

# Studies of Danish Ptiliidae (Coleoptera)

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638 specimens of Danish Ptiliidae have been studied. Data on distribution and faunistics are presented, and diagnostic morphological characteristics are described and illustrated in connection with some poorly known species; *Ptenidium turgidum* Thoms., *Ptilium affine* Er., *Ptiliola brevicollis* (Matth.), *Acrotrichis suecica* Sundt, and *A. danica* Sundt. Three species of *Acrotrichis* Motsch. new to Denmark are presented; *A. fraterna* Johnson, *A. strandi* Sundt, and *A. cognata* (Matth.). Systematic relationship and diagnostic characters are illustrated and discussed.

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## Introduction

In the past, our knowledge of the Danish Ptiliidae has generally been considered very good. This is mainly due to the comparatively small area investigated and the actions of many skilful collectors as well as the comprehensive investigations of Danish Ptiliidae undertaken by V. Hansen (1968) and E. Sundt (1958). But judging from recent interesting finds in Denmark (see Pritzl & Mahler 1981, Hansen & Mahler 1985, Bangsholt 1981), there is obviously still much to be done.

The main subject of this paper is to present and comment upon the results of my studies of some old material of Ptiliidae from the Zoological Museum in Copenhagen (ZMC). There will also be included a treatment of two species of the genus *Acrotrichis* new to Denmark, discovered by V. Mahler, G. Pritzl and M. Hansen.

A total of 34 species of Ptiliidae among 638 specimens were present in the material of ZMC. The bulk was made up by specimens collected between 1880 and 1915 by a number of collectors, among those Schiødte, J.P. Johansen, J.P. Jacobsen, N.P. Jørgensen, Schaltz, Wüstnei, and Rosenberg.

It may seem a bit astonishing that these small beetles (few collectors pay them any

attention nowadays) were so intensively collected by so many persons a hundred years ago, when equipment was demonstrably inferior to present days. One may find the reason abroad.

The general interest in Ptiliidae had steadily increased around Europe, ever since 1845, when three important works on the group were simultaneously published by Motschulsky, Gillmeister, and Erichson. These rival works had a great impact on the scientific knowledge and interest in the group, but they also contributed considerably to the creation of a number of taxonomic problems. The interest, however, reached its climax during the late nineteenth century when the leading specialist of that time, Reverend A. Matthews in England, produced numerous *species novae* from all over the world, though primarily as a result of a truly typological species concept. The intense attention to Ptiliidae paid by many skilful specialists during the middle and later part of the nineteenth century obviously inspired people, in Denmark as well as in other countries, to collect these small creatures more than ever.

Most species studied are common and widely distributed throughout the palearctic and nearctic regions. A few species, though, are rare and incompletely known and will therefore be treated one by one below.

*Ptenidium turgidum* Thomson, 1855

This tree-inhabiting species which seems to prefer old stands of beech (*Fagus sylvatica* L.) is rare in Denmark, although most certainly widely distributed within the country. The first records from Jutland are more than 100 years old and originate from the area around EJ: Frijsenborg; 20.ix.1884, 6 specimens, 21.ix.1884, 9 specimens, and 22.ix.1884, 7 specimens »in a rotten beach«. The name of the collector was not stated. From NEZ: Dyrehaven in 1886 and 1887, there were 12 specimens collected altogether, also anonymously.

*Ptilium affine* Erichson, 1845

5 specimens of this easily recognizable species were present in the material; NEZ: Damhussøen 19.vi.1909, coll. N.P. Jørgensen, 1 specimen, and F: Ålykke 27.v.1905, coll. N.P. Jørgensen, 4 specimens. The distribution in Denmark shows a marked displacement towards the east, and as far as I know it is not known from Jutland at all. Previous finds of this species in Denmark are all from NEZ and LFM.

*P. affine* is a species of rather specific ecological demands, and it will certainly not be expected to increase its distribution in the future. On the contrary, I believe it will suffer greatly under the yoke of human activities, thus probably establishing itself as a good indicator species of environmental alteration.

*Ptiliola brevicollis* (Matthews, 1860)

This is probably a widely distributed species in the south and central parts of Europe, although very few specimens are hitherto known. Besuchet (1971, 1976) noted its presence in Great Britain, Sweden, Norway, and Denmark. Recently Mlynarski (1985) reported it in Poland, and I myself have seen specimens from Spain.

One firm population seems to be present at NEZ: Dyrehaven, where different persons have collected it during several decades, the

first specimen dating from 1945. A new locality may now be added; F: Odense 9.viii.1901, coll. N.P. Jørgensen, 1 specimen.

**Genus *Acrotrichis* Motschulsky, 1848**

In general the biological and ecological claims of our *Acrotrichis* species are very poorly understood. Besides a wide ecological range of most species, many also occupy similar or even superficially identical niches, which aggravate a quick judgement of differences in interspecific ecological tolerance. One may speculate as to the causes of this similarity, but surely, e.g., choice of habitat and sources of nourishment play an important role in understanding the evolutionary trends within *Acrotrichis*, as well as within Ptiliidae in general. The considerable overlapping of niches does not merely reflect the features of an evolutionary and historically young group of organisms. It also mirrors the exploitation of a potentially »rich« habitat resource, where the natural selection works at a minimum, by a corresponding group of organisms possessing a high evolutionary potential. In some other context I will deal with questions arising from this problem.

In this paper it is my aim to give more information about some easily useful and reliable distinguishing characters within the genus *Acrotrichis*, including the »simple kind« of aedeagus which has been found to be of greater discriminating value than hitherto accepted. Since not all of the species are treated here, the information presented should be understood in connection with the key of V. Hansen (loc. cit.) in order to avoid misinterpretations. The key will also be reformulated in minor aspects.

It should be emphasized that the figures show characteristics of typical specimens, thus obscuring the fact of a consistent morphological variation of tremendous dignity. However, concerning the genitalia it is worth noting that the general outline of the aedeagus as well as its setal arrangement

hardly show any significant variation, thereby often facilitating a quick identification of the males.

While studying the male aedeagus under microscope, it is necessary to orient it in such a manner that the apical half is fully visible. Since the aedeagus is dorso-ventrally curved, this may be a tricky action, but nevertheless essential for comparative studies of the apical portion.

