Canadian Food Inspection Agency | Agence canadienne d'inspection des aliments

SPOTTED LANTERNFLY

Survey Protocol

AT A GLANCE

- The invasive Spotted Lanternfly (*Lycorma delicatula*) is an impressive and colourful insect that feeds on more than 70 species of trees and plants.
- The preferred hosts of this sap-sucking insect are tree of heaven, and wild and cultivated grapes.
- Prioritize inspection of host material around vineyards/orchards and campgrounds near border crossings.
- Host trees are inspected for signs and symptoms of the egg, nymph and adult stages.
- Overwintering “muddy grey” egg masses can be found on any hard surface near or on host trees.
- See new guidelines for shipping samples in ethanol in Section 9
- Information on MRRS tracking has been added to Section 9.

Canada

1. Background and Objectives

The spotted lanternfly, *Lycorma delicatula, (Hemiptera:* Fulgoridae) called here SLF, is a colourful planthopper native to southeastern Asia. It's first known North American establishment was in Berks County, Pennsylvania, USA in September 2014 within a wooded area containing the non-native tree of heaven (*Ailanthus altissima*). Since that time, SLF has spread to 19 states and has proven to be a serious pest to grapes (both cultivated and wild) and can also attack hops, apples, peaches, and other fruit trees, as well as wooded and residential areas with black walnut, maple, tulip poplar, and black cherry. These insects are also efficient hitchhikers; the adults have been known to fly into open windows of cars, into picking bins and into the back of trucks while they are being loaded. As well, the females can lay eggs on any hard surface, making it easy to travel on camping gear, patio furniture, recreational vehicles, building materials, etc. Both nymphal and adult stages of SLF feed by inserting their specialized mouthparts directly into the phloem of plants, extracting the sugary sap and excreting large quantities of excess sugar (honeydew). This excreted sugar acts as a growth medium for sooty mold and encourages secondary invaders. The stress caused by an infestation could weaken a tree's defences and make it more vulnerable to attack from insects or pathogens. Due to its impressive dispersal abilities, wide host range, and feeding/excretion damage, it has been recognized as a high risk to the grape, fruit tree and forest industries in Canada. The survey strategy outlined below reflects current knowledge and is expected to evolve over time.

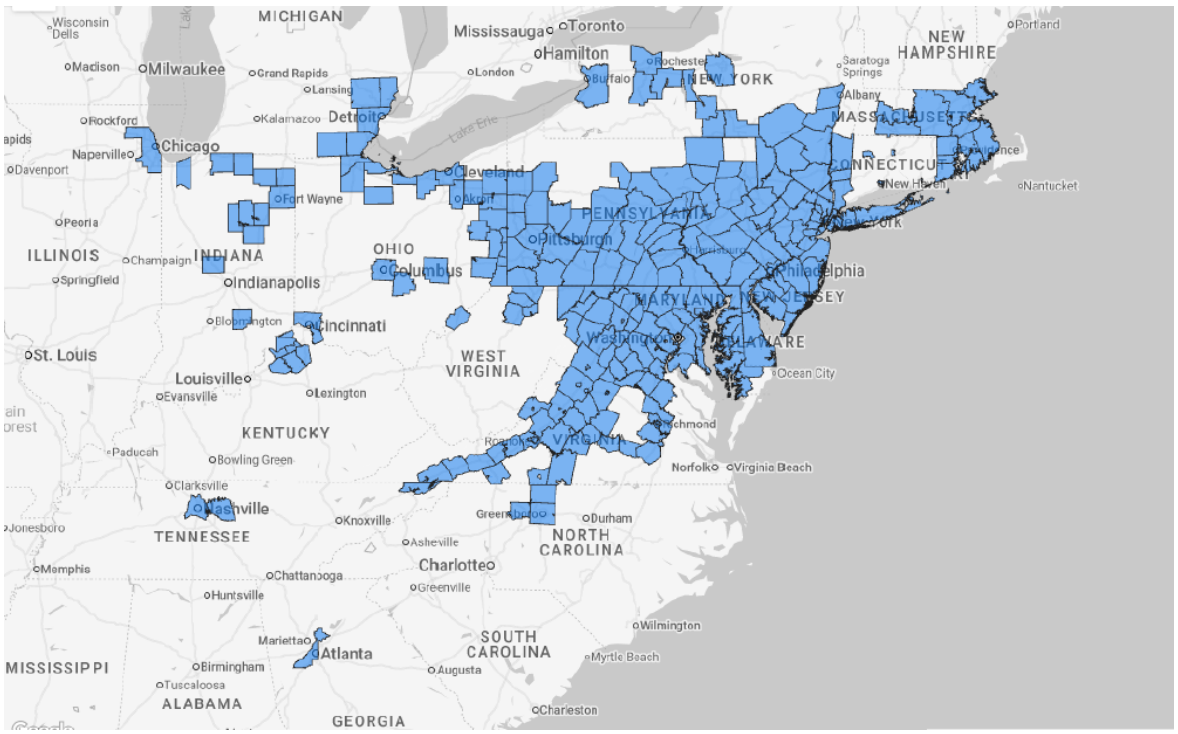


Figure 1. Spotted lanternfly in the United States (Credits: New York State Integrated Pest Management Program)

2. Target Life Stages

Spotted lanternfly has one generation per year. There are 4 nymphal stages which ultimately develop into adults; it overwinters within egg masses. Eggs hatch in May and June and the first instar nymphs disperse in search of a host. As this is a true bug, the SLF molts to progress between stages. Molting for second and third instar nymphs occurs over June and July. The first three nymphal stages are approximately ¼" long and black with white spots, while the fourth instar nymphs take on a red color and can be up to ¾" long. This stage can be found from July to September. All nymphal stages will feed from a wide range of plant species including grape (*Vitis*), apples (*Malus*), plums (*Prunus domestica*), cherries (*P. avium*), peaches and nectarines (*P. persica*), apricots (*P. armeniaca*), pine (*Pinus*), oak (*Quercus*), walnut (*Juglans*), hops (*Humulus*), maple (*Acer*) and poplar (*Populus*). The nymphs use their specialized mouth parts to pierce through plant tissue and suck sap directly from the phloem of leaves, stems, branches, and trunks.

Adult SLF also feed by sucking sap from the phloem of plants, but their mouth parts are stronger than the nymphs, which allows them to feed directly on older tissue. Although this insect does have a wide host range, the adults prefer to feed and lay eggs on the tree of heaven. The adults are active from July to December and are very noticeable. They are roughly an inch long and ½" wide at rest and have pinkish, tent-shaped forewings. The anterior 2/3 of the forewings are black spotted and the posterior 1/3 has a brick like pattern. When startled, or about to take flight, the wings spread about 2 inches wide to reveal the red hindwings with black spots and the yellow abdomen with horizontal black stripes. It's unique coloration, as well as it's tendency to congregate in large numbers, either at the base of the tree or in the canopy, make infestations easy to notice. They are easiest to locate at dawn and dusk when they are migrating up and down the tree.

