

# Nuisance Neonatives

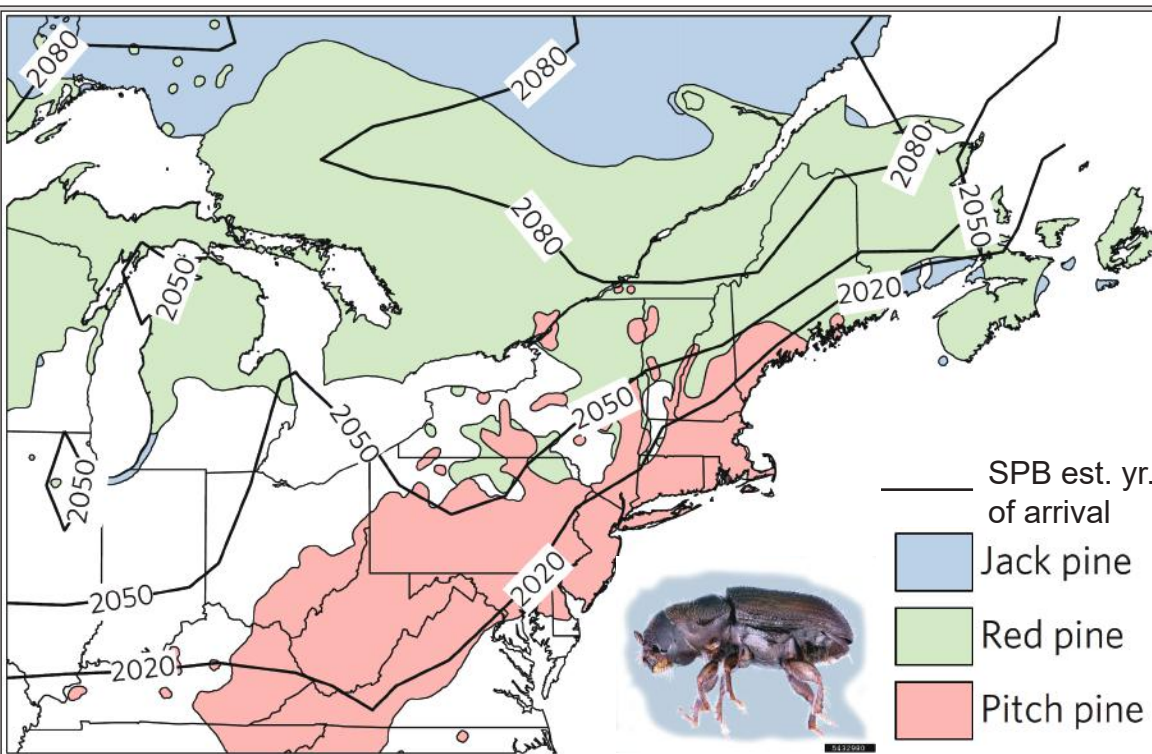
## Guidelines for Assessing Range-Shifting Species

### Summary

Native species will need to shift their ranges northward and upslope to keep pace with climate change in the Northeast U.S. However, this may cause some range-shifting species to have undesirable consequences in their expanded range. We provide a framework to identify the likelihood that a range-shifting species will become problematic and offer suggestions to minimize impacts from these species in the recipient habitat.

### What are nuisance neonatives?

Neonatives are native range-shifting species that have established themselves beyond their historical range. Unlike invasive species, neonatives could disperse into new areas unassisted by humans. However, like invasive species, neonatives are expanding into novel environments at an accelerated rate due to human-induced climate change (see Figure 1 for an example of a nuisance neonative species). The impacts of their movement to new recipient communities can vary from minimal to massive (e.g., species extinctions).



**Figure 1.** The southern pine beetle (SPB) is a forest pest native to the southeastern U.S. It is rapidly shifting north in response to warming. SPB targets many native pine species. This species expansion is anticipated to result in significant economic and ecological damage to northeastern U.S. native-pine forests.

Figure adapted from Lesk et al. (2017) *Nature*.

### Management actions

- ★ Survey for the expansion of neonatives in your management area
- ★ Monitor low-risk neonatives for impacts & control high-risk neonatives when feasible
- ★ Prioritize neonatives based on likelihood of impact to the recipient habitat (see reverse for guidance)
- ★ Expand public outreach on nuisance neonatives & facilitate discussions on whether management action should be implemented

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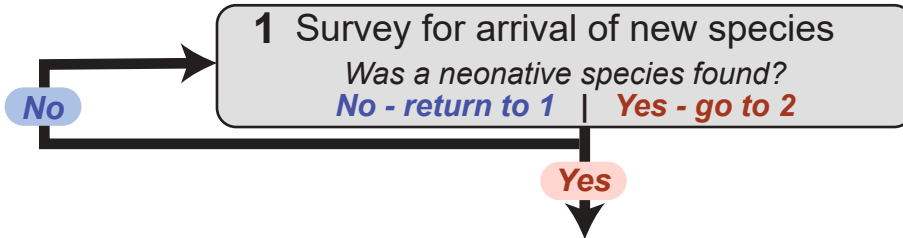
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# How can we prioritize neonatives?