Traditionally, the structure of the female genitalia is regarded as the major discriminating feature on the species level within Ptiliidae. This factor has been even more accentuated as far as *Acrotrichis* is concerned, since its gross morphology shows a severe lack of prominent distinguishing characters.

Moreover, primary as well as secondary sexual characteristics of the male have been severely neglected by previous authors, which has brought about considerable difficulties in making a proper identification of the male. Especially males of species possessing a »simple kind« of aedeagus, e.g., the *sitkaensis*-group and the *fascicularis*-group, have been ignored in this context and considered to be of no diagnostic value. However, it will be shown in this paper that, on the contrary, the »simple kind« of aedeagus often shows reliable species-specific marks in spite of its structural simplicity.

### *Acrotrichis suecica* Sundt, 1958

#### Material and distribution

This is a rare species, known from only a few places in northern Europe. It has been reported from Norway by Sundt (1971), from Finland by Silfverberg (1979), from Sweden at two different localities by Sundt (1958), and from Denmark; NEZ: Jægerspris Nordskov by Hansen (1964, 1968). I have also seen 5 doubtful specimens from the southern Soviet Union in the Zoological Museum of Helsinki.

In the collection of Ptiliidae in ZMC, two series of *A. suecica* were discovered. Both originate from NEZ and were collected by

Schaltz. 4 specimens are from Folehave Skov 6.v.1910, and 12 specimens are from Rude Skov 29.viii.1908. Unfortunately, there is no information on the circumstances under which they were captured.

#### Biology

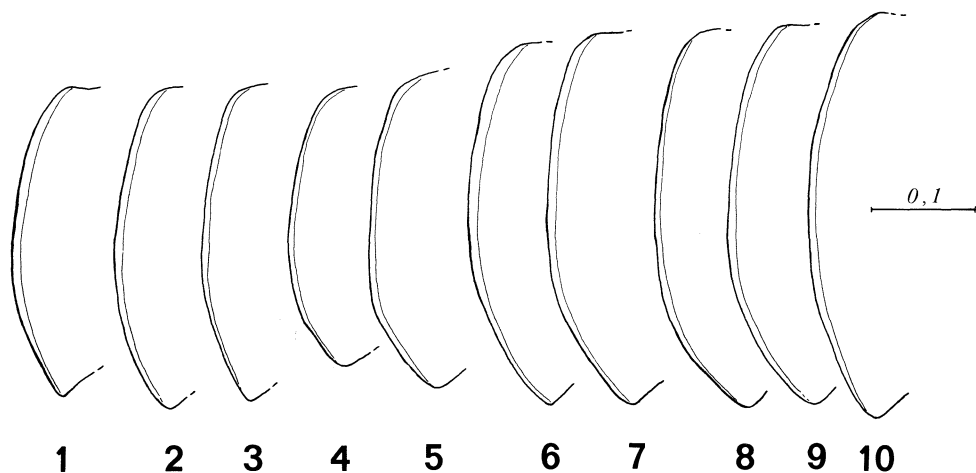
*A. suecica* has mainly been collected in nests of different buzzard species (*Buteo* spp.), but it has also, at least once, been found in dung on the forest floor. It is doubtful whether it is strictly bound to birds' nests or not. Taking biological and ecological claims of closely related species of *Acrotrichis* into consideration, rather a general demand for the type of dung and, perhaps, forest type are decisive factors determining the choice of habitat.

Biologically-ecologically, *A. suecica* is closely related to *A. rugulosa* Rossk. on one hand and the *A. silvatica* Rossk. species complex on the other. Morphologically, it occupies a position in-between the two.

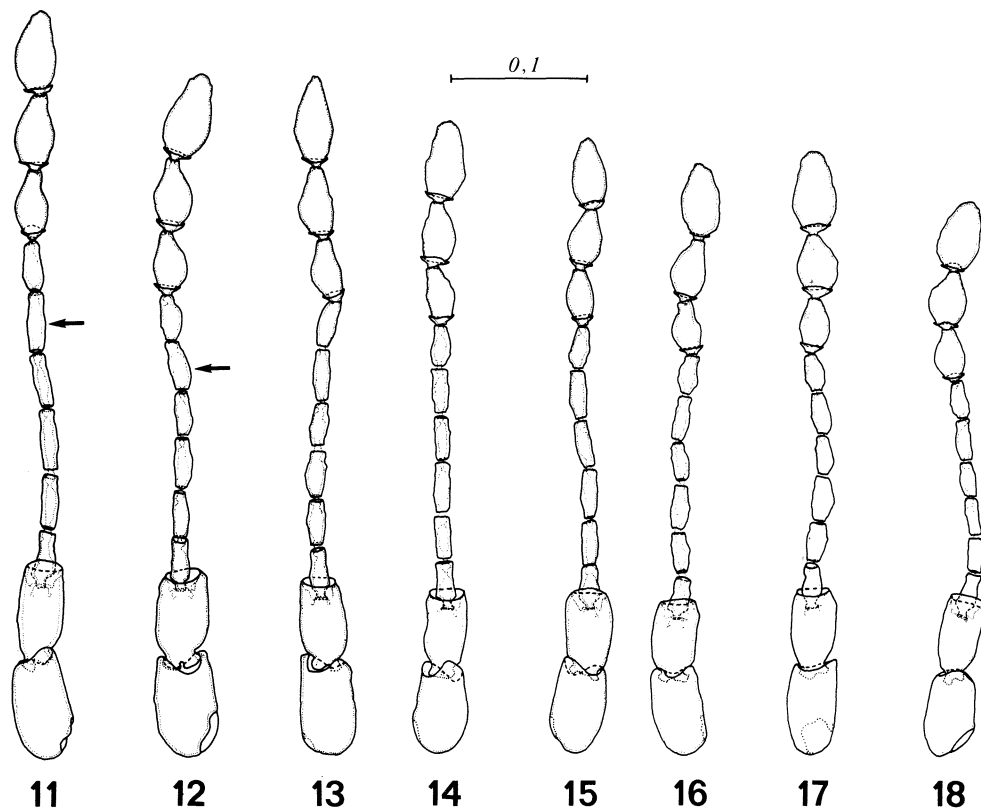
#### Diagnostic characters

The external facies is closely reminiscent of *A. arnoldi* Rossk. and *A. silvatica*. It possesses the same kind of narrow body form though it is a larger species. It differs from those and other complex members by having longer antennae (Fig. 17) which are brightly yellow, rarely infuscated, and in general markedly lighter than those of *A. volans* (Motsch.), *A. parva* Rossk., *A. cognata* (Matth.), *A. silvatica*, or *A. arnoldi*. The pronotum has dense punctulation and rather prominent reticulation which makes it look less glistening. The side-edge of the pronotum (Figs 2-3) is less basally arched than is that of *A. silvatica* (Figs 4-5).

