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

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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. The research resulted in all our samples belong to the invasive species spotted lanternfly (*Lycorma delicatula*).

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 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 these sequences are very similar to the sequences of a type of insect called flower cicada (*Limos 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 *Limos 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.

Acknowledgement
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References

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