



Lycopus americanus (American bugleweed). Photo by Pat Harris.



Quercus macrocarpa (bur oak) leaves and fruit. Photo by Pat Harris.

Toxicodendron radicans (poison ivy), *Ulmus americana* (American elm), *Ulmus rubra* (slippery elm), *Verbena stricta* (hoary vervain), *Verbena urticifolia* (white vervain), *Verbesina alternifolia* (wingstem), *Vitis aestivalis* (summer grape), *Vitis riparia* (river grape), *Xanthium strumarium* (rough cocklebur).



Different Jaws for Different Jobs

Ted C. MacRae¹

If you're interested in wood boring beetles and live in the eastern U.S. like I do, you're sure to encounter sooner or later the region's sole "primitive weevil" (family Brentidae), the oak timberworm (*Arrhenodes minutus*)². This beetle

¹ Originally posted October 11, 2011 at *Beetles in the Bush*: <http://beetlesinthebush.wordpress.com>. Photos by the author.

² Actually, there are three other species in eastern North America as well, but all are Neotropical species that occur no

develops as a larva in the wood of living trees exposed by wounding, creating numerous small "worm holes" that can occasionally degrade the value of wood grown for timber. Females are presumably attracted to volatiles given off by wounded wood for oviposition, thus they are also commonly attracted to the trunks and stumps of trees harvested for lumber or cut for some other reason. Cut trees are also highly attractive to wood boring beetles in the families Buprestidae and Cerambycidae—my primary taxa of interest, so I've seen more than a few oak timberworms over the years, including this male and female that I found on the cut stump of a large black oak (*Quercus velutina*) in Sam A. Baker State Park, Wayne Co., Missouri.

An interesting feature of oak timberworms and related species of primitive weevils is the rather extreme sexual dimorphism exhibited in the shape and function of the mandibles. Mandibular sexual dimorphism is actually quite common across many groups of beetles, but in most cases the males simply have proportionately larger mandibles than females due to their use in sexual combat (think stag beetles, for example). Oak timberworm males also have enlarged mandibles for combat with other males (males are territorial and guard females during oviposition). The females, however, rather than simply having smaller yet similarly shaped versions of the male mandibles, instead have tiny little mandibles at the end of a greatly narrowed and elongated rostrum (beak). This is because, unlike most other beetles in which the female mandibles lack a specific purpose, female oak timberworms use their mandibles to "drill" holes into the wood in which they will insert their eggs. Different forms for different functions!

I have seen reports of males assisting females in removing her beak if stuck in the wood while drilling an egg hole by "stationing himself at a right angle with her body and pressing his heavy prosternum ("chest") against the tip of her abdomen, her stout fore legs thus serving as a fulcrum and her long body as a lever" (Riley 1874, as quoted in Thomas 1996), making this a rare instance of tool use by insects. I have not observed

further north than the southern tip of Florida (Thomas 1996).



Arrhenodes minutus (oak timberworm), Wayne Co., Missouri. Male (top) and example of mate-guarding behavior (bottom).

this behavior myself, but it is common to find the males in various mate guarding positions over the female as pictured above.

REFERENCES:

Riley, C. V. 1874. The northern brentian—*Eupsalis minutus* (Drury). (Ord. Coleoptera; Fam. Brentidae). *Sixth Annual Report on the Noxious, Beneficial, and Other Insects, of the State of Missouri*. Began and Carter, Jefferson City, Missouri, 169 pp.

Thomas, M. C. 1996. *The primitive weevils of Florida* (Coleoptera: Brentidae: Brentinae). Florida Department of Agriculture & Consumer Services, Division of Plant Industry, Entomology Circular No. 375, 3 pp.

Lecture on Pollinators

Fran Glass

Wednesday, February 1, 7:00 p.m. Mike Arduser, Missouri Department of Conservation, will give a program on pollinators. Mike recently discovered two new species of native bees. The



The female (top) has the beak thin and elongate, while the male (bottom) has the beak short w/ robust mandibles.

lecture will be at [Powder Valley Nature Center](#) in Rooms C&D. Program sponsored by Wild Ones, Native Plants, Natural Landscapes, St. Louis Chapter. Wild Ones is a national educational and advocacy organization whose mission is to promote use of native plants in landscaping.

Nature Classes at St. Louis Community College—Spring 2012

Nels Holmberg

Attached is a list of nature classes offered by St. Louis Community College for Spring 2012.

Warblers [NATR 709 651]

March 27, 7:00–09:00 p.m., Meramec campus.

Learn about the colorful spring migrant birds known as the warblers. Which are year-round residents in our area? Which breed in our area? Which just are passing through in the spring and fall? Offered in cooperation with the St. Louis Audubon Society.