Eggs are laid from September to November on any smooth host plant or non-plant surface adjacent to host plants, including bricks, stones, lawn furniture, vehicles, and other structures. Females can lay one or two egg masses, each containing 30-60 eggs, which appear like seeds arranged in 4 to 7 vertical rows. The female covers the egg masses in a grey, waxy coating that becomes darker and cracks as it dries, leading it to resemble a splotch of mud.

Feeding damage from SLF appears as "weeping wounds". Weeping wounds are caused by excess sap being discharged from the puncture site, and debris and honeydew excreted by the adults. These wounds appear as grey or black streaks along the stems, branches or tree trunks. These secretions can also prompt fungal growth and lead to mould patches occurring at the base of the tree which may give off a fermented odor and appear yellowish-white in color.

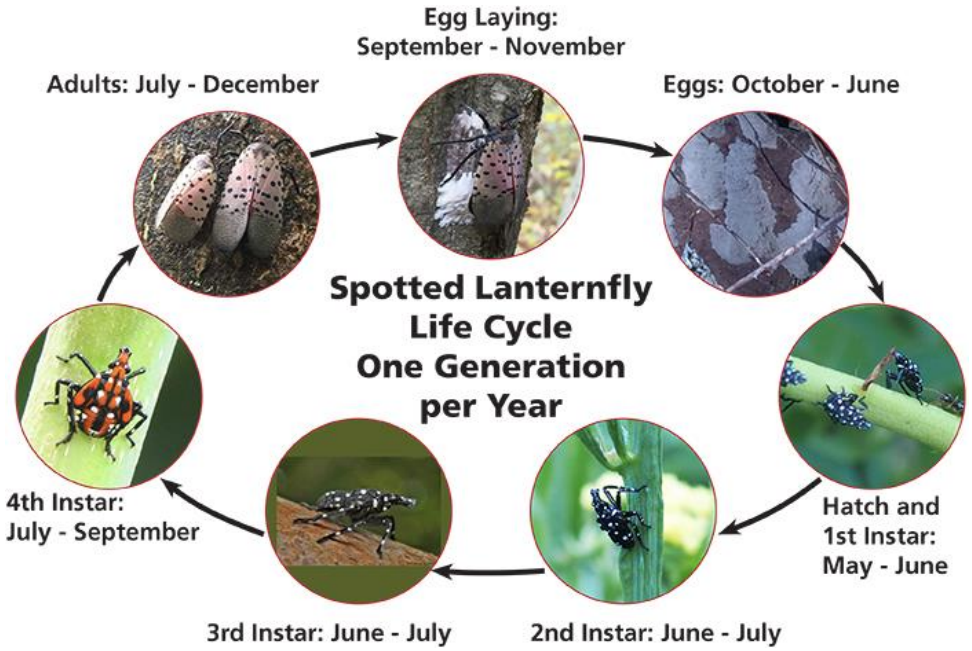


Figure 2. Lifecycle of the spotted lanternfly (Photos: Egg Laying, Hatch and 1st Instar, 2nd Instar, Adults: Emelie Swackhamer, Penn State University, Bugwood.org; Eggs: Lawrence Barringer, PA Dept. of Agriculture, Bugwood.org; 3rd Instar: Dalton Ludwick, USDA-ARS/Virginia Tech; 4th Instar: Richard Gardner, Bugwood.org.).

3. Target Hosts

The non-native tree of heaven is the preferred host for adult feeding and egg laying. However, early instar nymphs do not show a significant preference for feeding on tree of heaven. Therefore, emphasis should be placed on other key hosts in the absence of tree of heaven, including but not limited to grape (wild and cultivated), walnut, hops and maple, a preferred late season host.

Ongoing emphasis should be placed on observing tree of heaven records in your region using the Record your observations feature in iNaturalist. **This data will assist in determining where to survey for SLF.**

4. Timing and Duration

If there are competing operational resources, SLF surveys can be conducted year-round as some signs and symptoms are present. However, as the visual survey primarily targets nymphs and adults try to complete the survey between June and October.

5. Target Areas and Site Selection

This survey should target known infestations of the non-native tree of heaven and where there is travel/tourism from United States, including but not limited to railyards, campgrounds, conservation areas, provincial parks, rest stops, forests near the U.S.-CAN border, particularly those in proximity

to major transportation corridors and rail lines. In the absence of tree of heaven, other preferred hosts should be examined Vineyards or orchards near the border should be targeted, **especially if adjacent or close to US infestations** and additional risk intelligence information can be obtained from the CFIA SLF Webmap Application at: https://arcg.is/1KHa40.

Detecting incipient infestations in a non-urban environment is very difficult. To focus your search in campgrounds and holiday destinations, determine if it is common for guests to come from the United States, particularly states with known infestations of SLF (Figure 1). If there are currently guests from infested States, begin by requesting to inspect the exterior of their vehicles or camping equipment.

6. Survey Methodology

6.1 Detection Survey

6.1.1 Visual

- A total of 30 preferred host trees/plants with emphasis on tree of heaven if present and surrounding objects should be inspected per site, extending the search up to 200 m from survey point.
- Ensure that the host trees inspected are randomly chosen and well distributed throughout the site.
- Around vineyards and fruit production, balance a portion of inspection between the first 15 m of production and edges of neighbouring forest stands.
- Completely walk around the entire host plant/tree, scanning as much of it as possible; sooty mold often occurs along the trunk. Scan the ground as dead/alive nymphs and adults may be present. Scan the canopy with binoculars.
- Beating sheets maybe used to randomly sample foliage for nymphs during the nymphal period.

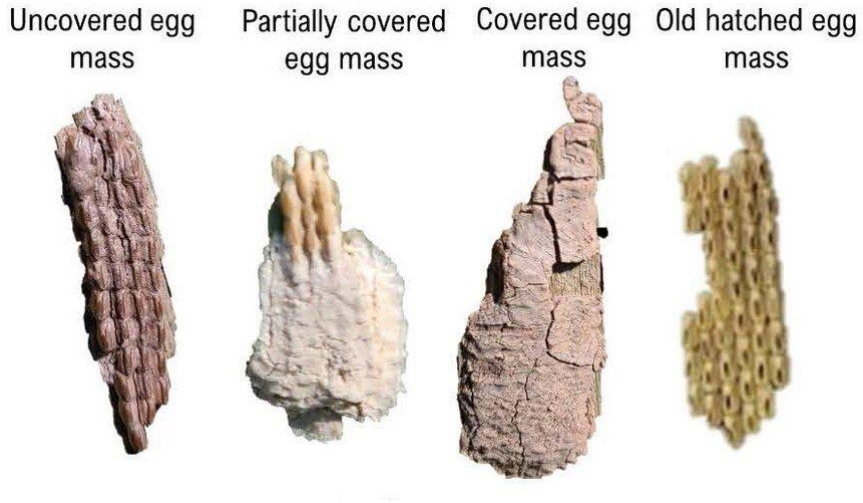


Figure 3. Variations in spotted lanternfly egg masses including color (yellow, grey, brown) and covering. Photos: Heather Leach.

