

# Terrestrial and aquatic habitats, threatened and endangered species, species of conservation concern, and invasive species

September 12th, 2013

## Field Trip Agenda

- 0830 Leave Fairgrounds Kalispell  
0930 Leave Swan Lake Campground  
Introductions and expectations of field trip
- 1000 - **Stop 1: Water Howellia Pond**  
1045 Topic: *Howellia aquatilis* habitat and management  
Topic: Invasive plants  
Topic: Coarse Filter/Fine Filter Wildlife Assessment
- 1045- **Stop 2: Piper Creek Bridge**  
1145 Topic: Bull Trout habitat and management  
Topic: Watershed Condition Framework  
Topic: Aquatic Stressors  
Topic: Forest Structure and Lynx
- 1145- **Lunch**  
1215
- 1215- **Stop 3: Piper Creek North Road Turnout**  
1330 Topic: Examples of fine filter analysis: lynx and wolverine  
Topic: Northern Rockies Lynx Management direction
- 1330 **Stop 4: Piper Creek Trailhead**  
1400 Topic: Grizzly Bear Conservation Strategy, roads, and developed recreation  
Topic: Comparison of streamside management zone (SMZ) and riparian habitat conservation area (RHCA) buffers
- 1435 Arrive at Swan Lake Campground  
1445 Depart for Kalispell  
1530 Arrive Fairgrounds

# Flathead National Forest Plan Revision

The Flathead National Forest (FNF) is beginning the first phase of a multi-year planning process to revise the Forest Plan. The intent of the planning framework is to create a responsive planning process that informs integrated resources management and allows the Forest Service to adapt to changing conditions, including climate change, and improve management based on new information and monitoring. The FNF planning process will consist of the following three phases:

1. **Assessment.** The assessment rapidly evaluates existing information about relevant ecological, economic, and social conditions, trends, and sustainability and their relationship to the land management plan within the context of the broader landscape.
2. **Revision.** The plan revision will be based on the identification of the need to change from the assessment. The plan revision will include development of a proposed plan, consideration of the environmental effects of the alternatives in the proposal, providing an opportunity to comment on the proposed plan, providing an opportunity to object before the proposal is approved, and, finally, approval of the plan revision.
3. **Monitoring.** Monitoring is continuous and provides feedback for the planning cycle by testing relevant assumptions, tracking relevant conditions over time, and measuring management effectiveness.

## Assessment

The Flathead National Forest is working on phase I – the assessment. The assessment is not a decision-making document but provides current information on select topics relevant to the plan area. The assessment contributes to the planning process as follows:

- Informs the development of plan components and other plan content, including desired conditions, objectives, standards, guidelines, and suitability of lands.
- Identifies and evaluates a solid base of existing information relevant to the plan revision.
- Builds a common understanding of that information with the public and other interested parties before starting plan revision.
- Develops relationships with interested parties, government entities, tribes, private landowners, and other partners.
- Develops an understanding of the complex topics across landscapes that are relevant to planning on the forest.

In the assessment for plan development or revision, the responsible official shall identify and evaluate existing information relevant to the plan area for the following:

1. Terrestrial ecosystems, aquatic ecosystems, and watersheds
2. Air, soil, and water resources and quality
3. System drivers, including dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change; and the ability of terrestrial and aquatic ecosystems on the plan area to adapt to change
4. Baseline assessment of carbon stocks

5. Threatened, endangered, proposed and candidate species, and potential species of conservation concern present in the plan area
6. Social, cultural, and economic conditions
7. Benefits people obtain from the planning area (ecosystem services)
8. Multiple uses and their contributions to local, regional, and national economies
9. Recreation settings, opportunities and access, and scenic character
10. Renewable and nonrenewable energy and mineral resources
11. Infrastructure, such as recreational facilities and transportation and utility corridors
12. Areas of tribal importance
13. Cultural and historical resources and uses
14. Land status and ownership, use, and access patterns; and
15. Existing designated areas located in the plan area including wilderness and wild and scenic rivers and potential need and opportunity for additional designated areas.

## Multiple Uses and Ecosystem Services

The assessment will identify and evaluate existing information relevant to multiple uses and the benefits that people obtain (ecosystem services) from the Flathead National Forest. The following **multiple uses** and their trends will be discussed in the assessment: outdoor recreation, scenery, range, timber, watershed, fish and wildlife, energy and minerals.

**Ecosystem services**, benefits people obtain from ecosystems, can be divided into four categories:

1. Provisioning services, such as clean air and fresh water, energy, food, fuel, forage, wood products or fiber, and minerals;
2. Regulating services, such as long-term storage of carbon; climate regulation; water filtration, purification and storage; soil stabilization; flood and drought control; and disease regulation;
3. Supporting services, such as pollination, seed dispersal, soil formation, and nutrient cycling; and
4. Cultural services, such as educational, aesthetic, spiritual, and cultural heritage values, recreational experiences, and tourism opportunities.

In addition to the multiple use resource topics that are listed above, the Flathead National Forest has identified the following key ecosystem services that will be addressed in the assessment:

- Forest products
- Water (water quality: clean drinking water)
- Air (clean air)
- Wildlife and fish (non-consumptive—considered as the full complement of native species, addressed by ecosystem integrity; consumptive use will be addressed under multiple use)
- Inspiration and non-use values (spiritual, solitude)
- Cultural services (cultural heritage, research and education)
- Regulating Services (flood control, climate regulation/carbon sequestration)

## Stop 1: Water Howellia Pond

### Water howellia (*Howellia aquatilis*)

- History
  - Federal listing
  - Monitoring
  - Conservation strategy
- Existing condition
  - Population size – 216 populations in the Swan Valley
  - Trends
- Biology
  - Reproduction
  - Habitat requirements
- Threats
  - Livestock grazing
  - Reed canarygrass
  - Climate change (unknown effect)
- Management
  - Forest Service (Map 5) and Plum Creek



### Weeds

- Existing condition (Map 6)
- Priorities
  - Species
  - Infestation types
  - Locations
  - High priority species
    - Dyer's woad, leafy spurge, toadflax, tansy ragwort
  - Low priority species
    - Spotted knapweed, thistle, St. John's wort
- Vectors
  - Recreation
  - Vegetation management
  - Roads
  - Livestock
  - Wildlife
  - Wind
- Management
  - Flathead National Forest Noxious and Invasive Weed Control (2001)
  - Reed canarygrass experimental control on Tally Lake Ranger District
- Control

## *Introduction to the coarse filter/fine filter approach*

Modern designs for conservation of biological diversity combine managing for broad ecosystem characteristics (coarse-filter approach) with species-specific management (fine-filter approach) (Cushman et al. 2008; Haufler 1999b; Hunter et al. 1988; Hunter 1990, 1991; Noss 1996; Noss and Cooperrider 1994).

Coarse-filter strategies are based on:

- Providing a mix of ecological communities across a planning area,
- Providing for ecological integrity/biological diversity at an appropriate landscape scale (Kaufmann et al. 1994),
- Looking at how to maintain or restore the composition, structure, function, diversity, and habitat connectivity of ecosystems,
- Providing for a range of species habitat conditions at a variety of spatial scales over the long term and maintaining biological diversity for the vast majority of species (Hunter 1990, Committee of Scientists 1999, Lindenmayer and Franklin 2002).
- Understanding past, current, and projected future conditions (Haufler 1999b).

## *Coarse Filter Assessment*

### Habitat Data

The habitat data to assess the FNF includes (but is not limited to) the Ecological Systems for Species Richness and Connectivity data from the Montana Crucial Areas Assessment (MTFWP 2010), the FS 2012 VMAP classification, and FNF riparian landtype classification (1995). MTFWP information will be used to assess FNF ecosystems in the context of the Northern Rockies.

