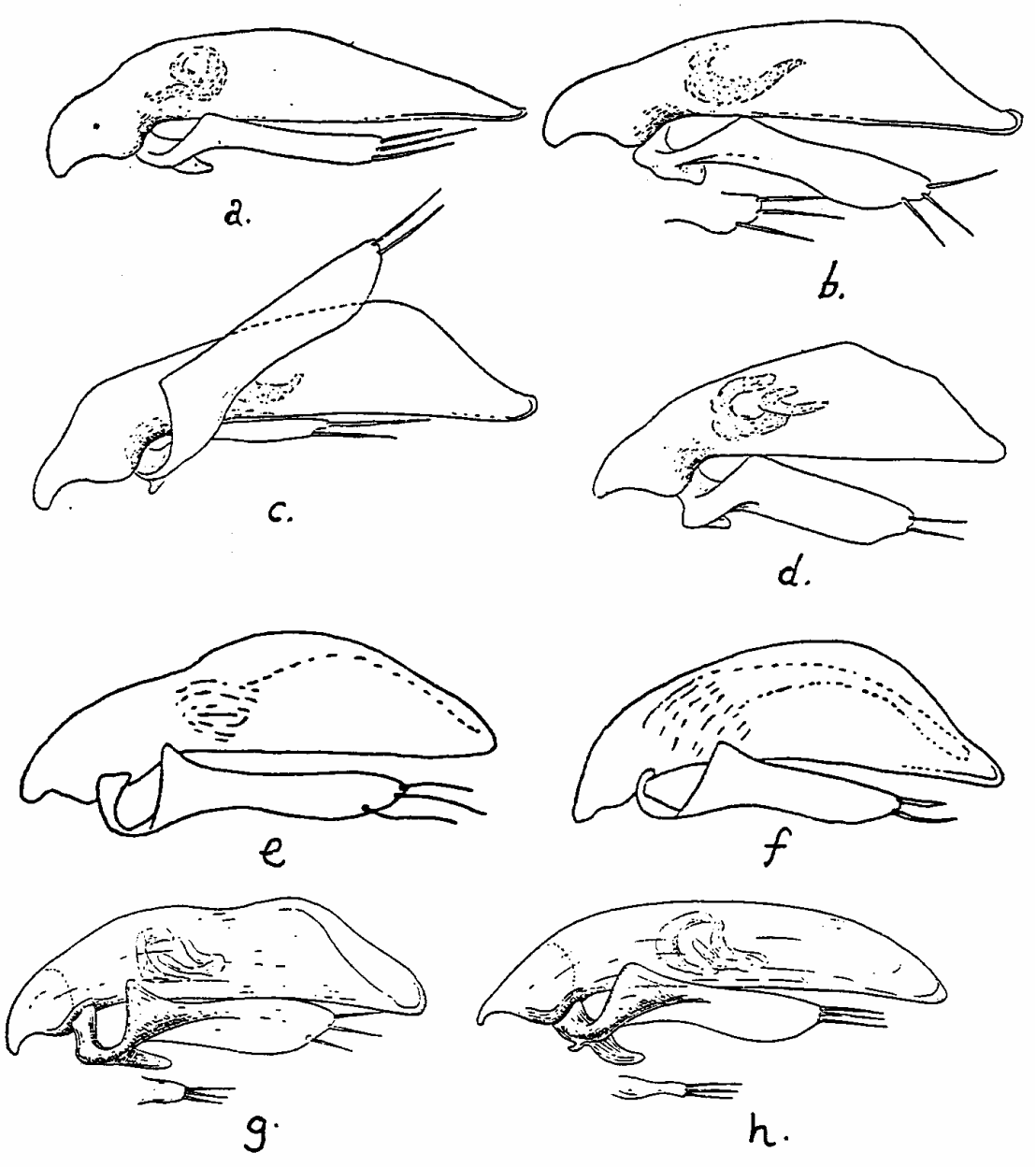


Figure 2 Male genitalia of *Paratachys* of the '*bistriatus*-group', (a) *P. elongatulus* (Dejean), (b) *P. pallidulus* (Antoine), (c) *P. kabylianus* (Puel), (d) *P. otini* (Antoine), (e and g) *P. bistriatus* (Duftschmid), (f) *P. edmondsi* (Moore), (h) *P. micros* (Fischer von Waldheim); a-d after Antoine (1955), e-f after Moore (1956), g-h after Jeannel (1941).

Various previously unidentified specimens of the *bistriatus*-group in The Natural History Museum, all from localities in Spain and North Africa agree in general terms with published descriptions of *Paratachys vandeli*. These specimens, much larger and with a different form of pronotum to those of *P. edmondsi*, clearly belong to several different species. Some may belong to *P. vandeli*, and others that are brachypterous may be referable to *P. kabylianus*.

No original material of any of the taxa discussed immediately above, except for *P. edmondsi* itself, has yet been available for study, but I have examined some specimens of *Paratachys* in the NHM collections that to varying degrees approach British *P. edmondsi*. Three in particular – namely two old specimens from 'Spain' without further locality data, one from Faro, Portugal, and one from Oued Zade (70 km south of Ifrane) in Morocco - may be conspecific with *P. edmondsi*. The Moroccan specimen agrees well with the original description of *P. otini* (Antoine). However, all three specimens differ in small details of proportions and surface sculpture from British material of *P. edmondsi*, and final judgement on their identity is reserved until material from intervening localities in France etc. has been examined.

The evidence gathered from examination of available specimens and from careful study of relevant descriptions thus suggests that *P. edmondsi* probably does occur in some western parts of Continental Europe and also, perhaps in the more western parts of North Africa.

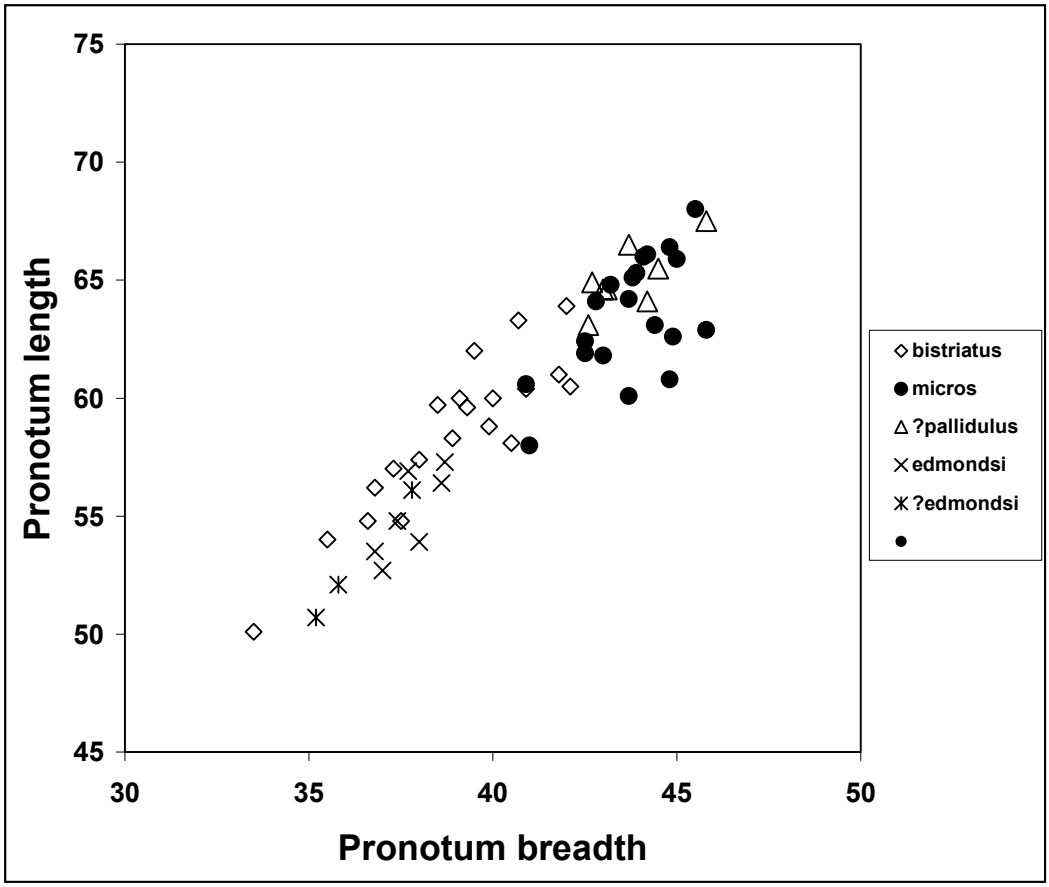


Figure 3 Pronotal dimensions of Paratachys species.

