

## On the occurrence of *Trypoxylon attenuatum* F. Smith, 1951 (Hymenoptera: Crabronidae: Trypoxylini) in North America

## О распространении *Trypoxylon attenuatum* F. Smith, 1951 (Hymenoptera: Crabronidae: Trypoxylini) в Северной Америке

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КЛЮЧЕВЫЕ СЛОВА: таксономия, Hymenoptera, Crabronidae, Trypoxylini, *Trypoxylon*.

ABSTRACT. *Trypoxylon attenuatum* F. Smith, 1851 is mentioned for the Nearctic fauna for the first time. It became the fourth species of the genus, occasionally introduced from Europe and successfully acclimated in the New World. An illustrated key for the North American members of the *Trypoxylon figulus* species-group is given.

РЕЗЮМЕ. Для Неварктики впервые указан *Trypoxylon attenuatum* F. Smith, 1851, который стал четвертым видом рода, завезенным из Европы и успешно акклиматизировавшимся в Новом Свете. Приведена иллюстрированная определительная таблица для североамериканских представителей группы видов *Trypoxylon figulus*.

### Introduction

Seventeen species of the nominative subgenus *Trypoxylon* Latreille, 1796 belonging to 8 species-groups were known in North America up to now [Sandhouse, 1940; Bohart, Menke, 1976; Krombein et al., 1979]. The species-groups *Trypoxylon figulus* and *T. clavicerum* are represented in both Nearctic and Palaearctic Regions, and the rest 6 groups are endemic for the New World. Analysis of the regional faunas shows that only two species — *T. frigidum* F. Smith, 1856 and *T. pennsylvanicum* de Saussure, 1867 (*T. figulus* species-group) having transpacific distribution, are really Holarctic forms. Three other common representatives of the genus, mentioned at first from eastern Canada or United States, were obviously introduced from Western Europe into North America, where they have successfully acclimated:

— *Trypoxylon apicalis* W. Fox, 1891 described from Canada was later synonymized with *T. figulus* (Linnaeus, 1758) by V.S.L. Pate [1943];

— *T. backi* Sandhouse, 1940 described from Baltimore (USA: Maryland) was also synonymized by R.E. Coville [in: Krombein et al., 1979] with another European species — *T. kolazyi* Kohl, 1893;

— *T. clavicerum* Lepeletier et Serville, 1828 was mentioned for the first time from the Great Lakes Region of the United States and Canada by R.E. Coville [1984].

In my systematic studies of the tribe Trypoxylini, I have discovered several additional species introduced into the New World from Oriental and Palaearctic Regions. In this paper *T. attenuatum* F. Smith, 1851 is mentioned from the Nearctic Region for the first time. It is one of the widespread west Palaearctic species of the genus, occurring in the Old World from Morocco and Portugal in the west to Kazakhstan in the east [Antropov, 1991].

### *Trypoxylon attenuatum* F. Smith, 1851

*Trypoxylon attenuatum* F. Smith, 1851: 120, ♀. Lectotype: ♂, Great Britain: Bristol [Oxford University Museum]: Antropov, 1991.  
= *Trypoxylon Hannibalis* Gribodo, 1894: Antropov, 1991.

Specimens of *T. attenuatum* examined: 2 ♀♀, 2 ♂♂: "U.S.A.: VERMONT: Rutland Co., Castleton, 18–19 VI 1989, coll. Howard V. Weems, Jr."; 2 ♀♀: "U.S.A.: VERMONT: Rutland Co., Castleton, 20 June 1989, coll. Lloyd R. Davis, Jr." [American Entomological Institute — Gainesville, Florida, U.S.A.]

At first I assumed those examples to be a result of occasional introduction. But last year I have studied many materials of this species, sent by Dr. Matthias Buck [Insect Collection, Department of Environmental Biology, University of Guelph — Guelph, Ontario, Canada]. The specimens, collected in several counties of southern Ontario, Canada (M. Buck, in press.) and USA, were compared with the examples from various parts of Palaearctic Region, and no differences between them were found. The oldest known specimen from the New World is a female from Guelph, Ontario, taken on 11 September 1960. Thus, *T. attenuatum* was probably introduced into eastern North America in 50–60th of the last

century. Today *T. attenuatum* became the second most common representative of the genus in southern Ontario after *T. frigidum* (M. Buck, personal communication).