The FNF land ecosystems are grouped into six categories for assessment, with examples listed below:

**Non-forest** – cliff, bedrock and scree

**Montane Coniferous Forest** – dry mixed conifer, mesic mixed conifer, Lodgepole pine

**Sub-alpine Coniferous Forest** – dry and Mesic Spruce-fir, Sub-alpine woodland/parkland

**Deciduous Tree and Shrub** – aspen, cottonwood, birch, etc.

**Riparian** – peatland, wooded vernal pool, emergent marsh, fen, riparian woodland/shrubland

**Grassland** – wet meadow, dry meadow

### Wildlife Species Data

We evaluated all species known to occur on the FNF, based upon inventory data compiled by MT Natural Heritage Program + research observations on FNF. Species are linked to ecosystems listed above. Refer to the following link <http://fwp.mt.gov/fishAndWildlife/conservationInAction/crucialAreas.html>.

## Stop 2: Piper Creek Bridge

### *Aquatic Assessment - Cold, Clean, Complex and Connected*

#### Assessment Overview

1. Watershed conditions are very good across the forest
  - a. Watershed Condition Framework ratings (see Map 2)
  - b. Stable soils
  - c. U-shaped valleys minimize road effects
2. Stream habitat is in excellent condition
  - a. Abundant wood
  - b. Stable banks
  - c. Good shade
  - d. Minimal land use adjacent to streams
3. Good watershed/stream conditions are the result of
  - a. Inherent factors
    - i. Geology
    - ii. Climate
    - iii. Landforms
  - b. Substantial investments over the past 20 years
    - i. Best Management Practices (BMPs)
    - ii. Road decommissioning
    - iii. Aquatic Organism Passage (AOP) improvements
4. Flathead Basin - A stronghold for native trout
  - a. Bull trout are *adfluvial*, meaning they migrate to and from lakes
  - b. Some of the cutthroat populations are migratory and some are resident or fluvial
  - c. Maintenance and recovery of native fish is largely dependent upon the lakes
5. Native fish population status
  - a. Excellent in South Fork of Flathead
  - b. North and Middle Forks of Flathead at risk due to lake trout invasion in Flathead Lake and lakes inside Glacier National Park.
  - c. Swan ecosystem is at risk due to lake trout invasion in Swan, Holland and Lindberg Lakes
  - d. Brook trout threaten Westslope cutthroat throughout the Swan and Stillwater systems
6. Flathead ecosystem is a good place to focus on native fish maintenance and recovery
  - a. Abundant, cold water
  - b. Groundwater supply
  - c. Connectivity throughout system
  - d. Prime habitat
  - e. Less vulnerable to climate change than adjacent systems

#### Information for Assessment

1. USFWS
  - a. Bull trout critical habitat and Bull trout Inland Native Fish Strategy (INFISH) priority watersheds (Map 1)
2. USFS
  - a. Watershed Condition Framework (Map 2)
  - b. PACFISH/INFISH Biological Opinion (PIBO) effectiveness monitoring data
  - c. Bull trout and cutthroat population status rankings by watershed (Maps 3 and 4)
  - d. Stream temperature
  - e. Channel cross-sections, bank profiles, pebble counts, bank erosion indices

- f. Redd counts
- 3. Montana Fish Wildlife and Parks
  - a. McNeil core sampling
  - b. Population data
- 4. Montana Department of Environmental Quality
  - a. 303(d) list
- 5. Montana Crucial Areas Assessment (<http://fwp.mt.gov/gis/maps/caps/>)
  - a. Aquatic connectivity - stream corridors for fish species that require connected habitats to complete all or a portion of their life history.
  - b. Fish native species richness - depicts native biodiversity using counts of native fishes present in waterbodies and streams.
  - c. Fish species of concern - areas with rare, declining or Federally Listed Threatened or Endangered fish species present as recognized by the joint Montana Fish, Wildlife & Parks and Montana Natural Heritage Program (MTNHP) Species of Concern (SOC) Report.
  - d. Watershed integrity - depicts a summation of human caused influences that contribute to the relative intactness of watersheds in Montana.

### Potential Species for Assessment

- 1. Federally Threatened or Endangered Species
  - a. Bull trout (threatened)
  - b. Water howellia (threatened)
- 2. Identifying Potential Species of Conservation Concern
  - a. Species with status ranks of G/T 1-2 on the NatureServe ranking system
    - i. *Rhyacophila ebria* – A Caddisfly
    - ii. *Parameletus columbiae* – A Mayfly
    - iii. *Lednia tumana* – Mist Forestfly
    - iv. *Zapada glacier* – Glacier Forestfly
  - b. State of Montana species of concern
    - i. Westslope cutthroat trout
- 3. Fish and plant species commonly enjoyed for fishing, gathering, observing, or sustenance.

### Stressors

- 1. Climate change
  - a. Air temperature
  - b. Precipitation
  - c. Stream flows
- 2. Wildfires
- 3. Exotic species impacts - species that have been deliberately or accidentally introduced to areas outside of their native geographic range and are able to reproduce and maintain sustainable populations in these areas. These exotic populations may also be referred to as alien, introduced, invasive, non-native, or non-indigenous.
  - a. Lake trout
  - b. Brook trout
  - c. Rainbow trout

### Stop 2 Wildlife Topic: Forest Structure and Lynx

Habitat varies in both space and time. The assessment provides a snapshot in time. Modeling will be done to see how landscape varies over time due to succession, wildfire, management activities, etc.

## Stop 3: Piper Creek North Road Turnout

### Topic: Fine filter assessment and landscape level analysis

With a coarse-filter approach in place, fine-filter strategies can be focused on the few species whose habitat requirements are not fully captured by coarse-filter attributes (Seymour and Hunter 1999). During phase I we will assess species that would fit into one of the categories below, as directed and defined by the 2012 Planning Rule, which provides the direction for our revision:

- 1) Threatened or Endangered (T&E) Species, proposed T&E species, or recently de-listed species: – on Flathead National Forest = grizzly, lynx, wolverine, wolf, bald eagle.
- 2) Species of conservation concern (SCC) – must be native in the plan area, and valid information indicates a “substantial” concern about a species’ “capability” to persist over the long-term in the plan area. During phase II, plan components will be designed to provide the ecological conditions (habitat) to maintain species of conservation concern at the landscape or specific area levels. For example, species associated with at-risk habitats, or specific sites such as bat winter roosts.
- 3) Species commonly enjoyed by the public for viewing, hunting, trapping, gathering – for example; loon, elk, marten.
- 4) Focal species –provide insight into the integrity and function of an ecosystem, and can be “efficiently” and “effectively” monitored – for example, boreal toad monitoring of breeding sites on a rotation basis

### Fine filter examples:

- Lynx assessment and management direction: Northern Rockies Lynx Management Direction was adopted by 18 Region1 National Forests in 2007. Critical habitat was designated in 2009.
- Wolverine – proposed for listing in 2013. Persistent spring snow and climate change.

## Stop 4: Piper Creek Trailhead

### Topic: Grizzly Bear Conservation Strategy, roads, and developed recreation

The USFWS recently published a draft of the Northern Continental Divide Ecosystem (NCDE) Grizzly Bear Conservation Strategy, produced with involvement of multiple managers, which is designed to:

- Ensure conservation of habitat to sustain the recovered NCDE grizzly bear population
- Update the habitat management and monitoring of grizzly bears to incorporate recent interagency recommendations and agreements, as described in the Conservation Strategy
- Improve consistency among NCDE national forests in managing grizzly bear habitat

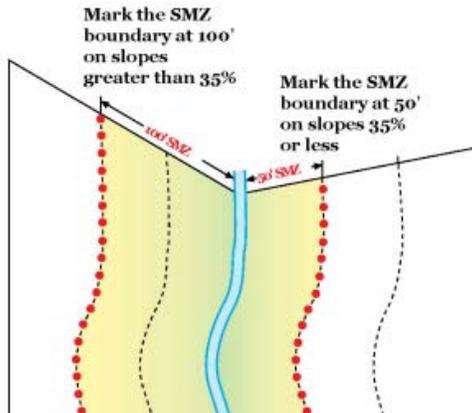
The USFWS solicited public comment on the draft and plans to finalize it in 2014. The conservation strategy includes habitat managed by 5 national forests. The FNF will include direction provided by this conservation strategy in its proposed forest plan revision and EIS.

