

# Invasive Species Impacts to First Foods and Native Plants



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# Presentation Overview

- 1) Describe First Food Order and Mission
- 2) Describe Women's Food and Distribution; and
- 3) Invasive Species Impacts
  - First Foods and Native Plants

# Department of Natural Resources

## Mission Statement



To protect, restore, and enhance the **first foods** - water, salmon, deer, **cous**, and huckleberry - for the perpetual cultural, economic, and sovereign benefit of the CTUIR. We will accomplish this utilizing traditional ecological and cultural knowledge and science to inform:

- 1) population and habitat management goals and actions; and
- 2) natural resource policies and regulatory mechanisms.

# Extending the Table

Using the First Foods to Guide DNR

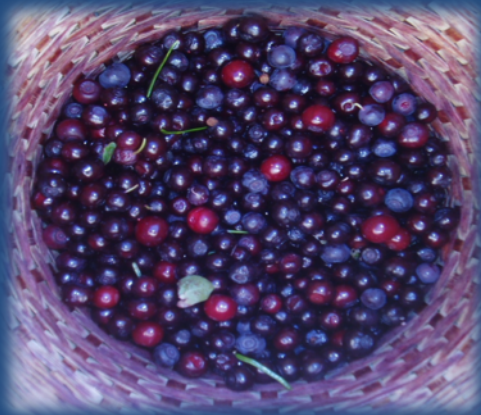


Men's Food

Women's Food



# Women's Food



# Distribution

- First Foods and other culturally important resources are found throughout the landscape, and their abundance and distribution is determined by the individual species' ecology and life history strategy, as well as current and historic land use patterns, management and disturbance regimes.

# Distribution

- In the most general terms, the First Foods serving order follows an elevation gradient, from lower elevation river, wetland and riparian systems (Water, Salmon), to higher elevation *grassland (Roots)* and forest (Berries)

# Impacts of Invasive Species

## Water, Fish and Wildlife

### Direct

- Predation on native species
- Competition for food or other resources
- Disease transmission

### Indirect

- *Degrade water quality and fish & wildlife habitat*



# Impacts of Invasive Species Native Plants



# Impacts of Invasive Species

- Structure
  - type and abundance of native plants
- Function
  - Ecological processes
- Organization
  - the relative abundance of native species and their relationships

# Structure

Altering the composition of plant communities  
– displacing native plants that changes the physical structure



# Cheatgrass - *Bromus tectorum*

- Winter annual that can significantly alters rangeland native vegetation composition
- Influences plant community composition by its effect on fire regimes
- Cheatgrass often burn every 3-5 years compared to with 60-110 years for native plant communities being displaced

# Cheatgrass - *Bromus tectorum*



Native bunchgrasses and shrubs have been severely diminished and replaced by invasive annual grasses

# Common Crupina – *Crupina vulgaris*

- Annual forb adapted to many environmental conditions
- Highly competitive for limited soil moisture
- Dense stands can dominate sites, reducing diversity



# Common Crupina – *Crupina vulgaris*

- Common crupina with single stems and low basal cover is replacing perennial bunchgrasses with multiple stems and relatively high basal cover
- Surface runoff and sediment production increase when bunchgrasses are replaced by weedy forbs

# Common Crupina



# Function

- Litter accumulation may reduce seed germination and seedling establishment by leaching inhibitory compounds, altering microclimate, and preventing shoot extension
- Invasive species can alter soil water and nutrient dynamics

# Function

- Reduced infiltration and increased runoff
  - Watershed level
- Altered historic disturbance cycles such as fire



# Medusahead - *Taeniatherum caput-medusae*



- Litter is slow to decompose due to high silica content causing buildup of 2- 4 inches
- Inhibits seedlings of more desirable species by shading or by keeping their seeds from gaining soil contact



# Organization

Altered the relative abundance of native species due to the following:

- Competitiveness
- Allelopathy
- Seed production, dispersal and viability



# Organization

- Faster growth rates and initiate growth before native species
- Exploitation of soil profile for moisture and nutrients
- Compete directly for sunlight and space

# Organization

- No natural enemies
- Often avoided by large herbivores



# Garlic Mustard – *Alliaria petiolata*



- Invades stable forest understory and rapidly *outcompetes* native plants
- Can form monotypic stands
- Considered *allelopathic* releasing phytotoxins

# Spotted knapweed – *Centaurea stoebe*

## *Seed production, dispersal and viability*

- Can produce from 400 to 25,000 seeds per plant depending on moisture
- Spotted knapweed seeds remain viable in soil for up to 8 years
- Readily invades grasslands and can reduce bluebunch wheatgrass cover



# Spotted knapweed – *Centaurea stoebe*

- Forms dense stands that can exclude desirable vegetation and wildlife



# Sulfur Cinquefoil - *Potentilla recta*

- a perennial forb that invades a wide range of grassland, shrub, steppe, and open-forest communities
- forms dense populations, becomes a plant community dominant, and threatens native species
- negatively affect soil flora and fauna and associated ecological processes



# Sulfur Cinquefoil



- high tannin content limiting its palatability to wildlife and livestock
- reducing biodiversity
- reduces grass production by about 60 percent

# Viper's bugloss (*Echium vulgare*)

- Invades rangelands displacing native plants
- Reduces forage production and wildlife habitat
- Not considered palatable to livestock contains toxic alkaloids that can cause liver failure when ingested
- Known host for several plant diseases

# Viper's bugloss (*Echium vulgare*)





# Impacts of Invasive Species

## First Foods



# “Food Associated” Culture

Access

Teaching

Learning

Harvest

Preparation

Consumption

Celebration

Sharing

Care (Reciprocity)

First Foods



Physical +  
Ecological  
Processes



# Biotic Integrity

- The ability of the biotic community to support ecological processes and interactions within the historic range of variability
- This supports ecosystem resistance and resilience following disturbance events and promotes the long-term production of ecosystem services, including First Foods.



# First Food

Invasive species impact the biotic integrity of First Foods

- Species composition
- Richness
- Biodiversity
- Structure



# Biotic Integrity

Key components are necessary for critical ecological processes and interactions including seed dispersal, pollination, mutualisms, food webs, and trophic cascades, in addition to being important for the sustained production of ecological services, including First Foods

# First Foods

- Loss of First Food species can occur directly as a result of particular disturbances or land use activities



# First Foods

- Changes in ecosystem structure, or disruption of species interactions can also result in major reductions in First Food availability





# Annual Grasses

Introduction of a non-native invasive plants such as annual bromes, ventenata (*Ventenata dubia*), and medusahead has resulted in large alterations to grassland and shrubland composition, structure, and function



# Annual grasses



Food gathers are reporting loss of root field from invading annual grasses





# Annual Grasses

Reductions in the abundance of several First Foods, particularly for roots (e.g. *Lomatium* spp.),



# Invasive Forbs



Invasive forbs like yellow starthistle (*Centaurea solstitialis*) is impacting biscuitroot gathering locations



# In Closing

- Sustained production of the First Foods through the protection of habitats that support First Foods allows CTUIR continued access to First Foods for harvesting, processing, preserving, and sharing
- Without First Foods, the continuity of CTUIR culture cannot be sustained.

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