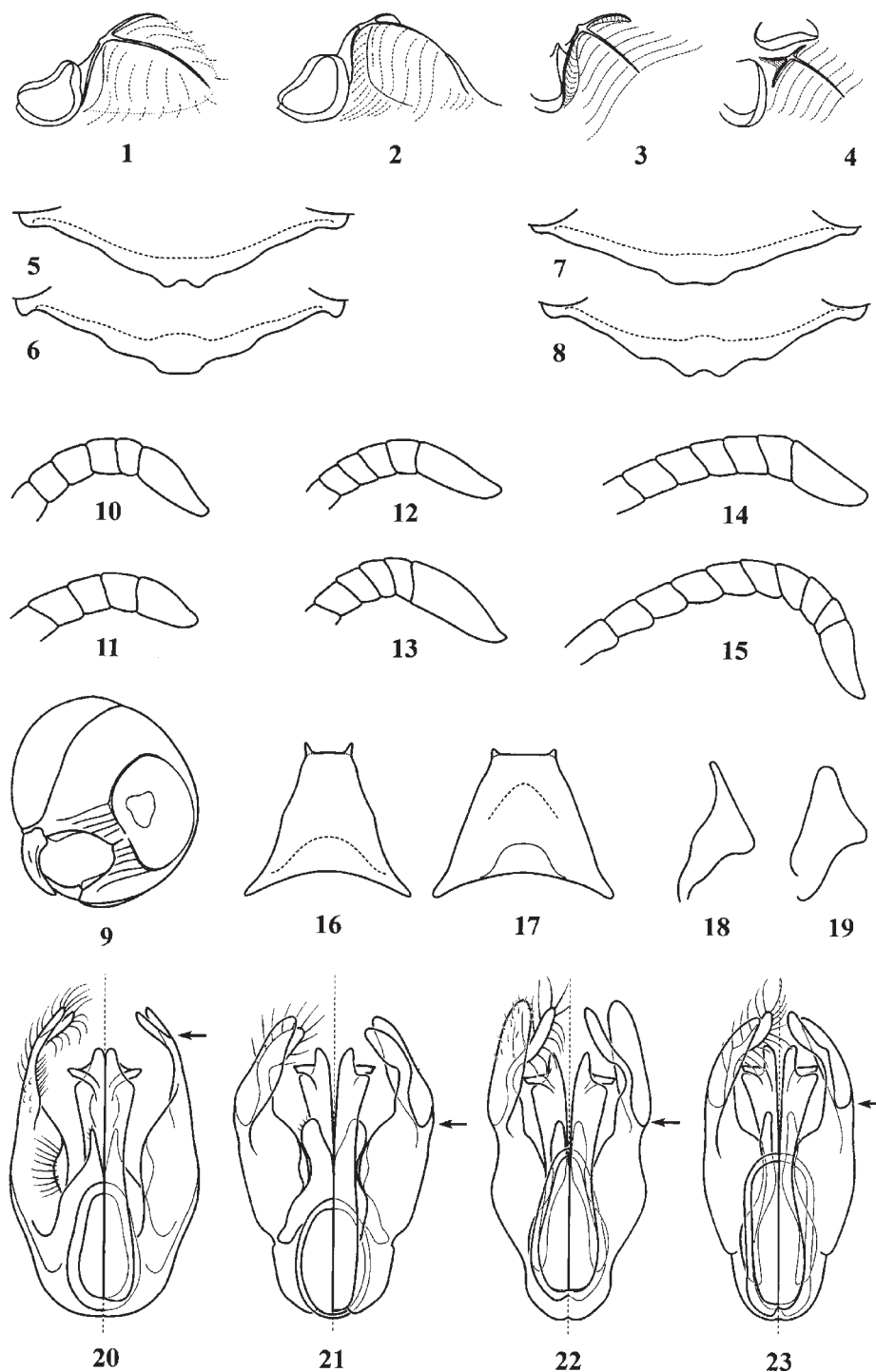
In the most complete recent key to the Nearctic species of the genus *Trypoxylon* (s.str.) [Sandhouse, 1940] *T. attenuatum* runs to *T. bidentatum* W. Fox, 1891 or *T. pennsylvanicum* — two resembling species it has been confused with, even though their males (particularly in the structure of genitalia) are clearly different. An illustrated key demonstrating the differences between the North American members of *T. figulus* species-group is given below.

