

Addressing Gaps in Entomology: Diversity in Education and Outreach

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1. Introduction

Entomologists are well familiar with the diverse and unique world of insects. As a Hispanic undergraduate, I understand first-hand that it is important to have diversity among scientists in the entomology department and field. By providing extension programs and resources to non-English speaking Latinos working in agriculture and pest management, we can help solve some of the societal grand challenges we currently face today. I believe that exposure of the entomology field to the underrepresented Latino community and prospective students can help propel Purdue to a national leadership role. The motivation for this project is my belief that includes that you cannot solve a societal grand challenge when you neglect a large portion of said society.

Diversity in the entomology profession benefits the discipline for several reasons. First, without diversity, science becomes limited, hindering innovation. Second, the scientific community requires diversity to create a more inclusive environment within the discipline. Lastly, without diversity, teaching will become inefficient as it harms students among all races by having them receive a subpar education (Smith et al., 2014). In one study by Smith et al. (2014), demographic data on graduate enrollment in entomology, parasitology, and parent categories of biological sciences, and science and engineering, collected from the National Center for Science and Engineering Statistics (NCSES) and the National Science Foundation (NSF). This information was then compared across the general U.S. population as a baseline and the graduate student demographics for the disciplines mentioned prior, as well as six others (ecology, genetics, physiology, mathematics, physics, and psychology). The study found that across the biological sciences, there is an acute underrepresentation of people of color (POC) among the graduate student population within the field of entomology and parasitology (Fig. 1). Moreover, among all the academic institutions surveyed, the institutions were “more fairly” distributed towards the White population compared to the Black population.

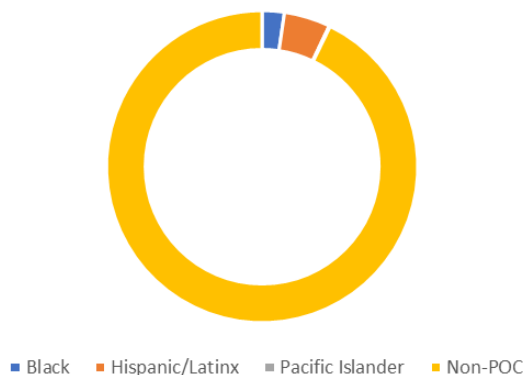


Figure 1. The NSF Demographic Report (2016) shows that about 16% of entomology graduate students are POC (*National Center for Science and Engineering Statistics, Women, Minorities, and Persons with Disabilities in Science and Engineering, 2016*).

According to the 2020 U.S. Census, the percentage of Hispanics in the U.S. is approximately 20% (US Census Bureau, 2022). Based on the 2020 USDA survey, the majority (51%) of farmworkers are Hispanic with 30% being farm managers, inspectors, and supervisors (Isaacs, 2020). Despite this, only approximately 5% of Hispanic graduate students are in entomology in 2016, indicating a huge gap in Latino representation in entomology education (Orfinger, 2020), especially for agricultural education. This clearly demonstrates that Hispanics/Latinos are underrepresented groups in the entomology field. The lack of content for the Spanish speaking population reflects a need to provide material for a largely underrepresented minority. Recent funding directions have shown that diversity has become priority for funding agencies. For example, Michigan State University assistant professor, David Mota-Sanchez, was awarded a \$600K grant from the USDA for the development of a project aimed to provide training to Latino farmers (Rudolph, 2020). Purdue University's Entomology Department has maintained its efforts of successfully providing insect-science education for undergraduate and graduate students and to the general public through outreach programs. However, there is a lack of educational content and resources for non-English speakers, particularly Latinos, in the Purdue Outreach and Extension programs for the Entomology Department.

The motivation for this project is that you cannot solve a societal grand challenge when you neglect a large portion of said society. According to the United States census of 2019, in terms of language fluency among Hispanics, about 30% of Hispanics have stated that they are not fluent in English (Office of Minority Health, 2022). In 2020, the student enrollment for the fall semester had 49,639 total enrollments (Student Enrollment Data Digest, 2022). Of the students enrolled, 75% (37,101) were undergraduates, 23% (11,613) were graduate students, yet only 7% of the undergraduate students were enrolled to the College of Agriculture (Fig. 2; Table 1).