6.1.2 Trapping

Trapping can be an effective detection strategy for SLF, specifically nymphs and to some extent adults. The BugBarrier Tree Band® is uniquely designed to provide an unobtrusive method to trap insects such as SLF that climb up the trunk of host trees in order to reach the canopy. The inward-facing adhesive minimizes by-catch and limits debris and dirt that can reduce detection efficacy. Traps can be deployed at a portion of your planned survey sites in consultation with your Area Plant Health Survey Biologist based on key risk factors. Traps can be established at select sites as follows:

- In preparation for the survey, the batting within the trapping kit can be cut in half along the horizontal plane.
- Trapping should occur between May and late September to align with the nymphal emergence and feeding period
- Tree of heaven along the edges of woodlots/forest stands in proximity to high risk areas is the primary trapping target. When tree of heaven is not present, traps may be established on black walnut, maple or oak.
- Wrap the batting around the trunk of the tree once at approximately 1-2 m above ground with a 2” overlap.
- Using the batting for reference, unroll the required amount of banding plus an additional 3”
- Cut the banding to size and remove the edge of the protective backing so it can be affixed to the batting
- Slowly remove the backing from the banding and affix it to the batting, sticky side in so that the top of the banding aligns with the top of the batting. Continue to remove the backing until the band is wrapped tightly around the batting.
- There should be some overlap at the end
- Make final adjustments to ensure the banding is not touching the surface of the tree
- Complete a mid-season trap check if resources permit by carefully removing the band and thoroughly inspecting the batting and inner band for any suspect SLF life stages. Ensure the band is thoroughly inspected during trap collection in September.
- Visually inspect plant material and surfaces in the vicinity of the trap for SLF life stages before leaving the site.

6.2 Site Characterization: Assess the extent of the pest and inform next steps

When SLF has been confirmed at a location, a site characterization will be conducted to assess the size and extent of the infestation, help inform regulatory decisions and identify potential dispersal pathways. Furthermore, characterizing the infestation provides an opportunity for outreach, training and knowledge transfer with key partners. A 100 m radius will be assessed from the initial detection point as follows:

- Eggs can be laid on any hard, smooth surface including, but not limited to, host trees (preferably tree of heaven), rocks, outdoor furniture, vehicles, etc. Egg masses can be about 1" to 1.5" long and appear like seeds arranged in 4-7 vertical rows. They are covered in a grey, waxy coating, which may take on the appearance of mud as it dries and cracks throughout the winter. Egg masses may vary in size and colour, as depicted in Figure 2.

- Egg mass surveys are conducted principally to verify the existence of an established population. However, as the SLF does not limit their egg laying to host plants, "hitchhiking" egg masses on other objects could be a primary source of introduction.

- Complete a visual survey for egg masses on any hard, smooth surface within 5 meters of host trees, including exterior of outbuildings, log piles, fence rails

- Focus your search on host tree trunks, under loose bark, and tree limbs. Binoculars can be used to assess the canopy if suspect signs of SLF are noted.

- Scan the ground for evidence of SLF, such as sooty mold and life stages as you progress through the site

- Adult SLF are most active at dusk or during the night and can be found migrating up and down the trunk of a plant.

More extensive delimitation surveys may be required in some situations and will be determined in consultation with the Area Survey Biologist and Policy and Programs Branch.

6.3 Delimitation Survey: Delineate the infestation to inform regulatory decisions

The intensity and extent of the delimitation survey will be defined based on the objective of the response strategy.

6.3.1 In vicinity of the detection

With support from Survey 123, establish concentric circles of 100, 150, 200 and 250m radius around the original detection. Within each circle, several plots of 5m radius must be selected for intensive visual surveys. The area may be evaluated in advance using tools such as Google Maps to ensure plots align with high-risk locations and preferred hosts. Each 5m radius plot must be examined for approximately 3 minutes.

Tab. 1 Recommended number of plots within each concentric circle

Concentric circle	Number of 5m radius plots
100m	8 (2 plots per quadrant/segment)
150m	8 (2 plots per quadrant/segment)
200m	8 (2 plots per quadrant/segment)
250m	8 (2 plots per quadrant/segment)

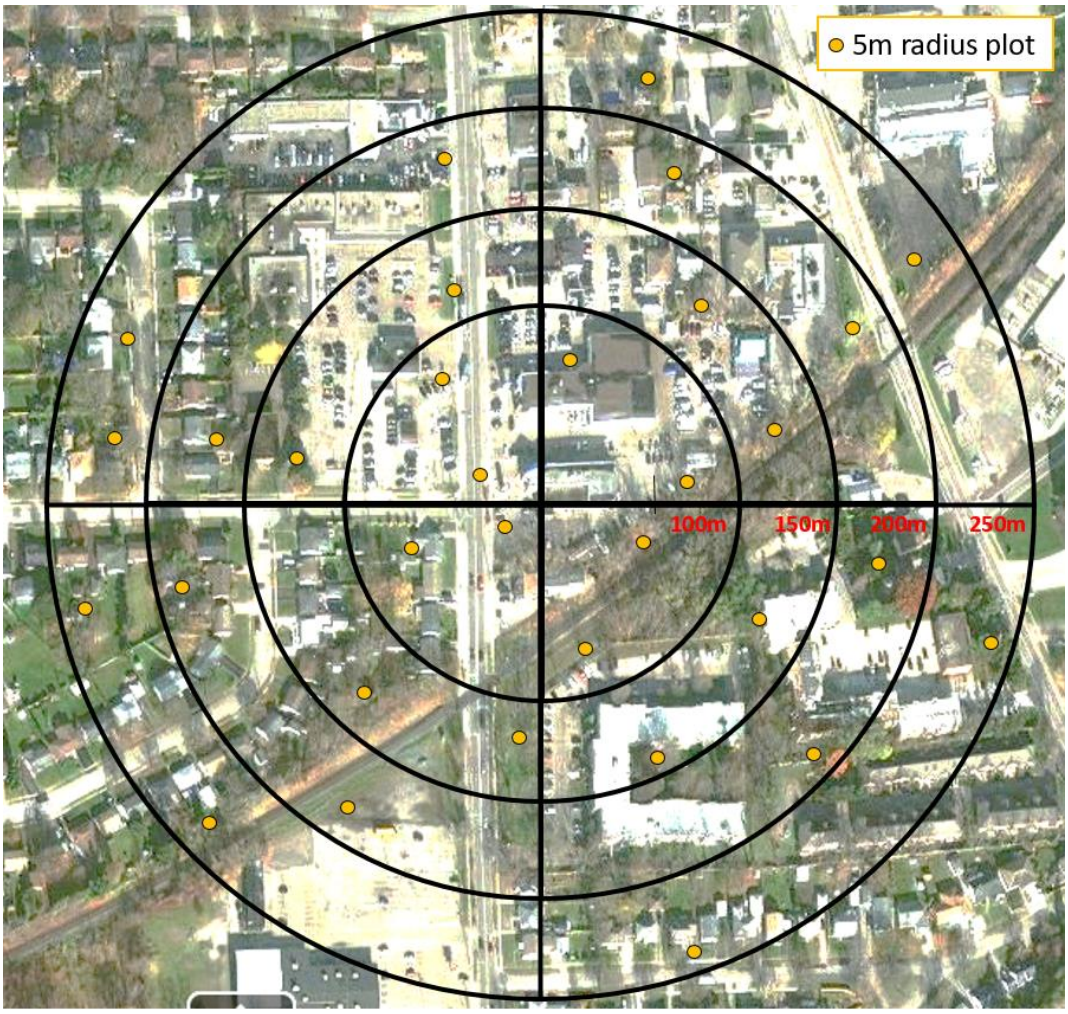


Figure 4. Example of site setting for delimitation

While walking the area, search for obvious signs of infestation and for the presence preferred hosts plants; this should orient the selection of plots for intensive visual survey. An effort must be made to prioritize plots where trees of heaven, vines, walnuts, hops or maples are present. If not

enough of these hosts can be found, any host plants can be targeted. At each plot, look carefully for the presence of any life stages that could be present on host plants or hard surfaces.

