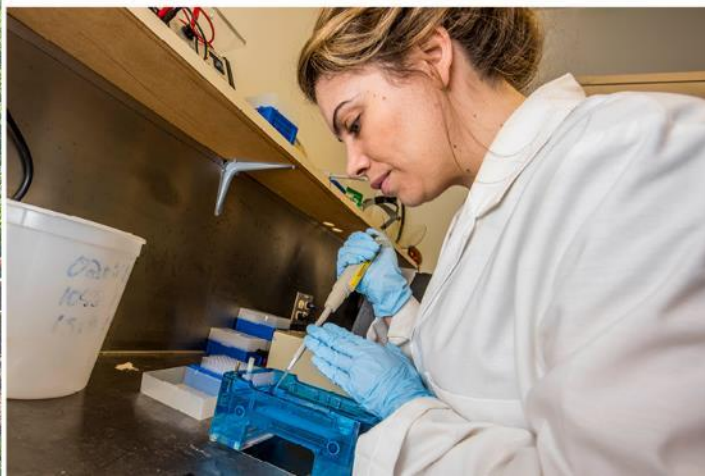




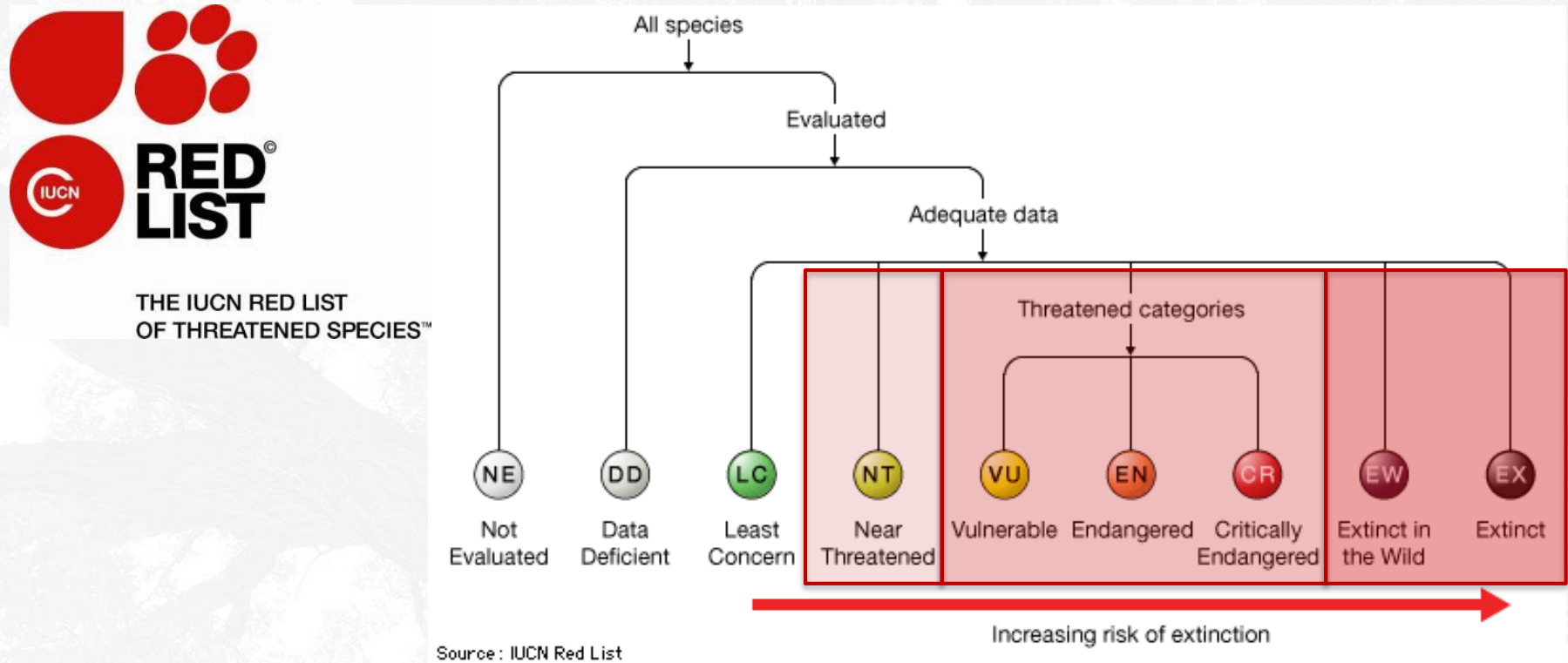
*12th Meeting of the Continental Dialogue on
Non-Native Forest Insects & Diseases
August 17, 2016*

