

# THE TACHINID TIMES

ISSUE 28

A challenge to report  
tachinid monstrosities

Update on Finnish Tachinidae

Biology of  
*Blepharomyia piliceps*

Host records for  
*Onychogonia cervini*

IN MEMORIAM  
Vera Andreevna Richter

FEBRUARY 2015

# TABLE OF CONTENTS



## ARTICLES

- 4** **Phylogeny of World Tachinidae Project. Continuing progress towards a phylogeny of Tachinidae**  
by J.O. Stireman III, J.E. O'Hara, J.K. Moulton, P. Cerretti, I.S. Winkler, J.D. Blaschke and Z.L. Burington
- 8** **On the biology of *Blepharomyia piliceps* (Zetterstedt) (Diptera: Tachinidae)**  
by H. Haraldseide
- 12** **A tachinid with a homeotic mutation – a report and a challenge to fellow collectors**  
by J. Pohjoismäki
- 14** **Checklist of Finnish Diptera published**  
by J. Pohjoismäki, A. Haarto, K. Winqvist and J. Kahanpää
- 17** **New host records for *Onychogonia cervini* (Bigot)**  
by J. Pohjoismäki and J. Itämies

## IN MEMORIAM

- 18** **Vera Andreevna Richter 1936–2015**  
by J.E. O'Hara

## CONGRESS REPORT

- 20** **8th International Congress of Dipterology, Potsdam, Germany, August 2014**  
by J.E. O'Hara

## 22 TACHINID BIBLIOGRAPHY

## 29 MAILING LIST

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## DISTRIBUTION

This newsletter is distributed near the end of February each year. It is published simultaneously in hardcopy and online, both based on the same PDF generated from an InDesign file. Hardcopies are distributed to several libraries and to a few readers who request them.

## INSTRUCTIONS TO AUTHORS

This newsletter accepts submissions on all aspects of tachinid biology and systematics. It is intentionally maintained as a non-peer-reviewed publication so as not to relinquish its status as a venue for those who wish to share information about tachinids in an informal medium. All submissions are subjected to careful editing and some are (informally) reviewed if the content is thought to need another opinion. Some submissions are rejected because they are poorly prepared, not well illustrated, or excruciatingly boring.

Authors should try to write their submissions in a style that will be of interest to the general reader, in addition to being technically accurate. This is a newsletter, not *Science* or *Nature*. Illustrate submissions with high quality images sent as separate files at the same time as the text. Text files sent with embedded images will not be considered for publication. All content should be original; if copyrighted material (online or in print) is used then permission from the copyright holder is needed.

Student submissions are particularly welcome. Writing about a thesis study or a side project involving tachinids is a good way to inform others about a study that is underway before it has generated formal publications.

Please send submissions for the 2016 issue of *The Tachinid Times* to the editor by the end of January 2016.

**FRONT COVER** The winding, treacherous road into the remote Gamkaskloof Valley leading to Swartberg Nature Reserve and 'Die Hel', Western Cape, South Africa. See *The Tachinid Times*, 26, 20–29 (2013) for expedition details.

Photo: J.E. O'Hara, 16 October 2012

**TABLE OF CONTENTS** A soaptree yucca stands tall in the foreground as a monsoonal downpour hits the Chihuahuan Desert west of Silver City, New Mexico, USA.

Photo: J.E. O'Hara, 17 August 2006

**BELOW** Ashley Kirk-Spriggs (National Museum, Bloem-fontein) checks his double-headed Malaise trap in the Anysberg Nature Reserve, Western Cape, South Africa. Expedition details given in *The Tachinid Times*, 26, 20–29 (2013).

Photo: J.E. O'Hara, 13 October 2012





# Phylogeny of World Tachinidae Project

## Continuing progress towards a phylogeny of Tachinidae

by John O. Stireman III<sup>1</sup>, James E. O'Hara<sup>2</sup>, John K. Moulton<sup>3</sup>, Pierfilippo Cerretti<sup>4</sup>, Isaac S. Winkler<sup>5</sup>, Jeremy D. Blaschke<sup>3</sup> and Z.L. "Kai" Burington<sup>1</sup>

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Readers of this newsletter are likely familiar with our ongoing project to establish a framework phylogeny of world Tachinidae (see articles in *The Tachinid Times* 26 and 27). This collaborative project, involving myself, Jim O'Hara, Kevin Moulton, Pierfilippo Cerretti, Isaac Winkler and a long list of collaborating tachinidophiles was initiated in 2012 with funding from the U.S. National Science Foundation. Our goal is to produce a robust phylogenetic framework of Tachinidae that can be used to inform tachinid taxonomy, systematics research, and the patterns of tachinid evolution. In previous issues of *The Tachinid Times* we summarized our progress to date in terms of obtaining taxa (e.g., Cerretti *et al.* 2013, O'Hara *et al.* 2014) and some of our preliminary phylogenetic findings (Stireman *et al.* 2013, Winkler *et al.* 2014). Here, we provide a brief update on some of our recent progress and associated products.

### Products and Progress

Since the last edition of this newsletter, we have continued to acquire specimens and data for our mission to reconstruct relationships of Tachinidae. In early 2014 we published the first major paper from the project, a morphology-based phylogenetic reconstruction led by Pierfilippo Cerretti (Cerretti *et al.* 2014). This analysis of 180 genera based on 135 characters produced a number of interesting results, some supporting previous hypotheses (e.g., a grouping of Phasiinae + Dexiinae, and Tachininae + Exoristinae) and some suggesting new ones (e.g., derived ovipary, and a non-monophyletic Dexiinae). Rather than elaborate on all of the findings here, we invite the reader to read the paper itself (available from any of the authors). Perhaps most importantly, this paper provides a morphological foundation with which to compare our emerging molecular-based inferences. It also illustrates the

difficulty of reconstructing phylogenetic relationships among tachinid clades, showing how small differences in character coding or weighting can result in substantial differences in inferred relationships.

Our preliminary molecular analysis using a “test-set” of 32 taxa, representing 22 tribes and nine genes provides a further backbone for tachinid phylogeny that strongly supports the usefulness of “new” nuclear loci developed by J.K. Moulton. This manuscript has experienced some delays in publication due to technical issues, but hopefully should be “in press” by the time you read this article.

As far as a detailed molecular phylogeny of the family goes, we have largely completed our sequencing of 28S rDNA and CAD genes (Fig. 4), although some holes remain to be filled. Preliminary trees are consistent with our multi-gene “test-set” analysis (above), yet reveal a number of finer scale relationships within and between tribes. We have also made great progress with the nuclear genes MAC and MCS (developed by Moulton), having acquired partial sequences for more than 100 taxa for each of these genes. Notably, we are sequencing large fragments of these genes (1700–2000 base pairs each), which takes more effort than smaller fragments, but promises to enable us to make more robust inferences about relationships. Sampling and sequencing of the Phasiinae, the focus of PhD student Jeremy Blaschke in the Moulton Lab, is largely completed with sequences from the genes CAD, MAC, MCS and LGL already acquired. We hope to be more or less finished with sequencing in the next six months, with perhaps some continuing efforts to acquire sequence data for key taxa, and it will probably take another six months to figure out what these data can tell us. Perhaps by this time next year, we will have a manuscript of a comprehensive molecular phylogenetic analysis nearing completion or in review.

