

USING GIS TO PRIORITIZE LARVAL TREATMENT SITES FOR SPRING-BROOD MOSQUITOES

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ABSTRACT

The spring brood mosquito species *Oc. abserratus* and *Oc. excrucians* comprise the 2 main species of mosquitoes in early June according to our surveillance trap counts. These species are single generation mosquitoes and emerge in vast numbers each year in late spring. Targeting their habitats in our early season larval control program is aimed at reducing their emergence and subsequent service requests for adulticiding in early summer.

INTRODUCTION

A geographic information system (GIS) is a system that creates, manages, analyzes, and maps all types of data. GIS connects data to a map, integrating location data with all types of descriptive information. This provides a foundation for mapping and analysis that is used in our program of mosquito control. GIS helps us understand patterns and relationships in a geographic context and is a powerful tool to improve quality of life and reduce risk from mosquito-borne diseases.

MATERIALS & METHODS

We used our GIS program to create heat maps of adulticiding requests from June 2020 and compared it against larval habitats of these 2 species we have mapped. These areas received priority treatments using organically-certified formulations of either Aquabac® 200G

(*Bacillus thuringiensis israelensis*) or Natular® G30 (*Saccharopolyspora spinosa*). Within the heat map areas there are 2,963 data point sites, however not all of these were determined to be spring brood habitats. 1,194 sites were surveyed for larvae in March and April, and 283 were treated at the time of inspection or were treated in our pre-hatch program earlier in the year. Figure 1 shows the priority areas in grey shading in the towns of Billerica, Chelmsford, Dracut, Tewksbury, Westford and Wilmington. Larval sites we have databased are the blue dots and larval sites treated are the green dots. XXX acres were treated in total as part of this program. To determine the heat map we ran a point density analysis, and used 10 classes. The scale began at ~27 requests per square mile, and went up from there. The largest class was ~120-134 requests per square mile, but that area was limited to Wilmington.

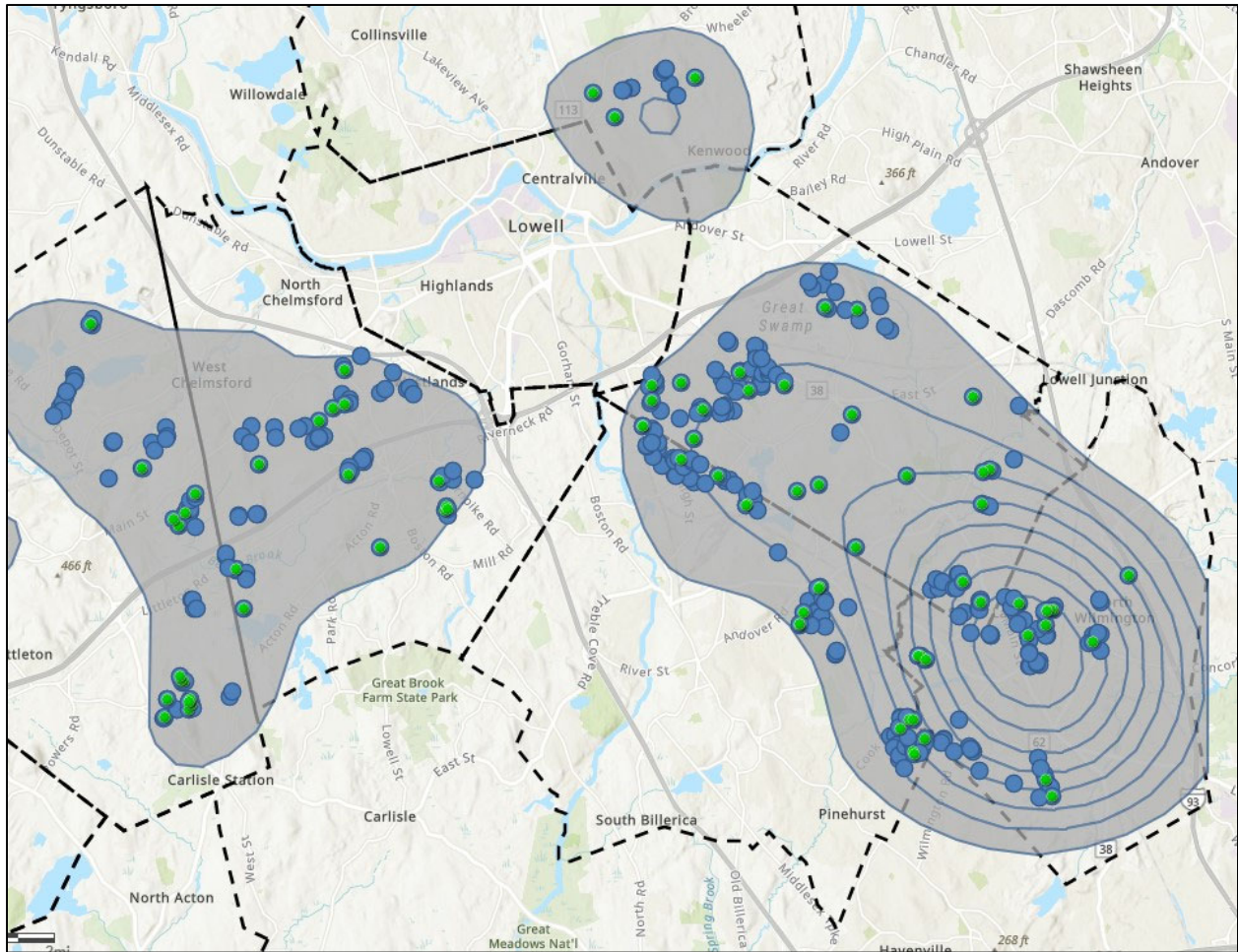


Figure 1

CONCLUSION

Using GIS is an effective tool for a proactive approach for larval mosquito control. By guiding field staff to areas of historic adult mosquito populations and treating appropriate larval habitats before emergence, the potential for a reduction in emergence and subsequent decrease in mosquito exposure is great. CMMCP will continue to employ this tool in our

program as an effective means of targeted control application and aimed at reducing dependence on adulticiding.

ACKNOWLEDGEMENTS

CMMCP Board of Commission, Frank Cornine III, Staff Biologist & GIS Coordinator, David Bitler, GIS Intern and CMMCP field staff.