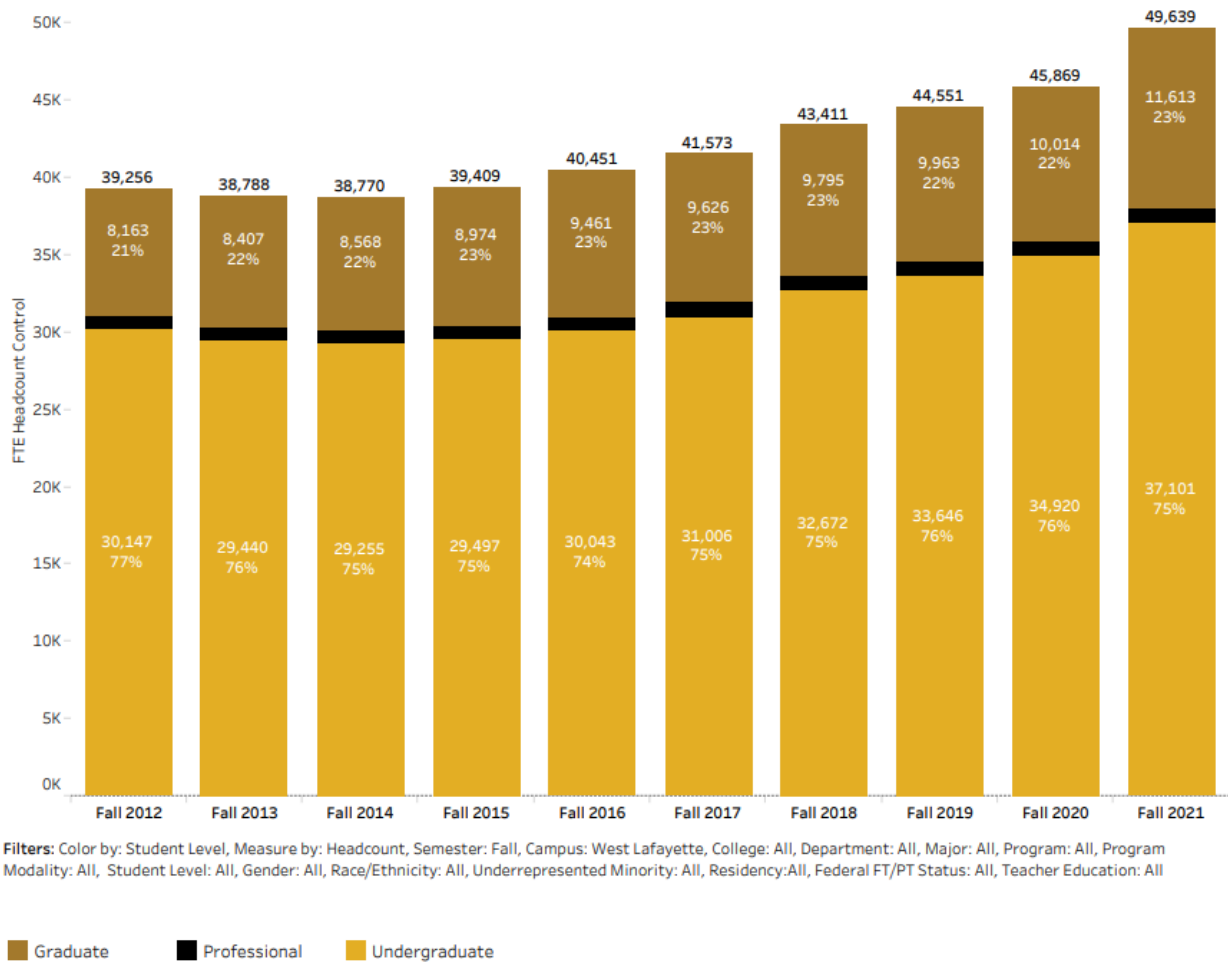
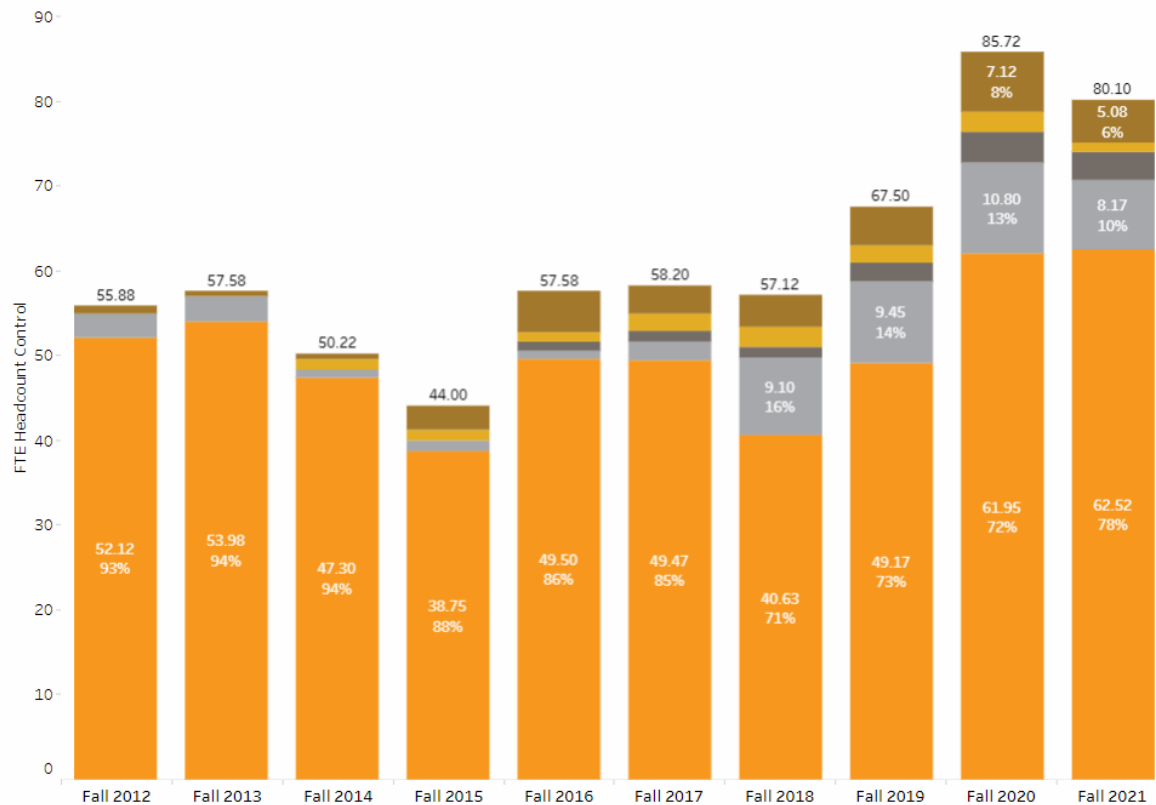


Figure 2. Purdue University's (2022) report on the total enrollment of students from the fall semester of 2012 to fall 2021.