All individuals labelled as *P. bistriatus, P. micros* and *P. edmondsi* are from the UK Those labelled as '*?edmondsi'* are from Spain/ Morocco, as are all but one of those labelled as '*?pallidulus*'.

6. Distribution and biology of the species of Tachyina recorded from the UK and neighbouring countries

For most of the species of Tachyina found in the UK, the most basic life history, phenology, habitat affiliation and geographical distribution data are wanting or unreliable. The western Palaearctic species (see above) of most tachyine genera are badly in need of revision, and many (in the south probably *most)* published records are likely to be unreliable. Recognising the difficulties of accurate identification, some recent European works (eg Trautner, 1987) make no attempt to deal with individual species of Tachyina at all. Against this background, a brief but critical review of data available for each of the species known to have occurred (and some that might occur) in Britain is given below, emphasising data on occurrences of species in the British Isles. No species of Tachyina has been reported from Ireland.

***Tachys scutellaris* Stephens**

The limits of the distribution of this species to the east and southeast are uncertain, as several related species that have been much confused with *T. scutellaris* are to be found in these regions (see Schatzmayr & Koch, 1934; Antoine, 1955; etc.).

Figure 4 European distribution of *Tachys scutellaris* Stephens, after Turin *et al* (1977).

In Britain *T. scutellaris* is a very local species, restricted to rather few estuarine and coastal situations in the south. It is mainly associated with bare stretches of mud, often by saline lagoons or small pools in saltmarshes. There are old records for several British localities (see Appendix 2) not included in Luff's (1998) map. Koch (1989) describes *T. scutellaris* as a stenotypic, ripicolous and also halotolerant species, associated with brackish water, and notes that it occurs in saltpans inland as well as on the coast. Where found, adults of *T. scutellaris* may occur in some profusion.

***Paratachys bistriatus* (Duftschmid)**

Although restricted to the southern half of Britain and commonest on the south coast, this is probably the most frequently encountered species of Tachyina in the UK. Koch (1989) lists it as stenotopic, hygrophilous and ripicolous. It is associated with a fairly wide range of riparian situations and substrates, but is to be found mostly on bare sand, silt or clay. Records additional to those summarised by Luff (1998) include very recent unpublished ones for Windsor Great Park, SU97 (P.M. Hammond), and Bookham Common (M. Barclay, R.G. Booth). There are also several older 10 km square records (see Appendix 2) not included in Luff's (1998) map.

Figure 5 European distribution of *Paratachys bistriatus* (Duftschmid), after Turin *et al* (1977).

As is the case with other European *Paratachys*, the broader distribution of *P. bistriatus* is uncertain because of frequent confusion with relatives. There are no published North American records, but I have examined one specimen in the collections of The Natural

History Museum from Plummers Island, Maryland, that appears to belong to *P. bistriatus*. This specimen bears a name label, '*Paratachys potomaci* Erwin' (added by N.E. Stork), for which species Plummers Island is the type locality. Erwin's (1981) description of *P. potomaci* reveals no characters, apart possibly from the condition of its flight wings, that might distinguish it from *P. bistriatus*, and it seems probable that *P. potomaci* will prove to be identical with Duftschmid's species.

All references that I have seen to the condition of flight-wings in *Paratachys bistriatus,* except those that might well refer to *T. edmondsi* (eg Jeannel, 1941, in part) indicate that these are constantly fully developed (eg Lindroth, 1974). British specimens that I have examined appear to be full-winged for the main part, but some exhibit varying degrees of wing reduction. None, however, has wings reduced to the micropterous condition typical of most *P. edmondsi* and many *P. micros.*

***Paratachys edmondsi* (Moore)**

Most of the relevant data on the occurrence of *P. edmondsi* are summarised above in the general discussion of its status. The area of the New Forest where the species was found by the late A.M. Massee and probably also by earlier collectors is stated to be 'near Emery Down' by A.A. Allen (in litt.), ie Grid reference ca TQ 285085. The species receives no mention, as such, in the Central and Northern European literature, but British data suggest that it is highly stenotopic and apparently woodland associated. Only one of the British specimens that I have examined is full-winged.

***Paratachys micros* (Fischer von Waldheim)**

As in the case of *P. bistriatus*, the *true* extent of the species' geographical range (see fig. 6 – note that this includes records that may well be false) is difficult to gauge, as a number of closely related species have been confused with *P. micros*. In addition, it seems likely that not all of the names placed in the synonymy of *P. micros* (see Appendix 1) relate to the same species. *P. micros* itself was described from the Caucasus and may not, in fact, be the species to which this name is attached in Britain and North/Central Europe. Koch (1989) lists *P. micros* as a eurytopic, hygrophilous and ripicolous species, associated with sand and clay banks, mostly by streams and rivers. Although seemingly reliably reported from well inland in northern and Central Europe, many such records are for the banks of large rivers. Most Dutch records, for instance (see Turin *et al*, 1977) are for localities on the Rhine. All confirmed British records, on the other hand, are for coastal situations, on bare sand or clay, often at the foot of cliffs.

Not detected in Britain until 1924, when a thriving population of the species was discovered near Charmouth, Dorset (Allen, & Nicholson, 1924), there have been subsequent British records of *Paratachys micros* for only a handful of additional localities. All of the British material that I have examined comes from the general area of Charmouth (see Appendix 2). As *P. micros* seems to be quite frequently confused with pale-coloured *P. bistriatus*, records from other areas - South Hampshire, East Sussex and Caernarvonshire – (see Hyman & Parsons, 1992; Luff, 1998) would be worth checking. Certainly, a question mark hangs over Bedwell's (1943) record for Ecclesbourne Glen, East Sussex. Bedwell (l.c.) himself notes that his Ecclesbourne specimens were referred to *P. bistriatus* by E.A. Newbery, and a series of *Paratachys* from the same locality collected by H. Donisthorpe on 4 April 1894, although less well pigmented than usual for the species, prove to be *P. bistriatus* (see Appendix 2).

Varying opinions have been expressed with respect to the normal condition of flight-wings in this species. For example, Jeannel (1941) stated that females were full-winged while males appeared also to be apterous, whereas Lindroth (1974) contended that (in England) "both sexes have fully developed wings." A cursory examination of the British material in the collections of The Natural History Museum suggests that both of these authors are wrong. Wing dimorphism in British specimens seems to be pronounced, with wings either full or reduced to a tiny rudiment. More of the specimens that I have examined are micropterous than are full-winged, and more of the micropterous specimens are males than females. However, at least some males (as well as females) are apparently full-winged.