KEY TO THE NEARCTIC SPECIES OF *TRYPXYLON FIGULUS* SPECIES-GROUP

1. First abdominal segment (dorsal view) 2–2.5 times its maximum width; distances between inner eye orbits at vertex and at clypeal level approximately equal to each other 2  
— First abdominal segment (dorsal view) at least 3–3.5 times its maximum width; distance between inner eye orbits at vertex distinctly more than that at clypeal level ..... 3
2. Larger species (in average). Supraantennal tubercle simply roundly convex (Fig. 1). ♀: clypeal surface coriaceous, with large punctures; metacoxal pit large, oval, usually covered with light bristles. ♂: antennal apical article approximately 3 times its maximum width (Fig. 10).....  
..... *Trypoxylon figulus* (Linnaeus, 1758)  
— Smaller species (in average). Supraantennal tubercle more or less high, keel-shaped (Fig. 2). ♀: clypeal surface with small punctures; metacoxal pit small, round, covered with black bristles. ♂: antennal apical article 2–2.5 times its maximum width (Fig. 11) .....  
..... *Trypoxylon frigidum* F. Smith, 1856
3. Supraantennal tubercle simply roundly convex (Figs 3–4) ..... 4  
— Supraantennal tubercle more or less high, keel-shaped (as Fig. 2) ..... 5
4. Transverse apical carina of supraantennal tubercle distinct particularly laterally (Fig. 3); mesopleuron ventrally with erect pubescence distinctly longer than diameter of lateral ocellus. ♀: apical margin of clypeus with two rounded teeth medially (Fig. 5); distance between eye orbit and lateral ocellus more than half of ocellar diameter. ♂: head postero-ventrally between occipital and hypostomal carinae more or less prolongly carinate (Fig. 9); distance between eye orbit and lateral ocellus equal to or more than ocellar diameter; antennal apical article not longer than four previous ones together (Fig. 12); abdominal sternite VIII narrowly trapeziform, with long apico-lateral teeth (Fig. 16); volsella (lateral view) narrow, pointed apically (Fig. 18); inner basal lobe of paramere triangular, with long straight bristles; paramere divided into two lobes not deeper than to the level of penis valve preapical hook; both apical lobes of paramere narrow; preapical lateral angle of penis valve obtuse (Fig. 20) .....  
..... *Trypoxylon attenuatum* F. Smith, 1851  
— Transverse apical carina of supraantennal tubercle weak even laterally (Fig. 4); mesopleuron ventrally with erect pubescence shorter than diameter of lateral ocellus. ♀: apical margin of clypeus with narrow shiny band and scarcely concave apically trapeziform medial projection (Fig. 6); distance between eye orbit and lateral ocellus less than half of ocellar diameter. ♂: head postero-ventrally between occipital and hypostomal carinae smooth; distance between eye orbit and lateral ocellus less than ocellar diameter; antennal apical article distinctly longer than four previous ones together (Fig. 13); abdominal sternite VIII broadly trapeziform, with short apico-lateral teeth (Fig. 17); volsella (lateral view) broad, rounded apically (Fig. 19); inner basal lobe of paramere broadly rounded, without long bristles; paramere divided into two lobes almost to the level of penis valve middle; dorsal apical lobe of paramere narrow basally, broadened apically; ventral lobe broad and narrowed to its apex; penis valve with right preapical lateral angle (Fig. 21) .....  
..... *Trypoxylon bidentatum* W. Fox, 1891
4. Smaller species (in average). Apical margin of clypeus straight or slightly curved between orbit and medial projection (Fig. 7); subantennal sclerite less than twice as broad as long. ♀: head frontally more rounded; distance between eye orbit and antennal socket less than a diameter of lateral ocellus; distance between eye orbit and lateral ocellus equal to half of ocellar diameter. ♂: middle antennal articles almost straight posteriorly (Fig. 14); ventral lobe of paramere parallel sided almost up to its rounded apex, setose ventrally; penis valve weakly broadened towards preapical lateral angle (Fig. 22) .....  
..... *Trypoxylon pennsylvanicum* de Saussure, 1867  
— Larger species (in average). Apical margin of clypeus with obtuse but distinct angles between orbit and medial projection (Fig. 8); subantennal sclerite more than twice as broad as long. ♀: head frontally more transverse; distance between eye orbit and antennal socket more than a diameter of lateral ocellus; distance between eye orbit and lateral ocellus more than 2/3 of ocellar diameter. ♂: middle antennal articles distinctly convex posteriorly (Fig. 15); ventral lobe of paramere curved outside and almost straight inside, more narrowed apically and bare ventrally; penis valve strongly broadened towards preapical lateral angle (Fig. 23) ..... *Trypoxylon sculleni* Sandhouse, 1940

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Figs 1–23. Fragments of body structure of the North American species of the group *Trypoxylon figulus*: 1, 10 — *T. figulus*; 2, 11 — *T. fligidum*; 3, 5, 9, 12, 16, 18, 20 — *T. attenuatum*; 4, 6, 13, 17, 19, 21 — *T. bidentatum*; 7, 14, 22 — *T. pennsylvanicum*; 8, 15, 23 — *T. sculleni*. 1–4 — supraantennal tubercle; 5–8 — apical margin of clypeus; 9 — head of male postero-ventrally; 10–15 — male apical antennal articles; 16–17 — male sternite VIII; 18–19 — male volsella (laterally); 20–23 — male genitalia (left — ventrally, right — dorsally; arrows show the level of paramere bilobing).

Рис. 1–23. Детали строения североамериканских видов группы *Trypoxylon figulus*: 1, 10 — *T. figulus*; 2, 11 — *T. fligidum*; 3, 5, 9, 12, 16, 18, 20 — *T. attenuatum*; 4, 6, 13, 17, 19, 21 — *T. bidentatum*; 7, 14, 22 — *T. pennsylvanicum*; 8, 15, 23 — *T. sculleni*. 1–4 — надантенный бугорок; 5–8 — апикальный край наличника; 9 — голова самца сзади-снизу; 10–15 — апикальные членики антенны самца; 16–17 — VIII стернит брюшка самца; 18–19 — вольсела (вид сбоку); 20–23 — гениталии самца (слева — вид снизу, справа — вид сверху; стрелками указан уровень разделения парамер).