While you gather information on site, try to determine if any risk generators can be identified as possible human mediated introduction pathways. This could include, but is not limited to:

- Railroads, transfer terminals and railyards
- Mail carriers
- Major roads, highways and rest stops
- Distribution centers
- Truck garages and auto repair
- Popular destinations
- Landscaping companies, lumber yards, sawmills

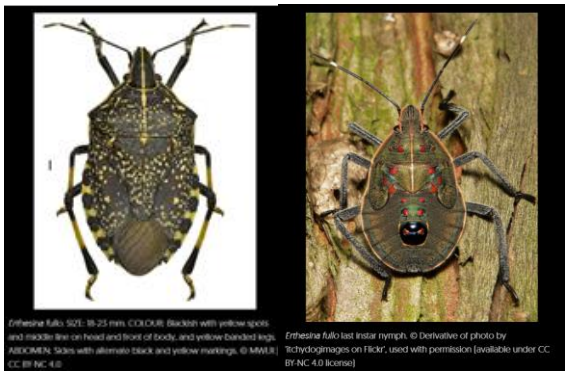
The information gathered about potential introduction pathways will inform further delimitation activities.

6.3.2 Broader delimitation survey

When a potential human mediated pathway has been identified in vicinity of the original detection, risk generators associated with this pathway must be identified in a radius of 50km around the detection. In consultation with your area survey biologist, determine which sites would be suitable to conduct additional delimitation survey, following the approach described above using the risk generator as the site center.

7. Bycatch and look-a-likes

During this survey, there may be other important pests that are found with SLF survey techniques. One such pest we ask inspectors to look out for is the yellow spotted stink bug, *Erthesina fullo* which has been intercepted in British Columbia and Oregon in North America. It originates in the far east and has been spreading outside its range in recent years. If a suspect is found, please submit to our entomology laboratory. See image below for adult and nymph recognition. Note characteristic medial yellow line from head to thorax.



Other insects that may resemble spotted lanternfly:

Pyrrhocoris apterus

Lygaeus spp.

8. Biosecurity Precautions

When visiting areas that are infested with SLF, staff must take the necessary precautions to ensure that the risk of spread is mitigated.

- Avoid placing survey equipment on or near the ground or near host plants/trees as SLF stages may hitch a ride.
- Examine clothing and equipment before getting into your vehicle to ensure you are not inadvertently moving life stages.
- Use lint rollers to ensure debris and potential hitchhikers are removed from clothing before leaving the site.
- Vehicles should be parked away host plants/trees. Walk around and examine the car surface for life stages before departing.

9. Sample Handling and Laboratory Submission

9.1 Sampling Procedures

If SLF is discovered during the survey, samples should be taken and prepared for submission to the lab. A digital photograph of the life stage(s) and infested area should be taken and emailed to your Inspection Advisor and Area Survey Biologist. Record the GPS coordinates in Latitude and Longitude in decimal degrees (NAD 83 datum), your name, site location, comments about the site (estimated diameter of tree, health, etc.), the date, and other location information on a piece of paper and insert it into a vial or record it for eventual entry into LSTS. A piece of flagging tape should be placed on the host plant/tree sampled as you will likely need to revisit the site if the sample is positive.

9.2 Sample Preparation

When surveyors return to the office, sample preparation and submission should occur as quickly as possible, ideally within 24 hours of collection. If the sample cannot be sent immediately to the lab (i.e. the sample was collected on a Friday and therefore cannot be shipped to the lab until the following Monday), they can be stored in the refrigerator.

In the field, adult SLF and nymphs can be placed into a vial with a 70% non-denatured ethanol and a temporary pencil-written label with collection details. In the office, record the LSTS System ID number, local sample ID number, submitter's name, and office on a paper (must contain cotton) label and place it in the vial (written in pencil, rather than ink, which will dissolve in ethanol). Place the vial in a cardboard box with packing material to prevent damage to it and include a print out of the completed LSTS "Report for Submission" form.

Insects must be placed in 70% non-denatured ethanol or in 70% specially denatured ethanol when sent to the lab. Specially denatured ethanol, sometime called reagent alcohol, is alcohol 95 parts by volume, and isopropyl alcohol 5 parts by volume. Do not use other denatured ethanol blends/formulations because they contain toxic chemicals (e.g. kerosene, methyl isobutyl ketone, ethyl acetate, etc.) that can cause adverse health effects to our laboratory staff and negatively affects the specimens being submitted.

When DNA analysis is required, it is advised to place the insects in 95% non-denatured ethanol or in 95% specially denatured ethanol to optimize DNA preservation. Larvae must not be placed into near-boiling water before to be placed in ethanol. If you are not sure if DNA analysis is required, please contact your local survey biologist or the entomology diagnostics lab.

s

Ensure that the samples collected from each sites are placed in separate vials and properly identified. Do not submit the contents of multiple sites in the same vial.

For suspect SLF adhering to sticky bands, cut around the specimens such that a small piece of the trapping material can be affixed to a container (stapled) for safe transport to the lab.

Egg masses must be collected with as little disturbance as possible. Use a flat, firm object (such as a card, ruler, blade) to scrape and remove egg masses from the surface into an airtight container or bag. When feasible and practical, let the egg masses on the surface they were found (e.g. a piece of bark, a flower pot, etc.) and submit them to the laboratory together. For laboratory submission, place the egg masses in a labelled plastic bag with a small piece of moist paper towel, and enclose bag in a tightly-closed rigid plastic container (e.g. jar or vial). Pack in a box or cooler and fully seal all openings with tape.

Please note that ethanol is considered a dangerous good and must be transported in accordance with the Transportation of Dangerous Goods (TDG) regulations. Full guidelines on the packaging and labelling for the transportation of samples with ethanol can be found in the Guidelines for the Laboratory Submission of Plants, Plant Pests, and Related Materials (RDIMS 8501762), Section 5.1.1.

For shipping samples by road, ensure that individual vials do not exceed 30 mL and the entire package does not exceed 500 mL of ethanol. Include the Excepted Quantity label, the name of consignor and consignee, and "OVERPACK" on the exterior packaging. Include the words

"dangerous goods in excepted quantities" and the number of inner packages on the documentation within the outer package.