Figure 6 European distribution of *Paratachys micros* (Fischer von Waldheim), after Turin *et al* (1977).

Paratachys pallidulus (Antoine)

In the course of this investigation a British specimen of *Paratachys* provisionally identified as *P. micros* was kindly passed to me by M. Barclay. This was collected in 1997 at Bookham Common by I. Menzies, running on mud at W. Hollows Pond. The specimen, a callow female is coloured somewhat as typical *P. micros* but differs from that species and from teneral individuals of *P. bistriatus* in several respects. The antennae are longer and darker than in *P. micros*, and the specimen has finer surface sculpture and is larger than usual for *P. bistriatus*. The form of the pronotum, especially the hind angles which are blunt, differs in detail from both *P. micros* and *P. bistriatus*. The Bookham specimen does not fall out easily

in Jeannel's (1941) key to French species, but runs to *Eotachys pallidulus* in Antoine's (1955: 109) key to Moroccan Tachyina. The type locality for *P. pallidulus* (Antoine) is Casablanca and, by searching amongst unidentified material in the collections of The Natural History Museum, I have found specimens from nearby localities in Morocco, from Algeria and from Spain that I believe to be conspecific with the Bookham specimen and also match with Antoine's description. However, without an adequate revision of related taxa, including those currently standing in the synonymy of *P. micros*, there is no great certainty that *P. pallidulus* is the oldest available name for the species. I can think of no particular reason why this, apparently Mediterranean, species should be established in the UK.

***Porotachys bisulcatus* (Nicolai)**

Koch (1989) regards *P. bisulcatus* as a eurytopic species in terms of habitat breadth, and this would seem to be justified by the bionomic information associated with records for the species. Most are for damp and wooded areas, where *P. bisulcatus* has been found on the banks of water bodies, in litter of various types, moist sawdust, wood shavings, moist decayed wood, under bark, in litter of various types, compost and even in ants' nests. Koch (l.c.) describes its 'niche' as xylodetriticolous and phytodetriticolous, but the common element in habitat records for *P. bisulcatus* appears to be moisture, woodland and (often) dead wood.

Ødegaard (1999) has described how *P. bisulcatus* has spread from east to west in Nordic countries in the past few decades (see arrows on fig. 7), and now occupies much of Denmark as well as being found in southern Norway. This expansion appears to be associated with the species' predilection for a particular type of man-made habitat – heaps of damp, fermenting spruce bark – that are common around saw-mills.

P. bisulcatus is well established as a successful colonist in parts of North America. Lindroth (1966) considers the species to have been an early introduction to the east coast. Today it occurs widely in the north-eastern part of the continent from Quebec south to at least Pennsylvania (Lindroth, l.c.). There is a specimen collected by me in 1976 from a beaver house in the Gatineau Park, Quebec Province in the collections of The Natural History Museum.

The occurrence of *P. bisulcatus* in neighbouring parts of Europe and its recent colonisation history suggest that an eventual spread to the UK is a distinct possibility.

Figure 7 European distribution of *Porotachys bisulcatus* (Nicolai), after Turin *et al* (1977).

Elaphropus parvulus (Dejean)

The European distribution of *E. parvulus* is probably fairly well represented by the map of Turin *et al* (fig. 8), although the species has been confused with near relatives such as *E. curvimanus* Wollaston (see Jeanne, 1990), and it may well be absent from the more easterly parts of the Mediterranean.

The British history of the species, first discovered here in 1884, suggests that it may have extended the range of habitats that it occupies in Britain and, at the same time, become more generally distributed over the past 100 years. By the time of Fowler & Donisthorpe (1913) *E. parvulus* was still known from only five British localities, but Luff's (1998) atlas includes records for some twenty 10-km squares, scattered across Wales and England north to Lancashire. To these must be added a number of recent records, many of them arising from sampling of exposed riverine sediments (eg Hammond, 1998). Additional 10-km squares include SD97, SJ20, SJ41, SK18, SK19, SN57, SX87 and TQ28. However, as noted by Welch (1992), *E. parvulus* is able to take advantage of various man-made situations, typically in gardens, as long as what appear to be its basic requirements of moisture and gravel or stones on more or less bare soil are met. The species is clearly highly dispersive and able to colonise new habitats rapidly. For example, one year after the establishment of a wildlife garden at The Natural History Museum, London in the 1990s, *E. parvulus* was found to be present in an area of cobbles on mud at one end of a newly constructed pond (P.M. Hammond, unpublished). This picture of an essentially riparian species that is, however, a good disperser and colonist in early succession situations is reinforced by recent Continental

European records and its status as a successful colonist in western North America (see below). Koch (1989) lists it as a eurytopic, hygrophilous species that is also, in Central Europe at least, halotolerant. There is no suggestion that the species is anywhere threatened in Europe, and it is listed as not at risk in various conservation status reports, for example the Red List for South Germany (Trautner, 1992).

The history of this species' occurrence in North America where it appears to have become established first in or a little earlier than the 1940s in the Seattle area is summarised by LaBonte & Nelson (1998).

Figure 8 European distribution of *Elaphropus parvulus* (Dejean), after Turin *et al* (1977).

Elaphropus walkerianus (Sharp)

This species has been little reported from Continental Europe. Lucht's (1987) catalogue of Central European Coleoptera makes no mention of the species, but it is included in the later work of Lohse & Lucht (1989) where it is given as a woodland species known from England, France and Czechoslovakia. From Kult's (1953) description of specimens from Slovakia, records from the latter country seem likely to be reliable. In the most recent work to deal with *E. walkerianus* and its near relatives Jeanne (1990) records the species from North and Central Spain, as well as France (Alsace, Paris region, Centre and Pyrenees). *E. dubius* (Mateu, 1953), described (as a *Tachyura*) from the Sierra Nevada, Andalusia, Spain is placed as as a subspecies of *E. walkerianus* by Jeanne (l.c.), but examination of one of Mateu's specimens of *E. dubius* in the collections of The Natural History Museum, reveals no

significant point of difference with type material of *E. walkerianus* from the New Forest, England. Both British and Continental data (eg Jeannel, 1941; Muriaux, 1956; Schuler, 1964) support the view that *E. walkerianus* is a woodland species, mostly to be found in association with sphagnum beds. Reasonably enough on the evidence, (Koch, 1989) categorises *E. walkerianus* as a stenotopic woodland species.

Champion (1913) notes captures by him in the New Forest and that previous records for *E. parvulus* for the New Forest and for Horsell, Surrey by himself should be referred to *E. walkerianus.* However, the only Champion specimen standing under the name *walkerianus* in the BMNH collections (from Woking) belongs, in fact, to *E. parvulus.* With the difficulty of separating these two species in mind, the apparent stenotopy of *E. walkerianus* and the known ability of *E. parvulus* to colonise man-made habitats, Surrey records of *E. walkerianus* and that for Faversham in Kent (Williams, 1997) deserve reappraisal. One new British locality for the species – Cranborne (in Dorset but still in the New Forest area) is listed in Appendix 2.

***Elaphropus quadrisignatus* (Duftschmid)**

The geographical distribution of this species is particularly poorly understood because of confusion with related taxa, some of which have only recently been recognised (Jeanne, 1990). There are apparently reliable records, mostly from mountain regions, for France and Central Europe east to the Balkans and western Turkey (Jeanne, l.c.); records for southwest Europe (French Pyrenees, Spain, Italy, etc.) and for the Caucasus through to Turkestan are probably referable to other species. I have not examined the sole known British specimen recorded from South Shields, but this is worthy of re-examination, as it could belong to one of the very similar species that were formerly confused under *E. quadrisignatus*, eg *E. pallidicornis* Jeanne, known from southern France southwards to Morocco. Koch (1989) lists *E. quadrisignatus* as a eurytopic hygrophilous and ripicolous species, associated mainly with sandy banks of running water, where it may be found in debris. Neither *E. quadrisignatus* nor any of its very close relatives have been reported from Fennoscandia, nor from those parts of France, the Low Countries or Germany that border the Channel or North Sea. On these grounds, it seems to be an unlikely candidate to be or become a resident British species.

