A NEW SPECIES OF THE RARE GENUS *KATYTERMUS* (HYMENOPTERA: BRACONIDAE) IN CHINA[1]

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ABSTRACT: *A* new species of lysitermine braconid wasp, *Katytermus gutianensis* sp. nov., is described, and the genus is recorded from the Chinese fauna for the first time. The genus is unusual among braconid wasps in parasitizing grasshoppers.

The aberrant genus *Katytermus* van Achterberg, 1996 was originally described from Ulu Gombak, Malaysia, with only the type species, *K. palmicola* van Achterberg, 1996, known. It was originally placed in a new tribe, Tetratermini van Achterberg, 1996, of the subfamily Lysiterminae (van Achterberg & Steiner,1996).

Katytermus is especially interesting in that the known host record suggests that the genus consists of gregarious endoparasitoids of nymphs of Gryllacrididae (Orthoptera). The type species was reared from a longhorn grasshopper (katydid) collected in open shrubland near old secondary forest. The host was living in a shelter of a leaflet of a palm *(Calamus manna* Miquel, 1861, Palmae) (van Achterberg & Steiner, 1996). The only other known case of Braconidae parasitizing Orthoptera is *Perilitus morabinarum* Blackith, 1967 (subfamily Euphorinae) from Australia. The latter was the first record of a hymenopteran primary parasitoid on nymphal or adult grasshoppers, in that case a wingless morabine grasshopper (Blackith, 1967). Both *Katytermus* and *Perilitus,* and their host taxa, belong to completely different lineages, respectively (van Achterberg & Steiner, 1996).

The new species described below is the second species recorded in *Katytermus* and has no host record. It was collected by the senior author by sweep net in a natural reserve in the southwestern part of Zhejiang Province (China), where it is believed on the border of Oriental and Palaearctic Regions in the east of these two regions. The vegetation there (without palm trees) is temperate and therefore quite different from that in Malaysia where the type species occurs.

The tribe Tetratermini *sensu* van Achterberg contains three genera, *Katytermus* van Achterberg, 1996, *Platyrmus* Belokobylskij, 1994, and *Tetratermus* Wharton 1993. The former two genera are distributed in the Oriental Region while the latter is from the Australian Region. Only the biology of *Katytermus* is known. The species described here represents the first record of both the genus *Katytermus* and the tribe Tetratermini in China.

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The morphological terminology used in this paper follows van Achterberg (1993) and Chen & He (1997).

Katytermus gutianensis, NEW SPECIES

(Figs. 1-4)

Female. Body length 2.5 mm, fore wing length 2.6 mm.

Color. Brownish-yellow, propodeum and first metasomal tergite brownish, second and third metasomal tergites medially tinged with brown; palpi ivory; legs and ventral side of metasoma yellow; apical segments of antenna darker; ovipositor sheath brown; wing membrane subhyaline; pterostigma yellow; veins pale brown.

Head. Antennal segments 23, length of third segment 1.2 times fourth segment, length of third, fourth and penultimate segments 3.4, 2.8 and 2.4 times their width, respectively; length of maxillary palp 1.3 times height of head; occipital carina angular mid-dorsally; OOL:OD: POL = 15:6:6; length of eye in dorsal view 1.9 times temple; temple smooth and setose; frons flat, smooth and sparsely setose; face smooth, with long setae and longitudinal-median carina; length of malar space 0.9 times basal width of mandible.

Mesosoma. Length of mesosoma 2.0 times its height; side of pronotum smooth, rugose anteriorly and crenulate posteriorly; precoxal sulcus smooth, posterior half absent; mesopleuron smooth; metaspleuron smooth except for some coarse rugae postero-ventrally; notauli largely absent, only anteriorly present and crenulate; medio-posterior groove of mesoscutum long and narrow, smooth, reaching the middle of mesoscutum from posterior border; mesoscutum smooth and setose; scutellum flat and smooth, shiny; scutellar suture with six carinae; surface of propodeum largely smooth, with some indistinct sculpture, median carina 1/3 whole length of propodeum, costulae present, areola long and large.

Wing. Fore wing: r: 3-SR: SR1 = 16: 32: 62; 1-CU1: 2-CU1 = 11: 30; SR1 straight; 2-SR: 3-SR: r-m = 29:32:18, m-cu postfurcal. Hind wing: 2-SC+R longitudinal; M+CU:1-M = 30:34; m-cu interstitial, long and reclivous.

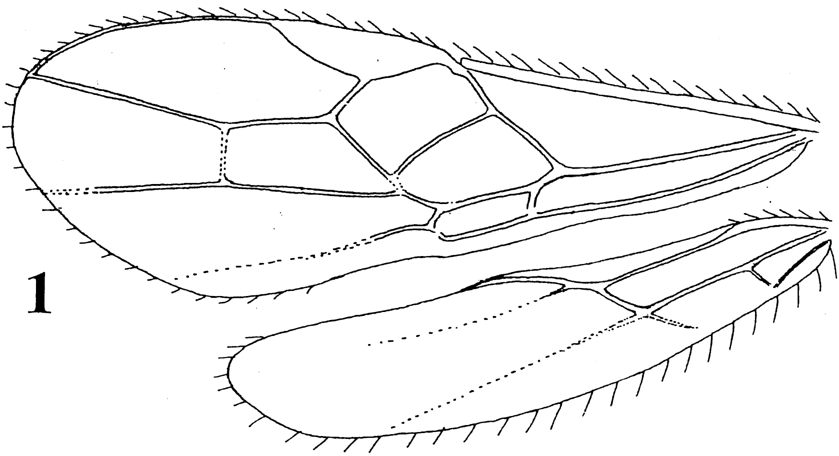
Legs. Hind coxa smooth; tarsi shortened, fore and middle telotarsi enlarged; length of femur, tibia and basitarsus of hind leg 3.8, 8.1 and 5.6 times their width, respectively; outer spur robust; length of hind tibial spurs 0.24 and 0.44 times hind basitarsus.

