



ADDRESSING THE GROWING THREAT TO LAND AND PEOPLE POSED BY INVASIVE ARTHROPODS

ESA Position Statement on Invasive Species

Approved on November 12, 2020

Valid through November 12, 2024

OVERVIEW

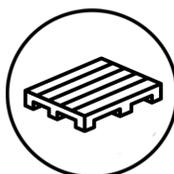
Invasive species are organisms that establish and spread in non-native environments and cause harm to public health, environmental health, and economic vitality around the world.¹ New, often dangerous insects and arachnids continue to arrive in the U.S. at an alarming rate. The estimated total economic impact of invasive insects exceeds \$70 billion per year in lost goods and services and \$6.9 billion per year in increased healthcare costs.² The yellow fever mosquito (capable of transmitting Zika virus and other human health pathogens), Asian giant hornet, spotted lanternfly, brown marmorated stinkbug, and emerald ash borer are just a few well-known examples currently spreading in the U.S.

Limited public awareness about invasive species, fundamental knowledge gaps about their biology, and the absence of effective mechanisms to promote and support multi-agency coordination across multiple levels of government impede timely and effective responses to new invasions. Insects and arachnids from other countries and continents enter the U.S. through a variety of pathways and represent a growing challenge in an increasingly globalized world of trade and travel. Preventive approaches and rapid responses to new invasions are strategic investments that are more effective than efforts to mitigate impacts of established and entrenched invasive species.

COMMON PATHWAYS OF INVASIVE SPECIES INTRODUCTION

Wood Packaging Material

- Crates
- Pallets
- Dunnage



People, Pets, and Livestock

- People and pets traveling abroad
- Luggage
- Hay and livestock bedding
- Food



Live Plants

- Produce
- Nursery Stock
- Ornamental trees
- Decorative flowers



Trade & Construction Materials

- Tires
- Masonry
- Soil
- Stones
- Tiles



¹“Invasive species’ means an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health” Executive Order 13112 (1999)

²Bradshaw, C.J.A., B. Leroy, C. Bellard, D. Roiz, C. Albert, A. Fournier, M. Barbet-Massin, J.M. Salles, F. Simard and F. Courchamp. 2016. Massive yet grossly underestimated global costs of invasive insects. *Nature Communications* 7: 12986



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RECOMMENDATIONS

The U.S. must become a global leader in the development and implementation of innovative strategies and technologies to protect the health of people and other animals, agriculture, forests, grasslands, wetlands, urban parks and gardens, homes and buildings, and countless other vulnerable environments from invading pests. To achieve this goal, the Entomological Society of America (ESA) supports the following recommendations:

1. Increase public awareness of invasive species through clear, consistent messaging and education, outreach, and advocacy campaigns.

Too few people know about the harmful effects of invasive insects or the roles people play in causing or worsening insect invasions. New arrivals can occur through travel of people and pets as well as trade of goods ranging from furniture to nursery trees to livestock. An existing example of an educational program that can be expanded is the “Don’t Pack A Pest”³ initiative (administered by U.S. Customs and Border Protection), which educates international travelers about the biological dangers posed by illegally transporting fruits, soil, and other prohibited items. Consumers, residents, and business owners can also contribute to early detection, helping prevent establishment. Through education and an increase in public awareness, individuals and industries can make informed decisions to reduce the potential introduction or spread of invasive insects and arachnids.

2. Create a rapid-response funding and authorization mechanism to eradicate or stop the spread of invasive species.

Rapid, decisive action is needed when new species are found. However, no rapid-response fund exists to support such actions, particularly in natural areas. Rather, an archaic system ties federal funding to specific invasive species, or groups of species that are federally regulated. For those that are not covered by Congressional appropriations for these programs, such as Asian longhorned ticks, invasive shothole borers, and raspberry/tawny crazy ants, responses are hamstrung unless Congress acts, costing valuable time. Instead, funds should be available for immediate responses to all new threats to the environment, critical infrastructure, food security, and public health for surveillance, eradication, and research. Rapid response may also be reliant on quickly identifying and making tools such as insecticides available under special authorization.

