Intellectual Merit Criterion

Overall Assessment of Intellectual Merit
Very Good

Explanation to Applicant
Individual has given several presentations, published several conference proceedings, received a number of awards and small grants, and has had a number of jobs and internships related to science. The proposed research project is timely and novel as it addresses an important topic in nonnative pollinator disease transmission. The objectives and straight forward and hypothesis is reasonable. The methods are clear in most places and it is apparent how the objectives will be met. Overall the work is pushing new directions and will be of particular importance to understanding disease ecology in bees.

Broader Impacts Criterion

Overall Assessment of Broader Impacts
Excellent

Explanation to Applicant
The proposed research has broad impacts as it deals with honey bees that are experiencing declines, which is important both economically and because they are nonnative species. Has given outreach talks and worked with local school to engage in citizen science project. Was an environmental educator and has led citizen scientists on native bee project. Leading an effort to do statewide bee survey that has not been performed yet by the state. First generation college student. Individual has strong ties to agencies and stakeholders. Plans to hold workshops and train undergraduates. Will be working with state to test hives for disease. The only aspect that was surprising to see was the lack of interaction with Extension given that the work is being done at a Land Grant institution. Overall, individual has a strong commitment to outreach and working with multiple stakeholders.

Summary Comments
A well thought out and nicely stated application that will help advance science. The project has a great broader impact and the individual has already contributed greatly to science. The individual is well prepared to carry out this important research.

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit
Excellent

Explanation to Applicant
This applicant proposes to evaluate the impact of RNA viruses on bees. This proposal is founded both in ecological theory as well as applied ecology to understand mechanisms that yield honeybee decline. The applicant has already demonstrated a commitment to develop the skills and support necessary to complete this project. I am concerned about the large scope of this project to be completed.

Broader Impacts Criterion

Overall Assessment of Broader Impacts
Excellent

Explanation to Applicant
This applicant has demonstrated passion and leadership abilities to bring together multiple stakeholders to work towards a

common goal. They also hae experience with citizen science and other education initiatives that will help disseminate the results of their study and other scientific concepts to a broader audience.

Summary Comments

This applicant's experience and glowing letters support my conclusion that they will be a leader in the scientific field.

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Excellent

Explanation to Applicant

The candidate received an honorable mention for her GRFP last year and since has successfully applied for $8500 of funding to develop the mechanical testing approaches needed for her proposed study. She has received multiple awards, co-authored conference proceedings and has been a co-presenter on multiple presentations. She brings an international perspective to the work, having conducted a semester of research in Costa Rica. The proposed project would examine relationships between RNA viruses in bumble bees in Vermont. The candidate is exceptionally qualified to carry out the proposed work. According to the applicant, no prior research "has defined native bee viral host range or closely examined the role of flowers in transmission. Filling these knowledge gaps is important from an ecological and conservation perspective." She has already demonstrated the ability to isolate RNA viruses from honey bees and bumblebees. The candidate has demonstrated an exceptional commitment to her important work, seeking expertise from collaborators and advisors in order to acquire the knowledge and resources needed to carry out the proposed work. As a result, she has access to all the resources she will need for this project.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Excellent

Explanation to Applicant

The broader impacts of this application are outstanding. The candidate is a first generation college going student and she has extensive experiences in science education/outreach. Not only has she given multiple public lectures on ecology, but she has also engaged young children in scientific research. She developed her own undergraduate lab course on the evolution of antibiotic resistance. She has worked with multiple stakeholders to lead Vermont's recent participation in the National Honey Bee Survey. The proposed project has clear implications for society (e.g., fodd production), given the focus on declining honey bee populations. She has plans to apprenctice with the USDA Bee Lab so that she can ensure her protocols are aligned with the USDA. In this way, her data will be more accessible to scientists worldwide.

Summary Comments

There is not yet a clear cause of the alarming decline in bee populations. This study may help further clarify possible factors associated with this decline. The candidate is exceptionally qualified to carry out the proposed project. In order to better prepare herself to carry out the work, the candidate has demonstrated considerable ambition and drive to secure the necessary resources, develop testing methods, and facilitate relevant collaborations.