There is a lack of educational resources for Latinos (particularly those are non-English speaking) in Purdue Entomology Outreach and Extension programs. In fact, Latino enrollment in Purdue Entomology Department has been hovering at 8-10% since 2018. I am part of this percentage, as I transferred in 2018 (Fig. 3).



Filters: Color by: Race/Ethnicity, Measure by: FTE, Semester: Fall, Campus: West Lafayette, College: College of Agriculture, Department: Entomology, Major: All, Program: All, Program Modality: All, Student Level: All, Gender: All, Race/Ethnicity: 2 or more races, Asian, Black or African American and 2 more, Underrepresented Minority: All, Residency: All, Federal FT/PT Status: All, Teacher Education: All

■ 2 or more races
 ■ Asian
 ■ Black or Africa...
 ■ Hispanic/Latino
 ■ White

Figure 3. Percentage of full-time students enrolled in Purdue’s Entomology Department from Fall 2012-201, filtered by race and ethnicity.

Table 1: Race/Ethnicity distribution at Purdue University.

Purdue University Main Campus Enrollment by Race/Ethnicity			
	Total	Men	Women
Total	46,655	26,714	19,941
American Indian/Native American	59	29	30
Asian	4,365	2,647	1,718
Black/African American	1,300	632	668
Hispanic	2,709	1,454	1,255
Native Hawaiian or Other Pacific Islander	30	20	10
White	27,571	15,065	12,506
Two More	1,708	923	785
Race Unknown	754	408	346

1.1 Project overview & background

Purdue Entomology Outreach and Extension programs provides a multitude of resources that span the different fields of entomology. The goal of this project was to provide the necessary resources to the underrepresented minorities in West Lafayette and Purdue University, in particular, the Hispanic and Latino community.

1.2 Project Objectives

This project involved faculty, publications, and peer-reviewed journals. Its development was coordinated with help of Dr. Sadof, Dr. Barnes, Dr. Pearson, and Areli Ortega, an entomologist from Mexico.

During Purdue’s Spring Fest, I distributed my flyers with information about invasive species: the spotted lanternfly, and Asian jumping worm. Additionally, I also provided flyers catered to a K-12 audience with “fun facts” about different insect species native to Indiana; the insects chosen were monarch butterflies and lady beetles. The process of making the flyers started with planning what was needed. First, licensing for creative commons photography was key to avoid any legal issues. More importantly, I needed to have information from reputable sources for all the flyers. Lastly, for the flyers in Spanish versions, it was important to have translators from Purdue University, and independent helpers. The overall objective in this approach was to provide a basic understanding on several key invasive insect species that are currently of rising concern throughout North America and Indiana.

My project focused on local population in West Lafayette and prospective students at Purdue University using this understanding in order to provide general knowledge in the entomology field. More importantly, the content I provided was developed for inspiring the local community in West Lafayette, Indiana towards curiosity and relevant understanding of the importance in insects, both native to Indiana and invasive species. Each draft of the flyers underwent revisions weekly to biweekly. The Spanish translations of the English versions were revised multiple times to make sure the tone and dialect match the context of the flyers and keep the information at an appropriate reading level. Moreover, information that that seemed irrelevant, or lacking were edited.

2. Methods and Materials

Material was distributed as (1) Qualtrics survey accessible to the public via QR code, (2) flyers about invasive species, and (3) flyers about native insects of Indiana catered to K-12 audience. Each of these materials were presented in English and Spanish. I created two versions of the survey, just changing the design of the flyer, to potentially catch the eye of more people. I coordinated with Dr. Barnes and Dr. Sadof for content, translation, and feedback of all the material created. I also received translation help from Areli Ortega (entomologist from Mexico). The objective was to distribute insect flyers in both languages.

Survey flyer

The objectives for the survey were to gather data and compare demographics' experiences, perceptions of insects, and have a basic idea about the range of knowledge of invasives species. The survey was distributed in various locations to maximize the amount of exposure to the general public. These locations included high-foot traffic areas on Purdue's campus, e.g., academic buildings such as WSTLR, SMTH, LILY, SC; Purdue Spring Fest at Bug Bowl; and through various social media platforms, e.g., Facebook, GroupMe, NextDoor. Unfortunately, there were no responses for two more options originally planned for: the Purdue Latino Cultural Center and the Mama Ines Mexican Bakery.

Invasive species flyers

The invasive species flyers were tailored for general adult public. These flyers focused on two species for Bug Bowl: (1) the Spotted lanternfly, and (2) the Asian Jumping worm. Other flyers had been worked on but were not presented. These included the Emerald Ash borer and the long-horned Asian beetle. Information and data on the flyers were sourced from Purdue's Entomology Extension and Outreach website.

Fun Facts! Flyers

The second type of flyers were more tailored for K-12 children. These focused on two species for Bug Bowl: (1) the ladybird beetle and (2) the Monarch butterfly. Similarly, other flyers that had been worked on but not presented included Say's firefly (Indiana's state insect), the mining bee, and evergreen bagworms. The information on these flyers included basic information about the ladybugs and monarchs such as their life cycle, fun facts, and the diversity of both these species. An activity on the insect was also created and placed as part of the flyer.