## 2 Predict neonative species' likelihood of impact by examining its traits

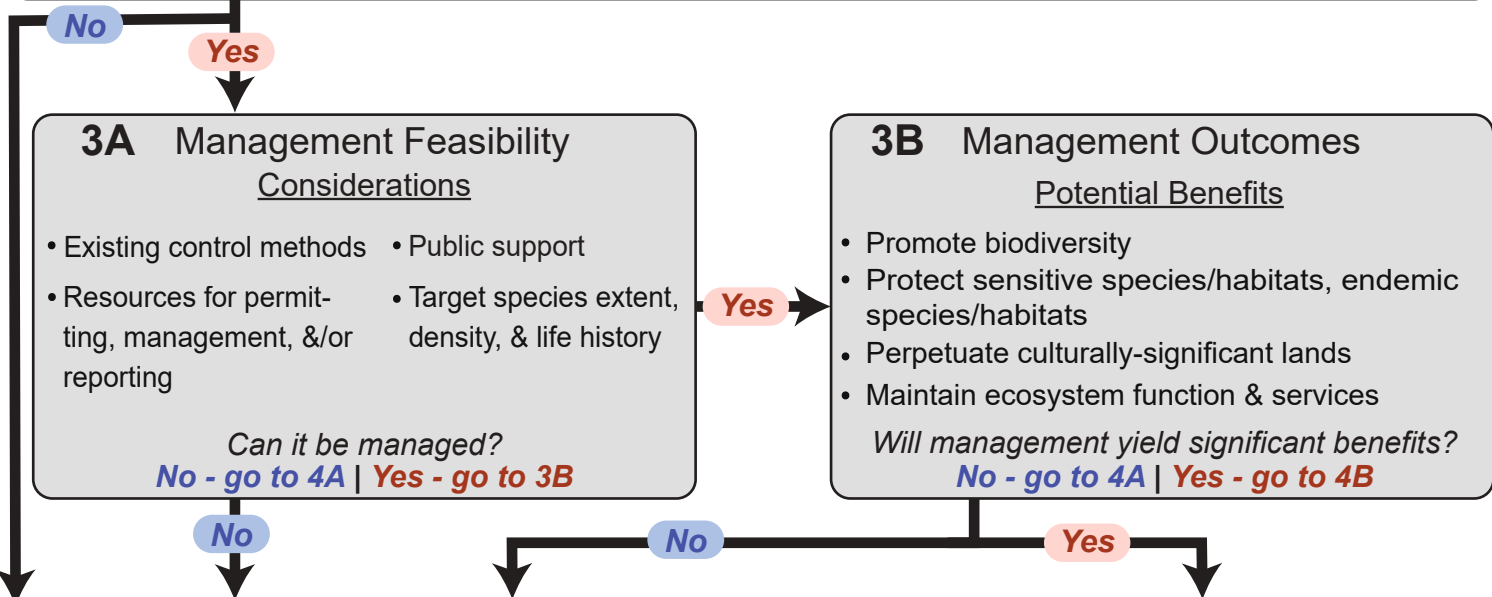
### Risky Traits

- High reproductive output
- High dispersal ability
- Common in native range
- Identified **invasive** elsewhere
- Ecosystem engineer
- Disease/parasite carrier

**Black Locust is a high-risk neonative tree** expanding its native range (Appalachian region) due to climate change. This species thrives in a variety of habitats - making it a strong competitor. It is a nitrogen-fixer, which may promote other invasive species, even in resilient areas. Ornamental trade spreads this species in and beyond its native and neonative ranges. Outside the U.S., it is invasive.



Does the neonative exhibit one or more **risky** traits? No - go to 4A | Yes - go to 3A



### 3A Management Feasibility Considerations

- Existing control methods
- Resources for permitting, management, &/or reporting
- Public support
- Target species extent, density, & life history

Can it be managed?  
 No - go to 4A | Yes - go to 3B

### 3B Management Outcomes Potential Benefits

- Promote biodiversity
- Protect sensitive species/habitats, endemic species/habitats
- Perpetuate culturally-significant lands
- Maintain ecosystem function & services

Will management yield significant benefits?  
 No - go to 4A | Yes - go to 4B

### 4A Monitor for impacts

**Common ragweed is a low-risk neonative herb** predicted to expand its range in the Northeast with climate change. It is a leading cause of hay fever, but it is also valuable to many insect and bird species. **Action:** Monitor for presence in areas with higher human populations.



### 4B Contain/eradicate

**Lone star tick is a high-risk neonative** steadily expanding north. These ticks are vectors for human and animal diseases. **Action:** Ticks are associated with some invasive plant species (e.g. Japanese barberry). Controlling invasive plants that provide tick habitat may help limit the Lone star tick's range expansion.

