



# Barcoding Spotted Lanternflies and Spotted Lanternfly Look-alikes Found on Governor Island, NY

Authors: Mamadou Barry, Monica Cen Cen, Aliou Diop, and Simbala Camara

Mentor: Alfred Lwin

*Manhattan Comprehensive Night and Day High School, Manhattan*

## Abstract

Spotted lanternfly (*Lycorma delicatula*), native to China, is a type of invasive insect pest found in some parks in New York areas, and it is a dangerous insect that causes major damage to the agriculture and forest of New York. We collected some samples of spotted lanternfly and spotted lanternfly look-alike insects from the Governors Island, NY in November 2021 and identified them through the DNA Barcode process. Our aim was to distinguish spotted lanternflies from native insects with a similar appearance found on Governors Island by DNA barcoding. And the research result showed that all our samples belong to spotted lanternfly only and we did not discover any spotted lanternfly look-alikes.

## Introduction

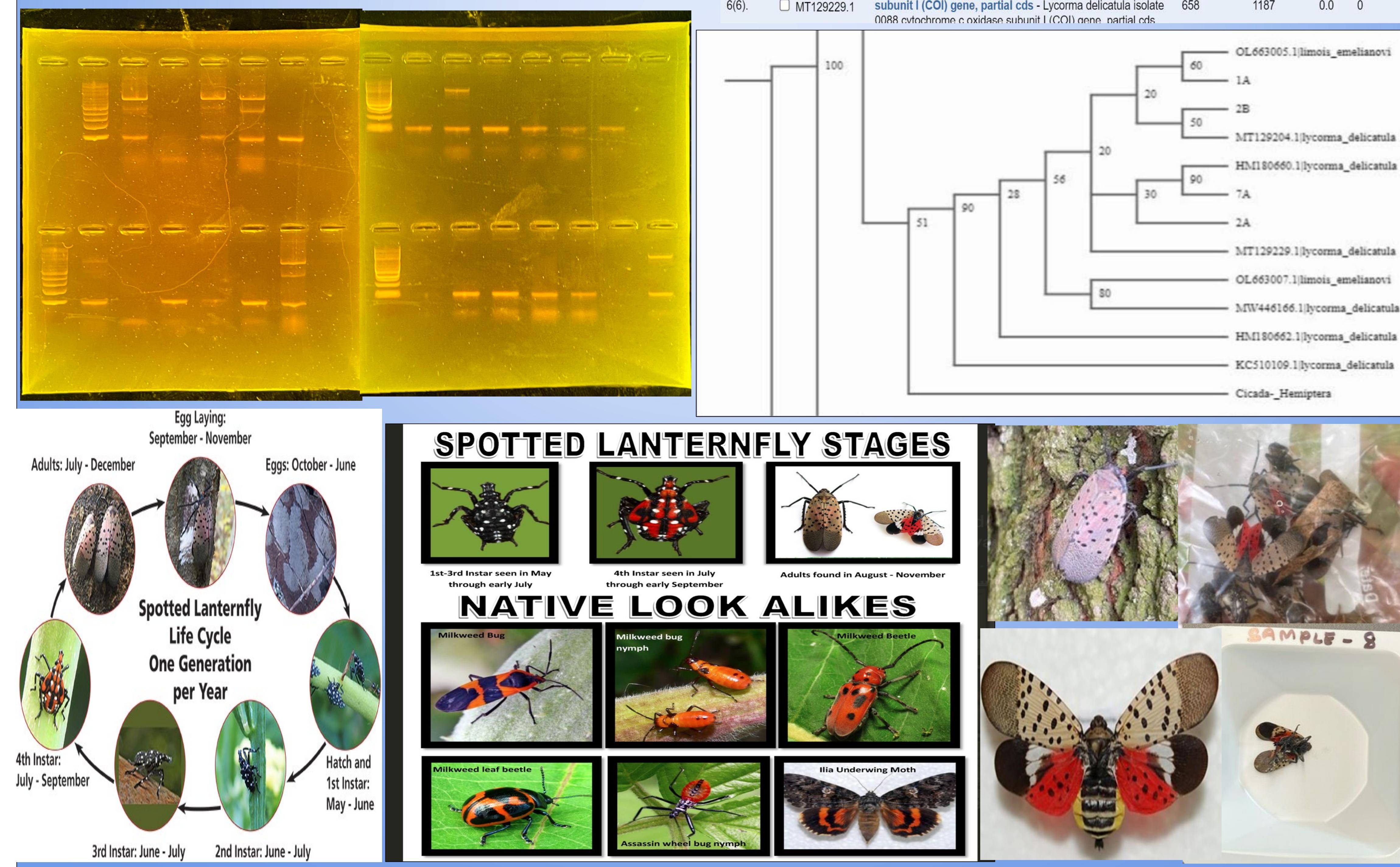
Spotted lanternfly is one of the nearly 12,500 species of planthoppers under Hemiptera. Spotted lanternfly might be introduced to the US and other countries by methods such as imported woods and wood products that are attached to eggs of spotted lanternfly. This insect was first detected in Pennsylvania in 2014 and later spread to other states, including New York. Some sources state that the spotted lanternfly arrived in Staten Island during the 2020 Covid pandemic and later spread to other parts of NYC. We hypothesized that there may be variants of spotted lanternfly that have not been identified yet, and also that there may be some species which are related to spotted lantern fly. Identification of spotted lanternfly based on their morphology may not be accurate, and DNA barcoding can be a solution.

## Materials & Method

We were able to collect 11 samples of the spotted lanternflies and to maximize the yield of DNA during DNA isolation, we isolated DNA twice from each sample and labeled them. We followed the Chelex Isolation Protocol provided by the DNA Learning Center to isolate mitochondrial DNA, then amplified the DNA. We analyzed our PCR products by running gel electrophoresis, and the gel analysis result showed that we were able to obtain some DNA from parts of our samples. We uploaded the sequences to the DNA Subway and chose the Blue Line to determine sequence relationship. After sequence trimming, pair building, and consensus-building, we used BLAST to analyze the sequences.

## Results

The BLAST result showed that sequences of our samples belong to the invasive species spotted lanternfly (*Lycorma delicatula*).



## Discussion

The BLAST result indicated that all our samples' DNA sequences match with *Lycorma delicatula*. When we analyzed the BLAST results, we noticed some of those sequences are very similar to the sequences of a type of insect called flower cicada (*Limois emelianov*). When we generated a phylogenetic tree using Neigh Joining Method (Philip NJ) and Maximum Likelihood tree using Philip ML, we found that *Lycorma delicatula* and *Limois emelianov* are closely related. We hope our research result may contribute to the biodiversity list of Governors Island, NY. Moreover, it may catch the attention of the NYC parks that spotted lanternfly has already spread to Governors Island. This way, they can take appropriate actions to control the spread of the dangerous pest on the beautiful and historic Governors Island.

## References

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