3. Analysis and Results

The number of responses for the survey reached approximately 185 in total. The survey response data was obtained on April 25th and an approximate total of 180 responses were tallied. Unfortunately, the Hispanic/Latino response was only about 3%. The majority of demographic responses were not Hispanic/Latino, which totaled to nearly 88% (Fig. 3). I received positive responses in-person about the survey questions and flyers during Bug Bowl.

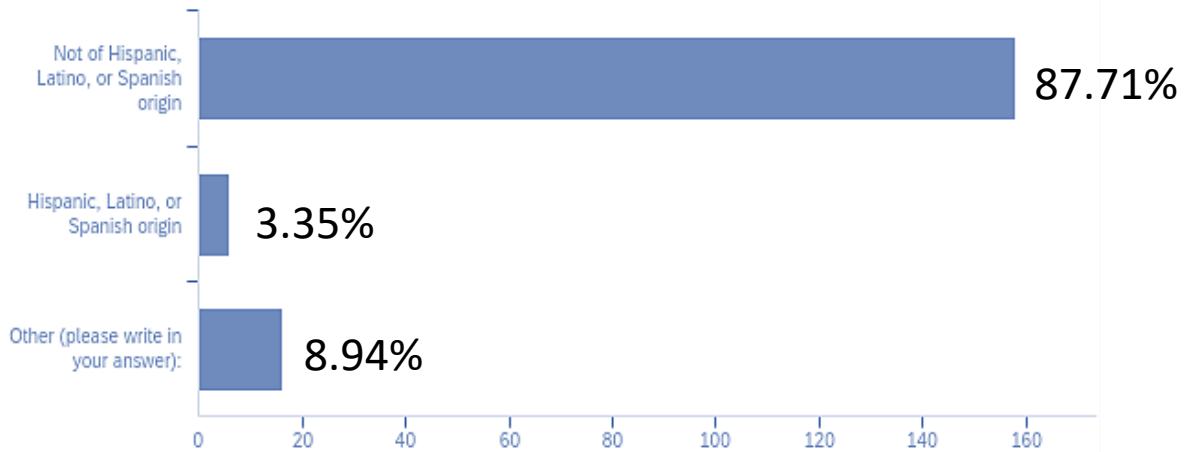


Figure 4. Demographic of the survey respondents.

The majority of respondents noted that they encounter insects in their daily lives from only ‘sometimes’ to frequently (‘often’ and ‘all the time’) (Fig. 5).

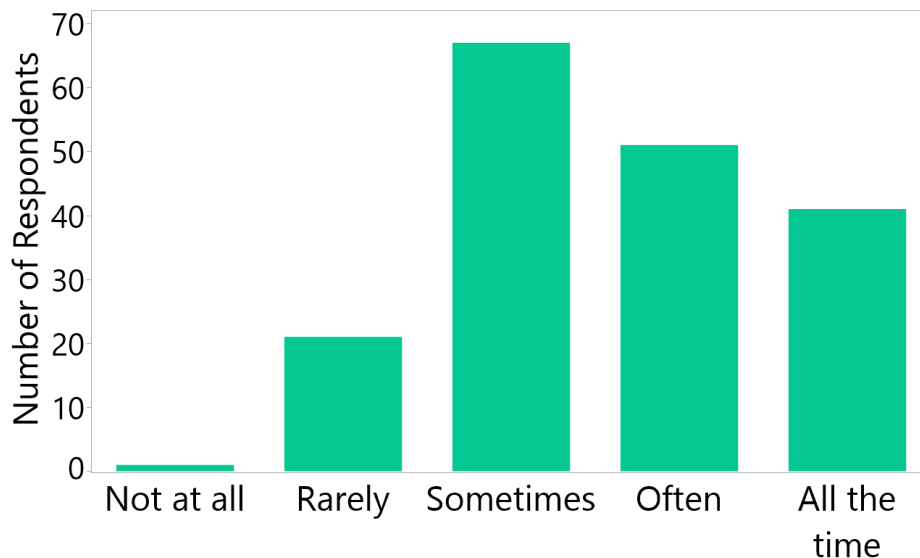


Figure 5. Responses for “how often do you encounter insects in your day-to-day life?”

Childhood perceptions of insects ranged from somewhat negative to somewhat positive, although the majority of views leaned more towards a neutral and positive view (Fig. 6). On the extreme ends, there were more ‘extremely positive’ views than negative. When compared to current views of insect, the majority of respondents noted to have a more positive perception (Fig. 7).