PhD students Jeremy Blaschke and Kai Burington are making good progress with their respective subprojects. As stated earlier, Jeremy has nearly completed a molecular phylogenetic analysis of Phasiinae using four nuclear genes which will be used for tracing the evolution of taxonomically important characters throughout the Tachinidae. He is also conducting tachinid faunistic studies in Great Smoky Mountain National Park and creating preliminary species trees of selected Nearctic phasiine genera. Kai is currently preparing for a proposal defense of her research which involves taxonomic and systematic studies of the genus *Eucelatoria* Townsend, a focused phylogenetic study of ‘keel and piercer’ genera within the tribe Blondeliini, and examination of geographic patterns of tachinid diversity.



**Figures 1–3.** 1. *Imitymyia sugens* (Loew), male. 2. *Freraea montana* (Coquillett), male. 3. *Germaria angustata* (Zetterstedt), male.

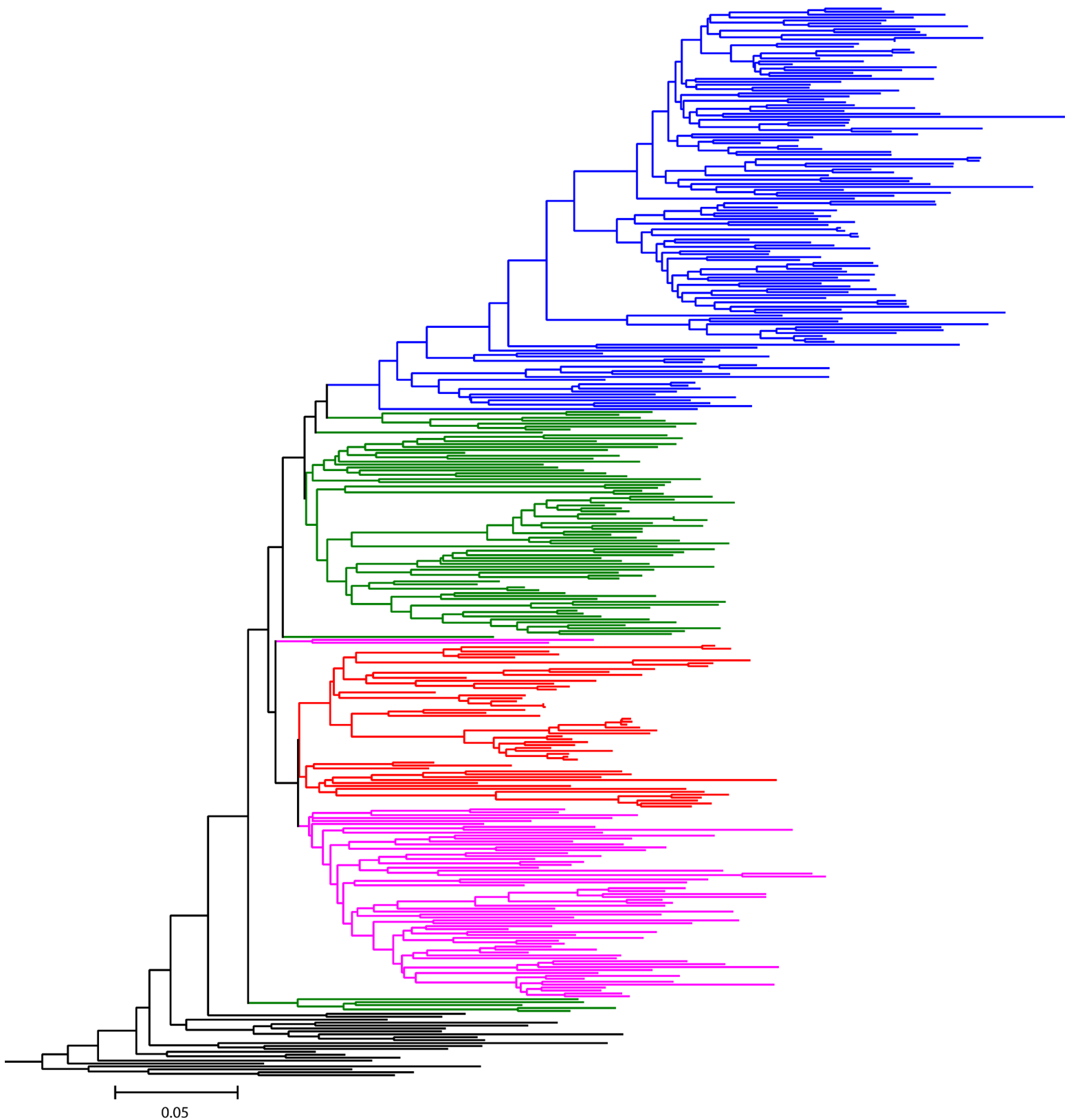
## Tachinid taxa

We have been able to obtain additional taxa for key groups from both our own collecting efforts and those of our collaborators. Notably, Jim O'Hara was able to obtain specimens of the small tribes *Imitomyiini* (*Imitomyia* Townsend, Fig. 1) and *Freraeini* (*Freraea* Robineau-Desvoidy, Fig. 2) on a successful collecting trip to the western United States. We were able to obtain a specimen of *Germaria angustata* (Zetterstedt) (Fig. 3) through Jim's colleague Syd Cannings from the so-called "Carcross Desert" in Canada's Yukon Territory, as well as *Germaria hispanica* Mesnil from Spain (collected by P. Alvarez and acquired by P. Cerretti). In addition, I (Stireman) recently collected material in Costa Rica and received the calyprate material in alcohol from Brown and Sharkey's former T.I.G.E.R. Malaise trapping project in Thailand (kindly forwarded by Thomas Pape), which will take a long time to properly sift through. Still, there remain a few small tribes for which we have yet to obtain representative taxa, including the *Iceliini*, *Doleschallini*, *Anacamptomyiini*, *Protohystriciini*, and *Trichodurini*. We also remain interested in obtaining additional genera of certain tribes such as *Ethillini*, *Macquartiini*, *Neaerini*, and *Blondeliini*. Jeremy is continuing to acquire a few remaining taxa of the Phasiinae including anything in *Parerigonini* or *Leucostomatini* (especially *Cinochira* Zetterstedt and relatives) and the Australasian genera *Pentatomophaga* de Meijere and *Saralba* Walker. We would be very grateful for any material from these groups or from any rarely collected genera that you (the community of those interested in Tachinidae) may come across. We would also like to acknowledge the many people who have generously sent us material or who have otherwise contributed to the project including Monty Wood, Hiroshi Shima, Diego Inclán, Steve Gaimari, Martin Hauser, Jaakko Pohjoismäki, Theo Zeegers, Thomas Pape, Rudi Schnitzler, Neal Evenhuis, Jeff Skevington, Greg Dahlem, Piluca Álvarez, Syd Cannings, Daniel Whitmore, Ashley Kirk-Spriggs, Brian Brown and Mike Sharkey (sorry if we missed anyone!).