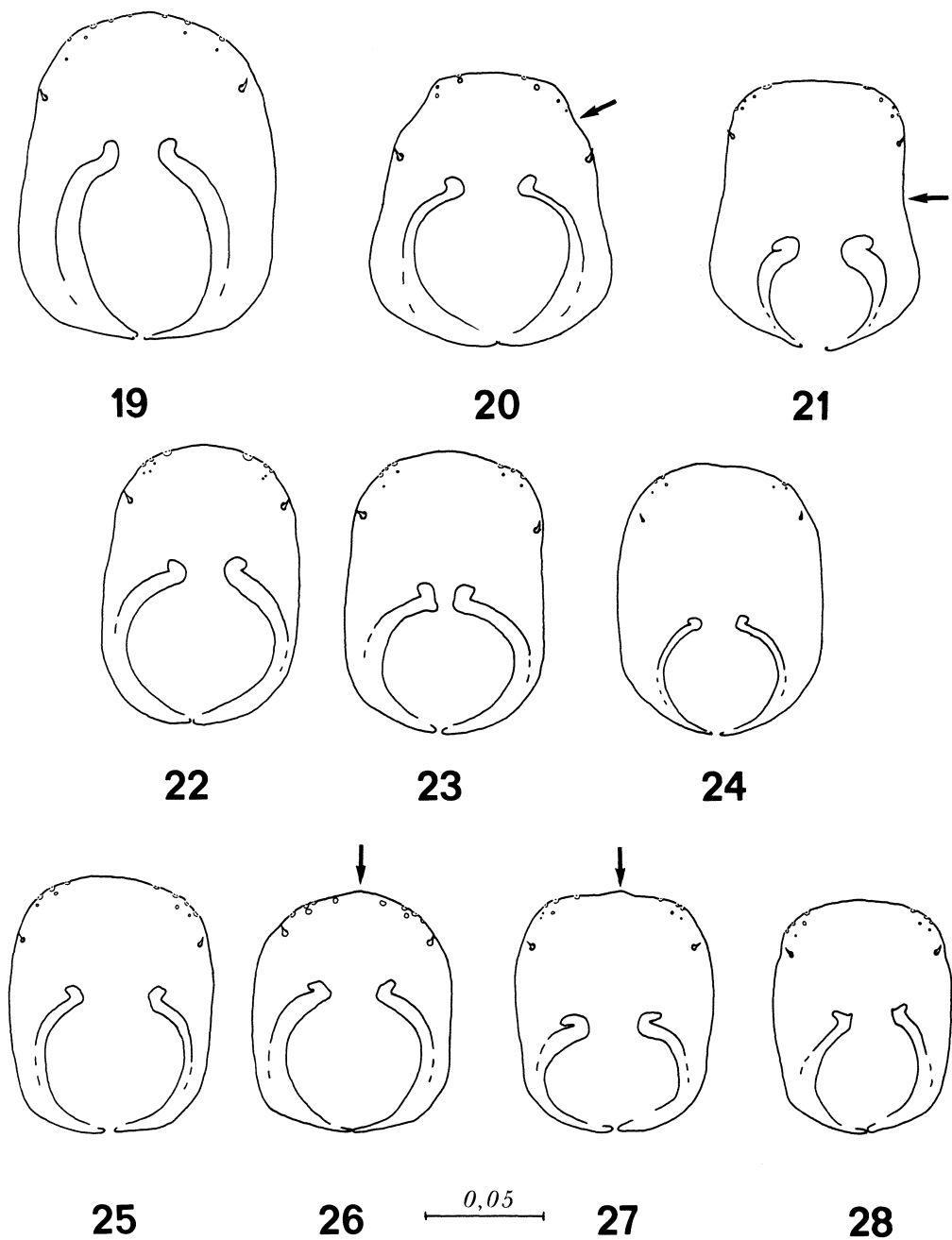
The spermatheca is of the *sitkaensis* type and differs totally from the *silvatica* complex type (Fig. 35). The aedeagus of *A. silvatica* has a pronounced tip (Fig. 26) which is missing in *A. suecica* whose tip is slightly concave (Fig. 24). Compared to *A. suecica*, *A. arnoldi* has a smaller aedeagus (Fig. 27) with more pronounced apicolateral corners (a.l.



Figs 1-10. *Acrotrichis*, pronotum, dorsum, left lateral side-edge. Scale in mm. 1. *A. rugulosa*; 2. *A. suecica* (Rude Skov); 3. *A. suecica* (Folehave Skov); 4. *A. silvatica* (S: Skåne); 5. *A. silvatica* (S: Lycksele lappmark); 6. *A. strandi*; 7. *A. fascicularis*; 8. *A. sitkaensis*; 9. *A. fraterna*; 10. *A. intermedia*.



Figs 11-18. *Acrotrichis*, antenna. Scale in mm. 11. *A. intermedia*; 12. *A. fraterna*; 13. *A. sitkaensis*; 14. *A. fascicularis*; 15. *A. strandi*; 16. *A. rugulosa*; 17. *A. suecica*; 18. *A. silvatica*.



Figs 19-28. *Acrotrichis*, ♂: aedeagus, ventral view. Scale in mm. 19. *A. intermedia*; 20. *A. fraterna*; 21. *A. sitkaensis*; 22. *A. strandi*; 23. *A. fascicularis*; 24. *A. suecica*; 25. *A. rugulosa*; 26. *A. silvatica*; 27. *A. arnoldi*; 28. *A. cognata*.

corners) which gives it a more square appearance. It also lacks the slight apical impression of *A. suecica* (Fig. 24).

In many respects *A. suecica* resembles *A. rugulosa* (e.g., the genitalia, length of antennae (Figs 16-17), side-edge of pronotum (Figs 1-3), and body outline), and it is obviously very closely related to that species. It is easily distinguished by its glistening head which, however, in *A. rugulosa* is covered by coarse stipples just as in *A. cognata*, *A. volans* (Motsch.), and *A. sjoeborgi* Sundt. Besides, the colour of the antennae is brightly yellow, those of *A. rugulosa* being dark, almost black.

