

HOW NOVEL ARE THE CHEMICAL WEAPONS OF GARLIC MUSTARD IN NORTH AMERICA? Don Cipollini\*, Stephanie Enright, and E. Kathryn Barto, Professor, technician, and graduate student, Department of Biological Sciences, Wright State University, Dayton, OH 45435

The novel weapons hypothesis posits that invasive plant species gain an advantage in invaded habitats by possessing novel biochemical traits toward which naive native species from many taxonomic groups lack tolerance. The invasiveness of garlic mustard in North America has been associated with the possession of novel weapons, but the chemistry of the native community has not been examined sufficiently to know whether the putatively bioactive molecules of garlic mustard are not already present in the native community. We compared the HPLC profile of flavonoids and glucosinolates, activities of trypsin inhibitors, and concentrations of cyanide in leaves of bolting garlic mustard plants with that found in equivalent leaves of four North American mustard species that occupy forest understories where garlic mustard invades. While profiles varied among North American *Arabis* and *Cardamine* species, no native mustard examined shared the same profile of glucosinolates or flavonoids in leaves with garlic mustard. Trypsin inhibitor levels were lower in undamaged leaves of garlic mustard than in the native species, which differed from each other, but these proteins are known to be highly inducible in garlic mustard. Among species, significant concentrations of cyanide were only found in the leaves of garlic mustard. Among the species examined here, the putatively bioactive chemistry of garlic mustard was distinct, supporting assertions of the novelty of the chemical weapons of garlic mustard in North America.