For shipping samples by air, it is strongly recommended to purchase a heat sealer. Samples may be shipped when quantities of ethanol do not exceed 30 mL per vial and 1 L per entire package, provided they are double bagged and each bag is heat sealed. Mark the outer package with "scientific research specimens, not restricted – special provision A180 applies" and include the description of the substance, the words "not restricted" and the special provision number A180 on interior documentation.

Laboratory Address

Indicate "Spotted Lanternfly Survey" on the sample container.

Ship all samples by courier to the address below:

Entomology Laboratory
CFIA – Bldg 18
CEF, 960 Carling Ave.
Ottawa ON K1A 0C6

For sample-related enquiries: entomology@inspection.gc.ca

10. MRRS Tracking

Planned survey activities are to be tracked under **MRRS code 31d01.53**.

Note: When completing unplanned work, such as responding to Pest inquiry or a potential pest detection, all activities including the initial site visit, sample submission and any follow-up surveys should be captured under **MRRS code 31a27**. A Survey 123 Pest Inquiry form must be completed to capture the details of the initial site visit. If a survey is deemed necessary as a result of your findings, the survey-specific Survey 123 form must also be completed to capture these results. For additional information on response to pest inquiries, please refer to CFIA Plant Pest Reporting Process RDIMS 18519211.

11. Supplies

- SLF pest cards and fact sheets for distribution.
- Utility knife
- Pruning shears and sanitizer
- HB pencils
- Permanent markers
- Maps
- GPS unit
- Flagging tape

- Rubber gloves
- Hand lens
- Binoculars
- 70% non-denatured ethanol **(see note below)**
- Vials with leak-proof stoppers
- Paper labels that contain cotton (25-30% is ideal but any percentage is good)
- CFIA contact information sheets
- CFIA 1355 (yellow trap stickers). See *Survey Reference Manual* or *General Information on Plant Health Surveys Protocol* for ordering information.
- Protective footwear
- Sunscreen
- Drinking water
- Insect repellant
- Disinfectant
- First aid kit
- Hat
- Tick Removal Kit (e.g., https://canlyme.com/product/tick-removal-kit/)
- Beating sheet
- CFIA ID/badge
- BugBarrier Tree Band® kit
- Scissors

Note: Denatured ethanol contains toxic chemicals (e.g. kerosene, methyl isobutyl ketone, ethyl acetate, etc. to render it undrinkable) that can cause adverse health effects to our laboratory staff and negatively affects the specimens being submitted.

12. Supporting Documents and Additional Information

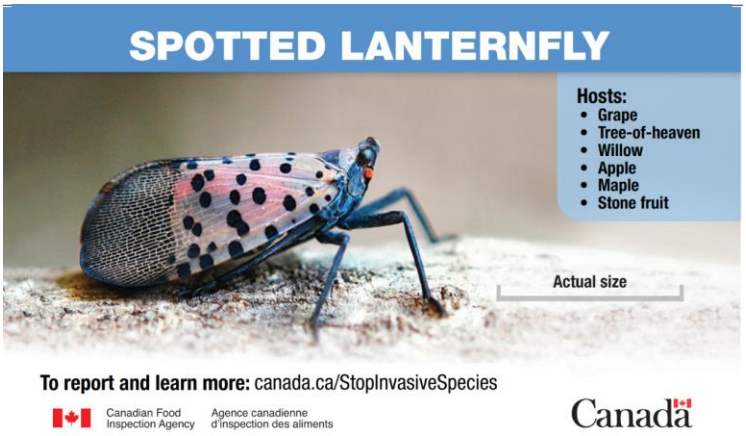
General Information on Plant Health Surveys *and Survey123 software*, available on Merlin at: http://merlin/english/sci/pps/ppse.aspx

Guidelines for the Laboratory Submission of Plants, Plant Pests, and Related Materials, available on Merlin at: https://merlin.cfia-acia.inspection.gc.ca/inspection-and-guidance/plants/plant-health/eng/1490909103573/1490909103574

Data Management and LSTS Entry Guidelines for Plant Health Surveys, available on Merlin at: http://merlin/english/sci/pps/ppse.aspx

Spotted Lanternfly Information and Policy Documents: https://inspection.canada.ca/plant-health/invasive-species/insects/spotted-lanternfly/eng/1612895045716/1612895046419

Spotted Lanternfly Pest Card



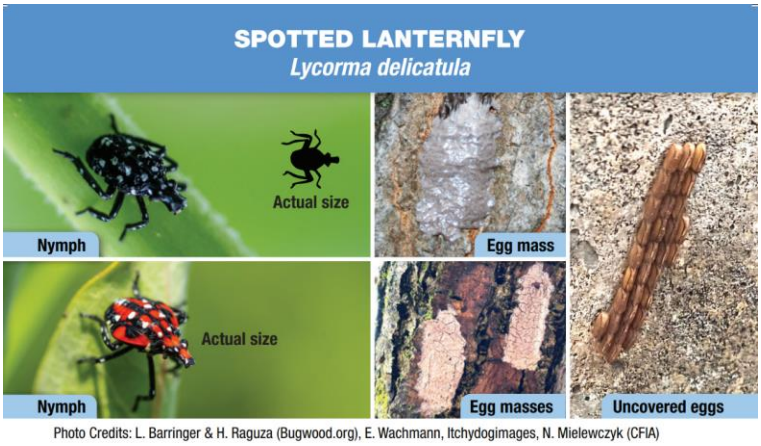
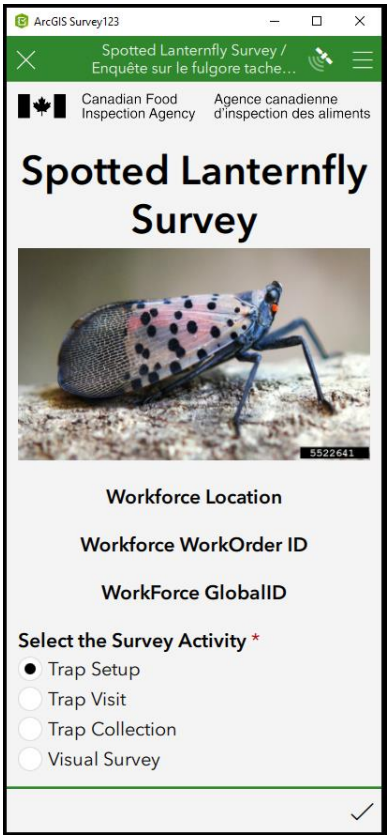


Photo Credits: L. Barringer & H. Raguza (Bugwood.org), E. Wachmann, Itchydogimages, N. Mielewczyk (CFIA)

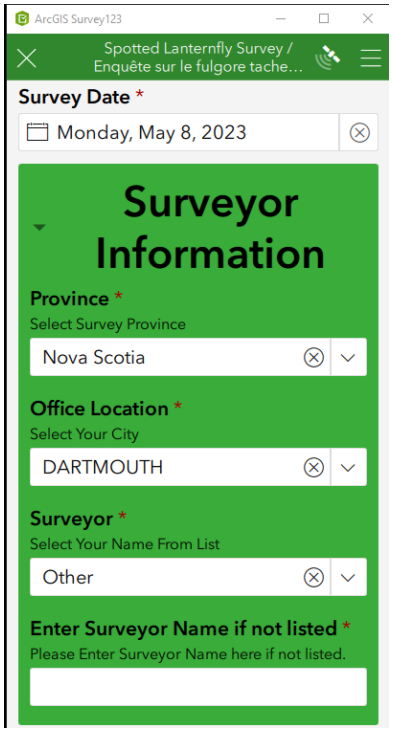
Appendix 1. Data Entry Guidelines – Survey123 Forms

There is one Survey123 form for the spotted lanternfly survey, four activity types: Trap Setup, Trap Visit, Trap Collection, and Visual Survey.

