

Protective Services - Southeast Regional Service Commission Mosquito Control

Pillar	Description	Commission	Division	Service Name	Sub Service	Direct Customer	Service Definition	Service Component	Current Service Level	Target	Target Achieved 2024	Target Achieved 2023	Target Achieved 2022	Results / Comment
Environment	Mitigate the potential spread of arbor-viruses as well as ensure that residents of the Tri-Community (Riverview, Moncton, Dieppe) experience reduced nuisance levels from mosquitoes and other (aquatic-larvae) biting flies.	Southeast Regional Service Commission	Mosquito 360	Mosquito Control	Monitor larvae densities on a 10 to 14 day rotation within the Tri- Community	Citizens and Tourists	A Tri-Community service provided to residents offering a mosquito control program to reduce the local mosquito populations (from late-April to early-September).	Number of larvae (per 250 ml sample)	<ul style="list-style-type: none"> Monitor public land sites (approx. 190 sites) every 14 days 	100%	95%	100%	100%	<ul style="list-style-type: none"> As noted in last year's results, the aim for 2024 was to maintain the previously established 7-10 window for monitoring This target was met (and exceeded in some cases/site classifications) for the most part, however there was a period mid-season in which we were closer to (and in some cases exceeded) the previous 14 day window - this was due to both the SERSC mosquito operations downsizing in staff (from 8+ Field Technicians historically to 4 for the 2024 season - as we had anticipated increasing monitoring/treatment efficiency via the transition to a drone-based model for wetland/marsh sites) and due to continued Argo repair issues (as was the case last year as well) We were unable to begin drone-based spreading/application operations (DJI Agras T20P) until mid July as the nature of these operations were novel to this region and there was a significant amount logistics/regulatory 'red-tape' to overcome The approximate window for this reduced monitoring, specific to the marsh sites (all other site classifications - parks, trails, retention ponds, etc. - were increased in monitoring/treatment frequency during this window) was around two - three weeks in late June/early July While having limited access to the spreading drone for the first half of the season, we were still able to deploy our multi-spectral surveying drone, the Mavic 3, beginning in May which allowed us to produce high resolution maps/photos of the marsh sites and deploy treatment in a more precise/targeted approach from both the ground (Argo) and eventual air (Agras T20P) Once Agras T20P applications began in July, the Argo's were no longer deployed for the rest of the season For the 2024 season we monitored and/or treated designated mosquito breeding sites a total of 1083 times (including: marsh, parks, schools, retention ponds, trails, and small sites) For 2023 we were able to monitor/treat our sites 1040 times Despite deploying less field technicians, the implementation of our surveying drone and the general dry nature of the season (low levels of standing water) allowed us to maintain historical coverage
					Apply biological insecticide (Bti)			Larvicide(Bti) Insecticidal applied	<ul style="list-style-type: none"> Apply biological insecticide when potential active breeding sites are identified or when larvae are present within a water sample 	100%	100%	100%	100%	<ul style="list-style-type: none"> Larvicide was applied to all sites where larvae were positively identified HIT treatment (high-intensity-treatment) was suspended for the majority of the 2024 season and will be omitted from future operations as we continue to transition to an IMM (integrated-mosquito-management) model - wherein targeted treatment, with increased surveillance and post-count data collection is the focus The implementation of targeted spot-treatment (via the use of drones) is likely to greatly increase the effectiveness of this model (and again, due to the implementation of the application drone mid-way through the season, and it being particularly dry, it was difficult to make a full assessment based on this year, but the data collected thus far is promising in that regard) With an approximate 40% reduction in total precipitation relative to 2023, and a targeted treatment approach, we also saw a significant reduction in the volume of larvicide applied (less than 50% relative to 2023) Factoring in the total reduced precipitation, specifically across July and August (a 66% decrease relative to 2023) larviciding was prioritized during the first part of the season with increased surveillance/monitoring and trapping being prioritized for the remainder to help determine where targeted spot treatment was necessary
					Monitor larval densities post biological insecticide application			Number of larvae (per 250 ml sample)	<ul style="list-style-type: none"> Monitor results within 48 hours of application 	100%	100%	100%	100%	<ul style="list-style-type: none"> Post-counts and general post-site treatment monitoring were significantly increased for the 2024 season, with a 98.6% reduction/effectiveness for the 2024 season (post-count data collected 24-72 hours post treatment) In the event that larvae were still present post-treatment, re-application was not performed immediately, instead sites were re-evaluated towards the end of given larval cycle (based on instar stage first detected) and larvicide was applied if larvae were still developing & granules were no longer visible. Pre-count average larval densities were 3.63 larvae/250 mL for 2024 With average density for 2023 at 3.72 larvae/250 mL, for reference Note that the decrease in available stagnant water for 2024 resulted in skewed averages as larvae were contained in smaller water sources - if, for example, we look at total larvae counts across Sample Station #1 across all active marsh sites, total larvae counts for 2023 were 6,614 larvae vs. 4,733 larvae for 2024 (a roughly 30% decrease in 2024 despite averages being very close)

