

INVASIVE SPECIES INTERMOUNTAIN REGION

PRIORITY LANDSCAPE RISK ASSESSMENT EXAMPLE

Expansion of current invasive species in the Intermountain Region and likelihood of new invaders is recognized as a serious risk to health, ecosystem functions and economies. A species is considered to be invasive if it meets these two criteria:

1. It is nonnative to the ecosystem under consideration, and
2. Its introduction causes or is likely to cause economic or environmental harm or harm to human health.

The National Strategy and Implementation Plan for Invasive Species Management; the Intermountain Region Invasive Species Strategy; and the Intermountain Region Business Plan provide strategic goals, objectives and priorities. This assessment tiers under these important guiding documents.

Current Situation

Invasive Plants (Noxious Weeds) of concern by States are categorized as either a general species list or in descending priority categories as follows:

- Idaho: 9 Statewide Eradication; 24 Statewide Control; 24 Statewide Containment
- Nevada: 29 Active Eradication; 8 Eradication or Control; 10 Discretionary Control
- Utah: 19 General Listing
- Wyoming: 62 General Listing

Invasive Aquatic Organisms of concern in the Intermountain Region include the following:

- Eurasian Water Milfoil
- New Zealand Mudsnails
- Quagga Mussels
- Zebra Mussels
- Whirling Disease
- Chytrid Fungus
- Didymo
- Red Lipped Snail
- Brook Trout
- Brown Trout

Invasive Invertebrates and Pathogens of concern in the Intermountain Region include:

- Chronic Wasting Disease
- White Pine Blister Rust
- Dutch Elm Disease
- Gypsy Moth
- Banded Elm Bark Beetle
- Japanese Beetle

Invasive Species Risk – Natural Vulnerability and Human Intervention

Ecoregion delineations focus on naturally occurring environmental attributes. Natural barriers such as climatic variance or soil, water and vegetation features, etc. traditionally inhibited natural spread of a species from one ecological unit to another. However, human intervention destabilizes niche persistence and facilitates spread into new ecological sites. Thus, an assessment of ecoregion risk provides limited value in determining pathway vectors and risk of invasion. More importantly, tracking human activities as major vectors along with general susceptibility based on ecoregion attributes and defending “priority landscapes” should be beneficial to IS risk assessments. Thus, this example focuses on numerous pertinent criteria including vectors for spread, availability of an IS to that vector, and susceptibility of “priority landscapes” within ecoregions.

Purpose

The purpose of this risk assessment is to (1) provide one example of a Priority Landscape risk assessment, (2) suggest priority landscapes to maintain as IS free; and (3) identify associated vectors, threats, and susceptibility examples. Resource and social values for categories of priority landscapes, ecoregion divisions, and noxious weeds as identified by the Regional Invasive Species Issues Team, were assigned and evaluated.

Risk Assessment Criteria

The Intermountain Region embraces the concept of invasive species management on landscape scales, through partnerships, to maximize efficiency and effectiveness and protect high value un-infested areas. It is also necessary to develop an analysis of risk, based on local criteria, at the Forest level. This evaluation of risk, although subjective, displays sample criteria and scoring for (1) direct impacts to priority landscapes on NFS lands, (2) indirect impacts from partner lands with common vectors, and (3) protecting non-NFS “priority landscapes” where appropriate. Each criterion is awarded from one to ten points, ten being the highest value, to determine a priority ranking.

“**Priority Landscape**” and “**Ecoregion**” evaluations are based on the following criteria:

1. Is this a human health issue?
2. Is an intact naturally functioning ecosystem at risk?
3. Does the area have high research values? (RNA's)
4. Are legal mandates to USFS involved?
5. Is there a presence of significant vectors?
6. Is threatened and endangered species habitat present?
7. Is there a high level of human activity present? (Disturbance)
8. Are wild and scenic area values present? (Highways, Rivers, etc.)
9. What is the level or likelihood of infestation?
10. Is Prevention and EDRR likely to succeed in the area?