Spotted Lanternfly Trap Setup

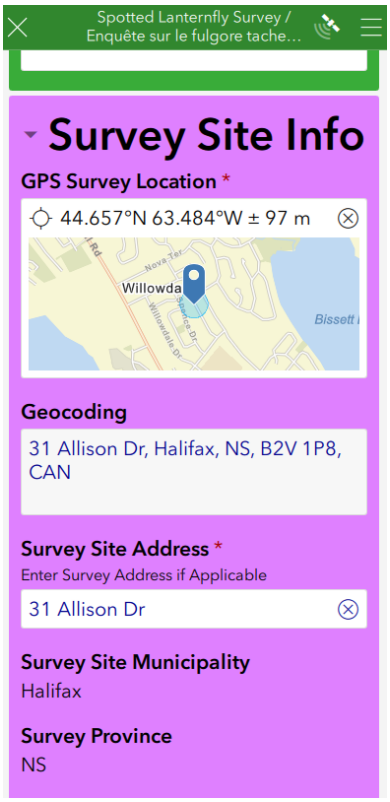


Ensure the correct ***Activity Type*** is selected.



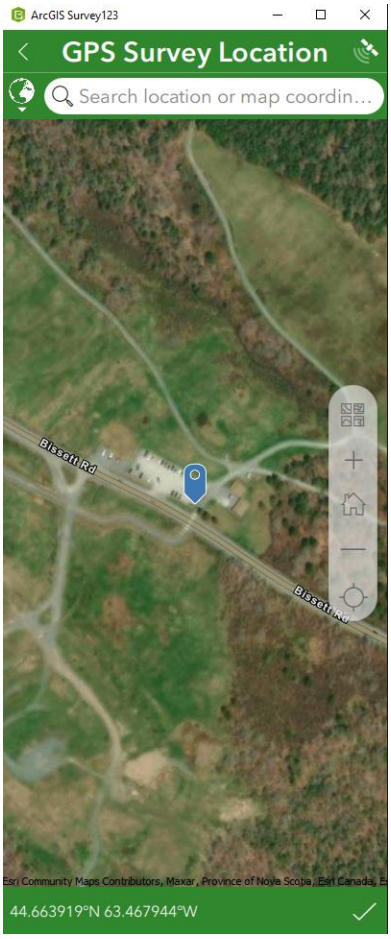
The ***Survey Date*** will auto populate with the current date. This can be modified and backdated if required.

In the ***Surveyor Information*** section you will capture your information by first selecting the province and municipality of your office and then your name from the ***Surveyor*** pick list. If your name is not there select Other under your office and then type it in.



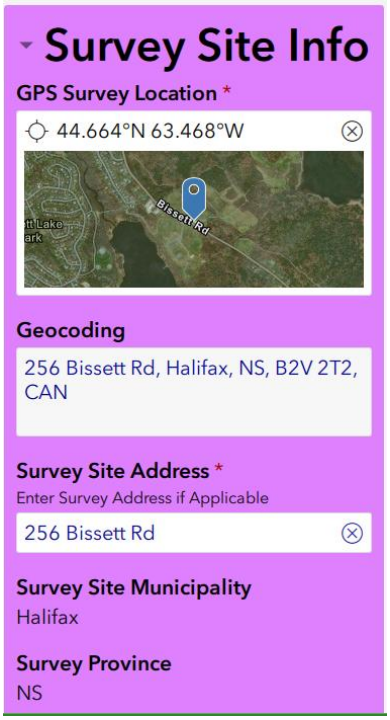
In ***GPS Survey Location*** select the crosshairs icon or the map to capture the GPS. This will populate the *Geocoding field* with an address nearby.

Note: When the GPS reading is plus or minus **more than 10 m** (+- 97 m in example provided) a more accurate reading should be taken. Press on the map display and a new screen will open allowing a more precise site location to be specified.

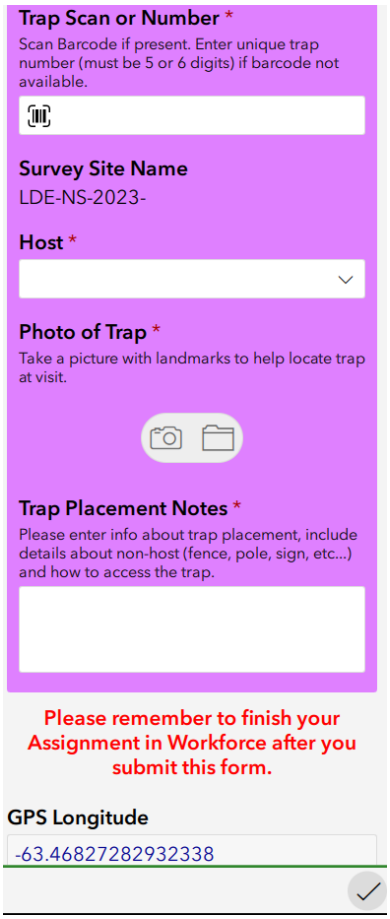


Position your location under the cross hairs zooming in as required. Press the check mark in the bottom right when satisfied.

You can change your basemap by pressing the  icon .



The ***Survey Site Address, Municipality*** and ***Province*** will be pre-populated based on the recorded GPS and address info from the geocoding. If you feel this does not accurately define the survey site location, modify the ***Survey Site Address*** as required.

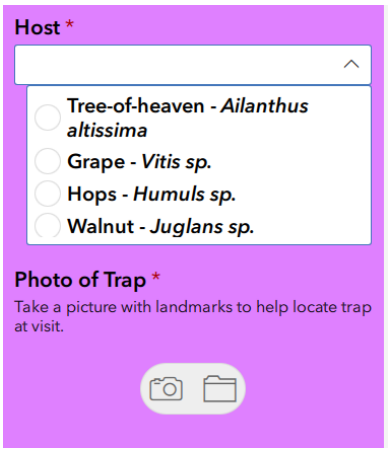


Each trap will be assigned a unique barcode. Attach the barcode on the outside of the trap. Pressing the barcode icon will activate your camera on your phone to scan the barcode.

Use your camera phone to scan the barcode.