The IUCN Red List: A tool for monitoring forest health

Dr. Murphy Westwood, Tree Conservation Specialist



The Red List of Threatened Species



- Population size
- Population fragmentation
- Geographic range
- Habitat quality
- Threats
- Level of exploitation

Threat categories are based on demographic & ecological data

Enter Red List search term(s)



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VIEW MAP

Abies fraseri

NOT EVALUATED	DATA DEFICIENT	LEAST CONCERN	NEAR THREATENED	VULNERABLE	<ENDANGERED>	CRITICALLY ENDANGERED	EXTINCT IN THE WILD
NE	DD	LC	NT	VU	EN	CR	EW

[Summary](#)

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Balsam woolly adelgid



76,000 species and
counting...

Justification:

The decline of the population due to an alien pathogen (insect) since the 1960s has been very substantial and is apparently ongoing, probably at a slower rate than initially. Its area of occupancy when calculated on a fairly comprehensive set of herbarium specimen based localities (some may now be dead trees only) even when using a grid size of 4×4 km per locality (22 collections = 16 localities) remains well under 500 km² (the threshold for Endangered) and with a continuing decline this species meets the B2 criterion for Endangered.

Common Name(s):

English – Fraser's Fir, Fraser Fir, She Balsam

Synonym(s):

Pinus fraseri Pursh

Assessment Information [\[top\]](#)

Red List Category & Criteria: Endangered B2ab(ii,iii,iv,v) [ver 3.1](#)

Year Published:

2013

Date Assessed:

2011-05-11

Assessor(s):

Farjon, A.

Reviewer(s):

Thomas, P. & Stritch, L.

Justification:

The decline of the population due to an alien pathogen (insect) since the 1960s has been very substantial and is apparently ongoing, probably at a slower rate than initially. Its area of occupancy when calculated on a fairly comprehensive set of herbarium specimen based localities (some may now be dead trees only) even when using a grid size of 4×4 km per locality (22 collections = 16 localities) remains well under 500 km² (the threshold for Endangered) and with a continuing decline this species meets the B2 criterion for Endangered.



Habitat and Ecology [top]

Habitat and Ecology:	On the highest slopes and summits of the Appalachian Mountains, between 1,200 m and 2,038 m a.s.l., usually best developed on north-facing slopes. The soils are commonly podzolized and moderately acid. The climate is humid, with cool summers and cold winters with heavy snowfall, annual precipitation varies between 850 mm and 2,000 mm. Fraser Fir occurs in scattered populations, sometimes pure at the highest elevations, but more often mixed with <i>Picea rubens</i> and <i>Betula papyrifera</i> above 1,500 m, at lower elevations also with <i>Thuja caroliniana</i> , <i>Betula alleghaniensis</i> , <i>Sorbus americana</i> , <i>Asper</i>
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Threats [top]

Major Threat(s):

The disjunct subpopulations of this fir, restricted to the mountain tops and their north-facing slopes of the southern Appalachians, are susceptible to destruction by windfall and fire. However, by far the most damaging agent is an insect, the Balsam Woolly Adelgid (*Adelges piceae*) discovered in 1957 in *Abies fraseri* on Mt. Mitchell. This alien pest has spread quickly to all subpopulations causing massive dieback through impairment of translocation flow in the cambium. Millions of trees had died by the 1980s and only one substantial population (Mt. Rogers, Virginia) remained largely unaffected (Beck 1990). After massive die-back competitors such as *Picea rubra* and *Betula* sp. can take over dominance in several locations in North Carolina (DeSelm and Boner 1984).

as an ornamental tree for gardens with several cultivars named. At least in the UK it does not usually have a very long life as a garden tree

Threats [top]

Major Threat(s):	The disjunct subpopulations of this fir, restricted to the mountain tops and their north-facing slopes of the southern Appalachians, are susceptible to destruction by windfall and fire. However, by far the most damaging agent is an insect, the Balsam Woolly Adelgid (<i>Adelges piceae</i>) discovered in 1957 in <i>Abies fraseri</i> on Mt. Mitchell. This alien pest has spread quickly to all subpopulations causing massive dieback through impairment of translocation flow in the cambium. Millions of trees had died by the 1980s and only one substantial population (Mt. Rogers, Virginia) remained largely unaffected (Beck 1990). After massive die-back competitors such as <i>Picea rubra</i> and <i>Betula</i> sp. can take over dominance in several locations in North Carolina (DeSelm and Boner 1984).
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Conservation Actions [top]