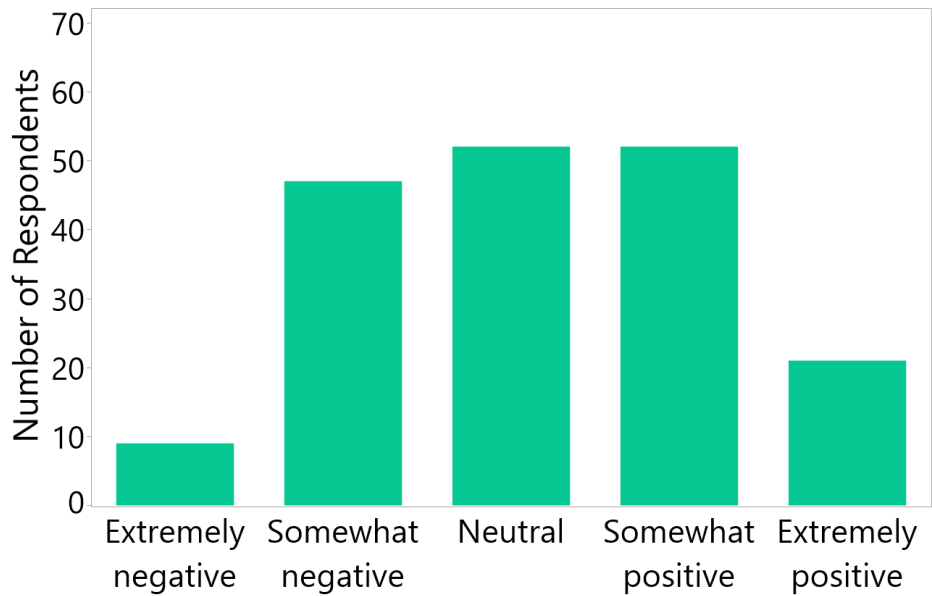


Figure 6. Responses for survey question “what was your view of insects as a kid?”

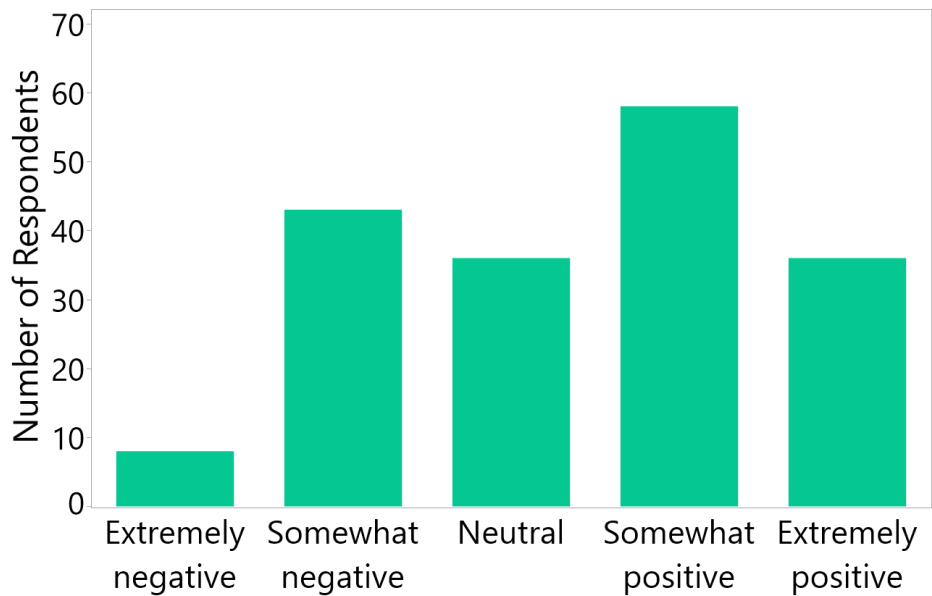


Figure 7. Responses for survey question “what is your view of insects now?”

Most respondents were not interested in having a career in studying insects (Fig. 8). This may be due to the age of the respondents, which averaged about 53 to 54 years old, and are already set in their career paths.

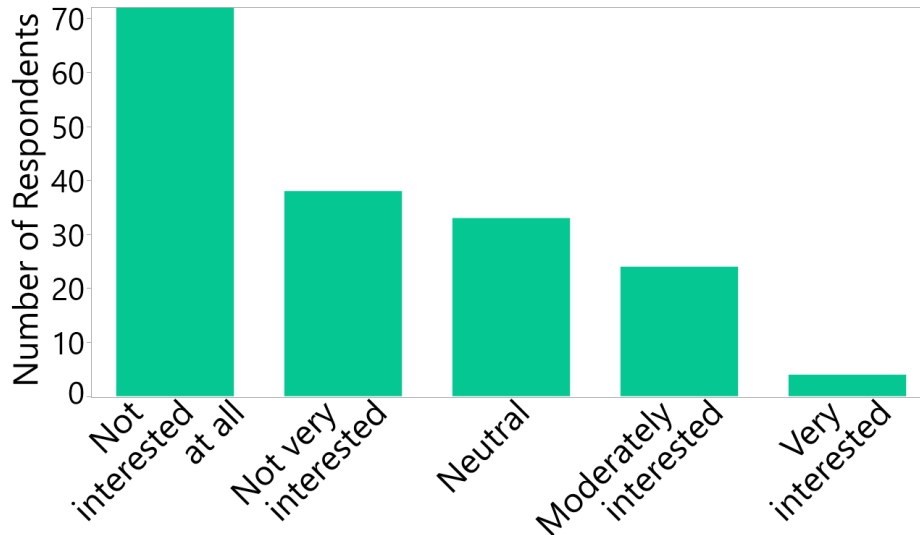


Figure 8. Responses for survey question “how interested would you be in having a career studying insects?”

4. Discussion & Conclusions

There are some potential reasons for the low response rate from people of Hispanic/Latino or Spanish origin. First, the survey was released on a short timeline, and was only IRB approved on April 4th. There may not have been sufficient time for the survey to reach a wider audience. Next, the survey may have been targeting a demographic too narrow for the West Lafayette area. It is possible that having the survey posted at the Purdue LCC and Mama Ines Mexican Bakery would have potentially increased the number of Hispanic/Latino respondents.