## Topic: Streamside Management Zone and Riparian Habitat Conservation Area buffers

### 1. State of Montana Streamside Management Zone Law

#### **SMZ Widths for Different Slopes**

Class 1 and 2 streams

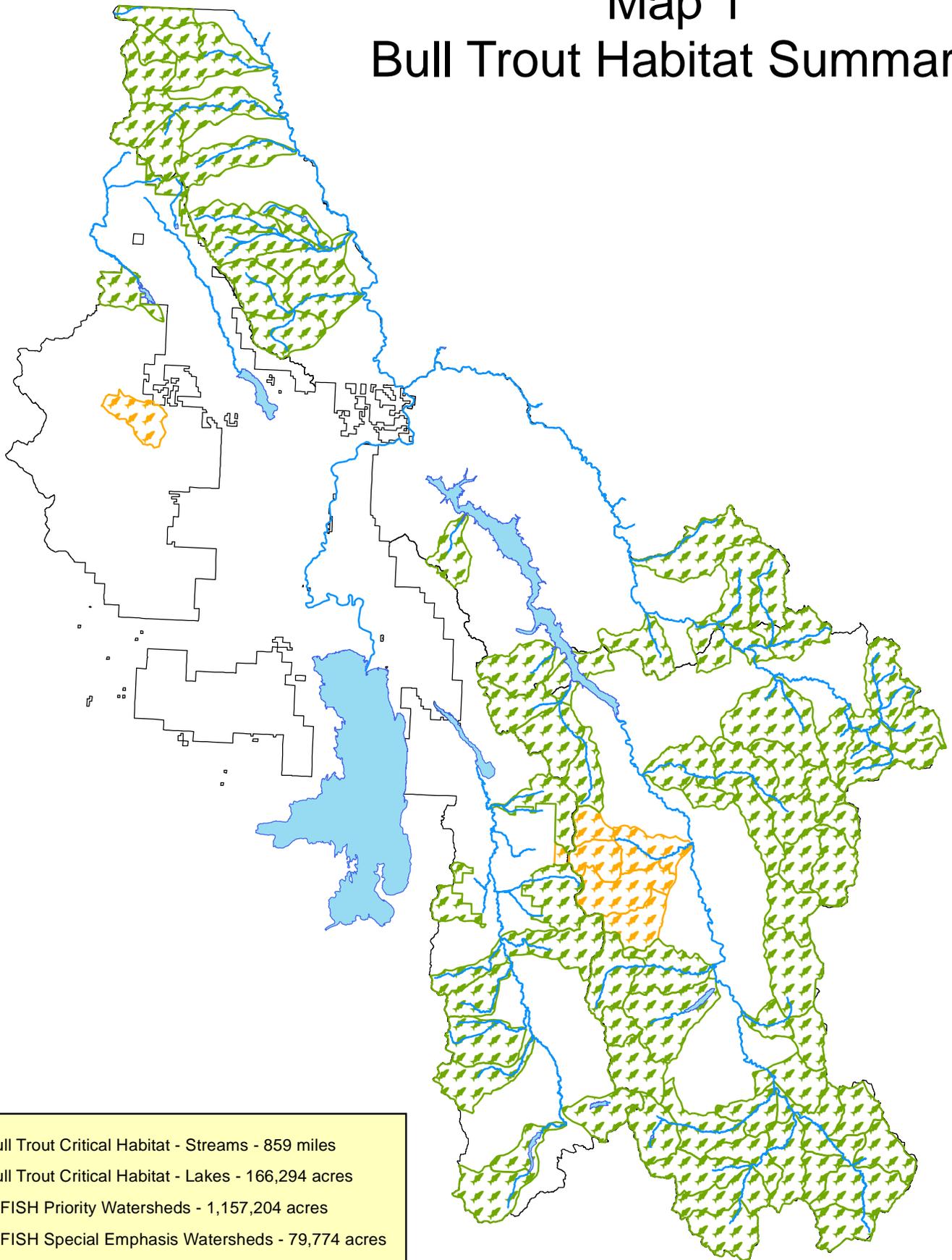


### 2. INFISH Riparian Habitat Conservation Area (RHCA)

The Flathead LRMP was amended in 1995 by the Inland Native Fish Strategy (INFISH). INFISH standards place a greater emphasis on protection of fish habitat than earlier standards in the Flathead LRMP. INFISH discourages timber harvest within riparian areas but does recognize that in some situations harvest may be appropriate as long as it does not retard riparian objectives. Most timber harvest practices on National Forest system lands have left RHCA's un-harvested since 1994. Retention of riparian vegetation has been found successful in trapping overland sediments before they reach stream channels.



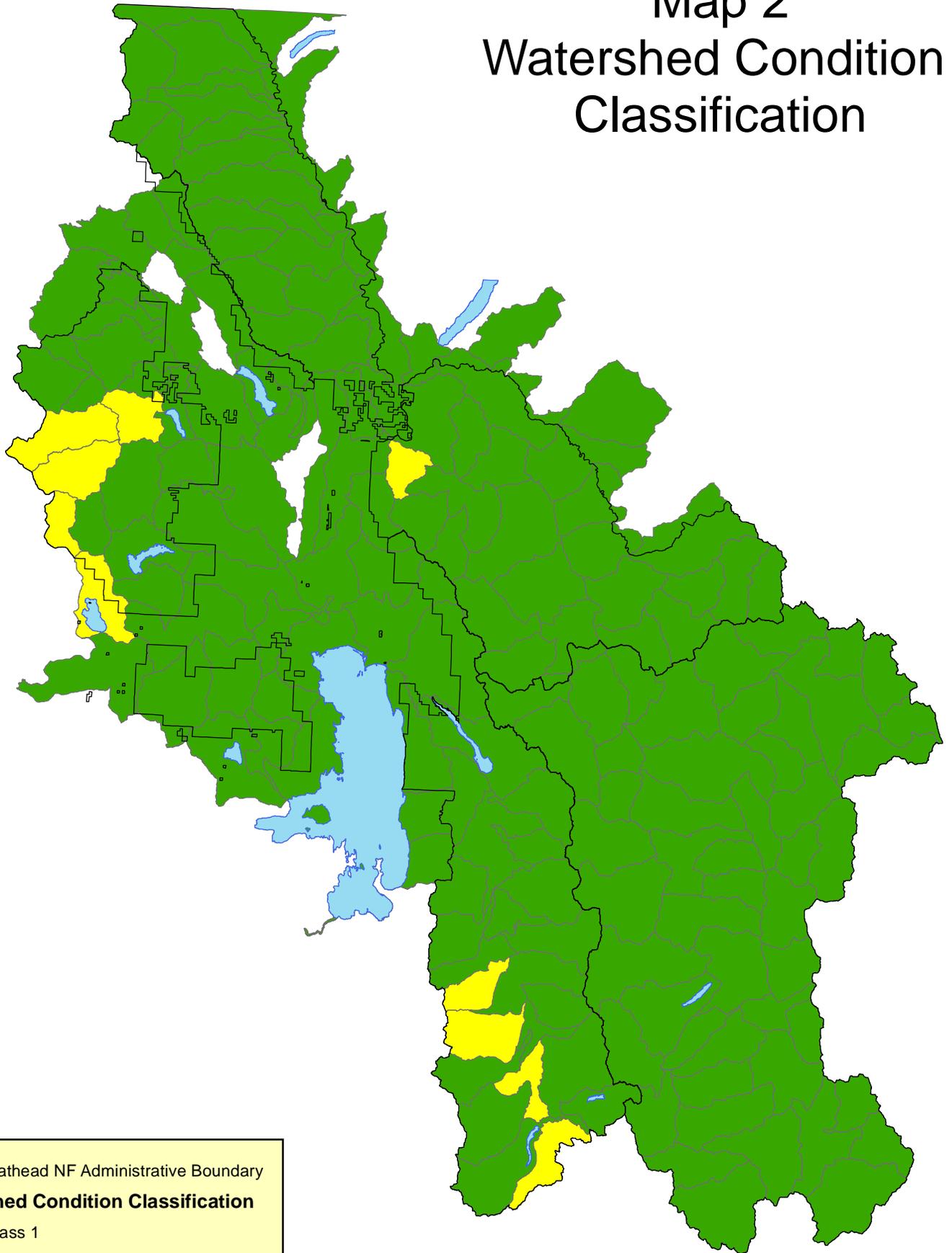
# Map 1 Bull Trout Habitat Summary



-  Bull Trout Critical Habitat - Streams - 859 miles
-  Bull Trout Critical Habitat - Lakes - 166,294 acres
-  INFISH Priority Watersheds - 1,157,204 acres
-  INFISH Special Emphasis Watersheds - 79,774 acres
-  Flathead NF Administrative Boundary



