Project Title: Targeted enhanced surveillance for early detection for the presence of Dutch elm disease or stockpiles of elm firewood in rural Alberta municipalities reporting higher numbers of DED beetle vectors

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At present, Alberta has the largest DED-free stand of American elm in the world. The province has 600,000 American elms valued at $2 billion. In order to keep the DED-free status, the Society to Prevent Dutch Elm Disease (STOPDED), a nonprofit organization, leads the development and delivery of Alberta's *Provincial Dutch Elm Disease Prevention Program.* Alberta American elms are not native, they either have been planted or are naturalized offspring of the planted elms.

In cooperation with Alberta Agriculture and Alberta's urban and rural municipalities, STOPDED has been monitoring for the elm bark beetle (EBB), vectors of Dutch elm disease (DED) throughout the province annually since 1975. Traps are placed in rural and urban municipalities, tree nurseries, provincial and municipal parks and at Canada/US ports of entry. Monitoring for the beetles has been a key component to the prevention program and has been used as an indicator for the possible presence of DED. The thought in Alberta has been; if there are beetles present there could be DED.

To date, smaller European elm bark beetles have been captured in low numbers every year throughout the province. The banded elm bark beetle (BEBB) has become quite established in the southeastern part of the province, mainly in the City of Medicine Hat. BEBB are now found in lower numbers in municipalities across the province. The native elm bark beetle is not yet established in Alberta.

In 2020, the City of Lethbridge had 2 boulevard elm trees test positive for the DED fungus. Surveillance was subsequently conducted on all the elm trees in the area of the infected trees and it was determined that this was an isolated case involving the two trees. Alberta also had one elm in the Town of Wainwright test positive in 1998 and the complete town and 2 km radius of the town was surveyed for more infections.

Alberta's DED-free status allows it to ship elm trees across Canada, a $50 to $60 million dollar a year industry for the province's tree nursery industry. The ability to ship elm trees Canada-wide is contingent on the province's DED-free status. The Canadian Food Inspection Agency regulates the movement of elm tree stock in Canada and provinces with DED cannot ship elms outside their borders,

The relationship between the presence of beetles and DED disease introduction, incidence and spread is not completely understood. In jurisdictions such as Manitoba and Saskatchewan that are actively managing DED, more effort is put towards DED surveillance and less on monitoring for the beetles as a tool to direct DED management efforts. Elm firewood that could have come from DED infected trees originating from outside of the province is a concern.

Alberta has not routinely conducted official DED surveillance. In1998 Alberta received Federal funds to conduct a province-wide elm tree inventory and it was at this time that the first DED infected tree was identified and subsequently eradicated. In the summer of 2021 STOPDED received funding from Canadian TREE Fund-Jack Kimmel Grant to complete an enhanced DED surveillance in municipalities and provincial parks that captured higher, sustained numbers, of EBBs over the last 2 years to determine if DED or if elm firewood was present. This was considered to be a valuable exercise because early detection of a new infection of DED is important if the disease is to be eradicated.

STOPDED contracted an Alberta-based company, Living Tree Environmental, that has conducted surveys for the Province of Saskatchewan over the past few years, to conduct DED surveys. Locations surveyed were the Towns of Brooks, Taber, Oyen and Drumheller, Village of Diamond City, Consort, Cereal and Barons, Taber Municipal Park and Park Lake and Tillebrook Provincial Parks. Brooks, Taber, Diamond City and Tillebrook received 2 surveys whereas the other locations one.

Each individual survey included a complete survey of all private and public elms by an experienced crew, collection of samples from all DED symptomatic elm trees, which were sent to the provincial lab for diagnosis, and collection of data on elm firewood violations that are in contravention of the Alberta Agricultural Pests Act. This act gives municipalities the ability to enforce immediate removal and destruction of any DED infected elm trees or elm firewood stored on private property in their jurisdictions. A complete report was supplied to STOPDED and to the municipality.

In order to better equip municipalities with their prevention program, Living Tree Environmental put on 2 workshops, in Taber and Brooks. Due to covid regulations at the time, there was limited attendance. These workshops covered biology of DED and its vectors, DED symptoms, elm identification, how to take a suspect DED sample, review of Alberta Agricultural Pests Act (APA) and "Pest and Nuisance Control Regulation (PNCR)", the DED Prevention/Control Measures and the roles of local enforcement officials. A total of 30 people attended the workshops which included AB Parks staff, Agriculture Fieldman from 7 counties and parks employees from 3 municipalities.

 All surveyed locations were sent an article which explained the project for their local papers and social media.

In conclusion, with DED on the rise in Saskatchewan and the high risk of infected/infested elm wood being transported into Alberta this project indicated that more emphasis needs to be placed on DED and elm firewood surveillance. Monitoring for beetles is still a valuable component to the DED prevention program since it could alert to beetle movement and the indication that new elm firewood is present.

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