In the process of collecting material for the tachinid phylogeny project, we have obtained preserved tissue from thousands of specimens, most of which we will not use for the current project. Generally, this consists of 1–3 legs preserved in 95% ethanol and stored at –20 or –80°C, as well as the mounted remainder of the specimen as a voucher. Much of this material is from North America, but all biogeographical regions are represented. We hope to take advantage of many of these preserved samples in future systematic projects involving Tachinidae, but we also realize that this tissue collection represents a potentially useful resource for other researchers working on various tachinid groups. Thus, if you (or one of your students) are planning to use DNA data in taxonomic or systematic studies of a particular tachinid taxon, please contact us, and we may be able to help you obtain samples of representative taxa.

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**Figure 4.** A preliminary phylogenetic reconstruction of 369 tachinid taxa based on 28S rDNA and the nuclear gene CAD, with taxa colored according to subfamily: blue=Exoristinae, green=Tachinae, magenta=Dexiinae, red=Phasiinae, black=outgroups. Taxon names are omitted as we would like to wait until all data is collected and analyzed before presenting our full results.

# On the biology of *Blepharomyia piliceps* (Zetterstedt) (Diptera: Tachinidae)



Figure 1. *Blepharomyia piliceps*, live female (Karmøy, Norway).

by Håkon Haraldseide

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## INTRODUCTION

*Blepharomyia* (Brauer & Bergenstamm) (Dexiinae, Voriini) is a Holarctic genus comprising six known species, four from the Palearctic Region and two from the Nearctic Region (Tschorsnig & Richter 1998, O'Hara & Wood 2004).

*Blepharomyia piliceps* (Zetterstedt) (Fig. 1) is a boreo-montane species found mainly in northern and central Europe but also known from high altitudes in Bulgaria and Spain (Tschorsnig *et al.* 2004).

The known hosts, usually based only on one or two records each, are: Lepidoptera, Geometridae: *Ematurga atomaria* (L.), *Entephria caesiata* (Denis & Schiffermüller), *Epirrita autumnata* (Borkhausen), *Eulithis populata* (L.), *Macaria brunneata* (Thunberg), *Mesotype didymata* (L.) and Noctuidae: *Xylena solidaginis* (Hübner)

(Herting 1960, Belshaw 1993). More records exist for *Eulithis populata* which seem to be the preferred host of *B. piliceps* (IOBC lists 9 and 10, Ziegler 1983, Ford *et al.* 2000, Robertson & Shaw 2012).

Presented below are the results of field observations and experiments on oviposition of *B. piliceps*. The egg, first instar larva and puparium are described. The cephaloskeleton of the second instar larva is illustrated. Observations on oviposition and descriptions of early stages were not known before for this species. A description and figures of the first instar exist for the closely related *B. pagana* (Meigen) [= *amplicornis* Zetterstedt] (Fariñets 1976), as well as some observations on its development (Herting 1965) and some descriptive notes on the puparium (Herting 1960).



## MATERIAL AND METHODS

Field observations and collection of specimens for experiments were done in Ferkingstadskogen, Karmøy, Norway.

Two specimens of *Eulithis populata* were used as hosts in the oviposition experiments. To reduce the chance of tachinid or hymenopteran preinfection both were collected at a very early stage, and reared to maturity before being exposed to the fly. Experiments were done as described in Haraldseide & Tschorsnig (2014). Specimens of immature stages described and illustrated are the results of captive rearings, except the first instar larva which was dissected from a collected female.

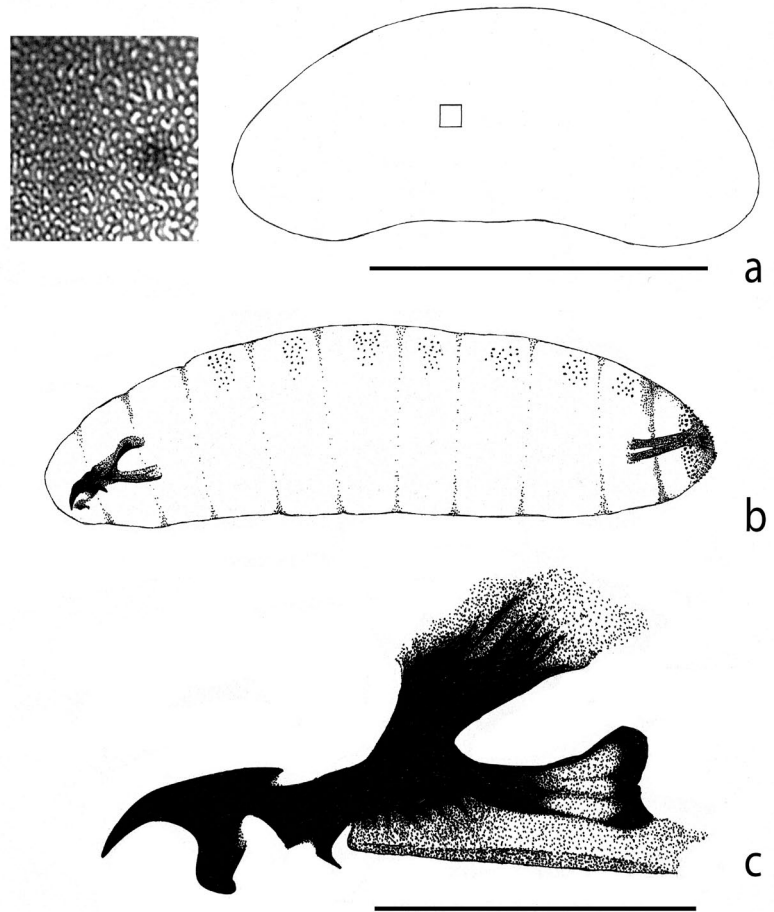
## FIELD OBSERVATIONS

In Norway *B. piliceps* has been collected from the beginning of May to beginning of June, and seems to be rare but locally common. In Ferkingstadskogen the species is frequent and appears to be one of the most abundant spring tachinids. The location is a damp and thin forest consisting mainly of *Pinus* and various deciduous trees and shrubs with patches of marshland. Open areas and undergrowth are dominated by *Vaccinium myrtillus* and *Calluna vulgaris*, on which the hosts *Eulithis populata* and *Ematurga atomaria* are abundant. Adults of *B. piliceps* are most often observed in more or less shaded areas on *V. myrtillus* where they are very active. Males are sometimes also found on tree trunks.