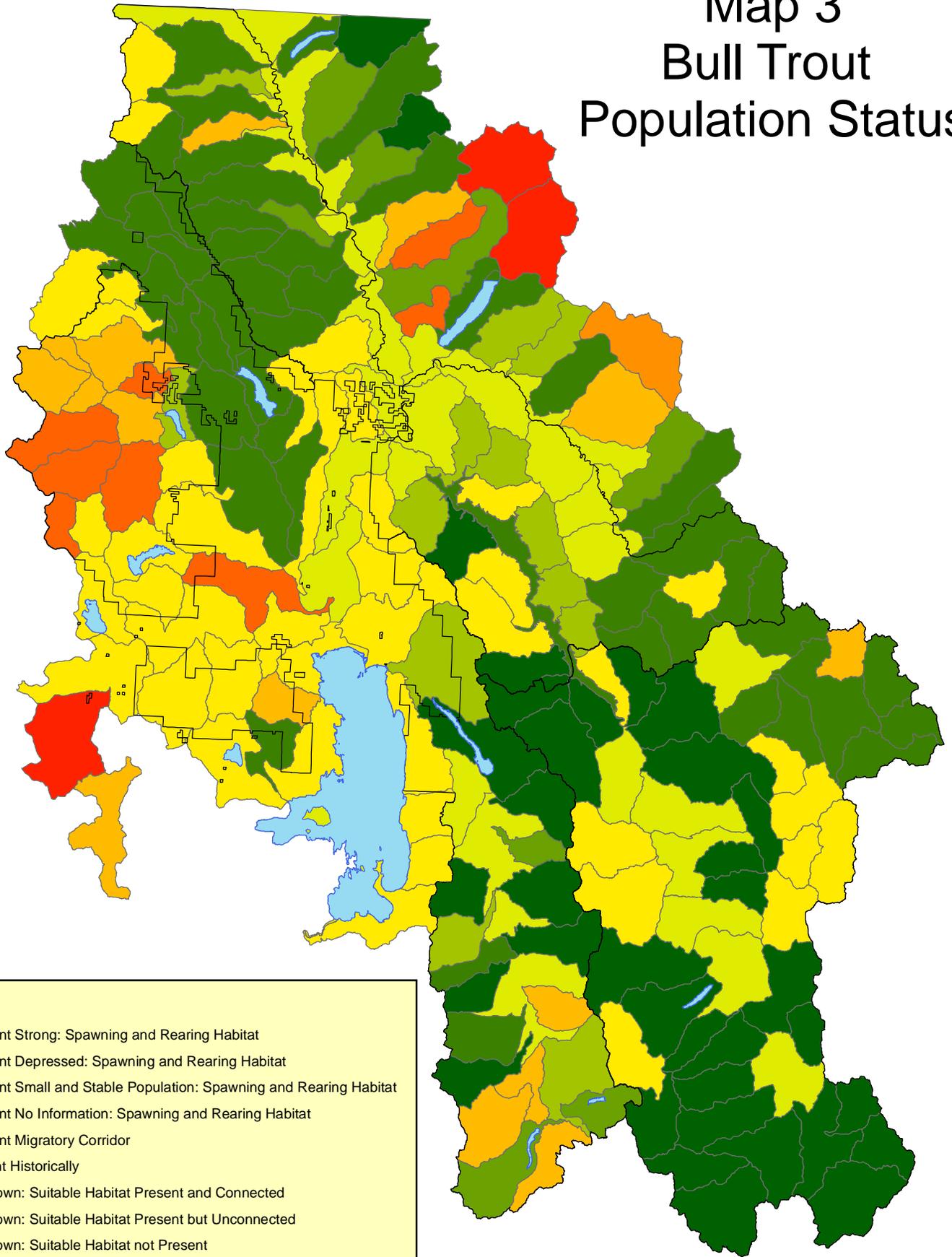
# Map 2 Watershed Condition Classification



-  Flathead NF Administrative Boundary
- Watershed Condition Classification**
-  Class 1
-  Class 2