REGIONAL “PRIORITY LANDSCAPE” EVALUATION

PRIORITY LANDSCAPES	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	SCORE
Research Natural Area	0	9	10	0	2	7	2	6	2	7	45
National Recreation Area	4	5	0	7	10	0	10	7	2	9	47
Wilderness Area	0	10	10	7	7	8	8	10	6	10	76
Municipal Watershed	10	8	0	0	7	0	4	0	9	8	46
Capitol Forest	5	5	0	0	10	0	8	4	8	5	45
Scenic Byway	0	9	3	0	10	1	7	10	5	9	54
Wild & Scenic River	0	10	7	7	8	8	8	10	6	10	74
National Park	0	10	8	0	10	8	10	10	6	10	72
National Monument	0	7	0	0	7	0	8	7	7	8	44
Urban Interface	10	2	2	0	10	1	10	2	10	2	49
Interstate Travel Corridor	7	0	0	0	10	0	10	5	8	3	43
Primitive Area	0	10	10	0	7	8	8	10	6	10	69
Fishery Habitat	0	10	5	7	10	7	8	7	3	8	65
Wildlife Habitat	0	8	5	7	3	4	3	9	4	9	52
Permitted Rangelands	0	7	3	0	8	1	6	5	7	9	46
Forested Vegetation	0	9	6	0	2	3	2	9	0	1	32
Tribal Land	0	5	1	0	9	0	6	3	6	5	35
ECOREGIONS											
M261	0	9	9	0	10	5	10	10	10	10	73
Division 310	0	9	5	0	6	1	3	10	9	8	51
Division 320	0	9	5	0	8	10	10	9	9	9	69
M330	0	9	6	0	5	7	5	9	6	8	55
Division 340	5	4	3	0	10	1	10	4	10	9	56
M340	0	9	9	0	5	5	4	10	5	10	57

The “**Noxious Weeds**” evaluation is based on a different set of criteria:

1. Aggressive nature
2. Health hazards
3. Significant seed sources available
4. Highly windborne
5. Spread highly associated with human activity
6. Priority landscapes threatened
7. Effective management tools available
8. Potential ecosystem disruption
9. State priority listing
10. Low current infestations (higher score equals low level of infestation)

NOXIOUS WEEDS	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	TOTAL SCORE
State EDRR List											Top Priority
Leafy Spurge	10	3	10	0	5	10	8	10	5	5	66
Rush Skeletonweed	5	0	10	10	2	10	6	7	6	5	61
Yellow Starthistle	8	7	10	7	5	10	8	9	5	5	74
Knapweed Species	6	1	10	1	7	7	7	8	5	4	56
Salt Cedar	9	0	10	1	1	9	9	10	10	5	64
Cheatgrass	6	5	10	1	2	2	2	10	3	6	47
Musk Thistle	2	2	5	5	3	2	8	1	2	9	39
Scotch Thistle	3	3	5	5	3	2	6	2	2	8	39
Dyer’s Woad	5	0	8	1	7	8	8	7	5	9	58
Dalmatian Toadflax	3	0	3	0	8	9	5	3	2	8	41
Canada Thistle	7	0	8	6	1	9	3	2	1	2	39
Ox-eye Daisy	3	0	1	1	3	7	5	2	2	8	32
Orange Hawkweed	3	0	1	1	2	7	5	2	5	8	34
Whitetop	9	0	8	2	2	3	2	5	2	4	37
Perennial Pepperweed	9	0	6	1	2	3	2	5	2	3	33

Yellow Toadflax	2	0	3	0	0	10	3	3	2	9	32
Eurasian Watermilfoil	10	8	10	0	10	9	7	10	10	4	78
Mediterranean Sage	7	0	2	2	2	1	5	5	8	10	42
Giant Hogweed	5	10	1	0	9	0	10	0	9	10	54
Purple Loosestrife	6	0	8	0	6	5	8	10	5	8	56
Sulphur Cinquefoil											
Sahara Mustard	6	0	2	4	2	10	8	8	5	10	55
Medusahead	7	5	5	1	3	1	7	6	2	10	47

Scorecard Results

Based on this sample scorecard the top priorities would include:

PRIORITY LANDSCAPES

1. Wilderness & Primitive Areas
2. National Parks
3. Wild & Scenic Rivers
4. Primitive Areas
5. Fishery Habitat
6. Scenic Byways
7. Wildlife Habitat
8. Urban Interface
9. National Recreation Areas
10. Permitted Rangelands

ECOREGIONS

Emphasis would be on the following Ecoregions, listed by priority:

1. M261 (Sierra Nevada)
2. Division 320 (Mojave Desert)
3. M340 (Southern Mountains)
4. Division 340 (Basins)
5. M330 (Northern Mountains)
6. Division 310 (Grand Canyon/Navajo)

NOXIOUS WEEDS

Priority noxious weeds would be the following:

1. State eradication lists where developed
2. Eurasian Watermilfoil
3. Yellow Starthistle
4. Leafy Spurge

5. Salt Cedar
6. Rush Skeletonweed
7. Dyer's Woad
8. Knapweed species
9. Sahara Mustard
10. Giant Hogweed

Regional level species specific Risk Assessments

The use of species specific risk assessments at the regional level **is not recommended**. The noxious weed example clearly depicts the top ten "big hitters" from a regional perspective. However, it also clearly identifies a host of noxious weeds which would not be priorities with subsequent non-alignment to important partner programs and laws.