## IMMATURE STAGES

*Blepharomyia piliceps* is ovolarviparous. The egg is macrotype, approximately 0.8 mm long, oval in dorsal view and in lateral view planoconvex to weakly reniform when mature (Fig. 2a). Its dorsal surface is whitish with a reticulated structure (see insert to Fig. 2a), and the ventral surface is thin and smooth, covered with an adhesive material which sticks to the host. The egg is indehiscent; i.e., there is no line of weakness present. Probably the tachinid larva penetrates the host directly through the ventral surface of the egg. About 60–70 eggs of varying maturity were counted by dissection of two females.

The first instar larva (Fig. 2b) is fully developed within the egg at the time of oviposition and hatches soon after it is deposited on a host. Its thoracic segments are devoid of spines. The abdominal segments 1–7 bear broad bands of short robust spines or scales dorso-posteromedially on the segments, these bands are broadly interrupted along the dorsal midline, leaving 20–25



**Figure 2.** *Blepharomyia piliceps*. **a.** Egg. Scale bar 0.5mm (insert: surface structure). **b.** First instar larva. **c.** Cephaloskeleton of second instar larva. Scale bar 0.2mm.

spines on each side. Posteriorly on segment 7 a complete encircling band of minute spines is present. Segment 8 posteriorly has short robust spines and groups of longer spines which almost encircle the posterior spiracles, these spines are especially strong lateral to the spiracles and dorsally between them.

The second and third instar larvae are not described here except by illustration of the cephaloskeleton of the second instar (Fig. 2c).

The puparium (three puparia examined) is 5.3–5.4 mm long and 2.4 mm wide, reddish-brown, cylindrical, slightly widening posteromedially and tapering towards posterior spiracles (Fig. 3). Its surface texture is dull with fine transverse striations, these especially prominent on the posterior fifth where they may become rugose. The intersegmental divisions are differentiated only by deeper and closer striae. Bands of spines completely absent. Lateral muscle scars visible. Anterior spiracles protruding, parallel and apically blunt and cerebriform. Posterior spiracles situated on or just above longitudinal axis,

protruding and asymmetrically cerebriform in structure. Anal plate circular, opening slit-like.

## OVIPOSITION

A single female (collected 4 May 2014) was used in both experiments. In the first experiment the fly was allowed to oviposit once. The attack happened five minutes after introduction of the fly into the experimental box. One egg was laid dorso-laterally on a posterior abdominal segment of the host (the caterpillar was inactive due to ecdysis which was completed the next day).

In the second experiment the fly was allowed to attack several times. The first attack happened after one and a half minutes and the experiment was stopped after two and a half minutes. A total of four eggs were laid, one on a thoracic segment, one on an anterior abdominal segment, and two on the posterior abdominal segments, all in dorsolateral position.

Attacks were direct and did not seem very calculated, the fly landed on the resting, motionless host and held fast during oviposition while the host twitched violently. The average contact during an oviposition attack lasted approximately one second.

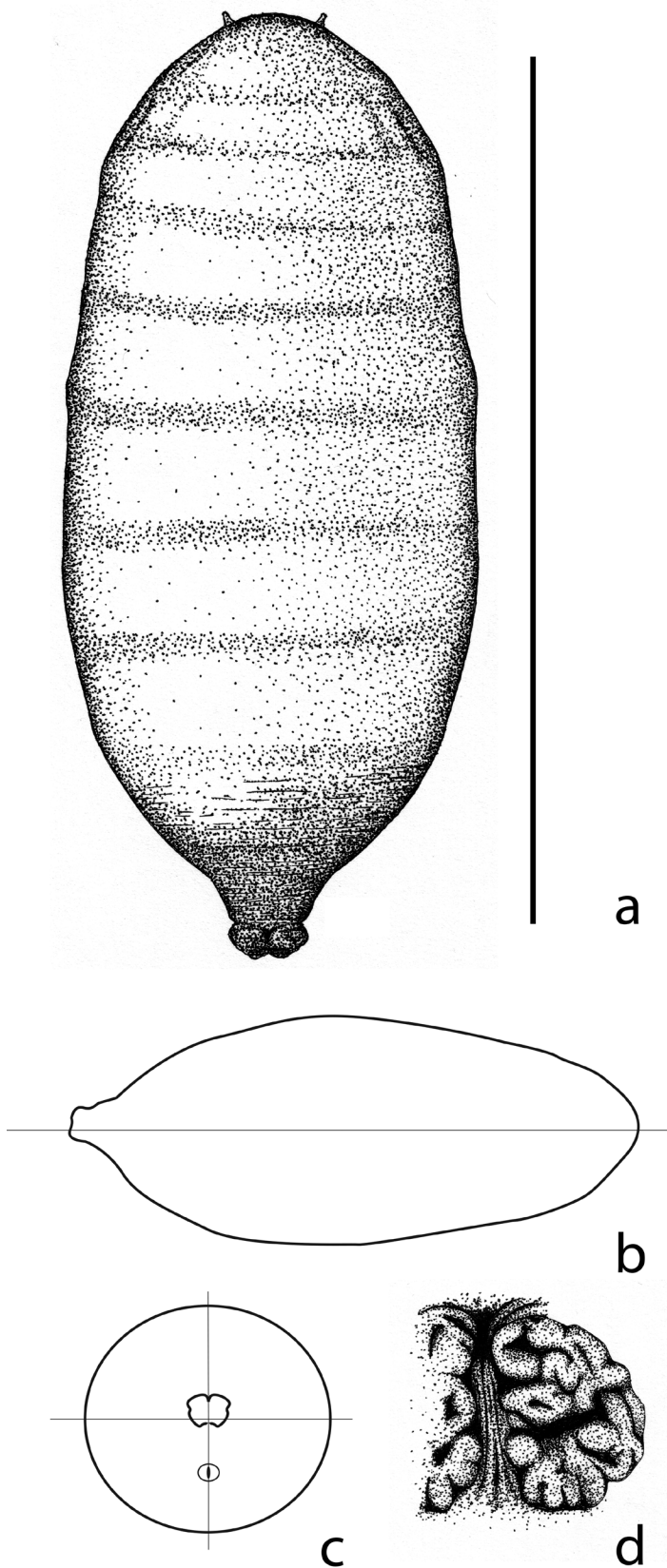
No cleaning efforts were attempted by the hosts. This might explain the lack of care taken by the fly to oviposit on the anterior segments to avoid loss of eggs by the host's mandibles.