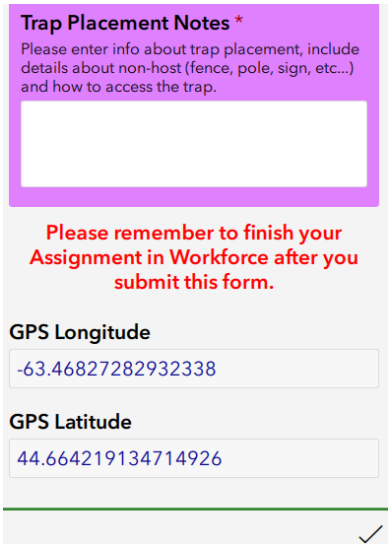
Scanning may require you to hold your camera at different angles, or to refocus by pressing the middle of the screen depending on sunlight and other outdoor factors. You can also type the 5 digit code if there are barcode scanning issues.

Note: a unique ***Trap Barcode*** has been created in the database upon completing the form.



Type the ***host name*** (common or scientific) or click the down arrow to choose the host plant.

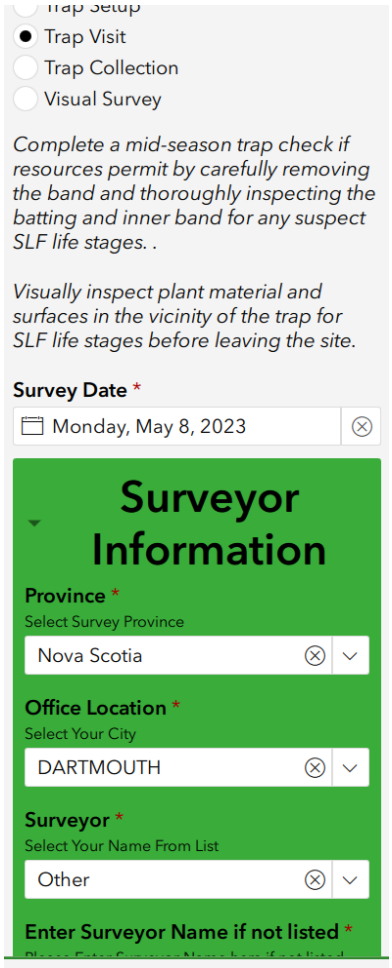
Trap Image. Always photograph the trap relative to geographical landmarks. Click on the camera icon to take a photo. If the image is not acceptable, click the Trash can icon and re-take the photo.



In ***Trap Placement Notes*** please provide further instructions to locate the trap, this will help for future trap checks.

Once you're satisfied with the data that's been entered, click the check mark in the bottom right to complete Trap Setup form.

Spotted Lanternfly Trap Visit and Collection (at end of season)



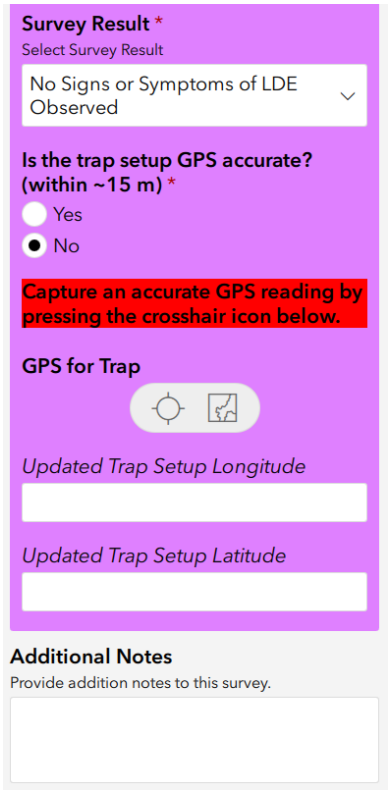
Ensure the correct ***Activity Type*** is selected.

The ***Survey Date*** will auto populate with the current date. This can be modified and backdated if required.

In the ***Surveyor Information*** section you will capture your information by first selecting the province and municipality of your office and then your name from the ***Surveyor*** pick list. If your name is not there select Other under your office and then type it in.

The ***GPS Survey Location*** will pre-populate when the Survey123 form is opened using the *Survey at Assigment* feature in Workforce. Otherwise a GPS reading for the present location will be captured when the form is first opened.

Scan or enter the ***Trap Barcode.***



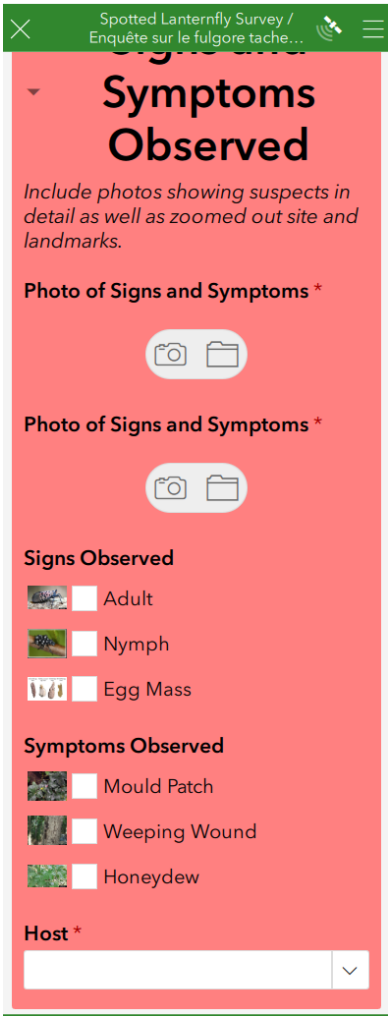
Select an option from the ***Survey Result*** drop down menu. If no signs or symptoms of LDE are observed, continue with the form

If the ***Trap Setup Location (GPS)*** is <u>accurate</u> (within ~15m) select **Yes** and do not recapture the GPS.

If the trap setup location is <u>inaccurate</u> select **No** and recapture the GPS by selecting the crosshairs or the map icon.

Type in any ***Additional Notes*** and once you're satisfied with the data that's been entered, click the check mark in the bottom right to complete Trap Check form.

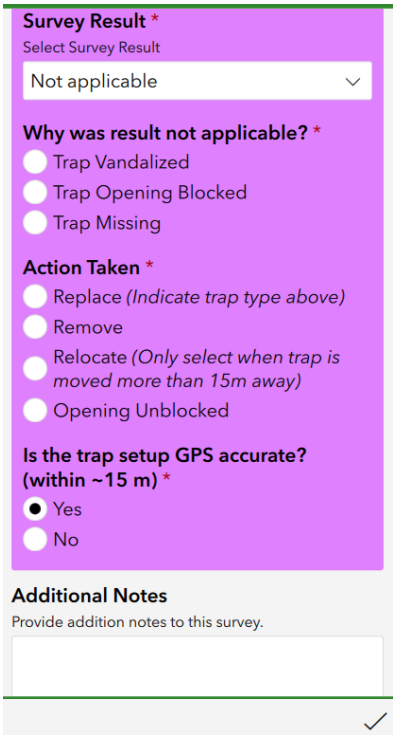
If signs and symptoms of LDE are observed, a new section will appear.



If a suspect has been collected select ***Images Required***. Up to 2 high resolution photos can be captured. Ensure you capture key morphological features of the suspect.