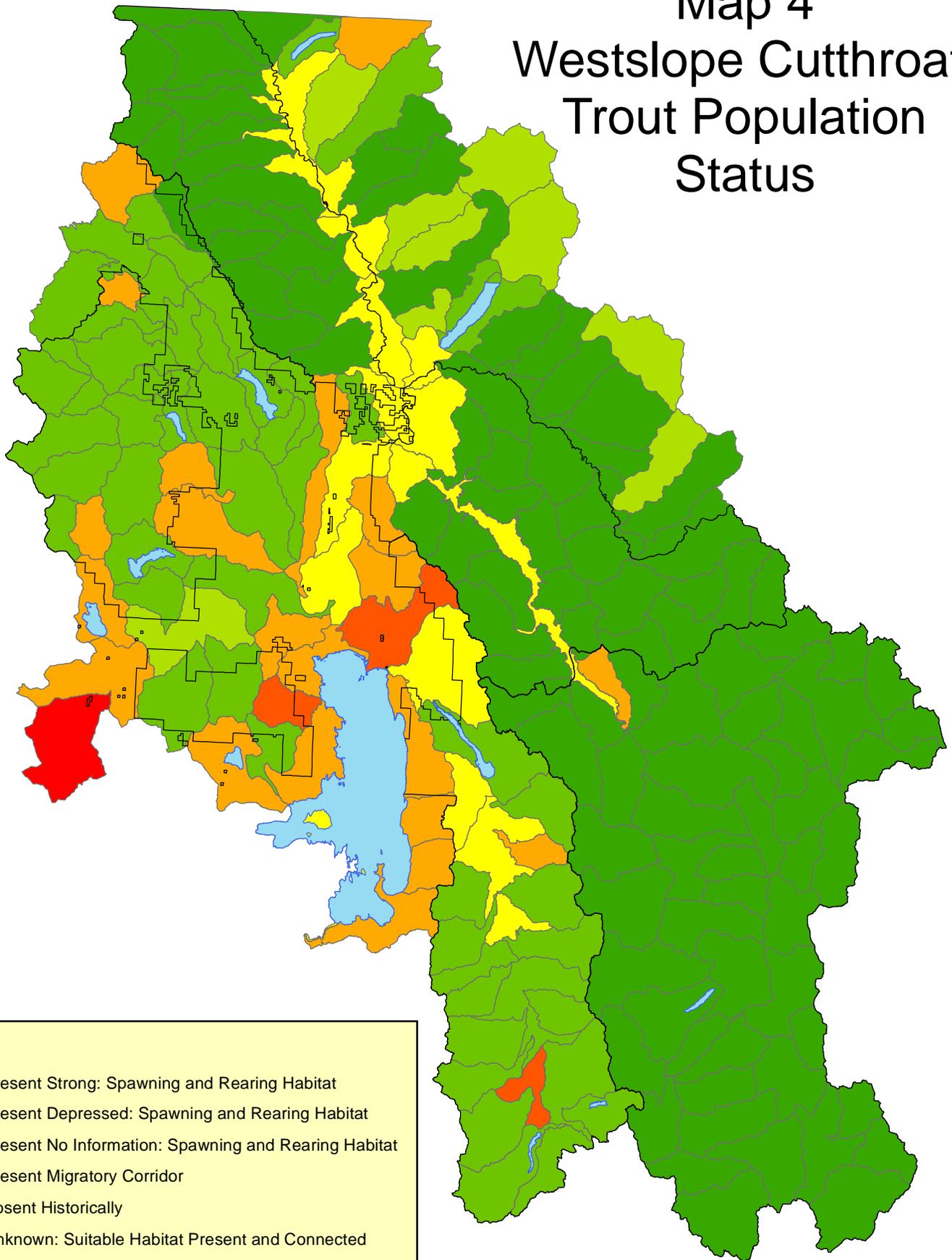
# Map 3 Bull Trout Population Status



BT	
	Present Strong: Spawning and Rearing Habitat
	Present Depressed: Spawning and Rearing Habitat
	Present Small and Stable Population: Spawning and Rearing Habitat
	Present No Information: Spawning and Rearing Habitat
	Present Migratory Corridor
	Absent Historically
	Unknown: Suitable Habitat Present and Connected
	Unknown: Suitable Habitat Present but Unconnected
	Unknown: Suitable Habitat not Present
	Unknown



# Map 4 Westslope Cutthroat Trout Population Status



## WCT

-  Present Strong: Spawning and Rearing Habitat
-  Present Depressed: Spawning and Rearing Habitat
-  Present No Information: Spawning and Rearing Habitat
-  Present Migratory Corridor
-  Absent Historically
-  Unknown: Suitable Habitat Present and Connected
-  Unknown



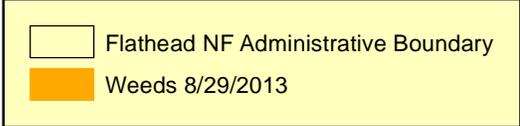
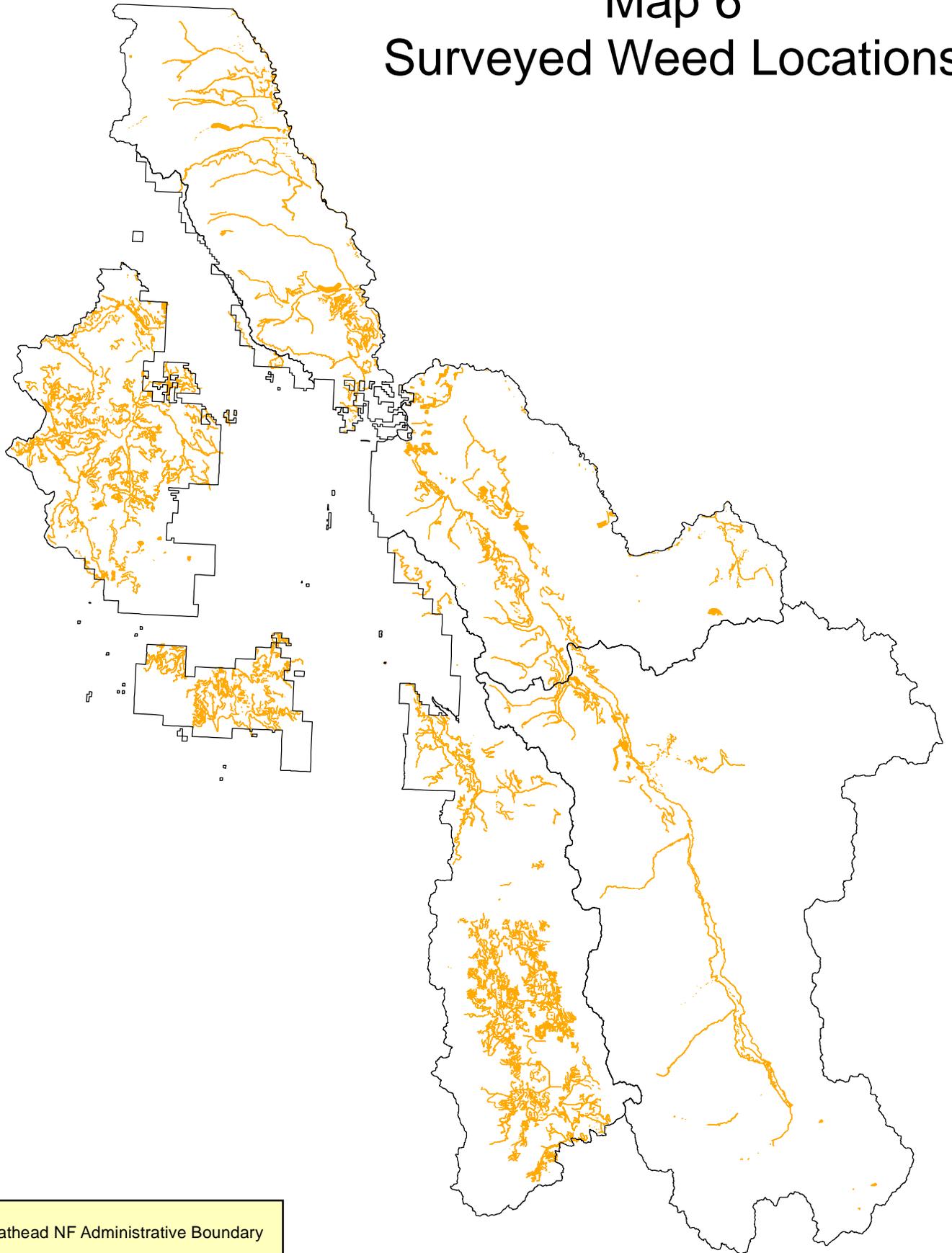
**Howellia Ponds**