Conservation Actions:	Methods to control this introduced insect are still being researched but none have been fully effective; some small scale protection can be provided by chemical insecticides. The latter strategy is very costly and is only used in plantations for Christmas trees and in some high profile recreation areas. In some stands that have died, there is massive seedling recruitment, and some of these seem to go through new infestations only partially damaged. It is hoped that eventually resistance may build up from these individuals.
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- ☐ 11 Climate change & severe weather (27)
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- ☐ 4 Transportation & service corridors (1)
- ☐ 5 Biological resource use (23)
- ☐ 6 Human intrusions & disturbance (14)
- ☐ 7 Natural system modifications (54)
- ☐ 8 Invasive and other problematic species, genes & diseases (1)
- ☐ 9 Pollution (7)

Abies bracteata (Santa Lucia Fir)
Status: Near Threatened [ver 3.1](#)
Pop. trend: stable



Abies fraseri (Fraser's Fir)
Status: Endangered B2ab(iii,iv,v) [ver 3.1](#)



[iii\) ver 3.1](#)



[ed C1 ver 3.1](#)



[Alder\)](#)
[eaten ver 2.3](#)



[iii,iv,v\) ver 3.1](#)



Pop. trend: decreasing

Arctostaphylos catalinae
Status: Vulnerable D2 [ver 2.3](#)
(needs updating)



Current search:

Modified from "Trees US and Canada"

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Species

Search by location:

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United States

(Native)

Search by life history:

Tree - large

Tree - size unknown

Tree - small

Refinements

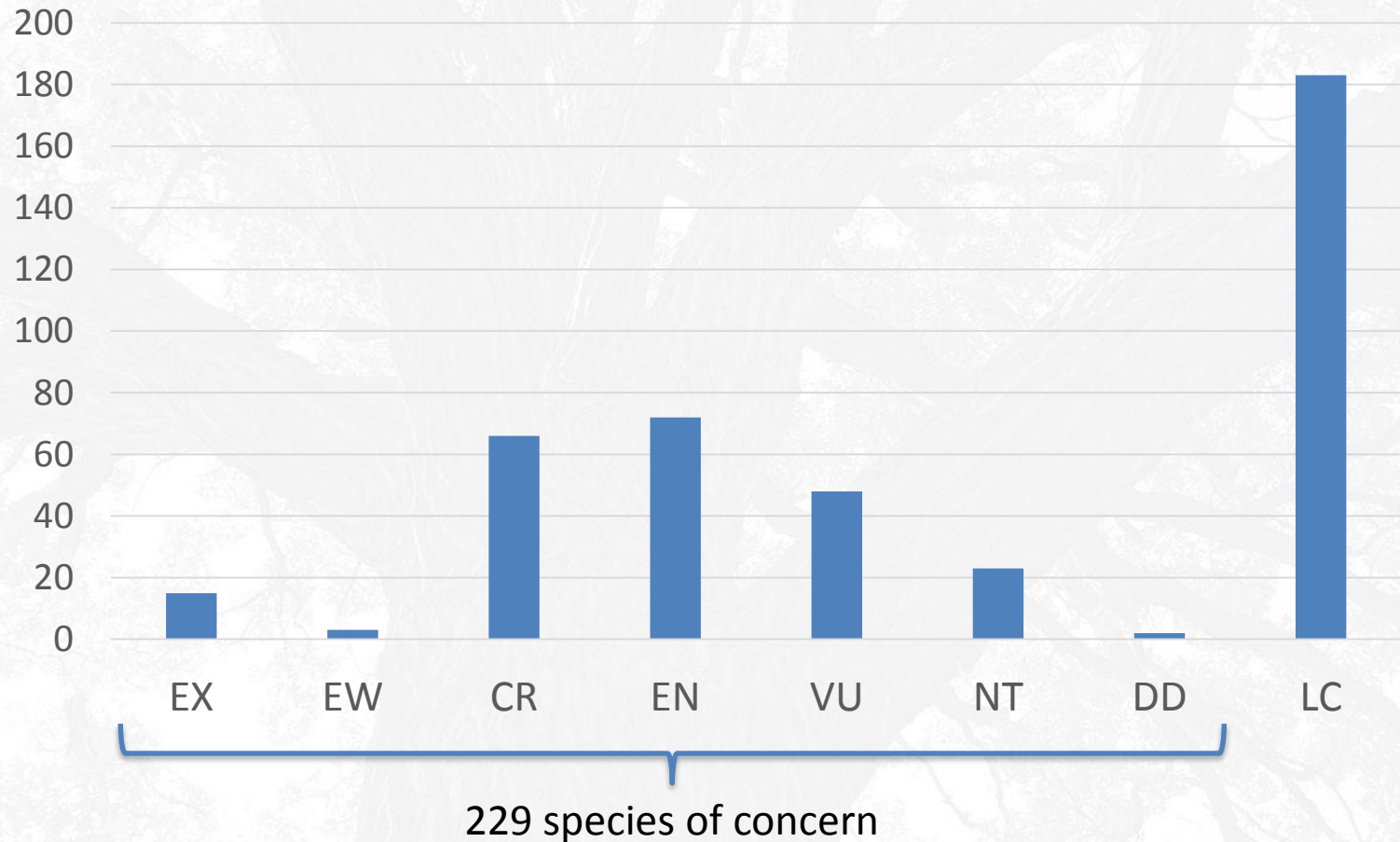
☒ Search by assessment:

