NISC
NATIONAL INVASIVE SPECIES COUNCIL
SECRETARIAT

# INVASIVE SPECIES

## *Impacts on Infrastructure*

### THE ISSUE

Because non-native species typically enter the United States (U.S.) through ports of entry in urban environments, some of the first observable impacts may be to infrastructure. In many cases, species that initially impacted infrastructure have had devastating impacts on ecological systems, agriculture, and/or fisheries when they spread into less modified landscapes and waterways. The U.S. currently lacks the comprehensive authority, or clarity of authority, necessary to effectively prevent, eradicate, and control invasive species that impact the human-built environment ("infrastructure"). We are thus unable to rapidly respond to some of the most damaging invasive species. We cannot effectively allocate the resources necessary to address invasive species that threaten public security, undermine federal infrastructure investments, or cause homeowners to incur substantial repair and maintenance costs.

(Right) Cheatgrass (*Bromus tectorum*) fuels fires that can destroy homes and businesses. (Left) Dreissenid mussels clog pipes and intake valves, costing agriculture and energy facilities millions of dollars in economic losses.

### CALL FOR ACTION

The *2016–2018 National Invasive Species Council (NISC) Management Plan* action items 4.2.1 and 4.2.2 call for the compilation of case studies of invasive species impacts on infrastructure in the United States, as well as the development of guidance that enables federal agencies to prevent the impacts of invasive species on U.S. infrastructure assets.

*Download the NISC Management Plan:* on.doi.gov/2xh8h7m

### INFRASTRUCTURE

*The human built environment.*

### ISAC WHITE PAPER RECOMMENDATIONS

1. Work with relevant federal agencies to help them assess the physical and economic impacts of invasive species on the infrastructure projects that they manage.
2. Work with relevant federal agencies to quantify the actual cost of invasive species management to federally owned or supported infrastructure.
3. Adopt innovative construction practices that will prevent future impacts from invasive species.

*Read the Infrastructure White Paper:*
on.doi.gov/2y14WNR

## EXAMPLES

- As of 2016, more than $6 million has been spent at the Hoover, Davis, and Parker Dams collectively to manage quagga mussels (*Dreissena rostriformis bugensis*). An additional $10.3 million is anticipated to be spent at those three dams to manage quagga mussels during the next 10 years.[1]
- Raspberry/tawny crazy ants (*Nylanderia fulva*) short out electrical systems in private homes, businesses, and at federal facilities, including at the Port of Houston and NASA's Johnson Space Center. These power outages can be costly and create safety risks.
- Formosan termites (*Coptotermes formosanu*) impact residential, commercial, and federal buildings, including historical landmarks. A 1998 study concluded that Formosan termites exist in more than a dozen southern states, costing an estimated $1 billion a year in property damages, repairs, and control measures ($300 million in New Orleans, LA).[2] The total cost of impacts has likely increased substantially over the last 20 years.
- Aquatic weeds, such as water hyacinth (*Eichhornia crassipes*) and hydrilla (*Hydrilla verticillata*), choke navigation, dams, and water supply lines. These infrastructure impacts can have substantial financial implications, and also adversely impact food production and human health.
- Invasive grasses, such as buffelgrass (*Pennisetum ciliare*) and cheatgrass (*Bromus tectorum*), literally fuel fires that burn down buildings and damage transportation infrastructure.
- Nutria (*Myocaster coypus*), sucker mouth catfish (Subfamily *Hypostominae*), and other burrowing invasive species are known to compromise the structural integrity of roads, dams, levees, and bridges - thereby jeopardizing the safety of entire communities. Nutria contributed to a recent levee failure resulting in flood damage in excess of $500 million.[3]

1 Bureau of Reclamation Research and Development Office of Science and Technology Program (2016) Mussel-Related Impacts and Costs at LCDO Facilities (Hoover, Davis, and Parker Dams). Final Report ST-2016-1608. September 2016.

2 Brown, PL (2000) A plague in New Orleans, with jaws of steel. *New York Times,* May 14; Suszkiw J (1998) The Formosan termite: a formidable foe! Agricultural Research 46(10): 4–9.

3 Orlandini S, Moretti G, Albertson JD (2015) Evidence of an emerging levee failure mechanism causing disastrous floods in Italy. Water Resour. Res. 51: 7995–8011. doi:10.1002/2015WR017426.

## PROGRESS

In December 2016, the Invasive Species Advisory Committee (ISAC) adopted a white paper entitled, "Invasive Species Impacts on Infrastructure." Among other things, ISAC recommended that NISC guide a process to assess invasive species impacts on federal infrastructure and, as feasible, to quantify the federal expenditures for managing invasive species that impact federal infrastructure.

*Read the Infrastructure White Paper:* on.doi.gov/2y14WNR

## NEXT STEPS

The NISC Secretariat is working with federal agencies to identify the breadth of impacts invasive species are having on federally managed infrastructure. For example, the NISC Secretariat is engaging a task team of interagency experts to analyze the information available on invasive species impacts to federal infrastructure, as well as to identify the priority actions that the federal government needs to take to effectively prevent, eradicate, and control invasive species that impact infrastructure. A report is anticipated in early 2018.

Questions and communications can be directed to:

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