**Howellia Ponds With 300' Buffers**



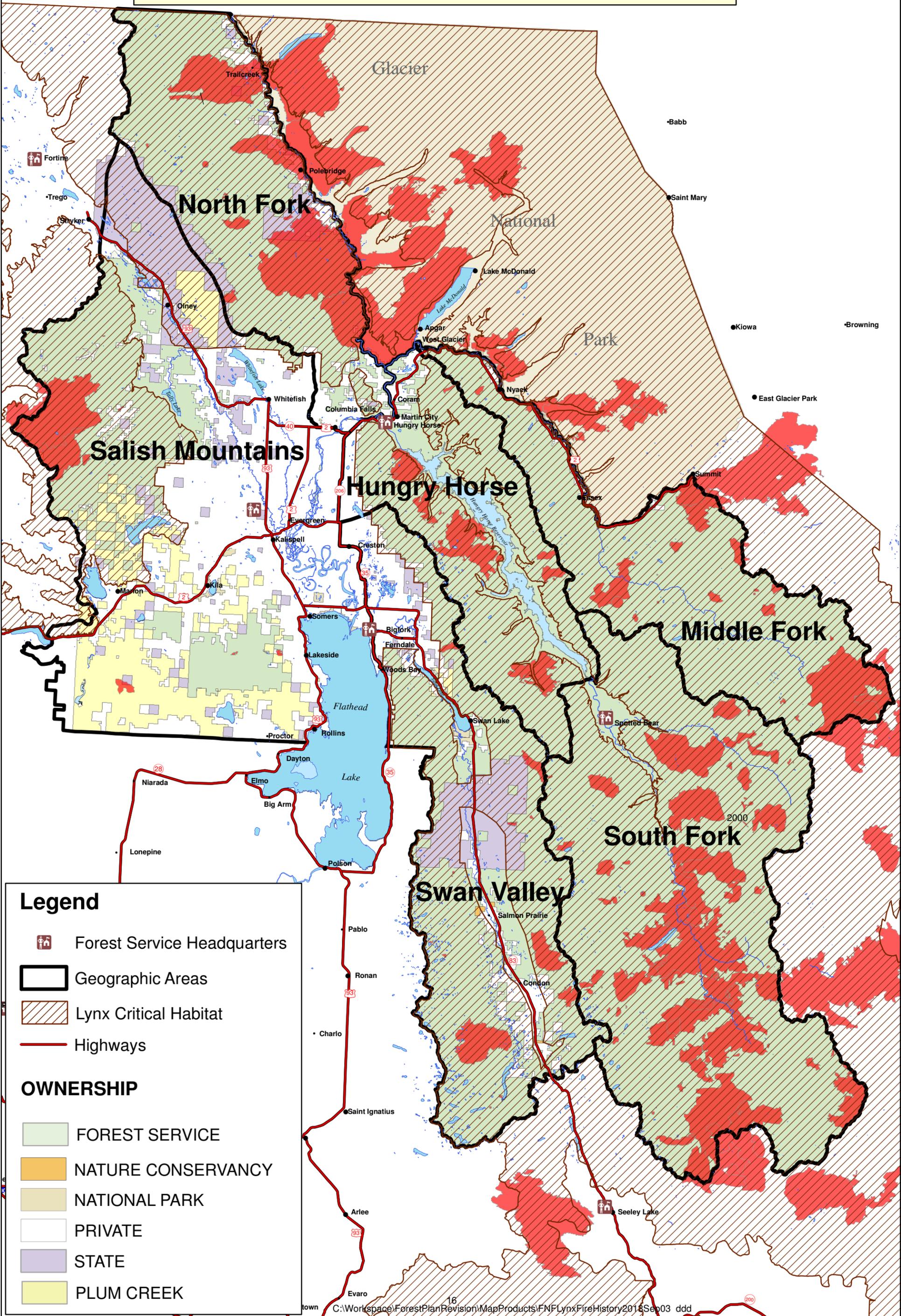
# Map 6 Surveyed Weed Locations



# CRITICAL LYNX HABITAT WITH FIRE HISTORY

Flathead National Forest

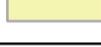
1984 - 2012



## Legend

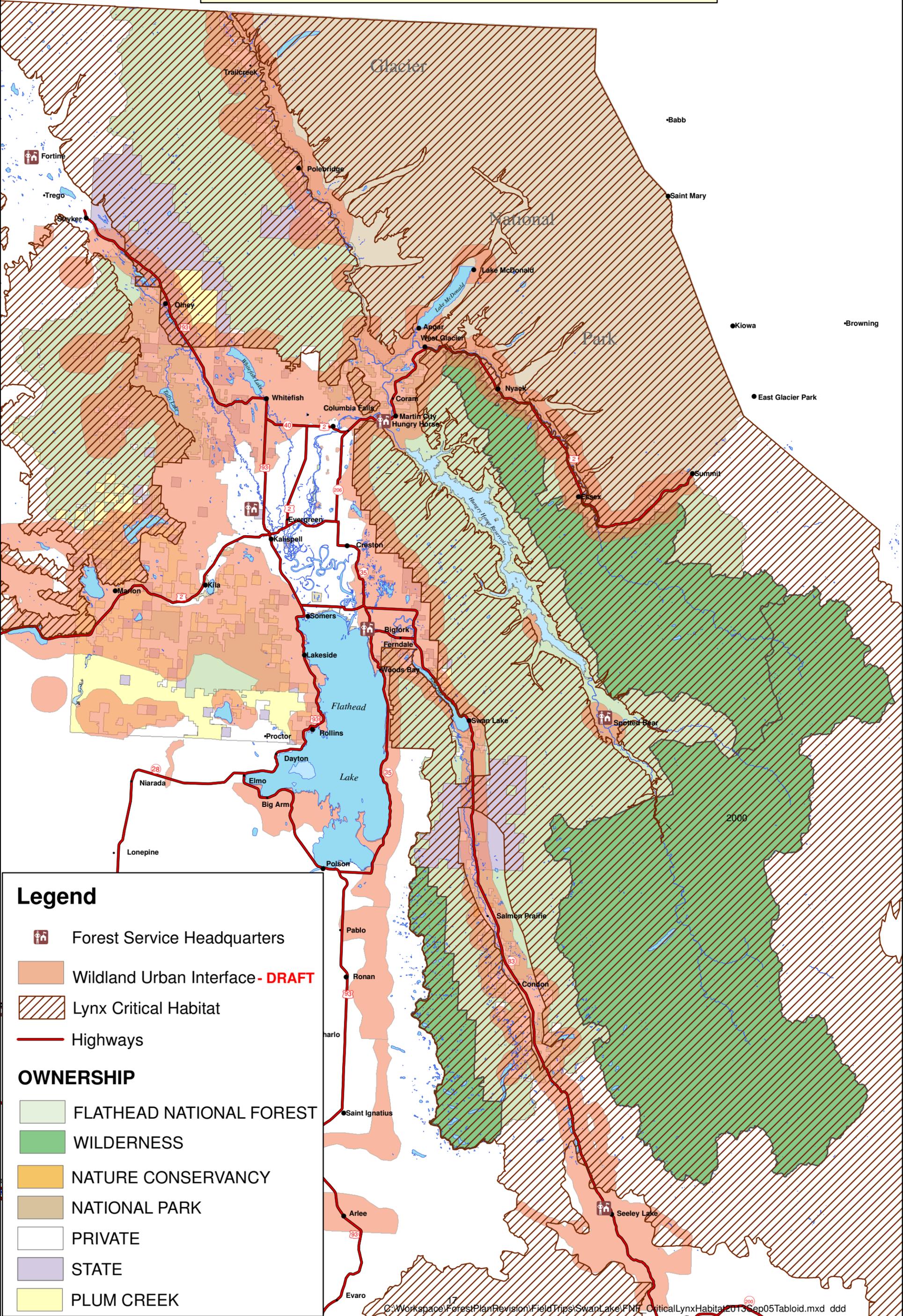
-  Forest Service Headquarters
-  Geographic Areas
-  Lynx Critical Habitat
-  Highways

## OWNERSHIP

-  FOREST SERVICE
-  NATURE CONSERVANCY
-  NATIONAL PARK
-  PRIVATE
-  STATE
-  PLUM CREEK

# CRITICAL LYNX HABITAT

## Flathead National Forest



**Legend**

- Forest Service Headquarters
- Wildland Urban Interface - **DRAFT**
- Lynx Critical Habitat
- Highways

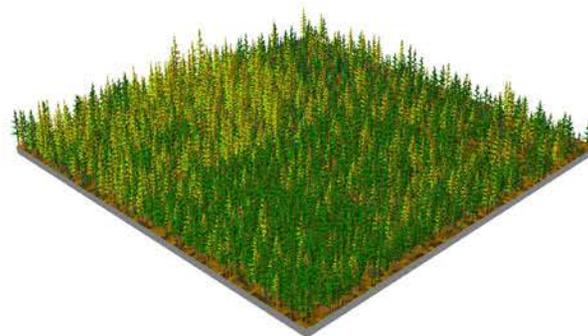
**OWNERSHIP**

- FLATHEAD NATIONAL FOREST
- WILDERNESS
- NATURE CONSERVANCY
- NATIONAL PARK
- PRIVATE
- STATE
- PLUM CREEK

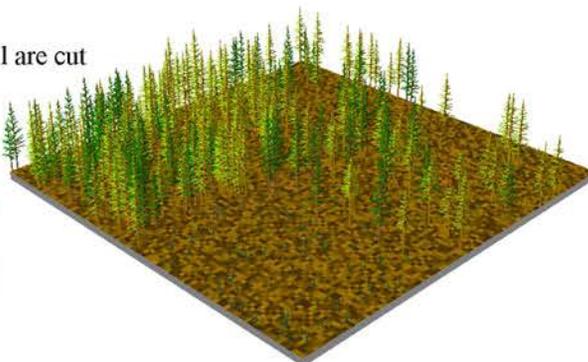
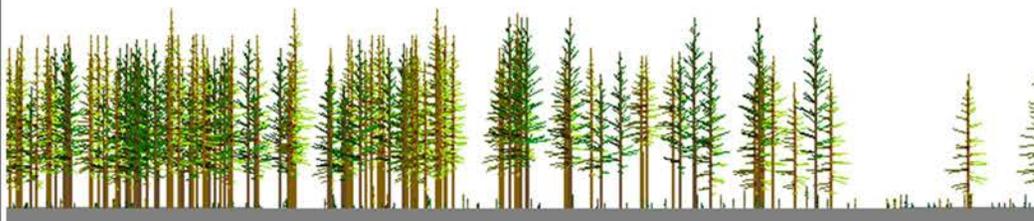
**YEAR 2012 Stand 01—20 years old**

Currently a sapling stand (clearcut 1990); High tree density (8000-12,000 tpa); Mixed species (larch, lodgepole pine, Douglas-fir, subalpine fir, spruce); Most trees <5 feet tall, but dominants reaching 15 feet or more in height.

