**Introduction**

The emerald ash borer (EAB), *Agrilus planipennis Fairemaire* (Coleoptra: Buprestidae), is an invasive species that has killed millions of ash trees (*Fraxinus spp*.) in North America since it was discovered here in 2002. Although it had likely been in the US since the late 1990’s, the EAB has spread throughout much of the eastern half of the contiguous US and parts of Canada, destroying tens of millions of ash trees in its path. Because these beetles spend most of their life as larvae feeding on the inner vascular tissue of ash trees, most of their movement can be accredited to unintentional human transportation of infested wood. As a result, it is difficult to predict where the EAB will move, making early detection nearly impossible.

The effort to slow the spread of this pest is headed up at a federal level by the US Department of Agriculture (USDA) Animal Plant Health Inspection Service (APHIS) and typically by the individual Departments of Agriculture at the state level. Since the EAB was first found in Minnesota in 2009, it has spread rapidly to 14 different counties as of 2016. Currently, the Minnesota Department of Agriculture (MDA) is the lead agency that institutes county quarantines when an EAB infestation is found in a new county.

As the Emerald Ash Borer is making its way through Minnesota, early detection through public engagement and volunteer efforts may be the most effective and economically viable plan of attack. When sightings are discovered in new counties, it is imperative to institute a quarantine as quickly as possible to prevent firewood from spreading to new locations across county lines. If the MDA is able to prevent infested wood from leaving a quarantined area, it may provide enough time to introduce biocontrols, insecticides, and other techniques to diminish the local populations of EAB. To help solve this problem, a mobile application can be developed to engage concerned citizens to report new sightings of EAB in real time.

With virtually every adult citizen having access to a mobile device, a mobile application is a great way to empower the public to accurately report new sightings. The device GPS can be used to gain an accurate location while the camera can allow the user to provide photographic evidence of EAB infestations so the proper agencies can determine whether or not the site needs to be visited for field verification. Additional attribute information can also be collected from the user through a form with drop down domain values and text boxes and the data will be stored in a GIS database in the cloud. In order to leverage ArcGIS technology in native mobile applications, the ArcGIS Runtime Software Development Kits (SDKs) were used. The application for this project has been built separately for iOS and Android using the ArcGIS Runtime SDK for iOS and ArcGIS Runtime SDK for Android, respectively.

The Android and iOS platforms were chosen because collectively they make up almost 94% of the mobile market share as of June 2016, with Android accounting for 70.9% while iOS holds a 23.1% market share (Epstein 2016). Despite the application being developed for two different platforms, the capabilities and functionality will accomplish the same goals: 1) incorporate a map view where new sightings of EAB are reported using the device GPS and stored in an ESRI Geodatabase, 2) allow users to identify/view sightings and Web GIS Services provided by the MDA for traps, biocontrols, and confirmed sightings, 3) provide the user with information on how to identify Ash trees and the EAB, 4) send an email to the the MDA when a new sighting has been logged, and 5) send out push notifications to everyone who has the app when a new sighting has been logged.