The mature tachinid larvae emerged from the caterpillars after 11 days and crawled a short distance before pupariation. Both hosts produced one mature larva each (of equal size), however, upon dissection a dead second instar larva was found in the second host.

The tachinid adults had not yet emerged at the time of submission of this article because the species has a single generation in spring and overwinters in the puparium.

## ACKNOWLEDGEMENTS

I am very grateful to Hans-Peter Tschorsnig (Stuttgart, Germany) for his comments and improvements to the manuscript and to Jim O'Hara (Ottawa, Canada) for linguistic review.



**Figure 3.** *Blepharomyia piliceps*, puparium. **a.** Dorsal view. Scale bar 5.0 mm. **b.** Lateral view. **c.** Posterior view. **d.** Right posterior spiracle.

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# A tachinid with a homeotic mutation – a report and a challenge to fellow collectors

by Jaakko Pohjoismäki

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**Figures 1–2.** The head of a male *Gonia divisa* Meigen with an antennal deformity. **1.** Head in left lateral view. Note the abnormally dilated left third antennal segment with an additional but somewhat truncated apical arista. The partial bifurcation of the antenna indicates that the developing antenna has had two regions with apical identity. **2.** Head in right lateral view showing the normal right antenna as a comparison. No other deformities were observed on this specimen.

When determining a collection of tachinids from a friend, I came across a male *Gonia divisa* Meigen, 1826 from Vanaja, Finland (Vehkalanmäki, 15 April 2008, J. Kahanpää leg.) having an additional terminal arista on the left antenna (Figs. 1–2). Similar animal monstrosities and deformations have always attracted attention from a wide audience and stirred the imagination of early naturalists. Due to their sheer numbers, rare deformities are easier to come across in insects and even some papers have been published on the topic in the past (Hagen 1876, Gauss 1962). Although a seemingly minor defect, the feature reported here proved to be very interesting, thanks to the detailed work on fruit fly (*Drosophila*) development.

Although most of the described cases from wild insects are due to non-genetic disturbances during the pupal development, the most interesting deformities in-

clude the transformation of body parts into others – such as in the case of the classical *Drosophila* mutant *antennapedia*, in which legs grow in the place of antennae. These transformations are genetic and are caused by so-called homeotic mutations that affect master regulatory genes required for the correct identity of body parts in the developing embryo.

Because there are dozens of genes involved in the patterning of body parts, not all homeotic mutants are as dramatic as the *antennapedia*. For example, in the antennal patterning several genes are involved in the assignment of correct insertion site, proximo-distal axes and segmentation (Cesares & Mann 1998, Ahn *et al.* 2011). Although the arista of cyclorrhaphous flies is located at the base of the third antennal segment, it is developmentally the apical part of the antenna. In *Drosophila*, this apical identity is controlled by the JAK/STAT pathway (Ayala-Camargo *et al.* 2007). Interestingly, the loss of

JAK/STAT signaling in the developing *Drosophila* antenna disturbs the apical identity and can create an identical double-arista as seen in the *Gonia* specimen (Figs. 1–2; cf. fig. 2I in Ayala-Camargo *et al.* 2007). Because the feature is present only on the left antenna in this *Gonia* specimen, it is likely that the feature results from a random somatic mutation that has occurred at some point in the lineage of cells forming the apical section of the left antenna. Unfortunately, the JAK/STAT pathway itself has many components, so it is impossible to decipher which part of the pathway is affected. The mutation is not hereditary and probably would have not affected the fitness of the individual to a great extent.

As a friendly invitation, I challenge all *Tachinid Times* readers to report their tachinid monsters in forthcoming issues of this newsletter. Although a curiosity, data on some naturally occurring mutants might prove to be useful as our understanding of insect development deepens.

## Acknowledgments

I would like to thank Dr. Hans-Peter Tschorsnig, Stuttgart, Germany, for encouraging me to report the finding.

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# Checklist of Finnish Diptera published

by Jaakko Pohjoismäki<sup>1</sup>, Antti Haarto<sup>2</sup>, Kaj Winqvist<sup>3</sup> and Jere Kahanpää<sup>4</sup>

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The updated checklist of Finnish Diptera was published as a special issue of *Zookeys* in September 2014 (Kahanpää & Salmela 2014). The new checklist includes 6920 dipteran species from Finland of which 2932 belong to Nematocera or lower flies and 3989 to the suborder Brachycera. Together with the introductory chapter, the work is divided into 31 independently-authored chapters consisting of infraorders to single families. A total of 24 authors contributed to the work, the first of its kind since 1980 (Hackman 1980a, 1980b). The checklist is open access and easy to use as an online resource.



**Figure 1.** Male *Peleteria ruficornis* (Macquart) from Tampere, 2009. J. Pohjoismäki leg. Although not present in the Central European key (Tschorsnig & Herting 1994), the species is easy to tell apart from the other European *Peleteria* by the red tip of the otherwise blackish gray abdomen.

## Additions to the Finnish Tachinidae

Tachinid enthusiasts might be delighted to see that the number of Tachinidae recorded from Finland has risen from 201 in 1980 to 319 in 2014 (Pohjoismäki & Kahanpää 2014). After the checklist was published, three additional tachinid species have been found in the country: *Lecanipa bicinta* (Meigen, 1824) and *Winthemia speciosa* (Egger, 1861), both from Lappeenranta, Koiveronmäki N67.71560 E5.93392, August 6, 2014, Iiro Kakko leg, and *Carcelia puberula* (Mesnil, 1941) from Espoo, Siikajärvi, N60.29 E24.52, May 25 to June 15, 2014, Jussi Koistinen leg. (**new records**). On the other hand the records of *Siphona variata* Andersen, 1982 proved to be misidentifications and this species must be deleted from the Finnish list. The current tachinid species count for Finland is a decent 321.

## Comments on the tachinid fauna

A major part of the increase in species known from Finland is explained by the extensive collecting efforts in the 2000s, but some records might reflect real changes in the fauna, namely the northward expansion of species as a result of global climate change. A similar trend is seen in the Finnish lepidopteran species (see Kontiokari 2014 for a review). At the same time some conspicuous species that are common in old collections, such as *Dexia vacua* (Fallén, 1816) and *Dinera carinifrons* (Fallén, 1817) have declined sharply in numbers or have possibly gone extinct. Although the last records for these species are from the 1940s, they have been kept on the list as some regions of Finland remain poorly sampled.

Probably the most impressive Finnish newcomer is *Gonia divisa* Meigen, 1826, first recorded in 1979, next recorded in 2004 and now one of the most common spring tachinids in southern Finland up to the level of Joensuu (N69.4 E6.4). This likely reflects the real situation in the field and not only the changes in collecting intensity, as the other spring *Gonia*, *G. ornata* Meigen, 1826 and *G. picea* (Robineau-Desvoidy, 1830) are common in old collections. While *G. divisa* is widespread elsewhere in northern Europe, some of the other records in Pohjoismäki & Kahanpää (2014) are more surprising. For example, the following species have been regarded as having more southern European distributions (Tschorsnig & Herting 1994):

### Exoristinae

*Ceromasia rubrifrons* (Macquart, 1834). First recorded in 2013 from Lieksa in North Carelia (63.2N 30.6E).