***Tachyta nana* (Gyllenhal)**

Categorised by Koch (1989) as a eurytopic, sylvicolous and corticolous species, *T. nana* is the only European species of Tachyina associated strictly with subcortical habitats. It is to be found under the bark of standing and fallen wood of a range of trees, including *Quercus* and *Fagus*, in various types of woodland. Some authors (eg Jeannel, 1941) stress an association with conifers, especially *Picea*.

Tachyta nana is highly distinctive among European Tachyina due to its depressed form, moderately large size (2.8 to 3.0 mm in length) and the uniformly isodiametric coarse sculpture of its upper surface, in addition to its (subcortical) habitat. The nominate subspecies (two others are known from North America) occurs across the breadth of the Palaearctic region in temperate woodland (Erwin, 1975). Its Continental European range is extensive and extends (fig. 9) more or less up to the Channel coast. Parts of southern Britain would appear to offer appropriate conditions for the species, so its eventual establishment here cannot be discounted.

Figure 9 European distribution of *Tachyta nana* (Gyllenhal), after Turin *et al* (1977).

7. Conclusions and recommendations

Although the North European species of Tachyina appear to be relatively well understood taxonomically (if not infrequently misidentified), this is by no means true of Southern Europe. Indeed, a full revision of western Palaearctic Tachyina is clearly long overview and, based on the investigations summarised above, may be expected to reveal a great deal of existing confusion with respect to the number and identities of species found in the Mediterranean and nearby areas. The present author has no intention of attempting to meet this need, but will complete the work necessary to establish the correct name for the species listed here still as *Paratachys edmondsi*, and to confirm that it is a native western Palaearctic species, but not one that is restricted in range to the UK Once this has been done or at least attempted, the intention is to submit these findings for publication. A second paper dealing with miscellaneous nomenclatural and taxonomic findings with respect to tachyines, some of which have no direct relevance to the British fauna, will also be prepared for publication in due course.

The principal conclusions stemming from the investigation reported on here is that there is no evidence that *Paratachys edmondsi* is anything other than a rare native species in the UK, that it appears to occur elsewhere in the western Palaearctic region, and that older names for this species are probably available. Despite the lack of recent success, further attempts to relocate *Tachys edmondsi* in the New Forest area of England would seem worthwhile.

Discussion of current systems of classifying tachyine beetles is included in this report and, stemming from these and recently published nomenclatural findings, recommendations are made with respect to the nomenclature of species appropriate for adoption in future UK checklists.

With respect to the species of Tachyina regarded here as vulnerable or endangered further efforts are needed to assemble available information (see Turin *et al*, 1991, and also various references in Hammond, 1997, and LaBonte & Nelson, 1998), and investigate further relevant aspects of their biology: distribution, habitat affiliation and fidelity, dispersal abilities, etc., as advocated by Hammond (1997) for scarce riparian species in the UK.

On present evidence, the scarcity/threat statuses currently accorded the various British species of Tachyina are in need of relatively little revision. Current categorisations of *Paratachys bistriatus* (Nb) and *Elaphropus walkerianus* (RDB1) seem to be appropriate, those of *Tachys scutellaris* (Na) and *Elaphropus parvulus* (Nb) may be a little high if anything, and those of *Paratachys edmondsi* (RDB3) and *P. micros* (Na) possibly too low. A more appropriate ranking for *P. edmondsi* might be RDB1 or RDB2, and for *P. micros* RDB3.

8. Acknowledgments

I am grateful to Jon Sadler for making unpublished information on *Elaphropus parvulus* available to me, and to Max Barclay for passing on to me for study the specimen of *Paratachys ?pallidulus* from Bookham Common, collected by Ian Menzies.

9. References

ALLEN, J.W. & NICHOLSON, G.W., 1924. *Tachys micros* Fisch. (*gregarius* Chaud.), an addition to the list of British Coleoptera. *Entomologist's Monthly Magazine,* **60**: 225.

ANDREWES, H.E. A revision of the Oriental species of the genus *Tachys*. *Annali Museo civico di Storia naturale di Genova,* **51**: 327-502.

ANTOINE, M., 1943. Notes d'entomologie marocaine. 50. Sur quelques carabiques marocains. *Bulletin de la Société des Sciences Naturelles du Maroc,* **23**: 43-55.

ANTOINE, M., 1955. Coléoptères carabiques du Maroc, Première Partie. *Memoires de la Société des Sciences Naturelles et Physiques du Maroc (N.S.),* **1**: 1-177.

BEDWELL, E.C., 1943. *Tachys micros* Fisch. (Col., Carabidae) in Sussex. *Entomologist's Monthly Magazine,* **79**: 208.

BOLD, T.J., 1865. Re-occurrence of *Bembidium Fockii. Entomologist's Monthly Magazine,* **2**: 14.

BONADONA, P., 1971. Catalogue des coléoptères de France. *Nouvelle Revue d'Entomologie* (suppl.), **1**: 1-177.

BRUNEAU DE MIRÉ, P., 1963. Les Tachyini africains de la collection du Muséum National d'Histoire naturelle de Paris. I. *Revue francaise d'Entomologie,* **31**: 243-256.

BRUNEAU DE MIRÉ, P., 1964. Les Tachyini africains de la collection du Muséum National d'Histoire naturelle de Paris. II. *Revue française d'Entomologie,* **30**: 70-100.

CHAMPION, G.C., 1913. Additional localities, &c., for various Coleoptera recently added to the British list. *Entomologist's Monthly Magazine,* **49**:176-177.

CASEY, T.L., 1918. A review of the North American Bembidiinae. *Memoirs on the Coleoptera,* **8**: 1-223. Lancaster, Pennsylvania.

COLLIER, M.J., 1988. 1987 Annual Exhbition. Imperial College, London SW7 – 24th October 1987. Coleoptera. *Entomologist's Record and Journal of Variation,* **95**: 213-215.

CSIKI, E., 1928. *Coleopterorum Catalogus, pars 97, Carabidae: Mormolycinae, Harpalinae I.* Berlin: W. Junk, pp. 1-226.

CURTIS, J., 1824. *British Entomology.* Vol. 2. London.

DARLINGTON, P.J., 1962. The carabid beetles of New Guinea, Part I: Cicindelinae, Carabinae, Harpalinae through Pterostichini. *Bulletin of the Museum of Comparative Zoology,* **126**: 321-564.

DUFTSCHMID, K., 1812. *Fauna Austriae*, Part 2. VIII + 311 pp. Linz; Leipzig.

EAGLES, T.R., 1952. Society. South London Entomological and Natural History Society: August 27th, 1953. *Entomologist's Monthly Magazine,* **88**: 251.

EDMONDS, T.H., 1934. A species of *Tachys* (Coleoptera, Carabidae) from the New Forest, new to science. *Entomologist's Monthly Magazine,* **70**: 7-9.

ERWIN, T.L., 1971. Fossil Tachyine beetles from Mexican and Baltic amber with notes on a new synonym of an extant group (Col. Carabidae). *Entomologica Scandinavica,* **2**: 233-236.