					Adult mosquito trapping		Number of mosquitoes per trap	<ul style="list-style-type: none"> Monitor results weekly, identify the flying adults Maintain adult-count trends from prior season(s), taking into account seasonal temperatures and precipitation- 	Yes	Yes	Yes	<ul style="list-style-type: none"> For the 2024 season, adult trapping was another aspect that was prioritized/increased in frequency Trapping was increased in frequency to 2x per week (relative to past seasons at 1x per week) This allowed us to nearly double the number of sites trapped to total of 22 (12 last year) Incorporated into the 2024 adult trapping was the introduction of traps to marsh sites, to help better gauge activity within the wetlands (these traps were placed roughly 100 m-200 m from the nearest adjacent trail into the marsh - or at known hot spots in some cases) Despite larval numbers for 2024, adult trapping was most indicative metric for mosquito activity When comparing the traps consistent across both seasons (2023 & 2024) we saw a staggering drop from 26,062 adults trapped for 2023 vs. 9,483 adults trapped for 2024 (a 63% decrease in adult activity from last year) Even when factoring in the additional 10 new trapping sites, we captured 11,410 adults (a 56% decrease in adult activity relative to 2023) For further reference, during the 2022 season, which similarly saw lower levels of precipitation, the total number of adults trapped at the sites consistent across all three seasons was 13,392 adults (still a 29% decrease relative to 2022) Ultimately, this year proved to be a 'good' one in terms of diminished adult mosquito activity, likely due to the combination of climactic conditions and a more targeted treatment plan For the 2025 season, Mosquito 360 has budgeted for an additional 20-25 traps, as we hope to implement it as a further control option (and bolstered surveillance tool) moving forward In terms of speciation, initial plans are to further internally develop capacity (via DNA analysis, which is still in discussion), however through contact with researchers at Acadia University, who are actively conducting speciation via both microscopy and DNA analysis in the region, we are now looking to develop a chain of communication to best allocate resources and identify species present Via internal microscopy, species belonging to both Aedes (container species) and Culex genus were positively identified, though exact speciation was difficult to determine (Culex salinarus - the saltmarsh mosquito) being among those positively identified
					Educate general population		Educated population	<ul style="list-style-type: none"> Community visit, Web site 	Partially (Ongoing)	In-Progress	Partially	<ul style="list-style-type: none"> For 2024, Mosquito 360 (rebranded from the Mosquito Control Division to better fit in with the SERSC's branding environment), deployed a website and a large-scale social media advertising campaign in collaboration with HAWK marketing to provide information on both mosquito management practices and to provide additional context/information for the introduction of drone technologies and the use of the bacterial larvicide, Bti (bacillus thuringiensis israelensis) Due to the numerous changes introduced in the active 2024 season, there was not a significant amount of time dedicated to education in terms of physical presence, though Mosquito 360 did have a very successful booth/information showing at the annual Home Show Education and awareness continue to be a focus for the 2024 off-season, including further expansion of website curriculum, the development of a interactive GIS map/portal (to showcase treatment areas, heat maps, etc.), and collaboration through ETF projects which will further highlight mosquito management practices and ecological stability Social media presence is also being targeted, with Ampersand Social Co. developing some audio/visual material to be deployed, again further detailing the purpose and methods of mosquito management operations