### Tachininae

*Peleteria ruficornis* (Macquart, 1835) (Fig. 1). A species not included in the book on Central European Tachinidae (Tschorsnig & Herting 1994). First recorded in 1997 from Naantali, two more in 2009 (Tampere) and 2010 (Toijala). All locations are in south-west; i.e., the southern part of central Finland.

### Dexiinae

*Halidaya aurea* Egger, 1856. First recorded in 2006 in Helsinki, three more records from the same region in 2011–14 and one record from Joensuu, North Carelia in 2013.

### Phasiinae

*Hemyda obscuripennis* (Meigen, 1824). A single record, Espoo in the vicinity of Helsinki in 2012.

*Hemyda vittata* (Meigen, 1824). So far the only record is Pohja, in southwestern Finland, in 2006.

## Towards a Red List of Finnish tachinids?

The brachyceran infraorders and families Xylophagoidea, Tabanoidea, Stratiomyoidea, Nemestrinoidea, Asiloidea, Dolichopodidae, Syrphidae, Neriodea, Diopsoidea, Conopoidea, Tephritoidea, Lauxanoidea, Scio-myzoidea and Clusiidae were evaluated in the 2010 Red List of Finnish species (Anonymous 2010). Together with a follow-up of the evaluated groups, it is intended that the evaluation will be extended to some other important families, such as Tachinidae, in the next Red List. Besides the problems with the paucity of recording, relatively little is known about the ecological requirements of tachinids. However, it could be possible to identify threatened tachinid species restricted to declining habitats, such as dry meadows (*Aphria* spp., *Demotocus*) or utilizing a threatened host as in the case of *Minthodes picta* (Zetterstedt, 1844) living on *Myrmecozela ochraceella* (Tengström, 1848) (Lepidoptera: Tineidae) (classified as NT). The evaluation will nevertheless be useful for the overall knowledge of the status and diversity of Finnish Tachinidae.

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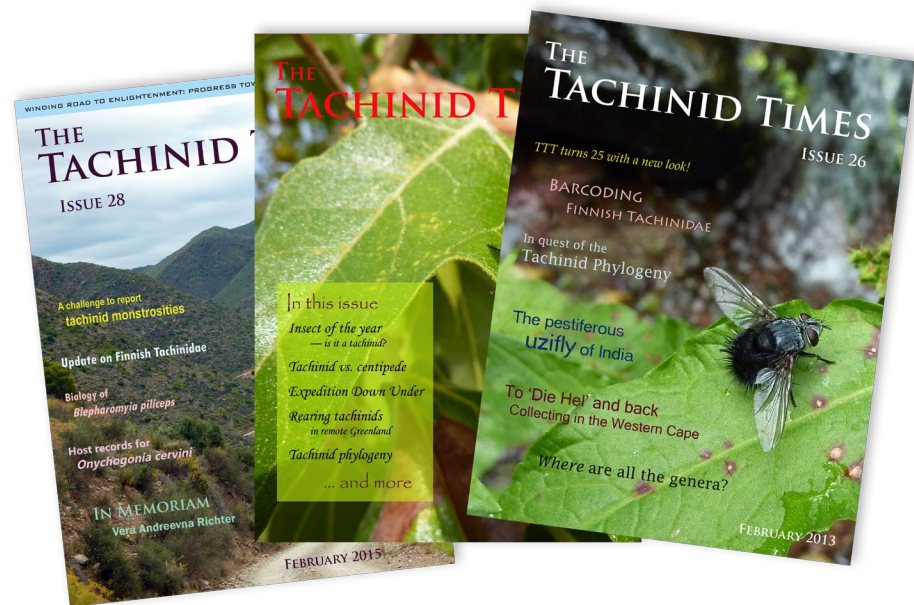
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# SEEKING IMAGES FOR *THE TACHINID TIMES*

I am seeking images that can be used for the introductory pages of this newsletter. In particular, pictures of tachinids that have a large background that is suitable for the overlay of text are especially welcome as potential cover and Table of Contents pages. I will also consider dedicating a page or two to close-up pictures of tachinids if

I receive some especially nice submissions. A section of this sort, called *Diptera ARE Amazing*, is now a regular feature of the *Fly Times* newsletter.



**Jim O'Hara**  
Editor, *The Tachinid Times*



# New host records for *Onychogonia cervini* (Bigot)

by Jaakko Pohjoismäki<sup>1</sup> and Juhani Itämies<sup>2</sup>

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*Onychogonia cervini* (Bigot, 1881) (Fig. 1) is a large and rare tachinid known from the Alps and the Scandinavian mountains. Its only known host so far has been the rare and locally distributed alpine tiger moth *Holoarctia cervini* (Fallou, 1864) (Lepidoptera: Erebiidae) (Tschorsnig & Herting 1994). During 1998–2002, Juhani Itämies, Eino Erkinaro and Kalevi Heikura collected for research purposes a large number of lepidopteran larvae from various parts of the Finnish Lapland, paying special attention to the yearly fluctuation of larval *Pararctia lapponica* (Thunberg, 1791) (Lepidoptera: Erebiidae) (Itämies *et al.* 2007).

The larvae were collected in August–September and allowed to overwinter to obtain adults in the following spring. A total of three *O. cervini* emerged from the rearings, two from *Pararctia lapponica* and one from *Anarta melanopa* (Thunberg, 1791) (Lepidoptera: Noctuidae). All host larvae were collected from Kaunispää, Inari, Finland (75.91253N, 5.18148E). The host association is interesting, as it indicates that *O. cervini* can utilize several suitable-sized hosts in its environment. However, this might not be so surprising as the members of Goniini produce microtype eggs, which get ingested by the



**Figure 1.** *Onychogonia cervini* (Bigot), male. A large (12 mm) and conspicuous species, closely resembling dark *Gonia* species in appearance. Photo by M. Mutanen.



**Figure 2.** A typical *Pararctia lapponica* (Thunberg) habitat in Utsjoki, Finnish Lapland. *Nowickia alpina* (Zetterstedt) can sometimes be hilltopping in numbers in similar locations. Mosquitoes and biting midges add excitement to the hunt. Photo by J. Pohjoismäki.

host making the host selection not as stringent as in species laying their eggs or larvae directly on the host. Therefore it might be possible to obtain the rare *O. cervini* for collections by rearing common alpine noctuid species. Additionally, as the Finnish habitat of dry fellfield-type tundra (Fig. 2) differs from the mountain habitats required by *Holoarctia cervini*, *O. cervini* could possibly be found from a range of open alpine landscapes.