ERWIN, T.L., 1972. Two new genera of bembidiine carabid beetles from Australia and South America with notes on their phylogenetic and zoogeographic significance (Coleoptera). *Breviora,* **383**: 1-19.

ERWIN, T.L., 1973. Studies of the Subtribe Tachyina (Coleoptera: Carabidae: Bembidiini), Part I: A revision of the Neotropical genus *Xystosomus* Schaum. *Smithsonian Contributions to Zoology,* **140**: 1-39.

ERWIN, T.L., 1974a. Studies of the Subtribe Tachyina (Coleoptera: Carabidae: Bembidiini), Part II. A revision of the New World-Australian genus *Pericompsus* LeConte. *Smithsonian Contributions to Zoology,* **162**: 1-96.

ERWIN, T.L., 1974b. Studies of the Subtribe Tachyina (Coleoptera: Carabidae: Bembidiini), Supplement A: Lectotype designations for New World species, two new genera, and notes on generic concepts. *Proceedings of the Entomological Society of Washington,* **76**: 123-155.

ERWIN, T.L., 1975. Studies of the Subtribe Tachyina (Coleoptera: Carabidae: Bembidiini), Part III. Systematics, phylogeny, and zoogeography of the genus *Tachyta* Kirby. Smithsonian *Contributions to Zoology,* **208**: 1-68.

ERWIN, T.L., 1976. A case of homonymy in the Tachyina (Coleoptera: Carabidae: Bembidiini). *Coleopterists Bulletin,* **30**: 94.

ERWIN, T.L., 1978. Studies of the subtribe Tachyina (Coleoptera: Carabidae: Bembidiini), Supplement C: discovery of the sister group of *Mioptachys* Bates, in the Amazon basin – *Inpa psydroides*, a new genus and species. *Coleopterists Bulletin,* **32**: 29-36.

ERWIN, T.L., 1981. Natural History of Plummers Island, Maryland, XXV, the ground beetles of a temperate forest site (Col. Carabidae). *Bulletin of the Biological Society of Washington,* **5**: 105-224.

FOWLER, W.W., 1887. *The Coleoptera of the British Islands*. Volume 1. London: Reeve,.

FOWLER, W.W. & DONISTHORPE, H., 1913. *The Coleoptera of the British Islands*. Volume 6 (Supplement). London: Reeve.

FREUDE, H., 1976. Fam. Carabidae. *In* Freude, H., Harde, K.W. & Lohse, G.A.,eds, *Die Käfer Mitteleuropas,* **2**: 1-302.

FOWLER, W.W. & DONISTHORPE, H., 1913. *The Coleoptera of the British Islands.* Volume 6 (Supplement). London: Reeve.

HAMMOND, P.M., 1996. *A taxonomic review of possibly endemic British non-marine invertebrates.* Unpublished report to English Nature. London: The Natural History Museum.

HAMMOND, P.M., 1998. *Survey of invertebrates of exposed riverine sediments on the Rivers Teign and Bovey near their confluence.* Unpublished report to the Environment Agency, Devon Area. London: The Natural History Museum.

HYMAN, P.S. & PARSONS, M.S., 1992. A review of the scarce and threatened Coleoptera of Great Britain. Part 1. *UK Nature Conservation* **3.** Peterborough: Joint Nature Conservation Committee.

JEANNE, C., 1990. Les *Tachyura* Mots. de la Région Méditerranéenne Occidentale (Col. Trechidae, Tachyini). *L'Entomologiste,* **46**: 245-252.

JEDLICKA, A.,1965. Monographie der Tribus Bembidiini aus Ostasien. *Entomologische Abhandlungen und Berichte aus dem Staatlichen Museum für Tierkunde in Dresden,* **32**: 79-198.

JEDLICKA, A., 1967. Beiträge zur Kenntnis der Fauna Afghanistans. Carabidae, Col.. *Acta Museo Moraviae,* **52** (Supplement): 53-104.

JEANNEL, R., 1941. Coléoptères carabiques. I. *Faune de France,* **39**: 1-571.

JEANNEL, R., 1946. Coléoptères Carabique de la Région Malgache. Première Partie. *Faune de l'Empire Francais,* **6**: 1-372. Paris.

KOCH, K., 1989. Ökologie, Band 1. *Die Käfer Mitteleuropas* **O1**: 1-440. Krefeld: Goecke & Evers.

KRYZHANOVSKIJ, O.L., 1970. On the taxonomy and distribution of the subtribe Tachyina (Coleoptera, Carabidae) from the USSR. *Revue d'Entomologie de l'URSS,* **49**: 165-182.

KRYZHANOVSKIJ, O.L., BELOUSOV, I.A., KABAK, I.I., KATAEV, B.M., MAKAROV, K.V. & SHILENKOV, V.G., 1995. *A checklist of the ground-beetles of Russia and adjacent lands (Insecta, Coleoptera, Carabidae).* Moscow: PENSOFT Series Faunistica No. 3.

KULT, K., 1953. New species of the family Carabidae from Central Europe. *Acta Scietatis Entomologicae Cechosloveniae,* **50**: 118-125.

KULT, K., 1961. Beitrag zur Kenntnis der Tachyiini aus Iran (Coleoptera, Carabidae). *Stuttgarter Beiträge zur Naturkunde aus dem Staatlichen Museum für Naturkunde in Stuttgart,* **57**: 1-4.

LABONTE, J.R. & NELSON, R.E., 1998. North American distribution and habitat of *Elaphropus parvulus* (Dejean), an introduced, non-synanthropic carabid beetle (Coleoptera: Carabidae). *The Coleopterists Bulletin,* **52**: 35-42.

LINDROTH, C.H., 1966. The ground-beetles (Carabidae, excl. Cicindelinae) of Canada and Alaska. Part 4. *Opuscula Entomologica, Supplement,* **29**: 409-648.

LINDROTH, C.H., 1974. Coleoptera: Carabidae. *Handbooks for the Identification of British Insects* **4**(2): 1-148. London: Royal Entomological Society.

LOHSE, G.A. & LUCHT, W.H., 1989. 1. Supplementband mit Katalogteil. *Die Käfer Mitteleuropa,s* **12**: 1-346. Krefeld: Goecke & Evers.

LUCHT, W.H., 1987. Katalog. *Die Käfer Mitteleuropas* **K**: 1-342. Krefeld: Goecke & Evers.

LUCHT, W.H. & KLAUSNITZER, B., 1998. 4. Supplementband. *Die Käfer Mitteleuropas,* **15**: 1-398. Jena: Fischer.

LUFF, M.L., 1998. *Provisional atlas of the ground Beetles (Coleoptera, Carabidae) of Britain.* Abbots Ripton, Huntingdon: Biological Records Centre.

MATEU, J., 1953. Algunos *Tachyura* del Sudeste de España (Col. Carabidae). *Bollettino della Società Entomologica Italiana,* **82**: 95-98.

MATEU, J. & COLAS, G., 1954. Coleópteros de la Sierra Nevada, Caraboidea. *Archivos del Instituto de Aclimatación, Almeria,* **2**: 35-72, 3 plates.

MOORE, B.P. 1956. A new name for *Tachys piceus* Edmonds (Col., Carabidae) and a note on the separation characters of the species. *Entomologist's Gazette,* **7**: 87-88.

MURIAUX, L. 1956. *Tachyura walkeriana* à Fontainebleau. *Bulletin de l'Association des Naturalistes de la Vallée du Loing,* **32**: 16.

NETOLITSKY, F. 1914. Die Bembidiini in Winklers Catalogus. I-II. *Entomologische Blätter für Biologie und Systematik der Käfer,* **10**: 50-55, 164-176.

