COQUILLETTIDIA PERTURBANS SURVEILLANCE IN SELECTED RETENTION PONDS FOR FIELD TRIALS OF NATULAR® G (UPDATED)

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ABSTRACT

To measure the potential of Natular® G treatments on *Coquillettidia perturbans* larvae, emergence traps were deployed in several retention ponds to monitor larval habitats. *Cq. perturbans* population data was successfully collected during the 2019 adult mosquito season, and reflected a single generation curve for the species. The Natular® G formulation of spinosad was then applied on one of these retention ponds in the fall to reduce emergence in the following season. The baseline data gathered in this project can now be used to evaluate the effectiveness of this fall application.

BACKGROUND

Coquillettidia perturbans is generally considered a single generation mosquito species with a mammalian feeding preference. In central Massachusetts this species emerges in significant numbers and is quite pestiferous to local residents, along with being a potential vector of West Nile virus and Eastern Equine encephalitis. A unique species, *Cq. perturbans* overwinter as larvae, breathing through the root systems of emergent vegetation by using a modified siphon tube (Andreadis 2005). This characteristic of the *Cq. perturbans* larvae make conventional larval control methods less effective. Surfactants are not as successful in treated the species because they do not have to routinely water surface to obtain air (Johnson 2017).

Natular® G is an organically certified (Organic Materials Review Institute) formulation of spinosad, created through the fermentation of soil organism *Saccharopolyspora spinosa*. It is also the first product of its kind that is categorized as a Reduced Risk product by the EPA (CMMCP 2020). Applications targeting this species have been conducted late in the season before the aquatic environment gets too cold, while the new population of *Cq. perturbans* larvae are still actively feeding. A follow-up application often occurs in the spring, once the larvae resume active feeding (MMCD 2013).

MATERIALS & METHODS

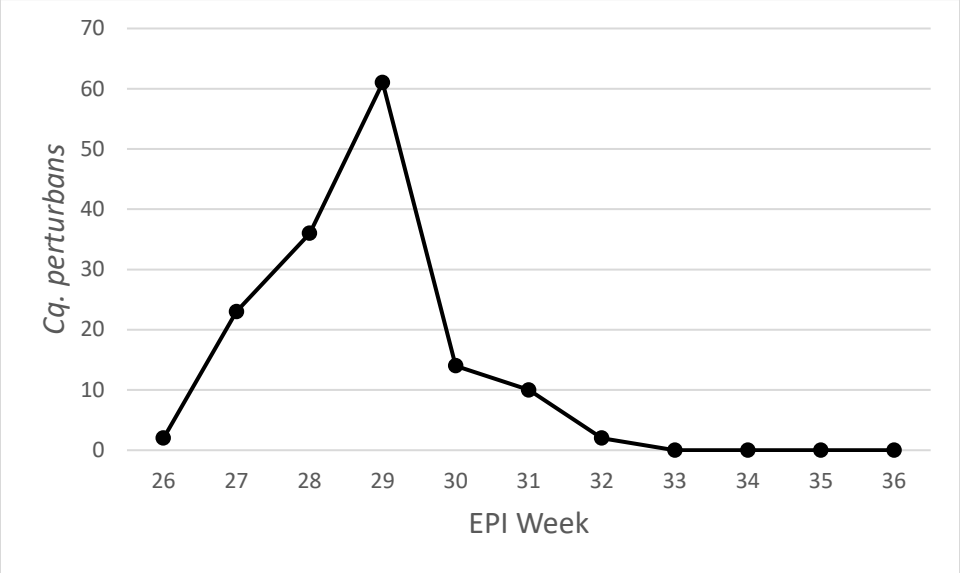
Cq. perturbans emergence traps were obtained from the Bristol County Mosquito Control Project (Attleboro, MA) for use in this project. These traps were placed within several retention ponds with visible emergent vegetation and sufficient standing water present. Once these traps were deployed in early June, surveillance was conducted weekly into September until *Cq. perturbans* specimens ceased being collected. Specimens were counted and identified by species, then grouped by EPI week

collected. Following the surveillance for *Cq. perturbans*, backpack treatments were conducting around retention ponds with Natular® G at a rate of ~10lbs/acre, in according to the label.

DISCUSSION

Of the three retention ponds monitored during this project, only one remained viable throughout the entirety of the surveillance period. Although there was a sufficient amount of water present at the beginning of the season, two of these retention ponds dried out during the summer. Surveillance in the retention pond that supported *Cq. perturbans* larvae all season showed a traditional population curve for this species (Figure 1). As with the surveillance portion of the project, the treatment with Natular® G was conducted only on the remaining viable retention pond. All retention ponds will be reevaluated for use in future seasons.

Figure 1: Emergence Trap *Cq. perturbans* Surveillance 2019



UPDATE

In response to the intense Eastern Equine encephalitis levels in Massachusetts during the 2019 season, CMMCP and other mosquito control projects in Massachusetts coordinated with the State Reclamation and Mosquito Control Board (MDAR) to conduct aerial larvicide operations on *Cs. melanura* and *Cq. perturbans* habitat to mitigate EEE vectors in 2020. Emergence traps were reallocated from this project to monitoring the efficacy of the aerial larvicide operations using Natular® products. Evaluating backpack treatments on local retention ponds may resume baring larger aerial applications.

REFERENCES

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