The target audiences from Spring Fest’s Bug Bowl were an area that I believe to have benefitted from having the flyers provided to them. From Bug Bowl’s debut in 1990, this event has attracted many people around Tippecanoe County, and it has been reported that prior the COVID-19 pandemic, the number of people visiting this event can reach up to 30,000 (Kelly, 2022). This year’s Spring Fest was held only one day, although the event is normally held over the span of two days, which may have influenced the lack of Hispanic responses from the survey. Nonetheless, pandemic restrictions have been lifting across the state (IDOH, 2022), which will aid in creating more opportunities for distributing flyers during future Spring Fest events.

Despite the lack of Hispanic responses, the responses from the survey are still useful, and the small sample size does not make the issue any less important. These responses can serve as a basis for discussion and for future efforts to increase interest among Latinos in the entomology field. In general, this project aimed to identify current gaps in the outreach programs provided by Purdue’s Entomology Department. Both types of flyers supported the recognition of underrepresented Hispanic/Latinos – this representation may help attract and retain talent and develop advances within the entomology field.

Future projects with similar goals as those presented in this project may attempt contacting community-based agencies throughout the West Lafayette area, as doing so could be beneficial for coordinating entomology-based programs and events around neighborhoods, thus gathering a

wider audience. These agencies may include the West Lafayette Parks and Recreation where coordinated events can be held in community parks, e.g., Happy Hollow Park and the Lily Nature Center located in Celery Bog. These locations are a great place to start for such endeavors. Another option would be developing entomology-themed websites interactive in both English and Spanish. Equally important would be to focus on creating opportunities for Latino community to access information in Spanish. Such opportunities could be created by targeting middle and high school students with field-course programs to allow the opportunity for bringing youth into the entomology community. Removing barriers in communication will promote meaningful change. Entomologists know that the world of insects is incredibly diverse, and an understanding of entomology requires just as a diverse background from its scientists and those working in its related fields and disciplines.

Acknowledgements

Dr. Sadof, Dr. Barnes, Dr. Pearson, Areli Ortega, Zherui Guo – thank you for all your help.

References

- Bureau, U. S. C. (2022, February 5). *Racial and ethnic diversity in the United States: 2010 census and 2020 census*. Census.gov. Retrieved May 4, 2022, from <https://www.census.gov/library/visualizations/interactive/racial-and-ethnic-diversity-in-the-united-states-2010-and-2020-census.html>
- Isaacs, S. (2020, October 29). *Hired Farm Labor and the role of Hispanic workers*. Hired Farm Labor and the Role of Hispanic Workers | Agricultural Economics. Retrieved May 4, 2022, from <https://agecon.ca.uky.edu/hired-farm-labor-and-the-role-of-hispanic-workers>
- Rudolph, C. (2020, September 23). *MSU entomologist leads training for Latino/a farmers, receives new \$600K USDA grant*. Department of Entomology. Retrieved May 4, 2022, from <https://www.canr.msu.edu/news/msu-entomologist-leads-training-for-latino-a-farmers-receives-new-600k-usda-grant>
- U.S. Dept. of Health and Human Resources, Office of Minority Health Resource Center. (2022). *Office of Minority Health*. Hispanic/Latino - The Office of Minority Health. Retrieved 4AD, from <https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=3&lvlid=64>
- National Center for Science and Engineering Statistics, Women, Minorities, and Persons with Disabilities in Science and Engineering*. (2016). [//C:/Users/aorfi/Downloads/wmpd19-sr-tab03-005.pdf](https://www.nsf.gov/pubs/2016/nsf16-128.pdf).
- Orfinger, A. B. (2020). Diversity Beyond Insects in Entomology and Allied Disciplines. *Journal of Insect Science*, 20(5). <https://doi.org/10.1093/jisesa/ieaa093>
- Smith, M., Hendrix, B., Su, N.-Y., Quisenberry, S. S., Hendrix, W. H., Mankin, R. W., Rohde, B., Lewis, V. R., & Kuniyoshi, C. H. (2014). Instant Symposium — Connecting with the World’s Best Talent: Attracting and Retaining Diverse Entomologists. *American Entomologist*, 60(3), 146–159. <https://doi.org/10.1093/ae/60.3.146>
- Student Enrollment Data Digest*. (2022).

https://www.purdue.edu/datadigest/?dashboard=EnrollmentBars_1

Kelly, J. (2022, April 9). *Purdue Spring Fest returns after 2 years of absence*. WLF1 News 18. Retrieved May 4, 2022, from https://www.wlfi.com/community/purdue-spring-fest-returns-after-2-years-of-absence/article_598c7710-b85a-11ec-8d51-ef6bacfe5c8d.html

Novel Coronavirus (COVID-19). (2022, May 4). *Indiana COVID-19 County At-A-Glance Dashboard: Novel Coronavirus (COVID-19)*. IDOH. Retrieved May 4, 2022, from <https://www.coronavirus.in.gov/indiana-covid-19-dashboard-and-map/>

APPENDIX

Flyers

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Invasive Species Spotlight

The Spotted Lanternfly

Other names: Spotted lanternfly (SLF), *Lycorma delicatula*

Where did it come from?

The Spotted lanternfly was first introduced on imported stone from southeastern Asia and was found in Pennsylvania in 2014.¹ It can spread rapidly without intervention, and was recently found in Vevay, Indiana in the summer of 2021 – if you see it, report it!