ODEGAARD, F., 1999. Invasive beetle species (Coleoptera) associated with compost heaps in the Nordic countries. *Norwegian Journal of Entomology,* **46**: 67-78.

POPE, R.D., 1977. Kloet and Hincks. A check list of British insects. Part 3, Coleoptera and Strepsiptera. 2nd Edition. *Handbooks for the Identification of British Insects,* **11**(3): 1-105, i-xiv. London: Royal Entomological Society of London.

PUEL, 1935. Sur les *Tachys* Steph. *Miscellanea Entomologica,* **36 (5)**: 5-13.

SCHATZMAYR, A. & KOCH, C., 1934. Risultati scientifici della Spedizione Entomologica de S.A.S. Principe Alessandro della Torre Tasso in Egitto e nella penisola Sinai. IV. *Tachys* Steph. *Bollettino della Societa Adriatica di Scienze Naturali Trieste,* **33**: 1-33.

SCHULER, L. 1964. Quelques Coléoptères Carabiques nouveaux pour la Faune de France, ou intéressants. *L'Entomologiste,* **19**: 84-87.

SHARP, D. 1913. Description of a new species of *Tachys*. *Entomologist's Monthly Magazine,* **49**: 125-126.

SHIRT, D.B. (ed.), 1987. *British Red Data Books: 2. Insects.* Peterborough: Nature Conservancy Council.

SILFVERBERG, H., 1992. *Enumeratio Coleopterorum Fennoscandiae, daniae et Balticae.* Helsinki: Helsingfors Entomologiska Bytesforening.

STEPHENS, J.F., 1828-1829. *Illustrations of British Entomology or a synopsis of indigenous insects. Mandibulata 2.* London: Baldwin & Cradock.

STEPHENS, J.F., 1839. *A Manual of British Coleoptera or Beetles.* London: Longman, Orme Brown, Green and Longmans, pp. i-vii, 1-443.

TRAUTNER, J. & GEIGENMÜLLER, K., 1987. *Sandlaufkäfer, Laufkäfer, Illustrierter Schlüssel zu den Cicindeliden und Carabiden Europas*. Margraf: Aichtal.

TRAUTNER, J. 1992. *Rote Liste der in Baden-Württemberg gefährdeten Laufkäfer (Col., Carabidae s. lat.).* Ökologie und Naturschutz 4: 1-72. Margraf: Weikersheim.

Turin, H., Haeck, J. & Hengeveld, R. 1977. *Atlas of the carabid beetles of The Netherlands.* Amsterdam: North-Holland Publishing Company.

TURIN, H., ALDERS, K., DEN BOER, P.J., VAN ESSEN, S., HEIJERMAN, T., LAANE, W. & PENTERMAN, E., 1991. Ecological characterization of carabid species (Coleoptera, Carabidae) in the Netherlands from thirty years of pitfall sampling. *Tijdschrift voor Entomologie,* **134**: 279-304.

WALKER, J.J., 1927. The New Forest, May, 1927. *Entomologist's Monthly Magazine,* **63**: 188-190.

WALKER, J.J., 1932. An annotated list of the Coleoptera of the Isle of Sheppey. *Transactions of the Entomological Society of the South of England,* **7**(1931-1932): 81-140.

WELCH, R.C., 1992. *Tachys parvulus* (Dejean) (Col.: Carabidae) from synanthropic habitats in Northamptonshire and Bedfordshire. *Entomologist's Record and Journal of Variation,* **104**: 81-82.

WHICHER, L.S., 1953. *Nebria livida* L. and other beetles from the Norfolk coast. *Entomologist's Monthly Magazine,* **89**: 32.

WILLIAMS, S.A., 1997. *Tachys walkerianus* Sharp (Carabidae), a patio beetle? *The Coleopterist,* **6**: 47.

Appendix 1. List of *Paratachys* species, including all those examined while investigating the status and identity of *P. edmondsi* Moore

All of the New World species in the following list were referred to *Paratachys* by Erwin (1971). However, the list of Old World species referable to *Paratachys* may be less complete, as named material of some of the species for which the published descriptions are inadequate was not available for examination. On the other hand, by no means all of the Old World species that are included below have as yet been formally transferred to *Paratachys* in published works. Technically, such species still stand as members of *Tachys* or other genera. Species transferred to *Polyderis* from *Eotachys* by Antoine and/or subsequent authors have been omitted from the list.

The three columns provide information on (1) geographical distribution, (2) presence of material that has been checked in the course of this study in the collections of the Natural History Museum, London, and (3) whether published descriptions have been consulted.

For all but Western Palaearctic species, the distribution is indicated only by major region (**Afr** = Afrotropical region; **Aus** = Austro-Pacific region; **EPal** = Eastern Palaearctic region; **Nea** = Nearctic region; **Neo** = Neotropical region; **Or** = Oriental region.

'**T**' indicates that type material in the NHM collections has been examined.

	Distribution	NHM	Description
***abruptus* Darlington 1934**	**Neo**	**T**	+
***aeneipennis* Motschulsky 1862**	**Neo**		
***aequinoctialis* Motschulsky 1855**	**Neo**		
***albipes* LeConte 1863**	**Nea**		
putzeyi Fleutiaux & Sallé 1889			
***ambulatus* Darlington 1962**	**Aus**	**T**	+
***androyanus* Jeannel 1946**	**Afr**	**T**	+
***apex* Darlington 1962**	**Aus**	**T**	+
***arcanicola* Blackburn 1878**	**Aus**	**T**	
***asemus* Basilewsky 1968**	**Afr**		+
***austinicus* Casey 1918**	**Nea**		
***avius* Darlington 1962**	**Aus**	**T**	+
***bathyglyptus* Andrewes 1925**	**Or**	**T**	+
***beatus* Darlington 1962**	**Aus**	**T**	+
***beaumonti* Casey 1918**	**Neo**		
***beebei* Mutchler 1924**	**Neo**	**T**	
***bicoloratus* Burgeon 1935**	**Afr**	+	+
***bistriatus* Duftschmid 1812**	Austria	+	+
minimus Curtis 1824	England		+
minutissimus Stephens 1828	England		+
maritimus Stephens 1839	England		+
limacodes Redtenbacher 1849	Austria		
testaceus Motschulsky 1850	Russia		
ab. rufulus Rey 1882	France		
ab. flavus Becker 1871			
insularis Ragusa 1875	Sicily		
piceus dalla Torre 1877	Austria		
***blemoides* Jeannel 1946**	**Afr**		+