Metasoma. Length of first tergite 0.9 times its apical width, its surface longitudinally rugose, its dorsal carinae complete; dorsope small but distinct; second tergite densely and longitudinally rugose; second metasomal suture very wide and crenulate; third tergite short, longitudinally rugose, medially and apically smooth; fourth tergite indistinctly rugulose, basally distinctly crenulate; length of ovipositor sheath 0.20 times fore wing.

Male. Unknown.

Material examined: female, holotype, China: Zhejiang, Mt Gutian, 1992.vii.18, Chen Xuexin, no 923484, kept in Hymenoptera Collection, Zhejiang University, Hangyhou, China (ZJU).

Note: This new species can be separated from the type species in having the length of the eye in dorsal view 1.9 times that of the temple; the occipital carina angular mid-dorsally; vein m-cu of fore wing distinctly postfurcal, vein M+CU of hind wing shorter than 1-M; vein m-cu of hind wing interstitial; the dorsope of the first tergite small but distinct; and body color brownish-yellow, with propodeum and first tergite brownish, second and third tergites medially tinged with brown, and pterostigma yellow. The venation of this new species is somewhat more like that of the monotypic genus *Platyrmus* Belokobylskij, but the latter has the head and mesosoma distinctly depressed, mandible without lamera, and costulae of propodeum absent.



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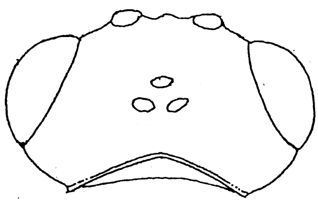

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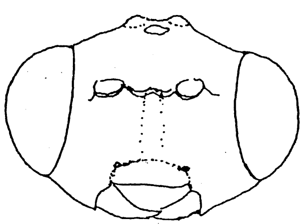

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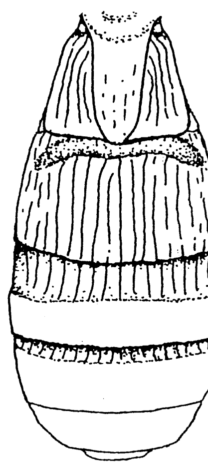

Figs. 1-4. *Katytermus gutianensis* sp. nov., holotype. 1, wings. 2, head, dorsal view. 3, head, frontal view. 4, metasoma, dorsal view.

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SOCIETY MEETING OF MARCH 27, 2002

Development and Implementation of Sustainable Insect Pest Management Tools in Cranberries

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Dr. Polavarapu began by noting that current pest management in cranberries depends heavily on organophosphate (OP) and carbamate insecticides. Recently, a number of novel, selective pest management tools such as biorational insecticides, mating disruption formulations, and insecticidal nematodes have become available against cranberry insect pests. New biorational insecticides are now registered, and others are in various phases of development for cranberries. Robust efficacy data are now available for most of these novel strategies against target pests.

To optimize mating disruption technology for managing *Sparganothis* fruitworm, Polavarapu and his staff evaluated pheromone application methods and purity of the active ingredient in the final product. Application of pheromone formulation via overhead irrigation (chemigation) was as effective as aerial application of equivalent amounts of pheromone. Microencapsulated formulation of pharmaceutical grade (*E*)-11-tetradecenyl acetate (>98% pure) provided higher level of efficacy compared with the technical grade (~88% purity). Large-scale field evaluation of pheromone alone or in combination with a reduced-risk insecticide, provided control comparable to OP insecticide application. Augmentation releases of endemic *Trichogramma* egg-parasitoids at 0.25 -1.5 millions per acre provided significantly higher levels of egg parasitism of spotted fireworm egg masses compared to parasitism levels in untreated control bogs. Field efficacy of the 'reduced-risk' insecticide tebufenozide (Confirm 2F) was further optimized by testing application methods and adjuvants, on residual toxicity against spotted fireworm and *sparganothis* fruitworm larvae.

Dr. Polavarapu concluded his talk by explaining that these new, selective technologies are safe to beneficial insects, compatible with other pest management strategies and excellent IPM tools. However, their narrow spectrum of activity, lower level of efficacy and higher cost compared to OP, combined with lack of operational experience and current low price of cranberries, are significant obstacles to commercialization. Because these technologies require accurate timing to achieve optimal efficacy, growers have to rely more on IPM programs for information on pest phenology. An alternative IPM program comprising mating disruption, reduced-risk insecticides, *Trichogramma* parasitoids will be tested and compared with conventional IPM program in coming years. The talk was followed by a lively discussion.

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