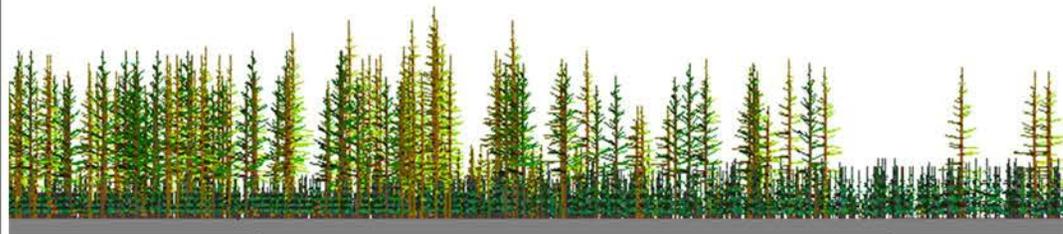
Year 2012—No thinning.



Thinned in 2012 to an average 300 trees per acre; no trees less than 2 feet tall are cut

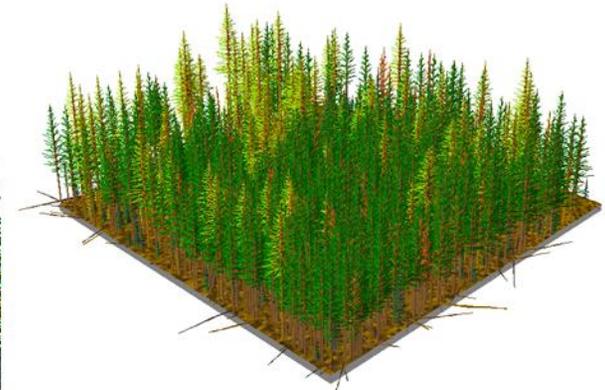


Thinned in 2012 to an average 300 trees per acre; no trees less than 6 feet tall are cut

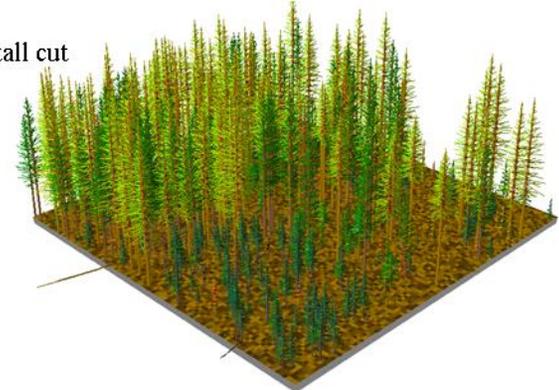
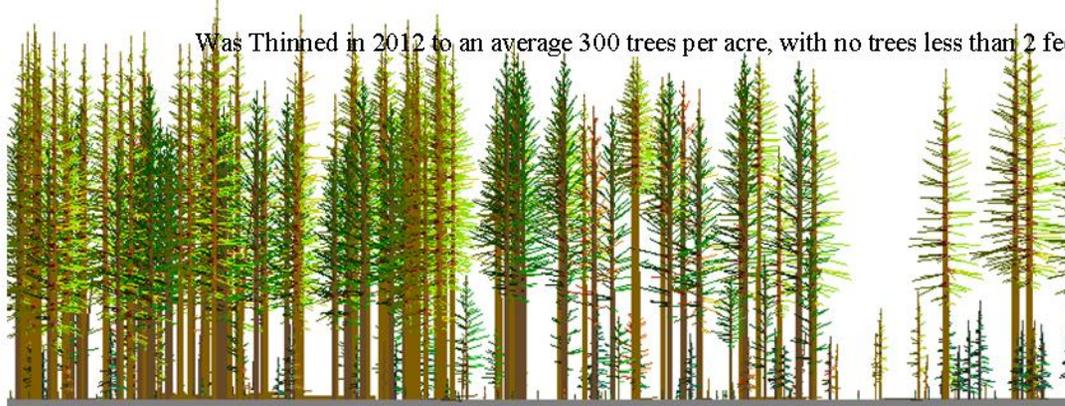


**YEAR 2080 Stand 01—90 years old**

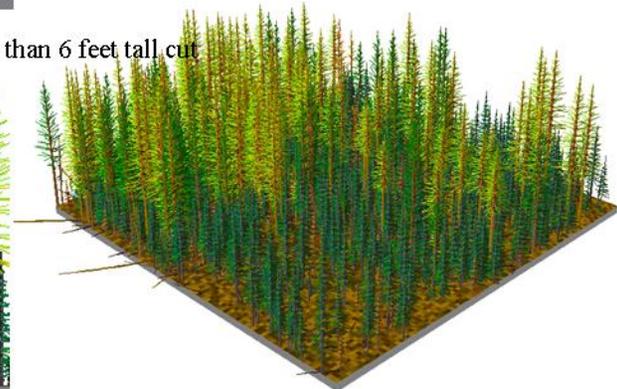
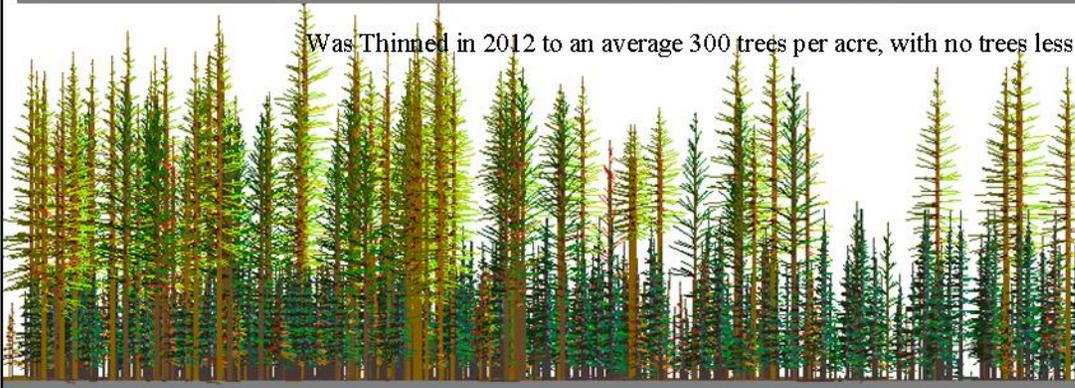
Never Thinned



Was Thinned in 2012 to an average 300 trees per acre, with no trees less than 2 feet tall cut