	Distribution	NHM	Description
***borkuensis* Bruneau de Miré 1952**	**Afr**		+
***bonariensis* Steinheil 1869**	**Neo**	+	
***borkuensis* Bruneau de Miré**	**Afr**		+
***bredoi* Basilewsky 1953**	**Afr**		+
***brunniceps* Andrewes 1930**	**Or**	**T**	+
***caffer* Péringuey 1896**	**Afr**		+
***caheni* Basilewsky 1972**	**Afr**	**T**	+
***cameroni* Andrewes 1925**	**Or**	**T**	+
***cardoni* Andrewes 1925**	**Or**	**T**	+
***carib* Darlington 1935**	**Neo**	**T**	+
***caspius* Kolenati 1845**		+	
***castaneicolor* Bates 1882**	**Neo**	**T**	
***centriustatus* Reitter 1874**			+
***chiriquinus* Bates 1882**	**Neo**	**T**	
***cinctus* Putzeys 1875**	**Or**		+
***collardi* Basilewsky 1955**	**Afr**		+
***colonicus* Casey 1918**	**Neo**		
***columbiensis* Hayward 1900**	**Nea**		
***crypticolus* Britton 1960**	**Aus**		
***cubax* Darlington 1934**	**Neo**	**T**	+
***cycloderus* Bates 1871**	**Neo**	+	
***delamarei* Jeannel 1962**	**Neo**		
***delicatus* Andrewes 1925**	**Or**	**T**	+
***devroyei* Burgeon 1935**	**Afr**		+
***diminutus* Bates 1871**	**Neo**	+	
***diploharpinus* Bates 1878**	**Neo**	**T**	
***dominicanus* Darlington 1934**	**Neo**	**T**	+
***dorsalis* Motschulsky 1851**	**Or**	+	+
***dromioides* Bates 1871**	**Neo**	+	
***dzosonicus* Pawlowski 1974**	**EPal**		+
***edax* LeConte 1851**	**Nea**	+	+
***edmondsi* Moore 1956, n.n.**		+	+
piceus Edmonds 1934	England	T	+
***ellenbergeri* Bruneau de Miré 1964**	**Afr**		+
***elongatulus* Dejean 1831**	Spain	?	+
ab. *obscuripes* de Monte 1957	Morocco		
ab. *oedipus* Antoine 1955	Morocco		+
***euryodes* Bates 1892**	**Or**	+	+
***euryphacus* Alluaud 1933**	**Afr**		+
***exaratus* Bates 1873**	**EPal**		+
***exiguus* Sahlberg, R.F. 1844**	**EPal**		+
***fasciatus* Motschulsky 1851**	**Or/Aus/Afr**	+	+
triangularis Nietner 1857			+
atriceps MacLeay 1871			+
tropicus Bates 1886			
trechiformis Jordan 1894			
migrator Péringuey 1896			+
var. *incertus* Andrewes 1925		T	+
perrieri Jeannel 1946			+
ssp. *uenoi* Tanaka 1960	**EPal**		+
***filax* Darlington 1934**	**Neo**	+	+
***flavax* Darlington 1962**	**Aus**	**T**	+
***flavicollis* Motschulsky 1862**	**Neo**	+	
***fortunatus* Machado 1989**	Canaries	+	
***fulvicollis* Dejean 1831**	Dalmatia	+	+
pallidulus Ménétriés 1846	Caucasus		
transparens Motschulsky 1850	Russia		
sulcifrons Chaudoir 1850			
rubicundus Chaudoir 1850	Odessa		

	Distribution	NHM	Description
subfasciatus Motschulsky 1862	France		
***fumax* Darlington 1962**	**Aus**	**T**	+
***gracchus* Andrewes 1935**	**Or**	**T**	+
***hindei* Alluaud 1933**	**Afr**		+
***holmi* Basilewsky 1963**	**Afr**		+
***hyalinus* Casey 1918**	**Nea**		
temporalis Casey 1918			
***hydrophilus* Germain 1906**	**Neo**		
***impressus* Motschulsky 1851**	**Or**	+	+
***iridipennis* Chaudoir 1876**	**Afr**		+
vicarius Péringuey 1896			
***jeanneli* Bonadona 1971, n.n.**		?	+
algiricus Jeannel 1941, not Lucas 1846	France		
***joannae* Basilewsky 1962**	**Afr**		+
***jucundulus* Péringuey 1908**	**Afr**	+	
***kabylianus* Puel 1935**	Algeria	?	+
***kahuzianus* Basilewsky 1953**	**Afr**		+
***kaorutanakai* Habu 1980**	**EPal**		+
***koizumii* Habu 1961**	**EPal**		+
***laevigatus* Boheman 1858**	**Neo**		
***lamottei* Bruneau de Miré 1964**	**Afr**		+
***latalatus* Csiki 1928, n.n.**	**Neo**		
latipennis Hayward 1900, not Sharp 1886			
***leptocerus* Chaudoir 1876**	**Afr**	+	+
precarius Péringuey 1896			+
umtalensis Péringuey 1896			+
***limbatellus* Bates 1884**	**Neo**	**T**	
***lissonotus* Andrewes 1925**	**Or**	**T**	+
***lugubris* Motschulsky 1862**	**Neo**		
***lusciosus* Antoine 1943**	Morocco		+
ab. *viator* Antoine 1943	Morocco		+
***luscus* Darlington 1962**	**Aus**		+
***mameti* Alluaud 1933**	**Afr**		+
***masculus* Darlington 1962**	**Aus**	**T**	+
ssp. *filius* Darlington 1962		T	+
***massauxi* Basilewsky 1955**	**Afr**		+
***mastersi* Sloane 1921**	**Aus**	+	+
sexstriatus MacLeay 1871			
ssp. *exul* Darlington 1962			
ssp. *pinguis* Darlington 1962			+
***micros* Fischer von Waldheim 1848**	Caucasus	+	+
gregarius Chaudoir 1846	Caucasus		
nigrifrons Fauvel 1863	France		
ab. *luridus* Rey 1882	France		
***minutissimus* Sahlberg, R.F. 1844**	**Neo**	+	
***mirei* Basilewsky 1968**	**Afr**		+
***monostictus* Bates 1871**	**Neo**	**T**	
***multistriata* Motschulsky 1862**	**Neo**		
***nepheloides* Andrewes 1930**	**Or**		+
bouchardi Andrewes 1931			+
***oblitus* Casey 1918**	**Nea**	+	+
cuneatus Casey 1918			
cuneatus appalachianus Casey 1918			
iowensis Casey 1918			
gentilis Casey 1918			
obliquus Casey 1918			+
***obsolescens* Bates 1892**	**Or**		+
***obtusiusculus* Jeannel 1941**	France		+
***olemartini* Kirschenhofer 1986**	**EPal**		+

	Distribution	NHM	Description
***opalescens* Andrewes 1925**	**Or**	**T**	+
***otini* Antoine 1943**	Morocco		+
***pallescens* Bates 1873**	**EPal**	**T**	+
blotei Andrewes 1930			+
***pallidulus* Antoine 1943**	Morocco	+	+
***palustris* Reitter 1894**	Turkestan	+	+
testaceus Solsky 1874, not Motschulsky			
***panamensis* Casey 1918**	**Neo**		
***paulax* Darlington 1934**	**Neo**		+
***piceolus* Laferté 1841**	**Neo**	+	
***potomaca* Erwin 1981**	**Neo**	?	+
***privus* Darlington 1962**	**Aus**		+
***prolixus* Bates 1892**	**Or**		+
***proximus* Say 1823**	**Nea**	+	+
nubifer Casey 1918			
***pseudosericeus* Kirschenhofer 1986**	**EPal**		+
***pujoli* Bruneau de Miré 1964**	**Afr**		+
***pumilus* Dejean 1831**	**Nea**	+	
corruscus LeConte 1848			
***rectangulus* Notman 1919**	**Nea**		
***rhodeanus* Casey 1918**	**Nea**		+
***rhombophorus* Andrewes 1925**	**Or**	**T**	+
ab. *evanidus* Andrewes 1925		T	+
***sagax* Casey 1918**	**Nea**		
***scitulus* LeConte 1848**	**Nea**	+	+
pallescens Casey 1918			
***sequax* LeConte 1848**	**Nea**		
***sericans* Bates 1873**	**EPal**	**T**	+
ssp. *vixstriatus* Bates 1873		T	+
***sericeus* Motschulsky 1851**	**Or**	+	+
photinus Bates 1892		T	+
***sibling* Darlington 1962**	**Aus**	**T**	+
***spadix* Casey 1918**	**Nea**		
laxicollis Casey 1918			
***striax* Darlington 1934**	**Neo**	**T**	+
***subangulatus* Bates 1871**	**Or**	+	+
***sublobatus* Darlington 1962**	**Aus**	**T**	+
ssp. *suffusus* Darlington 1962		T	+
***suboculatus* Basilewsky 1958**	**Afr**		+
***sundaicus* Andrewes 1925**	**Or**	**T**	+
***testaceus* Basilewsky 1953**	**Afr**		+
***tetraphacus* Bedel 1896**	Algeria		+
***transumbratus* Bates 1892**	**Or**	**T**	+
***transversicollis* MacLeay 1871**	**Aus**	+	+
adelaidae Blackburn 1888		**T**	
***trechulus* Darlington 1935**	**Neo**		+
***tropicus* Nietner 1858**	**Or**	+	+
cinctipennis Motschulsky 1861			
subvittatus Bates 1886		T	+
***tschitscherini* Khnzorian 1962**	Armenia		+
***turkestanicus* Csiki 1928, n.n.**		+	+
striolatus Reitter 1894, not MacLeay			
***uelensis* Burgeon 1935**	**Afr**		+
***uenoianus* Pawlowski 1974**	**Or**		+
***umbripennis* Chaudoir 1868**	**Nea**		
***vandeli* Mateu & Colas 1954**	Spain		+
***vandepolli* Bruneau de Miré 1964**	**Afr**		+
***varsavianorum* Pawlowski 1974**	**EPal**		+
***ventricosus* LeConte 1863**	**Nea**	+	