Concerning the genitalia, it should be mentioned at this point that the apparent difference in spermathecal structure between *A. rugulosa* and *A. suecica* (Figs 34-35) might be due to local variation. The spermathecae of *A. suecica* pictured by Sundt (loc. cit.) seem to be more complicated in the structure of some of the distal parts of the coil-like chord, thus becoming almost identical to *A. rugulosa*. I have been unable to detect a corresponding complicated spermathecal structure in the Danish material of *A. suecica*; nonetheless, this character should be used with great care.

The aedeagi are very difficult to distinguish from each other (Figs 24-25). That of *A. rugulosa* seems to possess a slightly more rounded tip and somewhat more pronounced apicolateral corners, however.

#### *Acrotrichis danica* Sundt, 1958

Another record of this overlooked species was discovered in the material; NEZ: Jonstrup 5.ix.1941, coll. Rosenberg, »pindsvinrede«. This is primarily a species of southern origin. Its distribution extends from southern Europe such as Spain and Italy (pers. obs.) to Denmark and southern Sweden. The northernmost record known to me is from Sweden: Östergötland.

Since it has a superficial reminiscence of many common species within the *sitkaensis* complex, to which the type of spermatheca

also clearly belongs, the identification might cause severe problems. Good identifying features are, however, the pale and slender antennae, the short and stout body form in combination with a glistening dorsal surface which reminds of a large specimen of *A. atomaria* DeG., the posteriorly tapering elytra, and, above all, the small eyes. No other western palearctic member of the *sitkaensis* species complex possesses eyes so minute. Viewed fronto-laterally, the eyes expose roughly 25 ocelli in *A. danica* contrary to 35-40 ocelli in closely related species (Figs 40-41).

#### *Acrotrichis fraterna* Johnson, 1975

##### Biology and distribution

This species was recently described by C. Johnson (1975) and soon afterwards it was found to be widely spread in Europe. It is a typical forest litter species (deciduous in northern Europe) which often can be found in damp sites such as wooden fens and the like. Very rarely it is found within more exposed habitats. Occasionally one finds it in rotting heaps of grass, in dung, or at carcasses.

Regarding the choice of habitat it is somewhat intermediate between those of *A. intermedia* Gillm. and *A. sitkaensis* (Motsch.). The former tolerates quite »dry« types of litter while the latter prefers very damp and moist types.

*A. fraterna* has a similar geographical distribution to *A. danica* though it seems to be more widely spread. Compared to *A. intermedia*, with which it often occurs, it has most probably a narrower and somewhat higher interval of temperature tolerance. This can be inferred by its pronounced increase in frequency towards the south of Europe. In northern Europe it is not a common species; though locally abundant it is always inferior to *A. intermedia* in quantity. However, in the south of Europe, e.g., in Sicilia, in Liguria, and in many other places in Italy, it is the most abundant species, often superior in frequency to *A. intermedia* and sometimes also the only species present.

As could be expected, it can also be found in Denmark. Although previously not recorded, nevertheless it seems to be widely spread. The following specimens were present in the ZMC material; NEZ: Brede 28.iv.1870, 3 ♀♀, NEZ: Strandmølleåen 30.vii.1916, coll. N.P. Jørgensen, 1 ♀, »Grævlinghule«, F: Fr. Bøge 26.vi.1886, coll. N.P. Jørgensen, 1 ♀, F: Klinten 19.iv.1894, coll. N.P. Jørgensen, 1 ♂, F: Marienlund 26.ix.1886, coll. N.P. Jørgensen, 1 ♂ 1 ♀.

Apart from these, Colin Johnson reports it from EJ: Himmelbjerget 8.vi.1981 (in litt.), and I have also seen 2 specimens from SZ: Sorø 1.ii.1984, and 3 ♂♂ 7 ♀♀ from LFM: Fuglsang 8.viii.1986, all of the leg. Å. Lindelöw.

### Diagnostic characters

Originally, the description of *A. fraterna* was the final product of a growing suspicion towards a heterogenous assemblage of populations under the name of *A. sitkaensis*. Although very closely related to that species, *A. fraterna* shows several distinct species-specific characters, a couple of them being treated below. It is just as interesting to note that it is virtually impossible to distinguish between *A. fraterna* and the more distantly related *A. intermedia* on body form and body sculpture alone. The similarity is striking and probably the result of phyletic parallelism.

Regarding taxonomy, it should be pointed out that Johnson (in press) will soon treat the nomenclatorial confusion around the name in an emerging paper.

*A. fraterna* is a large species, close in size to *A. intermedia*. The body outline as well as the pronotal and elytral surface sculpture are almost identical to those of *A. intermedia*. After studying a considerable amount of material on both species it is possible to state that, in general, *A. fraterna* has a trifle more glistening pronotum. The curvature of the side-edge of the pronotum, seen from angle of roughly 60° to the sagittal section, is an intermediate between those of *A. inter-*

*media* and *A. sitkaensis* (Figs 8-10). The former possesses quite long and slender antennae whose 3rd-6th and especially 7th joints are longer than those of *A. fraterna* or *A. sitkaensis* (Figs 11-13). The aedeagus of *A. fraterna* is quite distinct and is easily distinguished from closely related species (Fig. 20), while the spermatheca show the typical *sitkaensis*-like pattern.

In order to sum up some of the main differences between *A. fraterna* and its closest relatives, these are given in Table 1. See also figures.

Although it is easily understood from the table above that these three species are quite distinct, it should be stressed that the heavy intraspecific variation frequently obscures perfect understanding of the species-specific boundaries, thereby implying the necessity of access to a rich and variable material of each species. To beginners of this group this is especially important.

*A. fraterna* can be incorporated into the key of Hansen (1968) (see the Danish summary).