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# Vera Andreevna Richter

1936–2015

The dipterist community was saddened by the loss of Professor Vera Andreevna Richter (born August 28, 1936; Fig. 1), who passed away in St. Petersburg, Russia on February 7, 2015 after suffering a stroke the week before. Vera was an active participant at last year's International Congress of Dipterology in Postdam, Germany and her sudden death a few weeks ago was especially disturbing to those of us who had just seen her months before at the congress.

Vera Richter will best be remembered by readers of this newsletter for her nearly 50 years of research on the systematics of the Tachinidae. Born in Armenia to two eminent Soviet coleopterists, Vera followed in her parents' footsteps in becoming an entomologist. She graduated from university in 1958 and began her lifelong tenure at the Zoological Institute in St. Petersburg (then as Leningrad) that same year. She began in a technical position at the Institute, obtained her Ph.D. in 1965, a D.Sc. degree in 1988, and a professorship in 2003 (Korotyaev & Ovtshinnikova 2015).

Vera's first paper on Tachinidae was, not surprisingly, a study based on specimens she had collected in her homeland of Armenia the year before (Richter 1967). Vera rose to prominence as a tachinidologist in the 1970s with the publication of over twenty taxonomic papers on the Tachinidae, many focused on the faunas of Mongolia and Transcaucasia. Her knowledge of the fauna of the former Soviet Union and Mongolia was, by the end of the 1970s, second to none and this led to her being asked by the European specialist Benno Herting for assistance with the distributions of tachinids in these regions for inclusion in his landmark catalogue of the Tachinidae of the Palaearctic Region (Herting 1984).

Vera's publications throughout the 1980s to the present mostly concerned the tachinid fauna of the former Soviet Union but she also had a keen interest (shared with her Canadian colleague Monty Wood) in species with Holarctic distributions (e.g., Richter & Wood 1995). Over the course of her career, Vera published approximately 120 papers on the Tachinidae and described about 130 tachinid species. Through her efforts our knowledge of the Tachinidae in the vast area of the Palaearctic Region east of Europe and west of Japan was significantly improved. Among her most significant contributions to tachinidology were the Tachinidae chapters in *Contributions to a Manual of Palaearctic Diptera* (Tschorsnig & Richter 1998) and *Key to the Insects of Russian Far East* (Richter 2004).

On a personal note, Vera Richter was among the few tachinid specialists I have known since my earliest days of studying these flies. Communication was difficult at first, with all correspondence

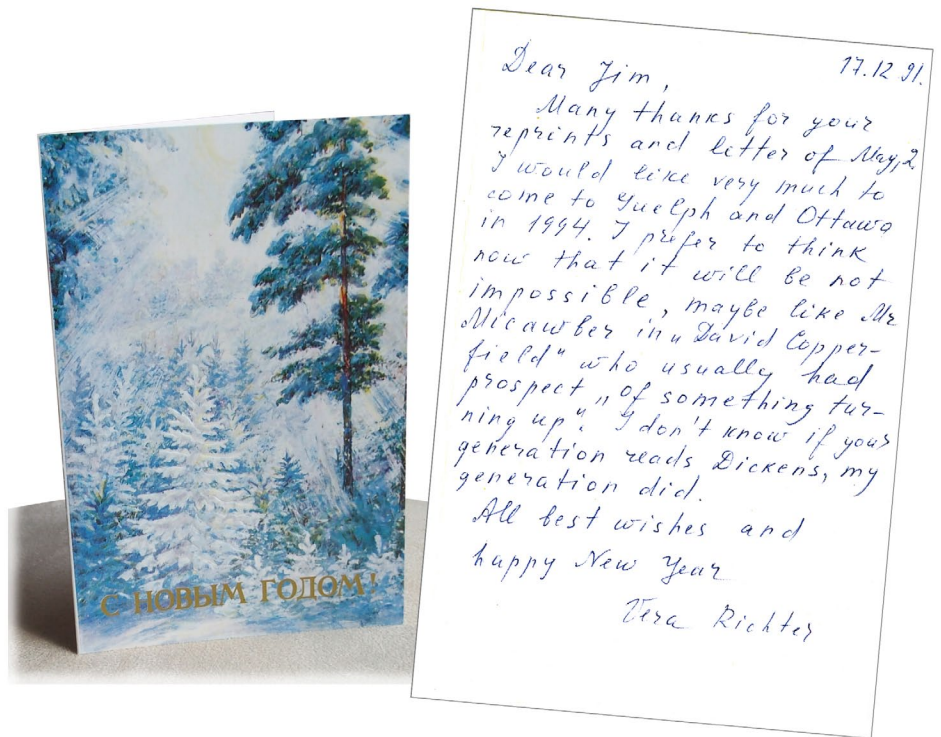
passing between us as letters sent through the mail and crossing the "Iron Curtain" into and out of the Soviet Union. The cost of postage was a concern for letters and reprints passing in both directions and this contributed to our infrequent early exchanges. I was thrilled to learn in 1991 that Vera had hopes of attending the International Congress of Dipterology in Guelph, Canada in 1994, with the news reaching me in the form of a note written in a Christmas card (Fig. 2). Vera eloquently compared herself to a character in Dickens' *David Copperfield* who "usually had prospect of something turning up" as a way of expressing her optimism about attending the congress. This card conveys a sense of the broad education Vera must have received as a young person, despite the hardships of growing up in Armenia during and shortly



**Figure 1.** Vera Richter during the 4th International Congress of Dipterology in Oxford, UK, September 1998.

after the Second World War. Vera's hope "of something turning up" came true and she not only attended the congress in Guelph but also spent a few days in Ottawa visiting the Canadian National Collection, where she was primarily hosted by Monty Wood. I have no pictures of Vera from that trip but I have included herein a picture from each of the two subsequent congresses she attended, the Oxford congress in 1998 (Fig. 1) and the most recent congress last August in Potsdam (Fig. 3). Vera will be missed by her colleagues and friends throughout the world.

More complete biographies of Vera Richter are being planned by her colleagues in the Zoological Institute in St. Petersburg.



**Figure 2.** Christmas card sent to the author in 1991 in which Vera likens herself to Mr. Micawber in Dickens' *David Copperfield*, in reference to her chances of attending the 1994 International Congress of Dipterology in Guelph, Canada.

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**Figure 3.** The patriarch and matriarch of tachinidology, Monty Wood and Vera Richter, at the congress dinner during the 8th International Congress of Dipterology, Potsdam, Germany, on 13 August 2014.

