

**ENTOMOLOGY RESEARCH 2001**  
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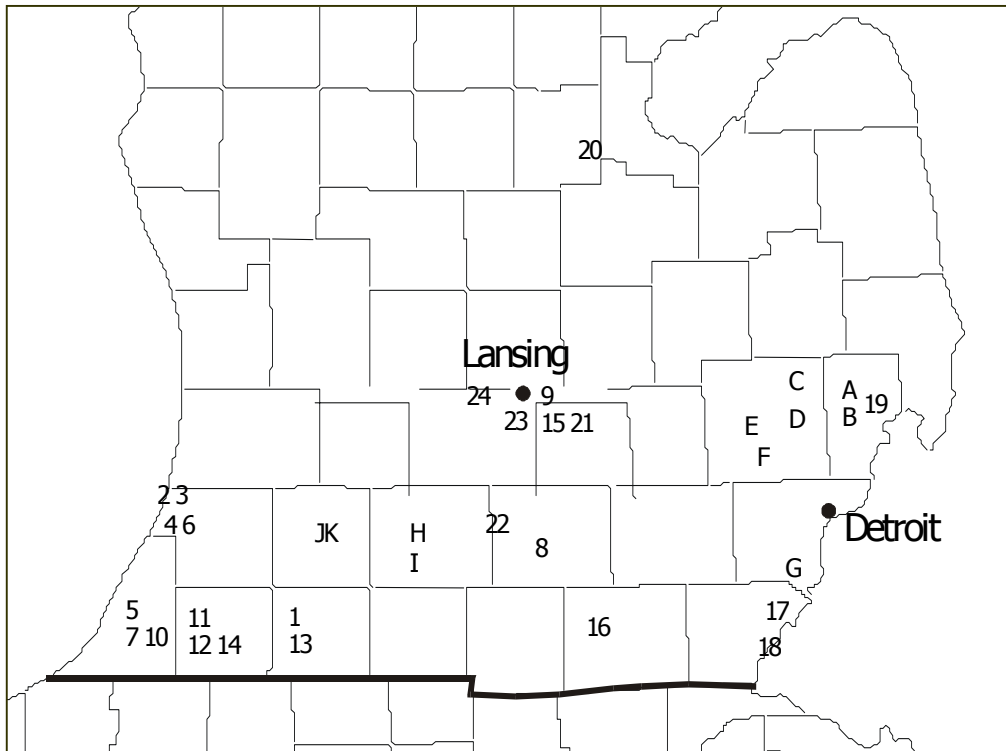
**Biological Control of Japanese Beetle in Michigan and the North Central United States – Funded by Project GREEN and the Michigan Turfgrass Foundation (David Cappaert, David Smitley).**

In this project we are collecting pathogens and parasites from areas of the Northeastern United States where Japanese beetle populations are more stable and introducing them to Michigan where they have not yet been found. A summary of our work in 2000 can be found in the Proceedings of the 2000 Michigan Turfgrass Conference.

**PROGRESS IN 2001:**

- 2,000 *Istocheta* (a parasitic fly) eggs on live Japanese beetle adults introduced in 1999 and 2000. None recovered in 2001.
- 500 *Tiphia vernalis* (a wasp parasite of Japanese beetle grubs) adults introduced in 2000. None recovered in 2001.
- *Ovavesicula*, a protozoan pathogen, introduced as 3,000 infected grubs in 1999 and 2000, was found at all three introduction sites in 2000 and at one of three sites in 2001.
- The Eugregarine pathogen (found in the midgut of grubs) found in most of the older infestations of Japanese beetle in Michigan has been identified by Dr. Richard Clopton as a *Gregarina sp.* He is now working on describing and naming the species.
- *Gregarina sp.* was found to infect 39% of all Japanese beetle larvae from golf courses in the bottom 2 layers of counties in Michigan, but only 12% of larvae from golf courses in the next layer of counties (Table 1, Figure 1). Similarly grubs collected from low maintenance turf in the lower 2 layers of counties were heavily infected with *Gregarina sp.* (54%) but not further north (0% infection).
- A manuscript on this research has been accepted for publication in *Environmental Entomology* and should be in print by March, 2002 (Cappaert and Smitley).

● **Figure 1. Sites in Michigan sampled for pathogens of Japanese beetle.**



**Table 1. Incidence of *Gregarina* sp. in Japanese beetle larvae from the southern-most counties where Japanese beetle was first found, compared with the same in counties that have become infested more recently.**

Type of research site	Location in Michigan	Number of sites	Larvae per 0.1m <sup>2</sup>	Percent larvae infected with <i>Gregarina</i> sp.
Golf courses	In 13 southern-most counties <sup>1</sup>	5	7.6 ± 4.3	38.8 ± 12.8
Golf courses	All other sites	6	11.0 ± 6.2	12.3 ± 18.0
Low maintenance	In 13 southern-most counties	17	5.6 ± 4.3	53.6 ± 29.9
Low maintenance	All other sites	7	4.1 ± 6.3	0 ± 0

<sup>1</sup>Primary sites were extensively sampled in 1999 and 2000 (Table 1, Figure 1) while secondary sites were sampled once in 2000 (Table 2).

<sup>2</sup>Sample sites in bottom 2 layers of counties in Michigan (Figure 1).