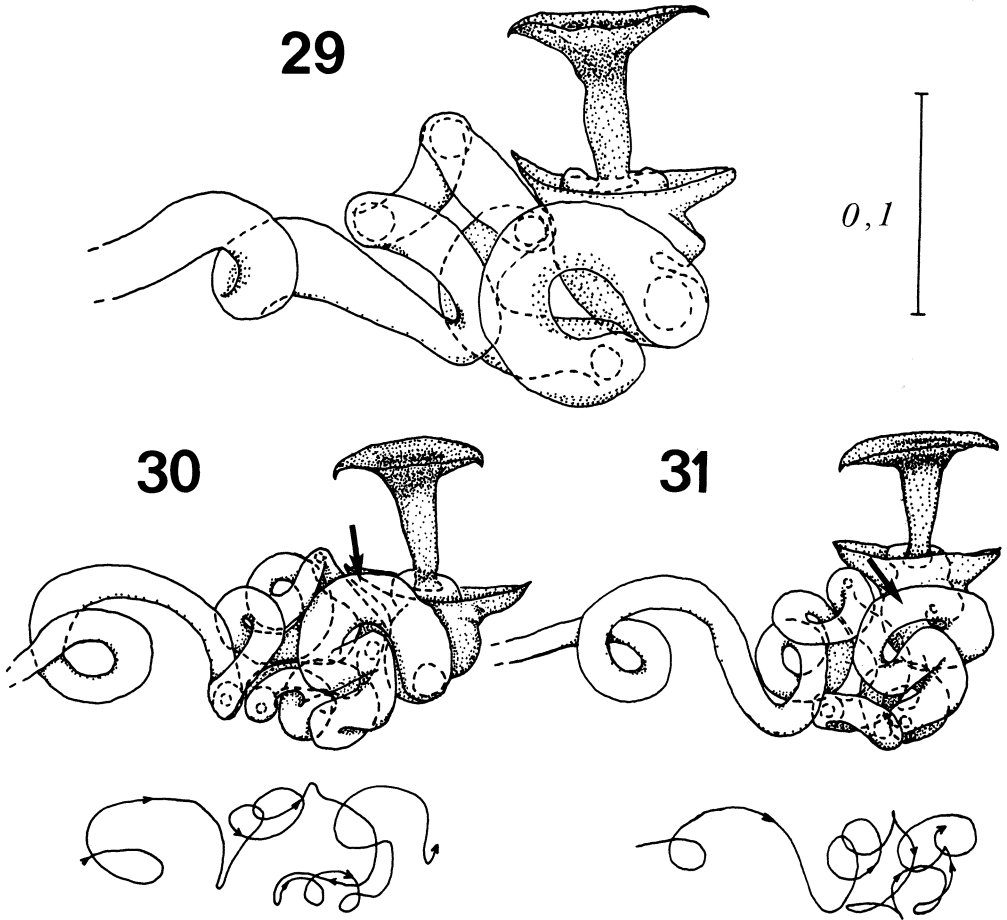
### *Acrotrichis strandi* Sundt, 1958

#### Biology and distribution

This might be announced as one of the more speculative finds of recently emerging elements in the Danish fauna of Ptiliidae. It was discovered and correctly identified by G. Pritzl, V. Mahler and M. Hansen at two different sites in the south of Zealand.

*A. strandi*, like many other congeners, often occurs in many kinds of rotting vegetables and also in moss and litter. It seems to strongly prefer damp situations like bogs, fens, and shores of rivers and lakes and can sometimes be seen in large numbers.

The Danish finds were made in damp, partly shady situations in old fenlands, mainly of alder (*Alnus glutinosa* (L.)). Two different sites are known; SZ: Knudskov, Stengaards Mose 8.vi.1984, 1 ♀, leg. V. Mahler, 6.vi.1985, 1 ♀, leg. M. Hansen, and SZ: Oreby Skov 20.v.1984, 1 ♂, leg. G. Pritzl. These localities have been described



Figs 29-37. *Acrotrichis*, ♀: spermatheca. Scale in mm. 29. *A. intermedia*; 30. *A. fraterna*; 31. *A. sitkaensis*; 32. *A. strandi*; 33. *A. fascicularis*; 34. *A. rugulosa*; 35. *A. suecica*; 36. *A. silvatica*; 37. *A. cognata*.

in greater detail by M. Hansen (1986).

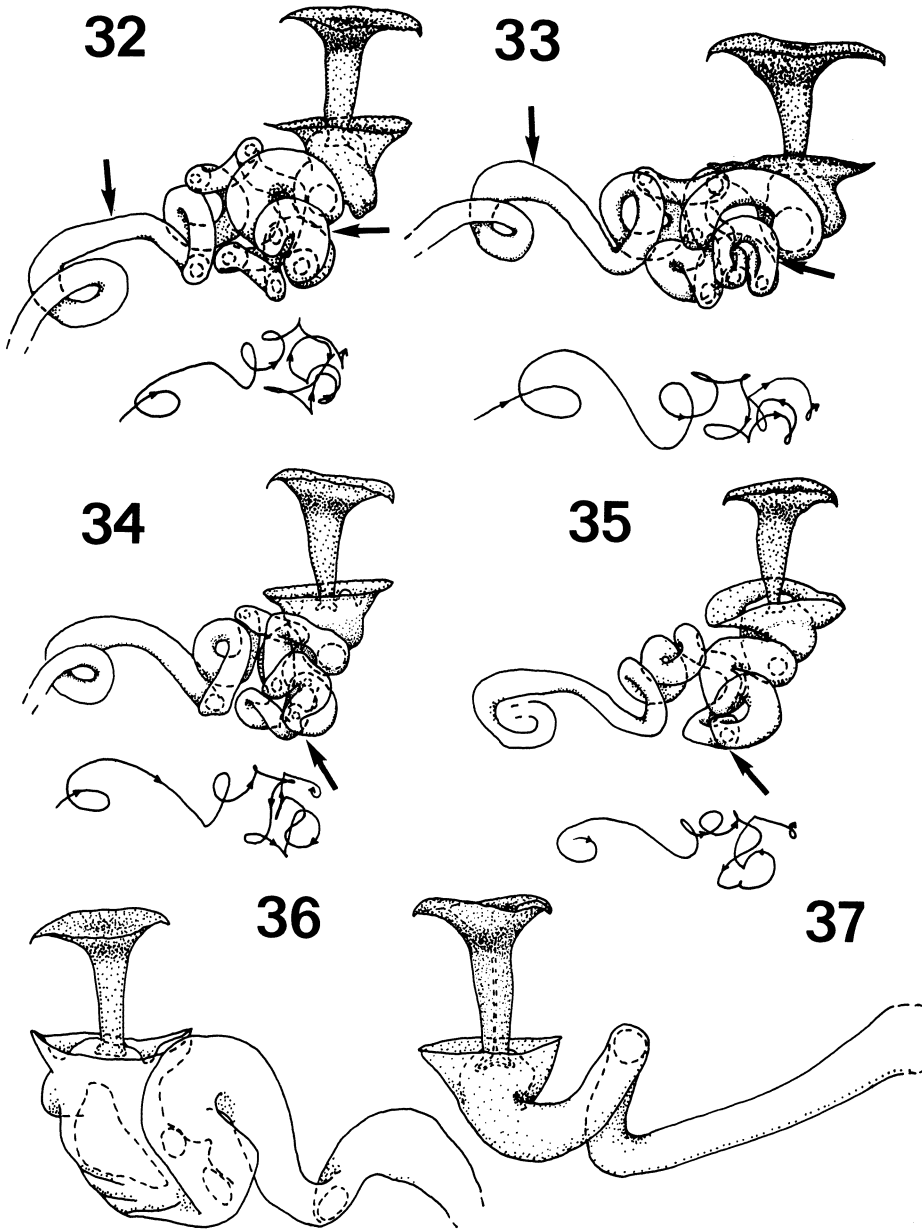
The finds of this species in Denmark illuminates in a very flagrant manner our incomplete knowledge of the composition of the Danish fauna of Ptiliidae on one hand, and the fact that biological and ecological observations in general are very scarce and faint of Ptiliidae on the other. *A. strandi* was hardly expected to occur in Zealand since it has hitherto been considered a northern species. In Sweden no records south of the province of Uppland are known to me, and it is most abundant in the mountainous area of the northwest. It is interesting to note, though, that it has been recorded from the

