Statement of purpose

As the climate continues to change there is an urgent need to improve the capacity of communities, front-line health workers, public health practitioners and health services institutions in Alberta, BC, and Saskatchewan to detect and respond to emerging ticks and tick-borne diseases of concern for human and animal health.

Context of the project

Climate change is predicted to cause significant impacts on the three western provinces. Large portions of Alberta and Saskatchewan expected to experience higher temperatures and lower levels of precipitation (leading to droughts), while BC expects higher levels of precipitation. This project aims to fill critical evidence gaps on the impact of climate change on ticks and tick-borne diseases in Canada’s three western provinces.

One Health in action

One Health is a cross-sectoral, multi-disciplinary, collaborative approach that recognizes the interconnection between humans, animals, and their shared environment. A diverse team was brought together, aiming at increasing our understanding of current and potential future risk determinants for tick-borne diseases in people and animals in Alberta, BC, and Saskatchewan. A harmonized approach to climate and tick-borne disease modelling and genetic sequencing of tick-borne pathogens will strengthen inter-agency partnerships and provide value for money for partner organizations.

Goal 1: Improve cross-sectoral monitoring and surveillance capacity for tick-borne diseases in Alberta, BC, and Saskatchewan

Objective 1: Improve detection, monitoring and surveillance of Ixodes spp. ticks and tick-borne pathogens in Alberta, BC, and Saskatchewan

Objective 2: Increase access to, and analysis of, human and animal case data on tick-borne diseases in Alberta, BC, and Saskatchewan

Objective 3: Improve availability of tick-borne disease (Anaplasma spp., Borrelia spp, and Ehrlichia spp) genomes originating from ticks in Western Canada

Goal 2: Improve cross-sectoral prediction and response capacity for climate-driven vectors and tick-borne diseases in Alberta, BC, and Saskatchewan

Objective 4: Enhance prediction and response capacity for climate-driven vectors and tick-borne diseases disease in Alberta, BC, and Saskatchewan

Objective 5: Improve availability and access to evidence-based information on climate-driven vectors and tick-borne disease for communities and vulnerable populations in Alberta, BC, and Saskatchewan
Goal 3: Alberta, BC, and Saskatchewan have strengthened One Health capacity to address climate-driven infectious diseases

Objective 6: Improve collaboration and information exchange between public, animal, and environmental health professionals and policy makers within and between Alberta, BC, and Saskatchewan

Ticks and pathogens explored

<table>
<thead>
<tr>
<th>Ticks</th>
<th>Pathogens</th>
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</thead>
<tbody>
<tr>
<td>Black-legged ticks: <em>Ixodes</em> sp</td>
<td><em>Anaplasma phagocytophilum</em></td>
</tr>
<tr>
<td>Rocky Mountain wood tick: <em>Dermacentor andersonii</em></td>
<td><em>Ehrlichia</em> sp</td>
</tr>
<tr>
<td>American Dog tick: <em>Dermacentor variabilis</em></td>
<td><em>Borrelia</em> sp</td>
</tr>
<tr>
<td>Winter ticks: <em>Dermacentor albipictus</em></td>
<td><em>Babesia microti</em></td>
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<tr>
<td>Asian longhorned ticks: <em>Haemaphysalis longicornis</em></td>
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</tbody>
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Expected outcomes

- Synthesis of existing data on tick and tick-borne pathogens
- Enhanced surveillance of ticks
- Genome sequences of TBD pathogens
- Predictive risk maps under different climate change scenarios
- Improved information exchange and collaboration
- Policy dialogues
- Strengthened One Health capacity - trainees

Project partners

- BC Centre for Disease Control
- Centre for Coastal Health
- BC Ministry of Forest, Lands and Natural Resource Operations
- BC Ministry of Agriculture
- BC Ministry of Health
- University of Calgary
- Alberta Health Services

- University of Regina
- Roy Romanow Provincial Laboratories
- Canadian Lyme Disease Research Network
- University of Guelph
- IDEXX Laboratories

Support statement

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