7th International Conference on Fossil Insects, Arthropods and Amber

ABSTRACTS

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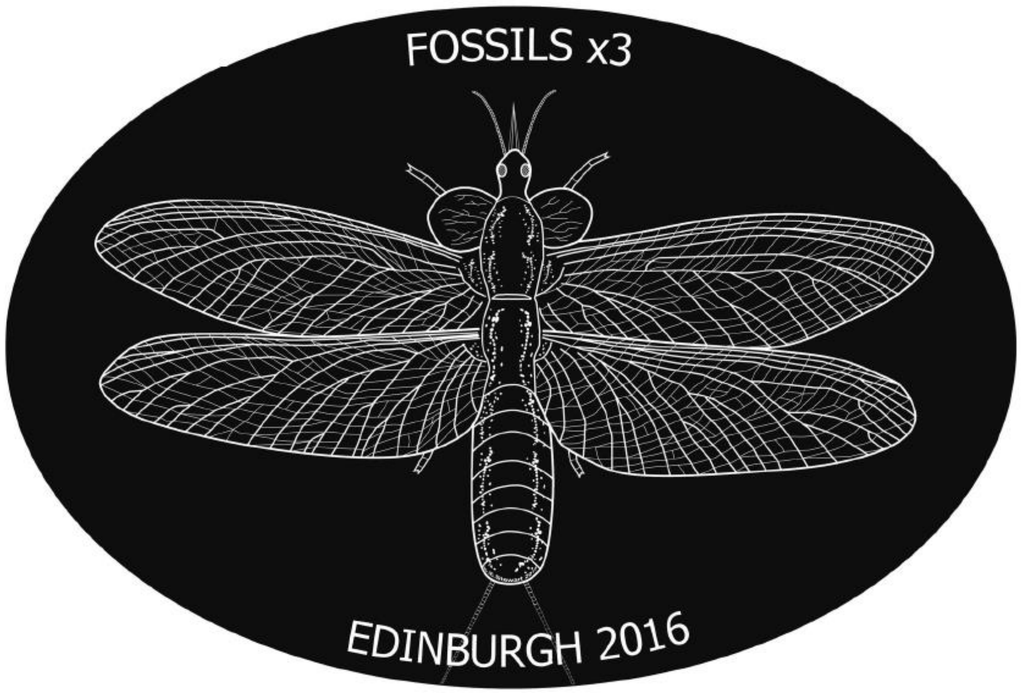

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The Tanytarsini (Diptera: Chironomidae) in Eocene ambers

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The Tanytarsini Zavřel, 1917 is a species-rich extant tribe within the large family Chironomidae, with the oldest known representatives found in Eocene resins: Baltic amber, including that collected in the Rovno region (40–45 Ma), Cambay amber from India (50–52 Ma) and Fushun amber from China (50–53 Ma).

In contrast to the extant fauna, Eocene Tanytarsini are rare and so far known only from 17 species of eight genera, including five extant (*Caladomyia* Säwedal, 1981; *Rheotanytarsus* Thienemann & Bause, 1913; *Stempellina* Thienemann & Bause, 1913; *Stempellinella* Brundin, 1947; *Tanytarsus* van der Wulp, 1874) and three extinct genera (*Archistempellina* Giłka & Zakrzewska, 2013; *Corneliola* Giłka & Zakrzewska, 2013; *Eonandeva* Giłka & Zakrzewska, 2015) – all described from Baltic amber. At least two further genera are represented by specimens found in Fushun and Cambay ambers (authors' forthcoming data), thus altogether ten genera with nearly 25 species of Eocene Tanytarsini are known to the authors. Most of them belong to extant subtribes (Tanytarsina Zavřel, 1917 and Zavreliina Sæther, 1977), whereas the subtribal placement of four extinct genera has not been determined definitively.

The examined specimens were obtained from several collections: the Museum of Amber Inclusions, University of Gdańsk, Poland; the private collection of amber inclusions of Christel and Hans Werner Hoffeins, Germany; the I.I. Schmalhausen Institute of Zoology, National Academy of Sciences of Ukraine; the Steinmann Institute, University of Bonn, Germany; the Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences and the American Museum of Natural History, New York, USA.

The Tanytarsini (Diptera: Chironomidae) in Eocene ambers

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7TH INTERNATIONAL CONFERENCE ON FOSSIL INSECTS, ARTHROPODS AND AMBER

The Tanytarsini is a species-rich extant tribe within a large family Chironomidae, with the oldest known representatives found in Eocene resins: Baltic amber, including that collected in the Rovno region, Cambay amber from India and Fushun amber from China. In contrast to the extant fauna, Eocene Tanytarsini are rare and so far known only from 17 species of 8 genera, including 5 extant and 3 extinct genera – all the taxa described from Baltic amber. At least 2 further genera are represented by specimens found in Fushun and Cambay ambers (authors' forthcoming data), thus altogether 10 genera with nearly 25 species of Eocene Tanytarsini are known to authors. Most of them belong to extant subtribes Tanytarsina and Zavreliina, whereas subtribal placement of 4 extinct genera at least is not determined definitively.