 Categories: EX, EW, CR, EN, VU, NT or
LR/nt, DD

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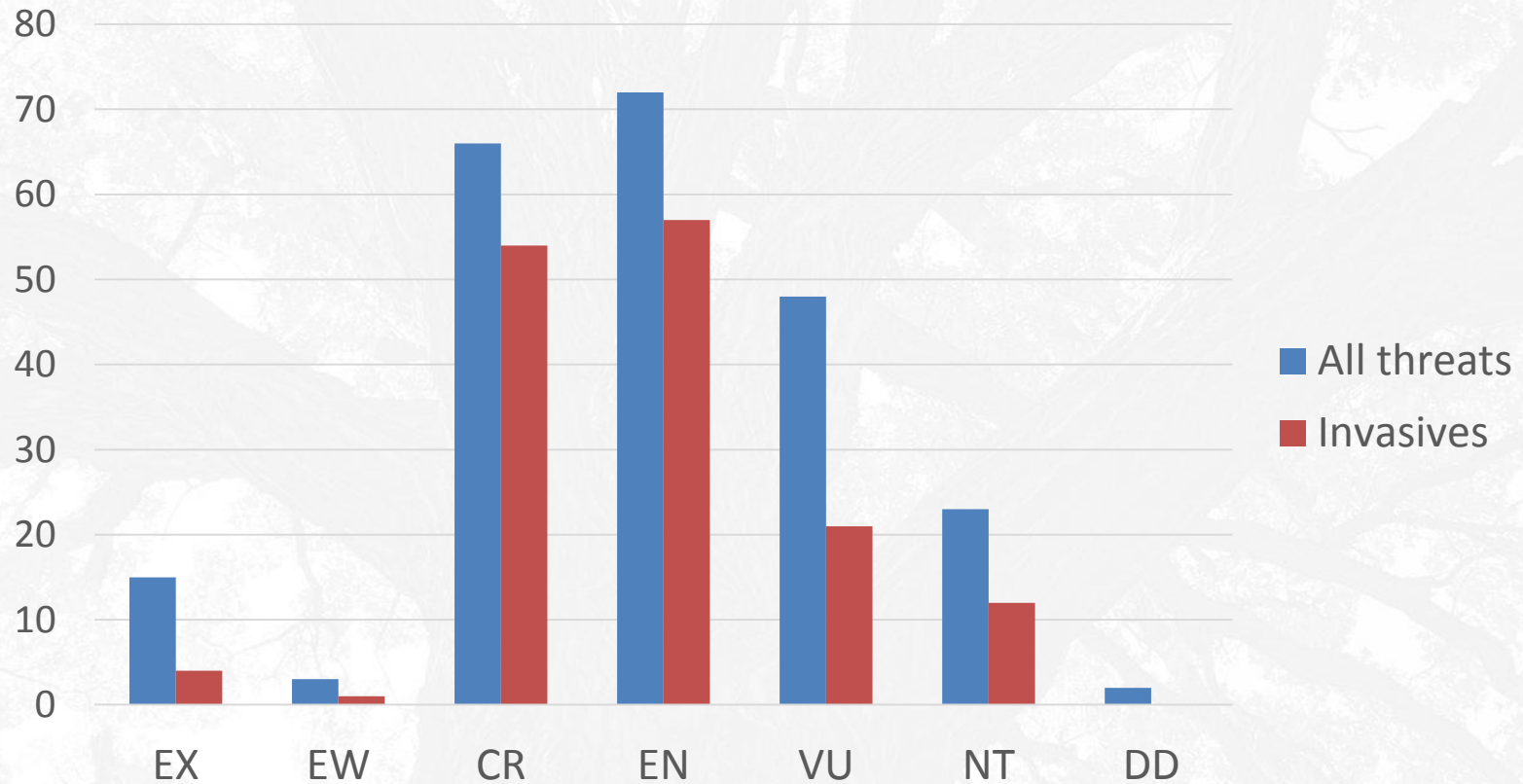
Trends and drivers of forest threat

