Written Statement of Proposed Testimony

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Before the House Natural Resources Committee's Subcommittee on Water, Oceans, and Wildlife Hearing on H.R. 6761 to require the Secretary of the Interior to establish a grant program to provide financial assistance to States in eradicating the Asian Giant Hornet, and for other purposes. *"Murder Hornet Eradication Act"*

June 25th, 2020

Good morning chairman, ranking members and other distinguished members of the U.S. House of Representatives, Committee on Natural Resources, Subcommittee on Water, Oceans and Wildlife. My name is Michelle Samuel-Foo. I am a faculty member at Alabama State University in the department of Biology. I am an entomologist by training, and I am a past president of the International Association of Black Entomologists and the president elect of the South Eastern Branch of the Entomological Society of America.

Thank you for the opportunity today to address the subcommittee on the very important issue of H.R. 6761 that would see grant funding established to provide financial assistance to States in eradicating the Asian Giant Hornet. My comments today are intended to provide this Subcommittee with a better understanding of the potential devastating impact of the Asian Giant Hornet to US agriculture, in particular our honey bee pollinators and also to emphasize that we

have an opportunity to help ward off the threat of this invasive species with the passage of this bill.

On May 2, 2020, the NY Times ran an article entitled: "Murder Hornets' in the US: The Rush to Stop the Asian Giant Hornet." While this headline was a bit sensational in nature, the article did do a good job of alerting consumers and other stakeholders about an invasive species that had recently been discovered inside of our borders. It brought widespread attention to a topic that those of us who work in the world of agriculture recognize as a very serious threat.

First, I would like to note that what is being called the "murder hornet" is actually the Asian Giant hornet, *Vespa mandarinia.* A large, dead Asian Giant hornet was found in Washington State in December 2019 and since then, there have been up to 2 additional reported findings to date. The insect was taxonomically identified by the Washington State Department of Agriculture. We know that it is the world's largest hornet, with a reported size of up to 2 inches and a wing span of 3". It's sting can evoke an allergic reaction, or anaphylaxis and can occasionally cause afflicted individuals to be hospitalized and in rare cases, fatality can result. How did the Asian Giant hornet arrive in the US? It's unclear at this point, but with more than 19,000 cargo containers arriving in the US on a daily basis at our various ports, it is not unlikely that this is a possible mode of entry.

Many of you may be asking the question: "What exactly is an invasive species?"The United States Department of Agriculture (USDA) defines invasive species as "plants, animals, or pathogens that are non-native (or alien) to an ecosystem, and whose introduction causes or is likely to cause environmental harm or harm to human health." Prior to moving to Montgomery AL, I lived in central Florida for a decade, and my work as the regional coordinator with the IR-4 specialty crops program saw me travel to various agricultural sites throughout the Southern

region of the US. In the South, the threat of invasive species is a particularly poignant one as our agriculture industries, while delicately balanced are powerful. Agriculture, food and related industries contributed over $1 trillion to the US gross domestic product (GDP) in 2017 according to the USDA economic research service statistics. Invasive species present significant threats to global agriculture, and as the US is among the biggest agricultural programs, we are at risk for the greatest cost from invasive species.

There are hundreds of invasive species -these run the gamut from the spotted lanternfly, which was discovered in Berks County Pennsylvania and is a threat to both agriculture and natural areas, to the kudzu plant, an invasive alien species that has penetrated and persisted in the SE US for most of the 20th century and continues to debilitate natural communities, human health, private property, and the enjoyment of public lands and the list continues.

Invasive plants and animals are successful because they eat or outcompete native species, by damaging habitats, or by spreading disease. Most invasive species are successful largely because they have no natural predators in their introduced environments. This is complex and results from hundreds of years of evolution. In nature, there are predators and there are prey. These two groups oftentimes coevolve in a phenomenon known as coevolution. When a species is introduced into a new environment, there are sundry outcomes that are possible, and please note that they don't all have to be negative. However, when an alien species begins to have unintended negative consequences, this is when they become invasive.

Now to specifically address the threat of the Asian Giant Hornet, let's look at bit at the life cycle of this insect. We know from the published literature that Vespa Mandarinia colonies establish in the spring by mated queens after they emerge from diapause (period of postponed development). New colonies are established in tree cavities or hollow areas near the root of trees (Matsuura and Yamane 1990), the queen is solely responsible for the colony development

and will provide monitoring, protection and food until workers begin to emerge. Once workers are present, the queen shifts focus to egg laying in the 1000 or more cells of its nest (Matsuura and Sahkagami 1973, Matsuura and Yamane 1990). Larval (immature) hornets undergo 5 larval instars (stages) then become pupae inside a cocoon for about 18 days. Colonies are most active during the summer and into the fall until a brood of new queen (reproductive females) and male hornets emerge until the end of October. Male hornets leave the nest and remain at the entrance to mate with new queen, then they overwinter in the soil (this can take about 7 months) before the start their own colonies in the spring and hence the continuation of the population (Takahashi et al., 2004)

Much of what we know about this insect's biology are from the scientific literature, largely on studies that were done in Japan. There is certainly a need to do basic biology studies so that we can learn more about the behavior of this insect in our domiciles. It's important that we get a handle on this threat before the insect establishes and wreaks further damage on our already at risk honey bees populations. We know that the hornet can decapitate entire broods of honey beads as they feed dead prey to their own young. We need to be able to accurately predict impact on the future and design policies that are proactive, and appropriate. A rapid response is essential to tackling invasive species and this requires adequate resources for scientists, researchers and stakeholders alike to be able to mobilize as needed, and to be able to conduct research efforts that will lead to eradication. One of the most important keys to prevent spread and eventual establishment is surveillance and the grant program that will be established by H.R 6761, will provide an avenue for affected states to have access to resources that will be needed for eradication efforts. Thank you for the opportunity to address the subcommittee on this very important issue.