Noxious weed densities have been dramatically reduced in some areas. Maintaining these historic investments may be important on some Forests but not on others.

Forest Activities

Forests will develop 5 year Strategic Invasive Species Plans based on Ecoregions and local priorities. Prevention and Early Detection and Rapid Response will be priority activities in protecting un-infested "priority landscapes".

Invasive Plants

In general, invasive plant species are limited to elevations below 10,000 feet and open canopy forests or rangelands. Closed canopy forests naturally inhibit shade intolerant invasive plants which comprise most of the current State listed noxious weeds in the Intermountain Region. However, species adaption may eventually overcome this biological barrier and shade tolerant species are expanding their range.

Invasive Aquatic Species

Aquatic environment susceptibility depends mainly on availability of IS; the level of human vectors; optimal water temperatures; and connectivity of watershed components facilitating rapid spread. Warm water corridors such as the lower Colorado River and associated reservoirs are a current primary focus. Additional infestations of aquatic invertebrates are known to exist in cold water corridors, and although they may have a slower rate of reproduction and spread, they are still major concerns to high quality fisheries.

Invasive Terrestrial Invertebrates and Pathogens

Insects and pathogens typically occupy niches in urban settings as well as Forests. Most IS issues within these taxa focus on urban Forests with the possibility of spreading into adjacent forested public lands.

Ecoregion and Forest Associations

200 – Humid Temperate Domain

260 – Mediterranean Division

- M261 – Sierra Nevada Section (Humboldt-Toiyabe NF)

300 – Dry Domain

310 – Tropical/Subtropical Steppe Division

- 313A – Grand Canyon Section (Dixie NF)
- 313B – Navajo Canyonlands Section (Manti-Lasal NF)

320 – Tropical/Subtropical Desert Division

- 322A – Mojave Desert Section (Humboldt-Toiyabe NF)

M330 – Temperate Steppe Regime Mountains

- M331A – Yellowstone Highlands Section (Salmon-Challis NF)
- M331D – Overthrust Mountains Sections (Salmon-Challis NF)
- M331E – Uinta Mountains Section (Wasatch-Cache & Ashley NF)
- M331J – Wind River Mountains Section (Bridger-Teton NF)
- M332A – Idaho Batholith Section (Payette NF)
- M332E – Beaverhead Mountains Section (Salmon-Challis NF)
- M332F – Challis Volcanics Section (Salmon-Challis NF)
- M332G – Blue Mountains Section (Payette NF)

340 – Temperate Desert Division

- 341A – Bonneville Basin Section (Wasatch-Cache NF)
- 341B – Northern Canyonlands Section (Manti-Lasal NF)
- 341C – Uinta Basin Section (Ashley NF)
- 341D – Mono Section (Humboldt-Toiyabe NF)
- 341E – Lahonton Basin Section (Humboldt-Toiyabe NF)
- 341F – Southeastern Great Basin Section (Humboldt-Toiyabe & Dixie NF)
- 341G – Northeastern Great Basin Section (Humboldt-Toiyabe NF)
- 342B – Northeastern Basin and Range Section (Sawtooth & Caribou-Targhee NF)
- 342C – Owhyee Uplands Section (Boise NF)
- 342D – Snake River Basalts Section (Caribou-Targhee NF)
- 342E – Bear Lake Section (Caribou-Targhee & Wasatch-Cache NF)
- 342G – Green River Basin Section (Ashley & Bridger-Teton NF)

M340 – Temperate Desert Regime Mountains

- M341A – Central Great Basin Mountains Section (Humboldt-Toiyabe NF)
- M341B – Tavaputs Plateau Section (Manti-Lasal NF)
- M341C – Utah High Plateaus and Mountains Section (Dixie & Fishlake NF)