Adult Spotted Lanternfly. Photo: Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org.

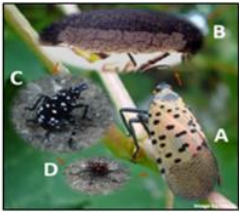


Photo: Elizabeth Barnes, Purdue Landscape Report (2018).



Egg mass on tree-of-heaven. Photo: Richard Gardner, Bugwood.org.



Tree-of-heaven, one of the preferred trees of SLF. Photo: Jan Samanek, Phytosanitary Administration, Bugwood.org.

Susceptible Plants

Spotted lanternfly threatens more than 70 species of trees, but especially tree-of-heaven, black walnuts, hops, grapes, roses, red maple, river birch, and fruit trees.² They can also feed on almonds, apples, blueberries, cherries, peaches, as well as hardwoods like oak, walnut, and poplar.³

Why is it invasive?

Spotted lanternfly feeds on sap from stem or leaves on plants, weakening the plant overall. Their damage can kill small plants and is particularly devastating to vineyards and fruit orchards.

The honeydew they produce covers the ground and attracts ants, wasps, and grows mold.



Mold on tree. Photo: Lawrence Barringer, PA Dept. of Agriculture, Bugwood.org.

¹ <https://www.purduelandscapeport.org/article/whats-as-wide-as-your-thumb-bright-orange-and-the-latest-threat-to-trees/>

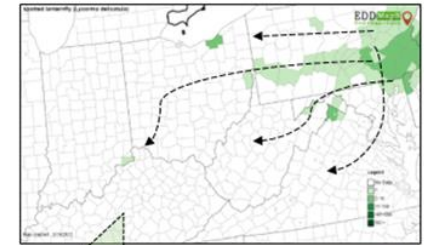
² <https://www.purdue.edu/fnr/extension/purdue-landscape-report-spotted-lanternfly-found-in-indiana/>

³ <https://www.cincinnati.com/story/news/2021/07/26/invasive-spotted-lanternfly-found-greater-cincinnati-indiana-vevay/8091959002/>

How does it spread?

They can be easily transported in goods, equipment, and even travel on vehicles. SLF can be present on:

- Packing materials, e.g., wooden boxes or crates
- Construction and remodeling material, equipment, and waste
- All plants and their parts, including nursery material, wood, fruit, vegetables, and other materials like roots, branches, mulch
- Home garden items, including but limited to tarps, tiles, stone, deck wood, mobile fire pits, and firewood



Spotted lanternfly can easily spread and establish itself in other areas at an alarming pace



Sighting of SLF in Indiana, July 2021. Source: EDDMapS, 2022. Early Detection & Distribution Mapping System. The University of Georgia.

Where has the spotted lanternfly been detected so far?

The spotted lanternfly has been found in 34 counties in PA, which are all under quarantine mandated by the state.⁴ The quarantine was implemented to deter the movement of SLF to new areas outside the quarantine zones and slow its spread within the quarantine zone.

Switzerland County, Indiana confirmed the first sighting of SLF in July 2021.⁵

How do you prevent its spread? Report it if you see it!

If you travel through affected states, check your luggage, vehicle, and anything you purchase there.

If you order anything from affected areas, make sure to inspect it when you receive it.⁶

What can I do? Send a report!

Get in touch with the Purdue Entomology Outreach & Extension!

<https://ag.purdue.edu/reportinvasive/contact-us/>

Call: Division of Entomology & Plant Pathology (DEPP)
at 1-866-NO-EXOTIC (1-866-663-9684)

Email: DEPP@dnr.in.gov



⁴ <https://extension.psu.edu/spotted-lanternfly>

⁵ Indiana Department of Natural Resources, "Spotted lanternfly found in Indiana", Indiana Department of Natural Resources, July, 2021. Available: https://events.in.gov/event/spotted_lanternfly_found_in_indiana_9382?

⁶ <https://www.purdue.edu/fnr/extension/purdue-landscape-report-spotted-lanternfly-found-in-indiana/>

Let's meet this insect!

The Ladybird Beetle

Other names: Lady beetle, ladybug, ladybird

Bloom of ladybugs

Approximately 6,000 species of ladybugs have been identified worldwide!

The most popular is the **seven-spotted black-and-red ladybug** found in North America – it's even Ohio's official



Photo: Flickr/[amitp](#), Amit Patel.

Our most popular beetle?
The seven-spotted lady beetle!

The ladybug is considered good luck because they feed on many crop and garden pests.

The most common ladybug in North America is the Asian ladybug, also known as the **harlequin ladybug**.

These beetles tend to gather in large groups during fall.

They're also a concern because they are in competition with Indiana's native ladybugs.



A multicolored Asian lady beetle.
Photo: Mary C Legg, Mary C Legg, Bugwood.org.



Ladybug resting on a leaf. Photo: Daren Mueller, Iowa State University, Bugwood.org.



Garden guardians

Ladybugs like to feed on aphids, which are small insects that can injure garden plants and even farm crops.

Farmer's little helpers

Ladybugs help farmers by eating aphids and other insects that harm their vegetables and fruit.

Where do ladybugs live?

Ladybugs can be found all around the world, except for places that are extremely cold or hot – like the arctic and deserts.

Most of the time, their habitats are in areas where they're most comfortable living in. They will tend to spread out to search for food.