North American tree species on IUCN Red List



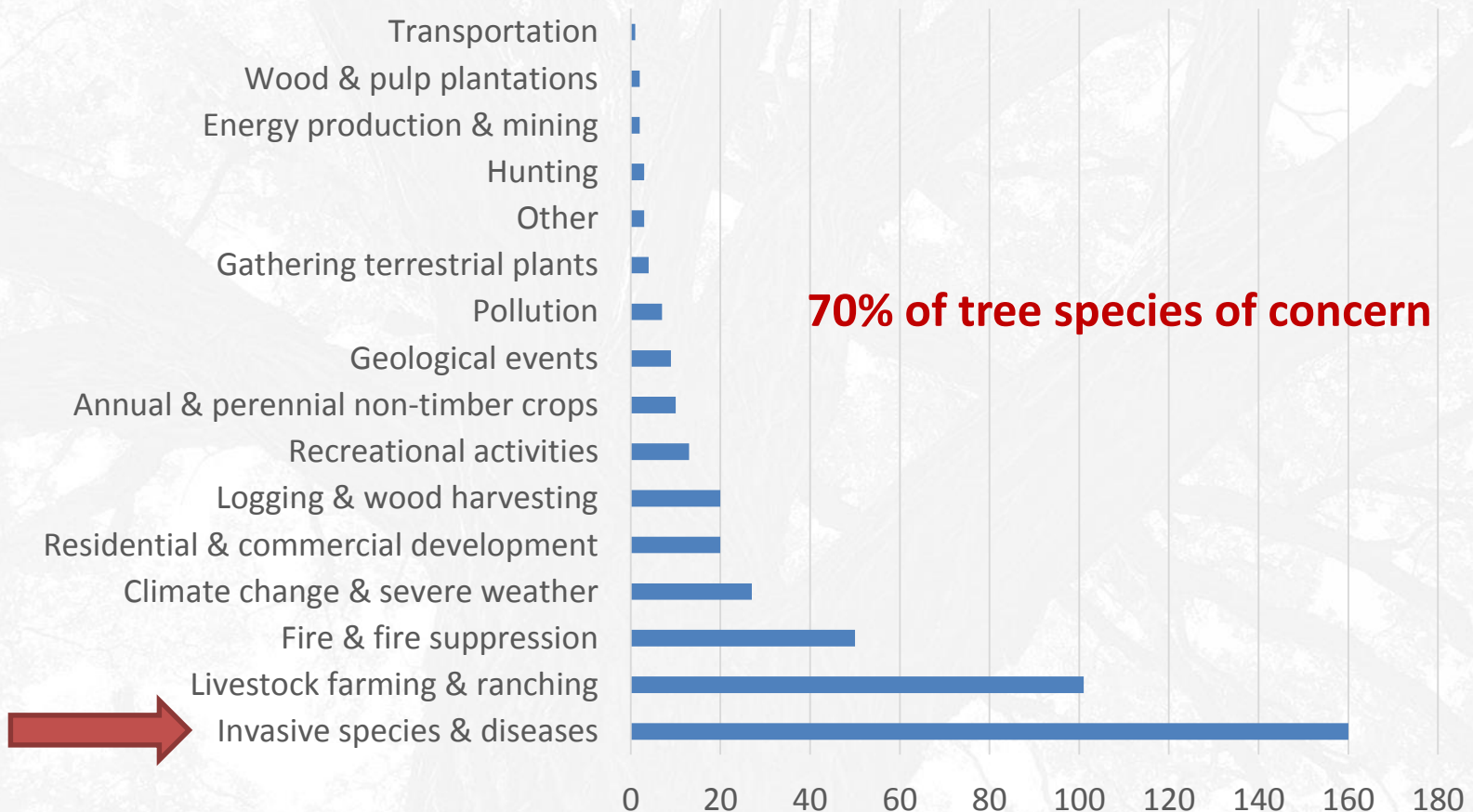
Trends and drivers of forest threat

North American trees threatened by non-native pests/diseases



Trends and drivers of forest threat

Threats to North American tree species



Using the IUCN Red List

Limitations

- Incomplete information
 - 412 tree species
- Not compiled systematically
- Assessments out of date
 - 42% >10 years old
- Slow to react to rapid invasions
 - EAB/*Fraxinus profunda*

Applications

- Species snapshots
 - Threats
 - Ecology
 - Habitat
 - Population trends
- Advanced query options
 - Status
 - Threat class
 - Life form
 - Date assessed
 - Taxonomic rank
 - Geographic region/state
- Analyze trends
- Identify gaps in knowledge

IUCN Red List of Threatened Species