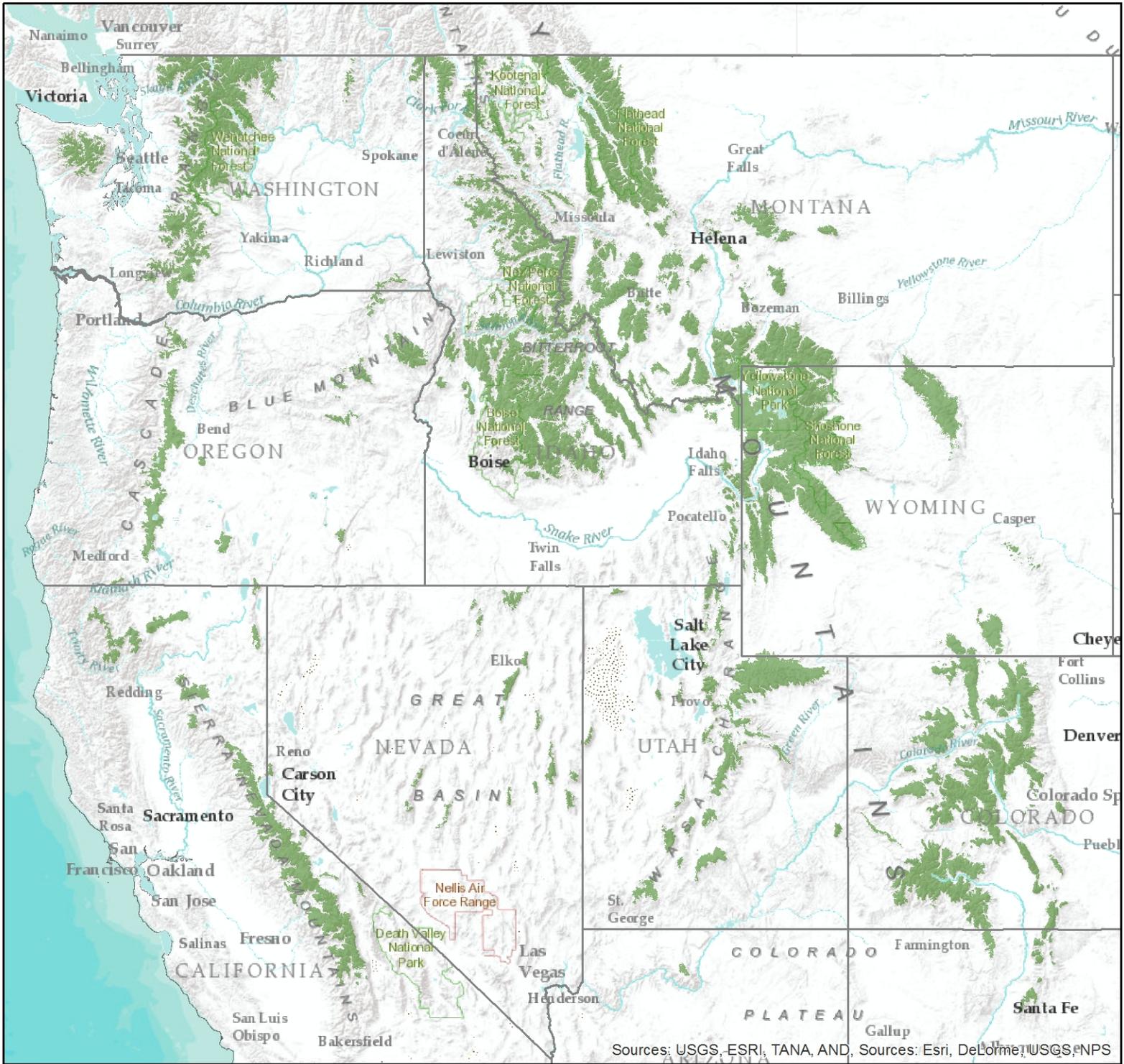


Was Thinned in 2012 to an average 300 trees per acre, with no trees less than 6 feet tall cut





# Modeled Wolverine Habitat in Western United States



Sources: USGS, ESRI, TANA, AND, Sources: Esri, DeLorme, USGS, NPS

0 200 400 Miles

0 200 400 Kilometers



## Legend

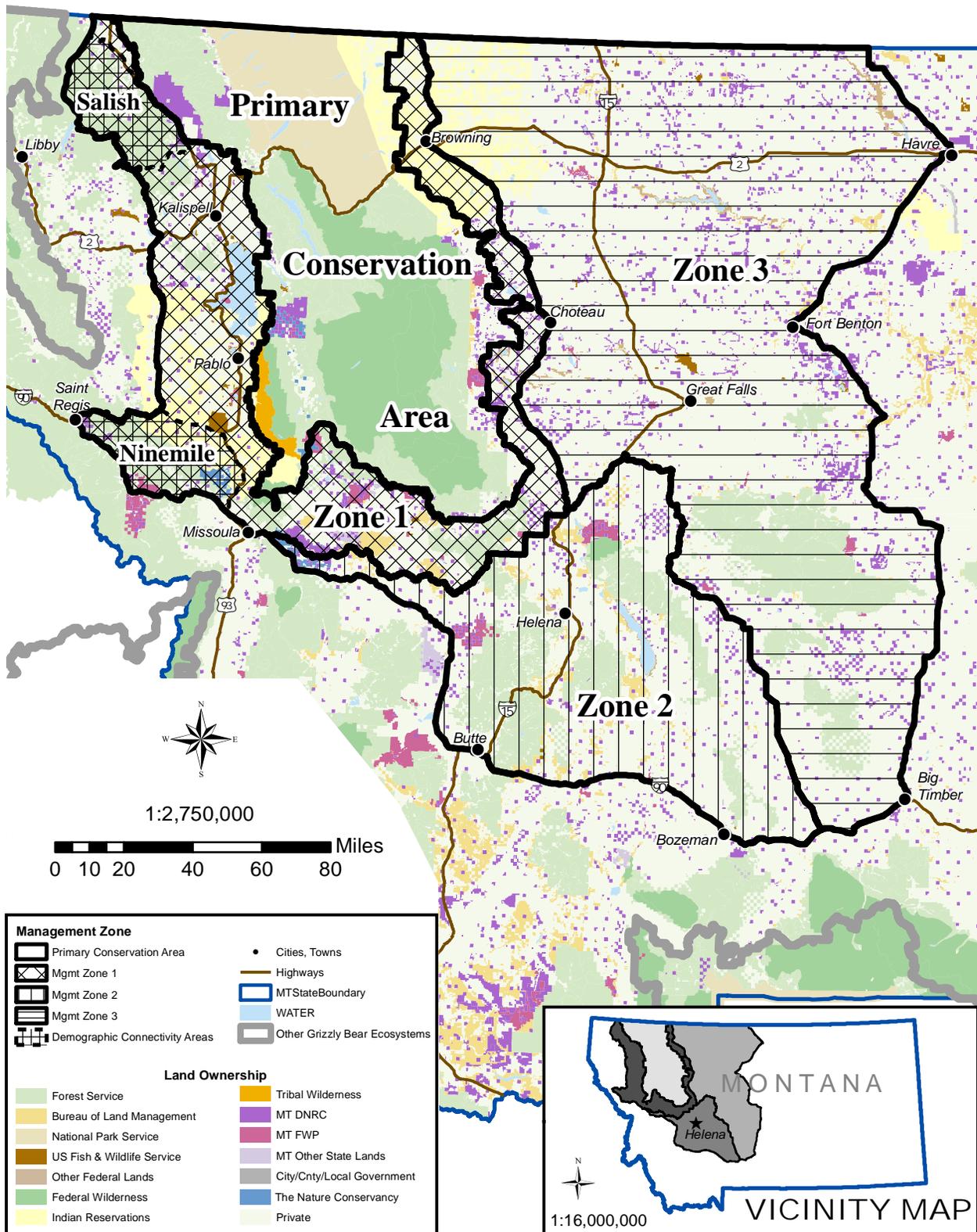
 Modeled Wolverine Habitat

No warranty is made by the USFWS. This map does not represent areas occupied by wolverine or areas with the potential to be occupied by wolverine. The accuracy, reliability, or completeness of these data for individual or aggregate use with other data is not guaranteed.

USFWS Boise Idaho  
 February 1, 2013  
 WGS 1984 Web Mercator (Auxiliary Sphere)

# Grizzly Bear Conservation Strategy

## Northern Continental Divide Ecosystem



# Grizzly Bear Conservation Strategy - Protected Areas Northern Continental Divide Ecosystem