3. Increase strategic investments in applied research and management of invasive insects.

Effective responses to prevent or eliminate the damage from invasive species depend on informed, tactical, and strategic decisions stemming from investments in scientific research by the federal government as well as private industry. Intensive research into fruit fly ecology and management (such as the Sterile Insect Technique) and extensive public engagement set the stage for the successful eradication of Oriental fruit fly from Florida in 2015. In contrast, early attempts to contain the spread of emerald ash borer in North America failed, in part, because too little was known about how widespread the insect was and because funding was not sufficient to support the response. Currently, few plans exist to respond to major invasive threats not yet established in the U.S. but poised to invade. The likelihood of success will be increased if investments are made to collect baseline information on the biology, detection, risk, and management of impending invaders.

4. Expand agreements among public-private entities for coordinated, effective invasive species management across land ownerships.

Invasive species have no respect for borders of any kind, but invasive species managers do. This poses a tremendous challenge when it comes to efforts to control and eradicate these invaders. Coordinated management between federal, state, local, and private organizations, including everyone from homeowners to farmers to business owners, is key to ensure the efficient use of funds and avoid duplicated efforts. By supporting partnerships between public and private entities, federal funds can be used effectively at varying levels of involvement. Hawaii’s Interagency Biosecurity Plan⁴, developed in part over concerns with mosquitoes that spread dengue and Zika, fire ants, and the coffee berry borer, provides a template framework for such coordination. Articulation of common “SMART” (specific, measurable, actionable, relevant, and timely) goals is critical to achieving outcomes.

³<https://www.dontpackapest.com/>

⁴<https://dlnr.hawaii.gov/hisc/plans/hibp/>





5. Create a National Invasive Species Intervention Network (NISIN).

Early-detection and rapid-response (EDRR) activities, such as eradication or containment, are the next best option if prevention efforts fail. However, currently, at least 20 U.S. federal agencies have authority for invasive species management, and their unique roles and responsibilities have remained poorly defined for decades. Overlapping jurisdictions with different accountabilities create confusion among stakeholders regarding who to contact when species are first detected in the United States. Additionally, differences in management goals, funding levels, project oversight, and outcome assessment discourage interagency cooperation. Critically, the sources of federal EDRR for invasive species that affect public health or non-commercial plants and animals in natural areas are unclear. Therefore, using the successful National Plant Diagnostic Network as a model, NISIN would be a network of public and private invasive species expertise, coordinated with land-grant universities, to provide guidance and oversight of invasive species management activities, particularly species of regional and national significance.

6. Increase support to manage the movement of invasive species within North America.

The U.S. Department of Agriculture (USDA) has primarily focused on excluding crop and livestock pests of foreign origin. In part due to constrained resources, the Animal and Plant Health Inspection Service (APHIS) does not have effective regulatory tools to respond to invasive species, like the goldspotted oak borer or the walnut twig beetle (which spreads thousand cankers disease), that are native to small portions of the U.S. but have been inadvertently moved to new ecosystems where they are highly destructive. We encourage USDA and other relevant agencies to elevate the priority of addressing the invasive spread of native pests within North America. When insecticides are considered necessary, public researchers with expertise in insect management should be relied upon to assess usefulness of proposed solutions and serve as a source of expertise for state and federal agencies considering continued use or special use authorizations for products. Furthermore, we recommend exploring ways within an integrated pest management (IPM) framework to manage these pests if efforts to prevent establishment fail.

7. More national and international research collaborations to foster a mutual understanding of, and more rapid responses to, invasive species.

Introductions of invasive species are largely a consequence of economic and social globalization. Thus, research must operate at a comparable scale to effectively address the issue. National and international cooperation for early identification of potential threats begins by understanding the biology and ecology of potential invasive species and the suite of natural enemies or strategies that can be used for their management and control. Real-time findings resulting from collaboration would result in improved surveillance and rapid-response programs. The spotted lanternfly detection program in the Northeast provides an example of the value of multistate cooperation and real-time geographic and biological information exchange. Such information flow ideally occurs before an invasion begins, must be maximized early on, and must stand on strong pillars of objective science to be successful. International collaborations will flourish only if based on trust and respect. We are all in this together.

The Entomological Society of America is the largest organization in the world serving the needs of entomologists and other insect scientists. ESA stands as a resource for policymakers and the general public who seek to understand the importance and diversity of earth's most diverse life form—insects. Learn more at www.entsoc.org.

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