	Distribution	NHM	Description
oopterus Chaudoir 1868			
***venustus* Andrewes 1936**	**Or**	**T**	+
***vernilis* Casey 1918**	**Nea**		
***vilis* Andrewes 1925**	**Or**	**T**	+
***vinsoni* Alluaud 1933**	**Afr**	**T**	+
***vorax* LeConte 1851**	**Nea**	+	
***xanthochrous* Chaudoir 1876**	**Afr**		+
leopoldvilleanus Burgeon 1935			
***yeboensis* Burgeon 1935**	**Afr**		+
***yunchengensis* Kirschenhofer 1986**	**EPal**		+
***zonatus* Andrewes 1925, n.n.**	**Or**	+	+
ephippiatus Putzeys 1875, not Say			

Appendix 2. Locality data for British specimens of Tachyina (= *Tachys* sensu lato) in the collections of The Natural History Museum, London

Tachys scutellaris **[88 exx.]**

Bembridge	IW	SZ69	J.A.Power
Bembridge	IW	SZ69	H. Dollman
Bembridge	IW	SZ69	H.W. Ellis
Hayling	SH	SU70	D. Sharp
Lymington	SH	SZ39	C.E. Tottenham
Romney	EK	TR03	?
Sheerness	EK	TQ97	G.C. Champion
Sheppey	EK	TQ97	G.C. Champion
South Shields		NZ36	T. Bold
Whitstable	EK	TR16	G.C. Champion

Paratachys bistriatus **[152 exx.]**

Arundel	WX	TQ00	G.C. Champion
Aylesford	WK	TQ75	R.O.S. Clarke
Aylesford	WK	TQ75	A.M. Massee
Bearstead	SR	?	J.A. Power
Bembridge	IW	SZ68	H. Dollman
Bookham Common	SR	TQ15	M. Barclay
Bridgwater	NS	ST33	C.E. Tottenham
Burgess Hill	EX	TQ31	C.E. Tottenham
Cowfold	WX	TQ22	J.A. Power
Ecclesbourne Res.	EX	TQ81	H. Donisthorpe
Fairlight	EX	TQ81	R.O.S. Clarke
Highcliffe	SH	SZ29	C.E. Tottenham
Hurst	BK	SU77	E.W. Janson
Luccombe Chine	IW	SZ57	A.M. Massee
Luccombe	IW	SZ57	D. Sharp
Lymington	SH	SZ39	D. Sharp
Mickleham	SR	TQ15	G.C. Champion
Milford	SR	SU94	G.C. Champion
New Forest	SH	SU20?	D. Sharp
Sandown	IW	SZ68	G.C. Champion
Southsea	SH	SZ69	G.C. Champion
Tewkesbury	GE	SO83	C.E. Tottenham
Windsor Gt Pk	BK	SU97	P.M. Hammond

***Paratachys edmondsi* [7 exx. in all]**

Brockenhurst	SH	SU30	D. Sharp	20.vi.1926	1
New Forest	SH	SU20?	D. Sharp	25.iii.1912	1
New Forest	SH	SU20?	H.W. Ellis	4.v.1914	2
New Forest	SH	SU20?	A.M. Massee	4.v.1936	1
New Forest	SH	SU20?	A.M. Massee	19.v.1937	1
New Forest	SH	SU20?	A.M. Massee	15.ix.1937	1

***Paratachys micros* [50 exx. in all]**

No locality	-	-	-	-	1
Charmouth	DT	SY39	E.C. Bedwell	-	1
Charmouth	DT	SY39	K.G. Blair	vii.1924	1
Charmouth	DT	SY39	H. Donisthorpe	28.iv.1928	6
Charmouth	DT	SY39	G.W. Nicholson	iv.1924	4
Charmouth	DT	SY39	C.E. Tottenham	6.vi.1926	12
Charmouth	DT	SY39	C.E. Tottenham	23.iv.1949	19
Chartwell	DT	SY39	C.E. Tottenham	6.vi.1924	3
Eype Mouth		SY49	R.G. Booth	3.vi.1993	3

***Porotachys bisulcatus* [16 exx. in all]**

No locality	-	J.A. Power	-	1
South Shields	NZ36	J.A. Power [ex Bold]	1863	1
South Shields	NZ36	J.A. Power [ex Bold]	1864	1
South Shields	NZ36	J.A. Power [ex Bold]	1866	3
Northumberland	-	J.A. Power [ex Bold]	-	1
No locality data	-	D.Sharp	-	

***Elaphropus parvulus* [16 exx. in all]**

Portscatho	EC	SW83	G.C. Champion		10
Woking	SR	TQ05	G.C. Champion		1
Bossington	ND	SS84	R.G. Booth	vii.1997	3
South Kensington	L	TQ28	P.M. Hammond		1
River Teign	SD	SX87	P.M. Hammond		1

***Elaphropus walkerianus* [76 exx. in all]**

New Forest	SH	SU20?	various	various	27
New Forest	SH	SU20?	H. Donisthorpe	v.1904	6
New Forest	SH	SU20?	Saunders	vi.1936	1
Brockenhurst	SH	SU30	D. Sharp	various	26
Brockenhurst	SH	SU30	C.E. Tottenham	vi.1926	1
Cranborne	DT	SU01	A.M. Massee	10.iv.1937	1

ENGLISH NATURE

English Nature is the Government agency that champions the conservation of wildlife and geology throughout England.

This is one of a range of publications published by:
External Relations Team
English Nature
Northminster House
Peterborough PE1 1UA

www.english-nature.org.uk

Cover printed on Character Express, post consumer waste paper, ECF.

ISSN 0967-876X

Cover designed and printed by Status Design & Advertising, 2M, 5M, 5M.

Front cover photographs:
Top left: Using a home-made moth trap.
Peter Wakely/English Nature 17,396
Middle left: Co_2 experiment at Roudsea Wood and Mosses NNR, Lancashire.
Peter Wakely/English Nature 21,792
Bottom left: Radio tracking a hare on Pawlett Hams, Somerset.
Paul Glendell/English Nature 23,020
Main: Identifying moths caught in a moth trap at Ham Wall NNR, Somerset.
Paul Glendell/English Nature 24,888