British Isles by Johnson (1967), and since then has turned up in many places there (Johnson, in lit.).

The hypothesis of *A. strandi* being a recent immigrant is conceivable but hardly realistic, since it postulates an unknown source of dispersal at a fairly suitable distance. Besides, the collecting sites show no signs of disturbances caused by man, which otherwise would have implied an anthropochoral way of dispersal.

*A. strandi* is very closely related to *A. fascicularis*, a species often found within similar situations. Nevertheless, at least in Sweden they never seem to occur together. It





would be interesting, however, to know whether they coincide in the Danish and English finding-spots or not.

Not only ecologically but also morphologically they are very closely related. In fact, the slight differences present are of such minute character that I regard the species-pair as one of the most difficult of all.

#### Diagnostic characters

The general look of the dorsal surface of *A. strandi* much resembles that of *A. fascicularis*. It differs in a number of minor aspects, though.

Generally, *A. strandi* is a dark species, uniformly black throughout, whilst *A. fascicularis* often possesses somewhat paler ely-

Table 1. Comparison of some important diagnostic characters between three species of *Acrotrichis*.

Tabel 1. Jämförelse av några viktiga nyckelkaraktärer mellan tre *Acrotrichis*-arter.

	<i>A. intermedia</i>	<i>A. fraterna</i>	<i>A. sitkaensis</i>
Body outline:	more quadratic	<i>A. intermedia</i> -like (Fig. 38)	more oval
Pronotal reticulation:	prominent, pronotum somewhat glistening	<i>A. intermedia</i> -like	weak, glistening
Pronotal side-edge:	weakly arched basally (Fig. 10)	intermediate (Fig. 9)	strongly arched basally (Fig. 8)
3-7 joints of antennae:	long, slender (Fig. 11)	shorter (Fig. 12)	shorter (Fig. 13)
Colour of antennae:	often pale	often darker	often darker
Aedeagus:	basally parallel, broadly rounded a.l.-corners, faint tip, no impressions, paler colour (Fig. 19)	tapering apically, a.l.-setae further away from apex, well marked a.l. impressions, often pitchy coloured (Fig. 20)	tapering basally, apically parallel, broad lateral impressions, paler colour (Fig. 21)
Spermatheca:	different (Fig. 29)	<i>sitkaensis</i> -type, somewhat larger, basal loops below the collar thicker than distal ones (Fig. 30)	somewhat smaller, basal loops slightly thicker than distal ones (Fig. 31)

tra, these being not entirely black. The body is domed like that of *A. insularis* Maeklin and *A. sitkaensis*. In *A. fascicularis* it is more depressed.

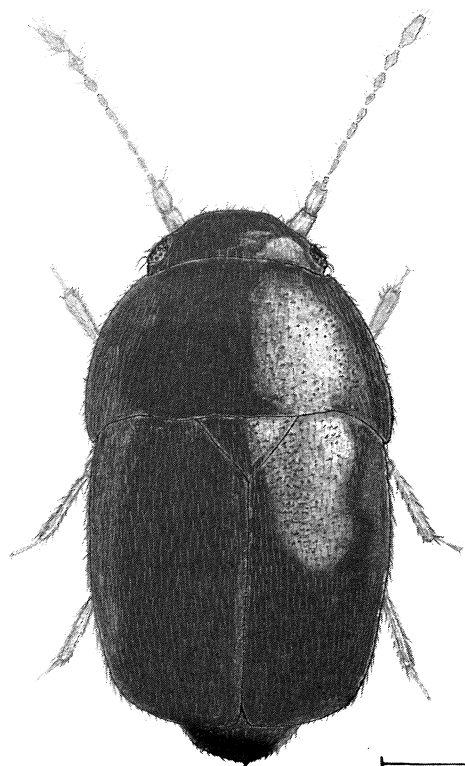
The pronotum of *A. strandi* has a weaker reticulation and the punctulation is more scattered which makes it look more glistening. In *A. fascicularis* the punctulation is very close and often has the character of wave-like rows both on the elytra and some parts of the pronotum. The side-edge of the pronotum is very similar in both species (Figs 6-7), just as is the structure of the antennae (Figs 14-15). However, the latter still provides a good separating mark, since the colour seems to be constantly different and rarely overlaps. Thus, the colour is very

dark, almost completely black in *A. strandi* except for the basal joints which are pitchy brown. This contrasts with the paler antennae of *A. fascicularis*, the basal joints often being reddish.

The genitalia are structurally very similar, yet there are some constant differences which are of great value to a proper identification, especially in combination with external characters.