Parks and lush fields are great places to find ladybugs

During summer, they'll live in many different habitats: gardens, forests, cities, by rivers, and more!

In winter, they'll spend the cold months tucked under fallen leaves in the woods.

Sometimes they can show up inside our homes where it's nice and warm.

Let's meet this insect!
The Monarch Butterfly

Other names: milkweed butterfly

Taking flight on a great heroic journey

Every year, millions of monarch butterflies migrate on a 4,000-mile journey across North America from their winter habitat in Michoacan, Mexico.

Monarchs pay an important role in pollinating plants along the way.

In Mexico, monarchs gather by the thousands to roost in trees that will get covered like a giant blanket of butterflies.

These giant clusters of monarchs become so heavy that they can *bend* tree branches!



Clusters of monarchs roosting on a tree. Photo: Flickr, [Avi Dolgin](#).



Adult monarchs love milkweed nectar!
Photo: Steven Katovich, [Bugwood.org](#).

How far is 4,000 miles?

About 70,000 times
as tall as the Statue of Liberty!

How high do they fly?

As high as airplanes soar or Mt.
Everest (tallest mountain in world)!

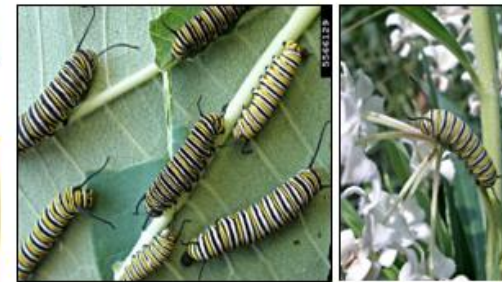


Monarchs migrate to get to frost-free areas. They travel south in the fall and north in the spring.

Their trek can take about two months, traveling from 50 to 100 miles a day. Some even migrate from places as far north as southern Canada!

Habitat and Ecology

Monarch habitats are under threat both in Mexico and the United States. Conservationists, entomologists and growing numbers of concerned citizens and students are working to preserve the future of this majestic butterfly.



Monarch caterpillars!

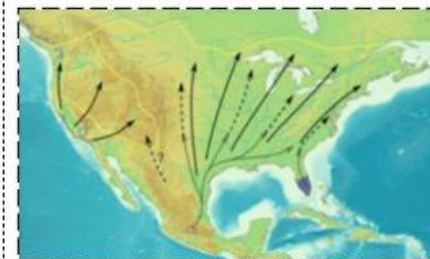
Photo: Ansel ~~Oppman~~, [Bugwood.org](#).

Where & when can I see monarchs in Indiana?

Monarchs begin their migration in early spring and appear in the Midwest around mid-May through July.

In Northeast Indiana, the peak season is around mid-September as they feed on any remaining nectar in the area.

Make sure to stay updated with Purdue's Pollinator page!



Source: [File:MonarchWanderingKlein.gif](#)
licensed with CC-BY-SA-3.0.

Are they buggin' you?

WE WANT TO KNOW!
Take our quick bug survey!



This survey is meant to explore different viewpoints and experiences when it comes to insects.

 https://purdue.ca1.qualtrics.com/jfe/form/SV_5cND0GHWnUYjA16



With your help, we can create a more diverse interest in entomology with our local community in and around Purdue University!

¿Qué opinas de los insectos?

¡HAZNOS SABER!
¡Toma nuestra encuesta rápida sobre errores!



Esta encuesta está destinada a explorar diferentes puntos de vista y experiencias en lo que respecta a los insectos.

Con tu ayuda, podemos crear conciencia e interés en la entomología en la comunidad local de la Universidad de Purdue y sus alrededores, ¡especialmente para todos los grupos demográficos!

 https://purdue.ca1.qualtrics.com/jfe/form/SV_5cND0GHWnUYjA16



Survey flyer, version 1, in English and Spanish.

SHARE THE BUZZ

TELL US WHAT YOU THINK ABOUT BUGS!



This survey is meant to explore different viewpoints and experiences when it comes to insects



CREATE DIVERSITY

We aim to create interest in entomology to our community around Purdue University, especially for all demographics!



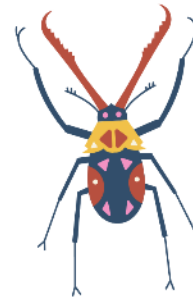
 [HTTPS://PURDUE.CA1.QUALTRICS.COM/JFE/FORM/SV_5CND0GHWNUYJA16](https://PURDUE.CA1.QUALTRICS.COM/JFE/FORM/SV_5CND0GHWNUYJA16)



TAKE OUR BUG SURVEY!

CUÉNTANOS EL ZUMBIDO

¿QUÉ OPINAS DE LOS INSECTOS?



Esta encuesta está destinada a explorar diferentes puntos de vista y experiencias cuando se trata de insectos



CREAR DIVERSIDAD

Nuestro objetivo es crear interés en la entomología en nuestra comunidad alrededor de la Universidad de Purdue, especialmente para todos los datos demográficos!



 [HTTPS://PURDUE.CA1.QUALTRICS.COM/JFE/FORM/SV_5CND0GHWNUYJA16](https://PURDUE.CA1.QUALTRICS.COM/JFE/FORM/SV_5CND0GHWNUYJA16)



¡TOMA NUESTRA ENCUESTA RÁPIDA SOBRE ERRORES!

Survey flyer, version 2, in English and Spanish.