BALTIC AMBER

(40-45 Ma, Gulf of Gdańsk, Rovno region)

The examined specimens are part of 3 collections: the Museum of Amber Inclusions, University of Gdańsk, Poland (MAI), the private collection of amber inclusions of Christel and Hans Werner Hoffeins, Germany (CCHH), and the I.I. Schmalhausen Institute of Zoology, National Academy of Sciences of Ukraine (SIZ).

♀ ***Corneliola avia***
Giłka *et* Zakrzewska, 2013

The majority of Eocene Tanytarsini taxa has up till now been found in Baltic amber. As a result of authors' recent studies their number has reached 17 species (descriptions of further 3 species in preparation). Eocene tanytarsines are represented by 5 extant and 3 extinct genera:

- *Caladomyia* Säwedal, 1981
- *Rheotanytarsus* Thienemann *et* Bause, 1913
- *Stempellina* Thienemann *et* Bause, 1913
- *Stempellinella* Brundin, 1947
- *Tanytarsus* van der Wulp, 1858

- † *Archistempellina* Giłka *et* Zakrzewska,2013
- † *Corneliola* Giłka *et* Zakrzewska,2013
- † *Eonandeva* Giłka *et* Zakrzewska,2015

Several species have been recorded both in amber from the Gulf of Gdańsk and from the Rovno region, what may confirm the hypothesis treating ambers from these regions as one, here called „Baltic amber" (see the Table).

Tanytarsus congregabilis
Giłka *et* Zakrzewska, 2013

Three males trapped in a small amber piece, probably during swarming.

♂ ***Stempellinella electra***
Giłka *et* Zakrzewska, 2015

♂ ***Archistempellina bifurca***
Giłka *et* Zakrzewska, 2013

♂ ***Eonandeva latistyla* Giłka *et* Zakrzewska, 2015**

Hypopygium photographed and drawn.

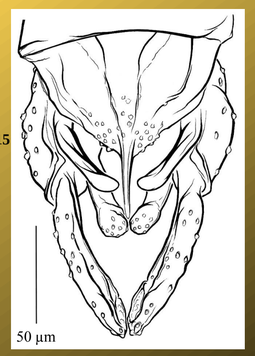

TABLE. Tanytarsini from different collections of Baltic amber (**A**, **B**, **C**, **G**, **H**, **I**, **J**). * unspecified amber deposits of the Baltic region, specimens in the Zoologische Staatssammlung München and amber collection of F. Seredszus/Köln (**F**).

Genus	Species	CCHH Gulf of Gdańsk	MAI Gulf of Gdańsk	SIZ Rovno region
Archistempellina		X		X
	bifurca			X
	falcifera	X		X
	perkovskyi	X		X
Caladomyia		X		
	szadziewskii	X		
Corneliola		X	X	X
	avia	X	X	X
Eonandeva		X		
	helva	X		
	latistyla	X		
Rheotanytarsus		X		X
	alliciens			X
	***sp.* 1**	X		
Stempellina			X*	
	exigua		X*	
Stempellinella		X	X	X
	bicorna		X*	
	electra		X	
	ivanovae		X	X
	***sp.* 1**	X		
Tanytarsus		X	X	X
	congregabilis			X
	fereci		X	
	glaesarius	X	X	
	protogregarius	X	X	
	serafini	X	X	X
	***sp.* 1**	X		
Number of genera/species		**7/12**	**3/7**	**5/8**
Total number of genera/ species		**8/20**		

A. Giłka, W. 2010. A new species group in the genus *Tanytarsus* van der Wulp (Diptera: Chironomidae) based on a fossil record from Baltic amber. *Acta Geologica Sinica (English Edition)*, 84:714-719.

B. Giłka, W. 2011. A new fossil *Tanytarsus* from Eocene Baltic amber, with notes on systematics of the genus (Diptera: Chironomidae). *Zootaxa*, 3069:63-68.

C. Giłka, W., Zakrzewska, M., Dominiak, P. and Urbanek, A. 2013. Non-biting midges of the tribe Tanytarsini in Eocene amber from the Rovno region (Ukraine): a pioneer systematic study with notes on the phylogeny (Diptera: Chironomidae). *Zootaxa*, 3736:569-586.

D. Giłka, W., Zakrzewska, M., Baranov, V., Wang, B. and Stebner, F. (in press). The first fossil record of *Nandeva* Wiedenbrug, Reiss & Fittkau (Diptera: Chironomidae) in early Eocene Fushun amber from China. *Alcheringa*.

