



Sunset on the glade. Pilot Knob Conservation Area, Stone Co., Missouri.

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Multiple *Megarhyssa* males

*Ted C. MacRae*¹

Today while hiking at [Hilda Young Conservation Area](#) (north-central Jefferson County, Missouri), I encountered a declining sugar maple (*Acer saccharum*) with lots of woodboring insect holes in the trunk. As I approached I noticed numerous giant ichneumon wasps in the genus *Megarhyssa* flying about the trunk and resting on its surface. Giant ichneumons belong to the family

Ichneumonidae and are, as the name suggests, the largest members of the family in North America. Interestingly, all of the wasps that I initially saw were males. I have never seen male giant ichneumon wasps before, and certainly not in such numbers, so this was quite exciting. We have two species of giant ichneumons here in Missouri—*M. atrata* and *M. macrurus*, the females of which I have seen only rarely, but I couldn't immediately decide which of these two species the males represented. I looked up higher on the trunk, and there I saw a female *M. macrurus* in the act of oviposition, so I decided that the males must also represent this species. However, one of the males was smaller and differently colored than the others, having more brown than black on the body and the wings clear with a well developed spot on the costal margin. The other males were noticeably larger and had more black than brown on the body and the wings smoky with only a narrow spot on the costal margin. After a little bit of digging, I know believe that the smaller male is also *M. macrurus*—the same species as the ovipositing female, while the larger males all represent the larger species *M. atrata*.

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Megarhyssa macrurus male, Hilda Young Conservation Area, Jefferson Co., Missouri.



Megarhyssa atrata male, Hilda Young Conservation Area, Jefferson Co., Missouri.

As I watched the males that had landed on the trunk of the tree, I observed both the *M. macrurus* male and one of the *M. atrata* males to bend their abdomen forward beneath their body rub the tip of the abdomen against the bark, a behavior called “tergal stroking”, and at times inserted the tip of the abdomen into cracks in the bark in an almost prehensile-looking manner. These behaviors belong to a suite of behaviors exhibited by male *Megarhyssa* aggregations. Previously thought to be function in early insemination of as-yet-unemerged females, the precise function of these behaviors remains unknown but seems somehow related to enabling sex discrimination of emerging wasps and/or increasing the rate at which virgin females are encountered (Matthews et al. 1979).

All species of *Megarhyssa* parasitize the woodboring larvae of Pigeon horntails (*Tremex columba*) (order Hymenoptera, family Siricidae), which the females reach by inserting their long, thin ovipositor deep into the wood where the horntail larvae live. Multiple species of giant ichneumons occurring in the same area at the same time and utilizing the

same resource seems to violate a basic ecological concept; the **competitive exclusion principle**, which states that two species competing for the same resource cannot coexist at constant population values because one species will always eventually outcompete the other. In the case of *Megarhyssa*, it seems that size differences between the species allow them to share a common resource (horntail larvae), as females of the larger *M. atrata* have longer ovipositors than the smaller *M. macrurus*, thus allowing them to penetrate deeper into the wood to parasitize horntail larvae that *M. macrurus* females cannot reach. By the same token, *M. macrurus* females tend to parasitize horntail larvae tunnel at shallower depths and that tend not to be utilized by *M. atrata* females.

REFERENCE:

Matthews, R. W., J. R. Matthews & O. Crankshaw. 1979. Aggregation in male parasitic wasps of the genus *Megarhyssa*: I. Sexual discrimination, tergal stroking behavior, and description of associated anal structures behavior. *The Florida Entomologist* 62(1):3–8 [pdf].