

Wildland Fire and Invasive Species Research Overview

The interaction between invasive plant species and wildfire is presenting increased risks to the integrity of natural ecosystems, human safety, and rural economies throughout the U.S. Recognizing the growing severity of this issue, in 2020 the National Invasive Species Council (NISC) and the Wildland Fire Leadership Council (WFLC) formed a partnership to: identify opportunities for coordination; enhance collaboration and engagement; and leverage federal activities. In October 2022, a memo was published from the NISC and WFLC Co-Chairs outlining thirteen opportunities to advance the integration of invasive plant and wildland fire management ([October 2022 memo](#)). A Federal task team, including experts from DOC/NOAA, DOD, DOE, DOI, and USDA, has actively advancing elements in the memo with the goal of leveraging interagency coordination and individual agency activities. The memo outlines ongoing efforts and needs for future implementation in three key areas: 1) developing science support for implementation; 2) identifying and supporting outputs in key geographies; and 3) facilitating outreach and engagement.

Since developing science support has been identified as a key theme underpinning work to advance integration of invasive species and wildland fire efforts, the task team is looking at issues related to promoting key research questions, as well as supporting information sharing and coordination on agency priorities. This overview, along with input from discussions within the task team, agency research programs, and engagement with regional networks, presents a broad review of published scientific literature, research, and species-specific research needs.

Research and Publications Database

Wildland Fire and Invasive Species Ecology

[Wildland Fire and Invasive Species Publications \(doi.gov\)](#)

This database includes publications from 2000 to the present. Most of the existing research explores the relationship between invasive plants, particularly invasive grass species, and wildfire risk, fire regimes, impacts to native plant communities, and loss of wildlife habitats. Research topics are generally grouped into the following research areas in relation to fire and invasive species:

- Climate Change and Modeling
- Annual Invasive Grass Species Expansion and Management
- Plant Community Structure
- Vegetation Mapping and Modeling
- Post-Fire Invasion and Restoration
- Genetic Studies
- Social Issues
- Grazing Management

The database also includes several agency reports, science synthesis documents, or comprehensive landscape plans that address climate change, restoration, and fire management in consideration of invasive plant species.

Data Gaps Identified

<https://www.doi.gov/media/document/wildland-fire-and-invasive-species-future-research-needs>

In addition to compiling research, we identified research needs and data gaps as stated in the existing research. This is a living document that will be updated as the NISC/WFLC task team deems necessary. Identifying science priorities and building a research agenda is critical for supporting and advancing the interdisciplinary relationship between resource areas (e.g., native and invasive plants, wildlife, fuel/fire management, range, soils) within land management agencies. The data gaps identified suggest decision-support tools, best practices, and other guidance would further enable researchers, land managers, universities, policymakers, and local communities to address the complex ecological challenges of invasive plant species and wildfire while trying to restore habitats.

Invasive Plant Species List

<https://www.doi.gov/media/document/invasive-plant-species-list>

The intent of the species list is to determine what species need further research to determine their impacts on wildland fire severity and frequency that may impact future fire conditions. The Forest Service, Fire Effects Information System (FEIS) has reviewed 142 non-native invasive plant species to correlate their plant characteristics, habitat, and ecology to fire regimes and species response to fire. Those species were compared to other species list to create a list of invasive plant species that were not include in the FEIS database but are of ecological concern. These could be prioritized (e.g., by region) for assessment to better assist land managers.

LINKS TO SPECIES LISTS USED

USFS Forest Inventory & Analysis	https://usfs-public.app.box.com/v/FIA-InvasiveSpeciesList
USFS Fire Effects Information System	https://www.feis-crs.org/feis/faces/SearchByOther.xhtml
USGS INHABIT	https://gis.usgs.gov/inhabit/
USGS Invasive Annual Grasses Dataset	https://www.usgs.gov/centers/fort-collins-science-center/science/invasive-annual-grass-iag-spatial-dataset-compilation
USGS Science Based Catalog	https://www.sciencebase.gov/catalog/items?q=invasive
USDA APHIS	https://www.aphis.usda.gov/sites/default/files/weedlist.pdf
USDA other	https://www.invasivespeciesinfo.gov/subject/lists
Hawaii Invasive Species Council	Hawaii Invasive Species Council Invasive Species Profiles
Grassland & Sagebrush Conservation Portal	Sagebrush Resources Grassland & Sagebrush Conservation Portal (arcgis.com)