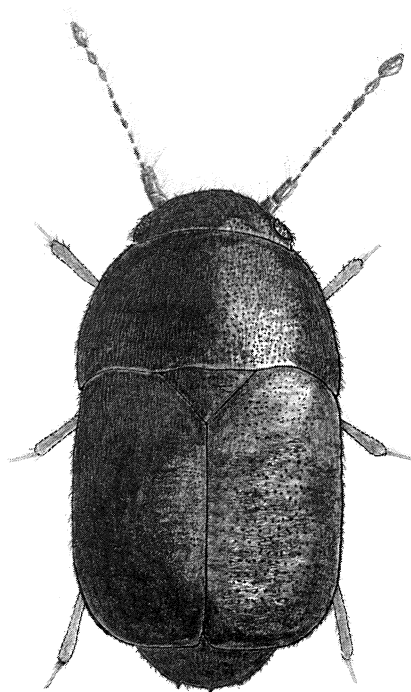
The spermatheca of *A. strandi* (Fig. 32) differs from that of *A. fascicularis* (Fig. 33) by the dark colour. The coil is narrower, the tail is straighter and points below an imagined horizontal plane, and the proximal one of the basal loops inclines somewhat.

The aedeagi are very similar to each



38

0,5



39

Fig. 38. *Acrotrichis fraterna* Johnson, ♀ (S: Skåne, Skärålid).

Fig. 39. *Acrotrichis cognata* (Matthews), ♀ (S: Lycksele lappmark).

other, yet the apical half in *A. strandi* seems to taper slightly towards the apex, while in *A. fascicularis* the sides are more or less parallel, providing a quadratic and often somewhat broader appearance. Aedeagi of both species are distinguished from *A. rugulosa* and other closely related congeners by their narrow and elongated shape.

Consequently, an extension of the key of Hansen (loc. cit.) can be made in order to include *A. strandi* (see the Danish summary).

#### *Acrotrichis cognata* (Matthews, 1877)

This is a circumpolar species, probably of nearctic origin. It has gradually expanded eastwards through the Siberian taiga and

reached northern Scandinavia, Great Britain, and Denmark. Recently, finds were also reported from the Netherlands by Jansen and Heijnsbergen (1986).

The Danish specimen, a female, was collected in NEJ: Læsø, Stoklund 7.viii.1984 by V. Mahler and correctly identified by him. It was found beneath a carcass of a hare (*Lepus europaeus*) situated on mossy ground in a pine forest (*Pinus silvestris* L.). This is a representative habitat of *A. cognata*, a species often found in all kinds of fermenting and decaying organic matter, always in woodland.

In the same habitat were also collected a number of other common *Acrotrichis* species, inter alia *A. silvatica* and *A. insularis*, together with *Ptiliolum schwarzi* (Flach),

*Philontus puella* Nordm., and *Microdota boreella* Brundin.

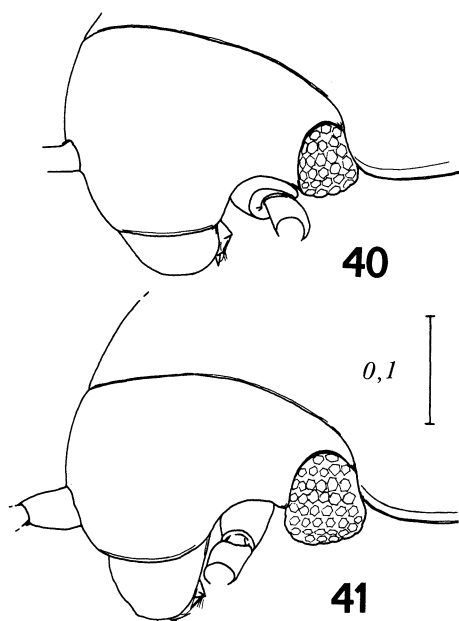
The population(?) in Læsø is probably the result of wind-dispersed specimens, emanating in either Swedish territory or in some unknown source in north-western Denmark.

*A. cognata* is one of the species most willing to fly known to me. Large amounts can be seen swarming during calm, warm afternoons throughout the summer. Its small size and great flying abilities surely permits it to be carried by wind over vast areas. The inferred parthenogenesis of this species also provides a mighty tool as far as capability of colonization is concerned.

Sundt (loc. cit.) mentions the presence of males in the Fennoscandian fauna, although he does not state the exact localities. Males are only known to me from the nearctic region, all Fennoscandian specimens studied being females. Having this in mind, at least it can be stated that males are very rare, most populations probably being completely parthenogenetic.

*A. cognata* is by its iridescent, blueish lustre on the elytra easily distinguished from all other European species. The same kind of tinge is only known to me in some South and Central American species of *Acrotrichis* and related genera. Rarely is it lacking; then the species can be recognized by its rough surface punctulation and reticulation, black antennae, parallel body form (Fig. 39), long elytra, and characteristic spermatheca (Fig. 37). The aedeagus of a specimen from USA: Arizona has been illustrated in Fig. 28. Note the apical tip. This species is already included in the key of Hansen.

As have already been stated, the Danish Ptiliidae are fairly well known as far as number of species is concerned. The distribution within the country is, however, inadequately understood. In general, many species will prove to be widely spread and common. A few will turn out to be rare and, perhaps, decreasing in numbers. Still, the dispersal dynamics of the taxon as a whole, as well as the fact of still undetected species,



Figs 40-41. *Acrotrichis*, caput, fronto-lateral view. Scale in mm. 40. *A. danica*; 41. *A. sitkaensis*.

will certainly cause instant changes of the composition of the fauna in the future.

## Sammandrag

638 exemplar av Ptiliidae från Zoologisk Museum i København studerades. Dessa härrörde huvudsakligen från äldre samlingar, de flesta insamlade under perioden 1880-1915. Insamlingsaktiviteten av Ptiliidae var påfallande hög under dessa år i Danmark och kan kanske tillskrivas det allmänt stora intresse gruppen rönte i Europa under 1800-talets senare hälft.

Materialet utgjordes dels av en större mängd vanliga och utbredda arter, dels av några mindre välkända. För de senare ges närmare upplysningar om fyndomständigheter och (*Acrotrichis*) morfologi.

De äldsta fynden af *Ptenidium turgidum* Thoms. från Jylland presenteras. *Ptilium affine* Er. och *Ptiliola brevicollis* (Matth.) är nya för F. *Acrotrichis suecica* Sundt rappor-

teras från Rude Skov och Folehave Skov i NEZ (tidigare endast en fyndort i NEZ), *A. danica* Sundt från NEZ: Jonstrup (ny lokal).

