

Southeast Regional Service Commission Mosquito Control (Third Party Level of Service to Public) 2023 Results													
Community Health													
Pillar	Department Goal	Commission	Division	Service Name	Sub Service	Direct Customer	Service Definition	Service Component	Current Service Level	Target Achieved 2023	Target Achieved 2022	Target Achieved 2021	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 Control Division	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• Target = 100% of the time	100%	100%	100%	Aimed to maintain a 7-10 day treatment window, rather than 14 days (current literature suggest 7-10 window is representative of larval life-cycle) but there were some challenges in doing so, specifically during periods wherein equipment failures halted/reduced operations. However, the MCD was able to maintain target treatment in the standard 14 day window. Following some significant equipment changes in the 2023 off-season, the MCD will again look to transition to and maintain the 7-10 day window for the 2024 season.
					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.• Target = 100% of the time	100%	100%	100%	Larvicide was applied to all sites where larvae were present and, during wet periods, to sites where potential breeding sites were identified. Two treatment approaches were used by the MCD to achieve this: 'HIT's' (High-intensity-treatment) and 'Dip N Sprays'. Given that it was a particularly wet season (31.6% increase in total precipitation relative to 2022) and that Vectobac is effective in standing water for ≈ 7 days, HIT's were often the preferred method as they ensured the highest level of site-coverage. During HIT treatment, larvicide was applied to all standing water in which larvae were present (reactive), as well as to all standing water that was deemed to be unlikely to dissipate in the immediate future (preventative). Dip N Spray was preferrd during dry periods, wherein the scale of standing water was significantly reduced and only water were larvae were actively present were treated.
					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• Target = 100% of the time	100%	100%	100%	Areas where larvicide was applied were monitored 24-48 hours after application. Results were consistent with established MCD post-count data (> 90% efficacy). Adult count data further supported results (see below). In the event that any larve were identified during post-counts, target area was re-treated.
					Adult mosquito trapping			Number of mosquitoes per trap	<ul style="list-style-type: none">• Monitor results weekly, identify the flying adults• Target: Maintain adult-count trends from prior season(s), taking into account seasonal temperatures and precipitation.	Yes	Yes	Yes	<p>9-12 traps set and counted (24-hour post-count) on a weekly rotation (vs. 8 last season) throughout the tri-community region. Across the 8 traps consistent with last season, average seasonal adult counts showed a 2.49% increase vs. 2022 adult counts (154 vs. 151). Current climate-mosquito models suggest that precipitation, relative humidity, and temperature (in that order) play the most statistically significant roles in shifting mosquito populations. Both precipitation and humidity show positive correlations (higher values correlate with higher counts); with temperature showing a negative correlation (lower temperatures, within the threshold of ≈ 35°C - ≈ 15°C, produce higher counts). As such, this marginal average adult-count increase for the 2023 season is expected given that average seasonal temperatures for 2022 vs 2023 showed a 4.8% drop; while total seasonal precipitation and average seasonal relative humidity both increased by 31.6% and 5.1% respectively.</p> <p>*Note: While the trend of positive/negative correlation to climate variables is consistent (case-study regression analysis consistent with a p-value < 0.05); the degree of positive/negative correlation is species-dependent (ie. In case study of 'number of mosquitoes sampled relative to precipitation', r-values can range from 0.9831 in Culex species to 0.9466 Aedes species (an r-value > 9 = very-strong correlation).*</p> <p>While limited to visual identification (require genetic testing for 100% positive identification), the MCD was able to positively identify 4 unique species of mosquitoes within the tri-community: Aedes triseriatus (La Crosse virus, West Nile virus); Coquilletidia perturbans (West Nile virus, Eastern equine encephalomyelitis virus); Culex nigripalpus (West Nile virus), and Anopheles punctipennis (Malaria). Other specimens belonging to the Culex and Aedes genus were positively identified, but specific species identification could not be determined (specimen damage and/or time-constraints). Specimen identification was not part of the 2022 operations and was only a sub-component of the 2023 season but will look to become a more central focus in 2024 and moving forward.</p>

					Educate general population			Educated population	• Community visit, Web site	In-Progress	Partially	Partially	<p>Community outreach took a back-seat during the first half of the 2023 season (January - September), as both program management and field-staff underwent significant changes new to 2023. Community education will become a primary focus for the program Supervisor beginning in the 2023 off-season (September - April, 2024). New to the 2024 season, the MCD is looking to make a significant shift to the use of Drones for primary treatment (parks, small sites, trails, and retention ponds, will still be monitored and treated 'by-hand'), this transition will require a large-scale education/outreach campaign and will also further focus on educating the public on Bti and its respective mode-of-action/properties. The SERSC has already committed a portion of the programs budget to ensure that this educational campaign is both professional and thorough. In the event that the MCD does not make this transition (and continues to primarily operate via Argos), the MCD will still continue to develop a public educational campaign focusing on Bti and daily MCD operations.</p> <p>*Note: Still awaiting approval from the Department of Environment regarding the use of Drones*</p>
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