### by J.E. O'Hara

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# 8th International Congress of Dipterology, Potsdam, Germany, August 2014

The 8th International Congress of Dipterology was held last summer in Potsdam, Germany. The meeting was a resounding success and broke the record for the most delegates at a dipterology congress—368 from 46 countries (Kotrba 2014). The contingent of tachinid enthusiasts was similarly large although the number of delegates eludes me. I can however give the number of oral and poster presentations in which tachinids figured prominently—18. This is possibly also a record-breaking number. The titles and authors of these presentations are listed below. The abstracts are given in the *Abstract Volume* that is available for download from the homepage of the *International Congresses of Dipterology* website. A few pictures of happy delegates are included below.



**An impromptu assembly of tachinidologists.** Left to right: Chun-tian Zhang (China), Pierfilippo Cerretti (Italy), Diego Inclán (Ecuador/Italy), Jim O'Hara (Canada), John Stireman (USA), Rudi Schnitzler (New Zealand), Monty Wood (Canada), Hiroshi Shima (Japan) and Takuji Tachi (Japan).

## Oral and poster presentations

### Authors and titles are cited as given in:

Dorchin, N., Kotrba, M., Mengual, X. & Menzel, F. (2014), eds., *Abstract volume, 8th International Congress of Dipterology, Potsdam*. xxvii + 440 pp.

### Presentations

Cerretti, P., O'Hara, J.E., Stireman, J.O. III, Inclán, D.J., Shima, H., Wood, D.M., Moulton, J.K. & Winkler, I.S. A morphological phylogeny of Tachinidae. P. 59.

Dios, R. & Nihei, S. Revision of the Neotropical species of *Trichopoda* Berthold, 1827 and *Ectophasiopsis* Townsend, 1915. P. 83.



Hiroshi Shima (left) and Takuji Tachi (right) from Japan.

Franco P., A.C. The genus *Phytomyptera* Rondani (Tachinidae) in the Cerrado vegetation, Brazil. P. 102.

Gudin, F.M. & Nihei, S. Taxonomic revision and cladistic analysis of *Ormiophasia* Townsend, 1919 (Diptera: Tachinidae: Ormiini). P. 126.

Ichiki, R., Tabata, J., Nakahara, Y., Kainoh, Y. & Nakamura, S. Comparisons between a midgut-resident tachinid and two hemocoel-resident parasitoids: how do food plants of host herbivores affect parasitoids' development? P. 145.

Inclán, D.J., Cerretti, P. & Marini, L. Disentangling the effects of agricultural management and landscape on the diversity of tachinid parasitoids. P. 146.

Lopes, A., Nihei, S. & Carvalho, C. Phylogenetic analysis of the tribe Winthemini (Tachinidae: Exoristinae): preliminary results and perspectives. P. 202.

Nakamura, S., Ichiki, R., Ho, G., Kainoh, Y., Wajnberg, E. & Tabata, J. Microtype tachinids possess thousands of eggs: do they have any oviposition strategies? P. 239.

Nihei, S. Neotropical Tachinidae: where are we and where are we going to? P. 246.

O'Hara, J.E., Stireman, J.O. III, Cerretti, P., Moulton, J.K. & Winkler, I.S. Diversity and systematics of the world Tachinidae (Diptera). P. 247.

Richter, V.A. The tachinids (Diptera: Tachinidae) of the tundra of Siberia and the Far East. P. 285.

Sahebari, F.S., Khaghaninia, S., Talebi, A.A., Ziegler, J. & Gilasian, E. Faunistic study of tachinid flies (Diptera: Tachinidae) in northwestern Iran. P. 318.

Schnitzler, F.R. A tussle with Tachinidae. P. 312.

Stireman, J.O. III, Winkler, I.S., Blaschke, J., Davis, D.J., O'Hara, J.E., Cerretti, P. & Moulton, J.K. Whence the Tachinidae? P. 350.

Stireman, J.O. III, Winkler, I.S., Moulton, J.K., O'Hara, J.E. & Cerretti, P. Towards a molecular phylogeny of world Tachinidae: a progress report. P. 351.

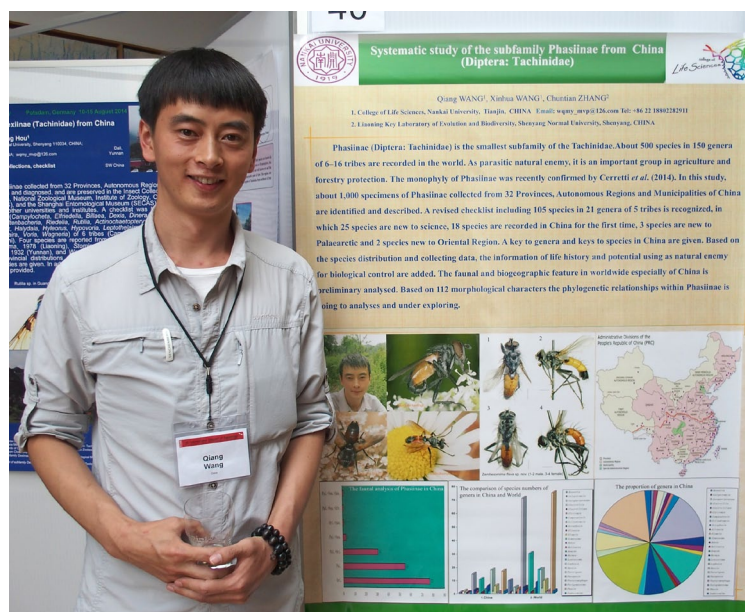
Tachi, T. & Shima, H. A revised evolutionary history of female reproductive (oviposition) strategy in the subfamily Exoristinae (Calyptera: Tachinidae). P. 365.

Wang, Q., Wang, X.-h. & Zhang, C.-t. Systematic study of the subfamily Phasiinae from China (Diptera: Tachinidae). P. 394.

Zhang, C.-t., Wang, Q. & Hou, P. A checklist of the subfamily Dexiinae (Diptera: Tachinidae) from China. P. 416.



Chun-tian Zhang (China) and poster.



Qiang Wang (China) and poster.

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Contributed by the editor  
Jim O'Hara

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Included here are references on the Tachinidae that have been found during the past year and have not appeared in past issues of this newsletter. This list has been generated from an EndNote 'library' and is based on online searches of literature databases, perusal of journals, and reprints or citations sent to me by colleagues. The complete bibliography, incorporating all the references published in past issues of *The Tachinid Times* and covering the period from 1980 to the present is available online at: <http://www.nadsdiptera.org/Tach/WorldTachs/Bib/Tachbiblio.html>. I would be grateful if omissions or errors could be brought to my attention.

Please note that citations in the online Tachinid Bibliography are updated when errors are found or new information becomes available, whereas citations in this newsletter are never changed. Therefore, the most reliable source for citations is the online Tachinid Bibliography.

I am grateful to AJ Fleming for performing the online searches that contributed most of the titles given below and for preparing the EndNote records for this issue of *The Tachinid Times*.

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