*Acrotrichis fraterna* Johnson är en för Danmark ny art, som varit förbisedd och troligen är utbredd över hela landet. Arten står nära både *A. intermedia* och *A. sitkaensis* men skiljes lätt från dessa på spermathecas struktur (Fig. 30), aedeagus' form (Fig. 20), pronotums sidokant, som är intermediär (Fig. 9), och 3.-7. antennledningens längd (Fig. 12). Kroppen liknar annars *A. intermedia* både till form, ytstruktur och storlek. Ofta är dock antennerna något mörkare och kortare och kroppsytan något mera glänsande. Pronotums sidokant är baktill starkare böjd och genitalierna är av annat utseende. Från *A. sitkaensis* skiljer den sig framför allt på mindre starkt glänsande översida, större och parallellare kroppsform och baktill rakare sidokant på pronotum, förutom skillnader i genitaliernas byggnad.

I Viktor Hansens bestämningsnyckel (1968) kan den infogas genom att texten på sidan 216, rad 8-18 ändras till:

- 12. Större arter, 0,9-1,2 mm, følehornene lange, slanke (Fig. 11-13). . . . . 12a
- Mindre arter, 0,8-1,0 mm, følehornene kortere (Fig. 14-15). . . . . 13
- 12a. Følehornene rødgyule, lange, slanke, 4.-7. led 3-4 gange så lange som brede (Fig. 11). Pronotums sider foran baghjørnerne svagere rundede (Fig. 10). ♂: aedeagus som i Fig. 19. ♀: spermatheca som i Fig. 29. . . . . 8. *intermedia*
- Følehornene ofte mørkere rødbrune, noget kortere, de 4.-7. led 2,5-3 gange så lange som brede (Fig. 12). Pronotums sider foran baghjørnerne noget stærkere rundede (Fig. 9). ♂: aedeagus som i Fig. 20. ♀: spermatheca som i Fig. 30. . . . . 8a. *fraterna*

De danske fynden härstammar från EJ: Himmelbjerget, F: Fruens Bøge, Klinten og Marienlund, LFM: Fuglsang, SZ: Sorø og NEZ: Brede og Strandmølleåen.

Arten är utbredd över större delen av

Europa. Den förekommer typiskt i fuktiga skogsbiotoper, företrädesvis av lövträdstyp. Där träffas den i fuktig förna, ofte nära vatten men undantagsvis förekommer den även i kompost och vid spillning och as.

Fynden av ytterligare två *Acrotrichis*-arter nya för Danmark presenteras; *A. strandi* Sundt och *A. cognata* (Matth.). Båda två har en nordeuropeisk utbredning, varför fynden får sägas vara överraskande.

*A. strandi* är en mörk art av mellanstorlek och är mycket nära besläktad med den något större *A. fascicularis* Herbst. Den skiljer sig dock från denna genom sin rent svarta översida, som är mera välvd och något mera glänsande. Antennerna är svarta med mörkbruna basaller medan *A. fascicularis* har ljusare sådana, vars basaller oftast är rödaktiga. Hos båda arterna är de korta (Fig. 14-15). Spermathecan (Fig. 32) är mörkare färgad, mer i hopträngd, med de proximala slingorna något annorlunda arrangerade. Dess ända »hängar« något. Aedeagi (Fig. 22-23) är svårskiljda från varandra men båda utmärks av långsträckt, parallell form.

Arten kan infogas i V. Hansens bestämningsnyckel genom att texten på sidan 216, rad 19-23 ändras till:

- 13. Hovedet som regel ret blankt og kun svagt og utydeligt netridset og kornet. Spermatheca af *fascicularis*-type (Fig. 32-33). . . . . 13a
- Hovedet ret mat, kraftigt netridset og kornet. ♂: aedeagus som i Fig. 25. ♀: spermatheca som i Fig. 34. . . . . 10. *rugulosa*
- 13a. Overfladen sort, ret spredt og ret fint kornet. Kroppen hvælvet. Følehornene sorte, de basale led sortbrune. ♂: aedeagus som i Fig. 22. ♀: spermatheca som i Fig. 32. . . . . 9a. *strandi*
- Overfladen ikke dybt sort, kraftigt og tæt kornet. Kroppen flad. Følehornene brune, de basale led oftest rødgyule. ♂: aedeagus som i Fig. 23. ♀: spermatheca som i Fig. 33. . . . . 9. *fascicularis*

*A. strandi* är hittills känd från två varan-

dra näraliggande lokaler; SZ: Stengærds Mose och SZ: Oreby Skov, där den upptäcktes år 1984 av M. Hansen, V. Mahler och G. Pritzl, vilka även korrekt identifierade arten. För beskrivning av lokalerna, se M. Hansen (1986).

Utbredningen i Europa har sin tyngdpunkt i de nordliga delarna av Skandinavien och Storbritannien. Djuret förekommer främst på fuktiga marker av olika slag, företrädesvis sumpiga sjö- och bäckstränder i förna, mossa och driftränder men även i kärr av olika typer. De danska exemplaren togs för övrigt just i ett gammalt alkärr.

Den tredje nya danska arten, *A. cognata* Matthews, upptäcktes 1984 på Læsø av V. Mahler. Den är mycket lätt igenkännlig på sina blåaktigt iriserande täckvingar, i övrigt mörk kropp och parallell gestalt. Den tillhör *silvatica*-gruppen, vilka utmärks av mindre kroppsstorlek och spermathecas förhållandevis enkla byggnad (Fig. 37).

Fyndet av en hona i NEJ: Læsø, Stoklund var ej oväntat, eftersom närmaste population finns på det svenska fastlandet och arten är en erkänt god passiv flygare. Det är en boreal art med circumpolär utbredning, troligen av amerikanskt ursprung. I Skandinavien är den, så vitt jag förstår, huvudsakligen parthenogenetisk (endast honor anträffas), vilket avsevärt torde underlätta den geografiska spridningen.

Den är starkt bunden till skuggig skogsmiljö, främst av barrträdstyp, och påträffas då typiskt i spillning, kadaver, komposter, ruttna svampar och i driftränder men även enstaka i skogsförna. Lugna aftnar kan den ses svärma i stort antal i gläntor och långs skogsvägar.

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