E. Rust, J. Singh, H., Rana, R.S., McCann, T., Singh, L., Anderson, K., Sarkar, N., Nascimbene, P.C., Stebner, F., Thomas, J.C., Solórzano Kraemer, M., Williams, C.J., Engel, M.S., Sahni, A. and Grimaldi, D. 2010. Biogeographic and evolutionary implications of a diverse paleobiota in amber from the early Eocene of India. *Proceedings of the National Academy of Sciences of America*, 107(43):18360-18365.

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H. Zakrzewska, M. and Giłka, W. 2014. The oldest known chironomids of the tribe Tanytarsini (Diptera: Chironomidae) indicate plesiomorphic character states. *Geobios*, 47:335-343.

I. Zakrzewska, M. and Giłka, W. 2015. The Tanytarsini (Diptera: Chironomidae) in the collection of the Museum of Amber Inclusions, University of Gdańsk. *Zootaxa*, 3946:347-360.

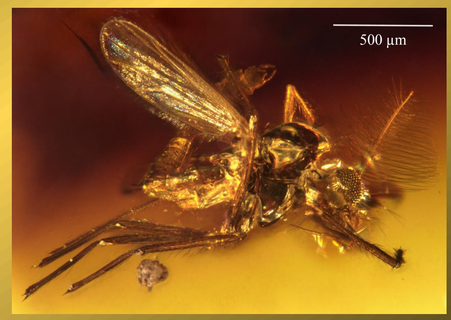
J. Zakrzewska, M. and Giłka, W. 2015b *Eonandeva* gen. nov., a new distinctive genus from Eocene Baltic amber (Diptera: Chironomidae). *Zootaxa*, 4044:577–584.

CAMBAY AMBER

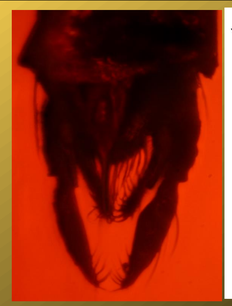
(50-52 Ma, Vastan-Tadkeshwar mines, Gujarat state, India)

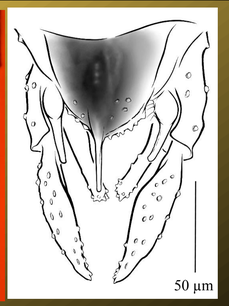
The examined specimens are part of 2 collections: the Steinmann Institute, University of Bonn, Germany and the American Museum of Natural History, New York, USA.

Handling the inclusions in Cambay amber, soft and dark as produced by angiosperm Dipterocarpaceae (E), and examination of minute tanytarsine diagnostic structures (several tens of micrometers at most) needs extraordinary precision and illustration techniques.



♂ ***Tanytarsus sp.* 1**





♂ ***Tanytarsus sp.* 1**

Hypopygium photographed and drawn using a combined illustration technique.

The majority of specimens examined belong to extant genera:

- *Stempellina* Thienemann *et* Bause, 1913 (1 ♂)
- *Stempellinella* Brundin, 1947 (1 ♂)
- *Tanytarsus* van der Wulp, 1858 (7 ♂♂)

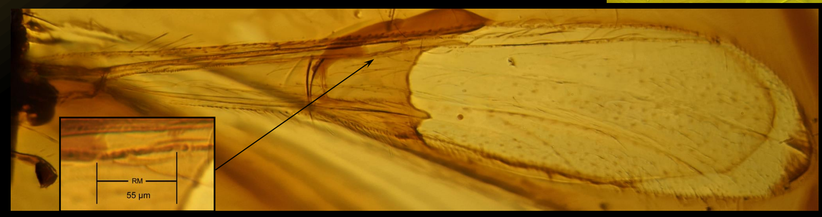
Several specimens belong to unknown genus (authors' forthcoming data).

FUSHUN AMBER

(50-53 Ma, Fushun mine, China)

The examined specimen is part of the collection of the Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences.

Here we present the first fossil representative of the tribe Tanytarsini from early Eocene Fushun amber, and also the first fossil specimen of the chironomid extant genus *Nandeva* Wiedenbrug, Reiss *et* Fittkau, 1998. Several concepts for the tribal placement of this genus have been proposed - within or close to each of all three tribes of the subfamily Chironominae: Chironomini, Pseudochironomini or Tanytarsini. However, the fossil *Nandeva* species shows a set of wing characters considered as crucial for the Tanytarsini: the strongly elongated RM (arranged as a continuation of M and R4+5 and slightly oblique relative to them), the reduced anal lobe, the membrane covered with dense macrotrichia and the bare squama (D).



♂ ***Nandeva sp.* 1**

♂ ***Nandeva sp.* 1**

Wing and RM (radius-medius cross-vein) magnified.