Indicate the ***Number of Specimens Collected*** using the + / - icons.

Type in any ***Additional Notes*** and once you're satisfied with the data that's been entered, click the check mark in the bottom right to complete Trap Check form.

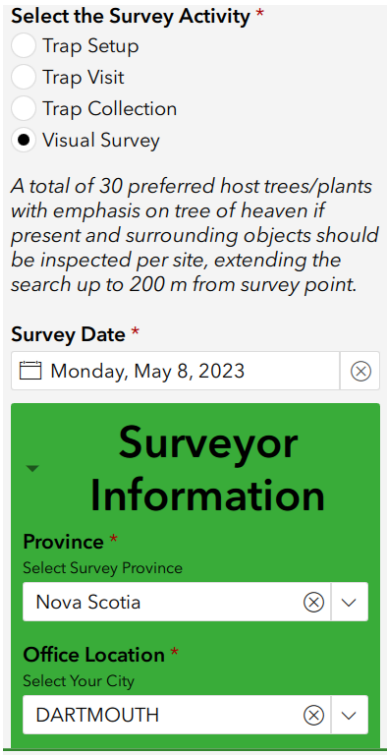


Select a ***Survey Result*** of *Not Applicable* when you are unable to determine if signs and symptoms of LDE are observed.

Please indicate why the survey result was not applicable and the action taken to prevent this in the future.

Type in any ***Additional Notes*** and once you're satisfied with the data that's been entered, click the check mark in the bottom right to complete Trap Check form.

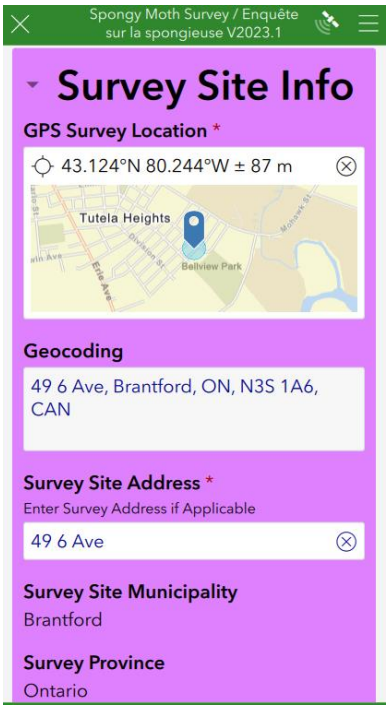
Spotted Lanternfly Visual Survey



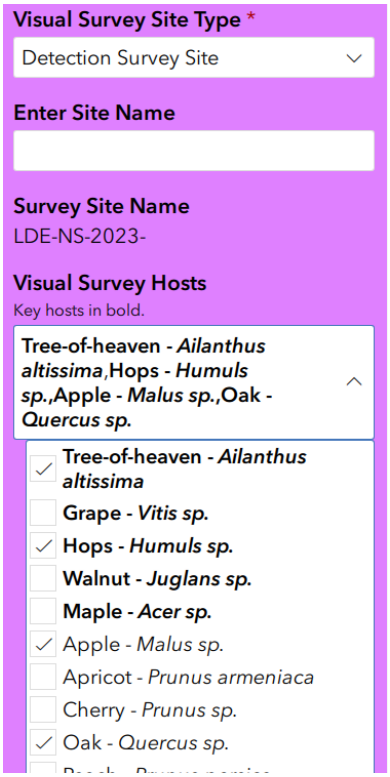
Ensure the correct ***Survey Activity*** is selected.

The ***Survey Date*** will auto populate with the current date. This can be modified and backdated if required.

In the ***Surveyor Information*** section you will capture your information by first selecting the province and municipality of your office and then your name from the ***Surveyor*** pick list.



The ***GPS Survey Location*** will pre-populate when the Survey123 form is opened using the *Survey at Assignment* feature in Workforce. Otherwise a GPS reading for the present location will be captured when the form is first opened.

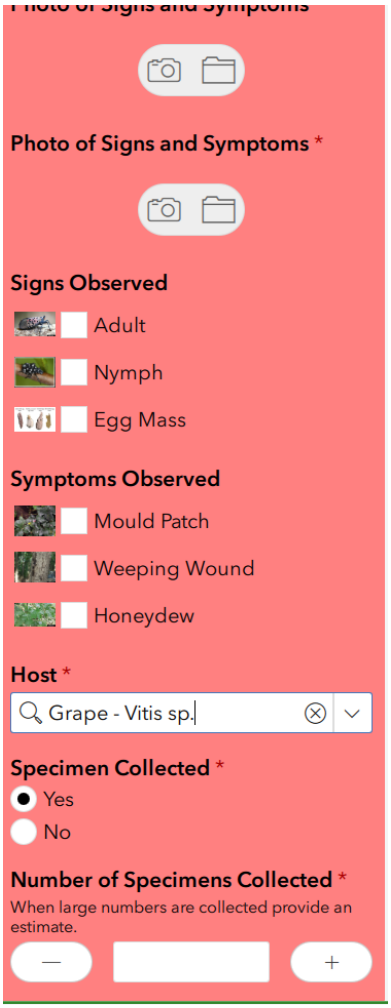


Confirm the ***Visual Survey Site Type*** used at the site.

In the ***Site Name*** section enter the trapping site barcode or new survey site name e.g. nursery or park name to identify the site.

Select an option from the ***Survey Result*** drop down menu.

Select the hosts included in your survey.



If signs and symptoms of spotted lanternfly have been observed a new field will appear in the form where additional information can be recorded.

Up to 2 high resolution photos can be captured. Ensure you capture key features of the sign or symptoms.

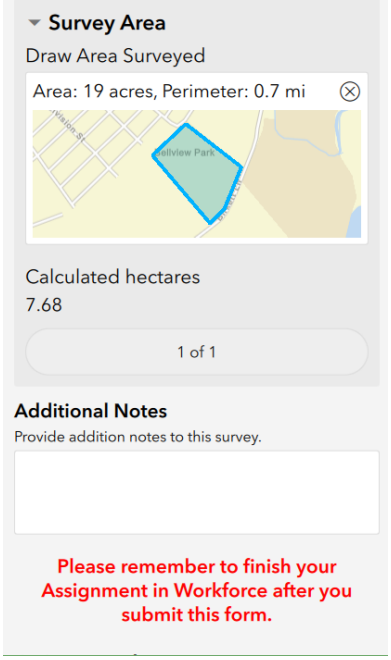
Indicate what ***Signs*** and ***Symptoms*** of spotted lanternfly have been observed.

Record the host where you observed the signs or symptoms.

Record if a specimen was collected.

Indicate the ***Number of Specimens Collected*** using the + / - icons.

Once you're satisfied with the data that's been entered, click the check mark in the bottom right to complete Visual Survey form.



Press on the map below ***Area Surveyed*** and a new screen will open allowing a polygon to be created to calculate the area surveyed.

In the ***Notes*** section, describe where the visual survey was conducted and what was observed.

Once you're satisfied with the data that's been entered, click the check mark in the bottom right to complete Visual Survey form.