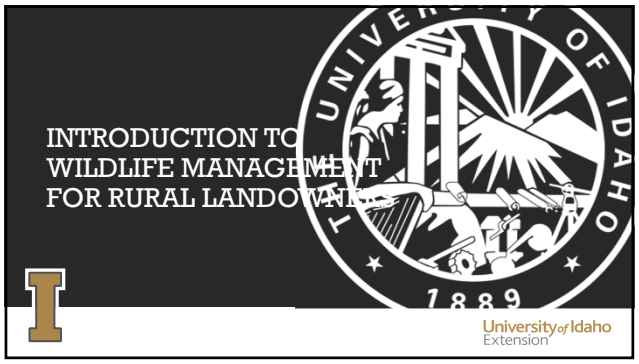
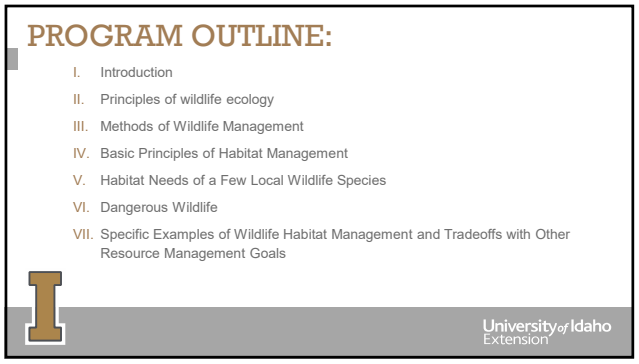
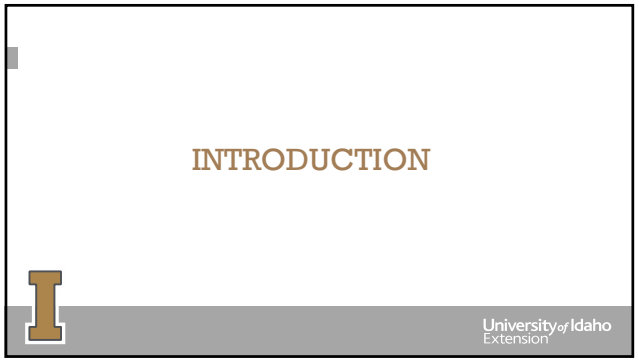

INTRODUCTION TO
WILDLIFE MANAGEMENT
FOR RURAL LANDOWNERS
1889
University of Idaho
Extension

1


PROGRAM OUTLINE:
I. Introduction
II. Principles of wildlife ecology
III. Methods of Wildlife Management
IV. Basic Principles of Habitat Management
V. Habitat Needs of a Few Local Wildlife Species
VI. Dangerous Wildlife
VII. Specific Examples of Wildlife Habitat Management and Tradeoffs with Other Resource Management Goals
University of Idaho
Extension

2


INTRODUCTION
University of Idaho
Extension

3

- Will not cover wildlife damage, or "backyard" wildlife (have handouts)
- All natural resource management is site specific, full of uncertainties, and the science behind it is in a state of rapid change – detailed prescriptions that would apply to all landowners are not feasible and would not be science based
- Workshop will present some basic principles of wildlife ecology and management, so that you can use these to craft management strategies for your own property that account for your specific situation and property goals
- Handouts and other resources

University of Idaho Extension

4

- What are your goals? Like all resource management decisions, what you choose to do depends on your goals for your land. You are the manager.
- All NRM requires trade-offs: can't maximize every resource on every acre
- Legal sideboards: except for listed (ESA) species and some migratory species, the state owns, and controls the harvest of, wildlife in the state
- Social classifications of wildlife:
  - game: established seasons and regulations for take
  - non-game:
    - protected: no take allowed
    - unprotected ("varmint"): as long as you have valid hunting license can take any time in any quantity
- Biodiversity

University of Idaho Extension

5

- Get to know your own property and wildlife habits well. Patient observation pays dividends.

University of Idaho Extension

6

BASIC PRINCIPLES OF WILDLIFE ECOLOGY

University of Idaho Extension

7

"An understanding of the basic ecological laws and principles and wildlife management concepts are essential to the habitat manager."

(Quote from: Black and Thomas 1977)

University of Idaho Extension

8

PRINCIPLES OF WILDLIFE ECOLOGY

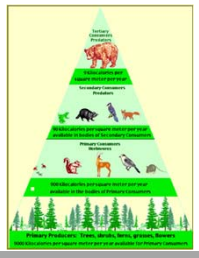
- Nature imposes limits. Only so many animals can exist on any given acre. This is sometimes referred to as "carrying capacity."
- Limits are imposed by availability of energy, predation, cover, disease, fecundity of animal species, etc. Changes through the year, seasons.
- Ecological vs. social carrying capacity

University of Idaho Extension

9

PRINCIPLES OF WILDLIFE ECOLOGY

Trophic Levels—Why there can't be as many cougars as elk and dear



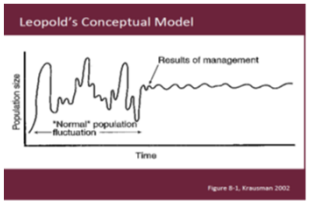
University of Idaho Extension

10

PRINCIPLES OF WILDLIFE ECOLOGY

Population Dynamics—wildlife populations fluctuate within a year, and across years

(nature is dynamic, always changing---- "boom and bust," not "steady state")



University of Idaho Extension

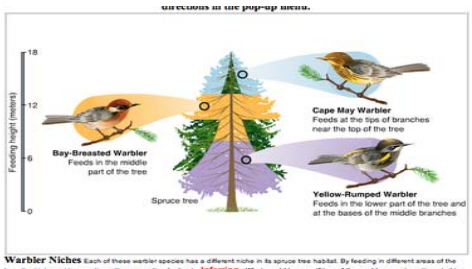
11

PRINCIPLES OF WILDLIFE ECOLOGY

- Niche includes the physical location, preferred food, trophic position, and "function" in the ecosystem
- Life history includes the basic biology of the species, such as average life span, number of young, breeding behavior and season, seasonal movements, etc.

University of Idaho Extension

12



Warbler Niches Each of these warbler species has a different niche in its spruce tree habitat. By feeding in different areas of the tree, the birds avoid competing with one another for food. **Inferring** *What would happen if two of the warbler species attempted to occupy the same niche?*

University of Idaho Extension

13

PRINCIPLES OF WILDLIFE ECOLOGY

- Different wildlife species have different requirements for habitat, etc. so, creating conditions that benefit one species of wildlife may be detrimental to another. Can't maximize conditions for all species on same acre.
- Some species migrate, or are not active for part of the year, so species on your property will naturally change through the year
- Most wildlife species are nocturnal (some more than others) or crepuscular, so just because you don't see a species on your property, doesn't mean they're not there (look for tracks, put up a "game cam")

University of Idaho Extension

14

QUESTIONS?

University of Idaho Extension

15

METHODS OF WILDLIFE MANAGEMENT

University of Idaho Extension

16

CONTROLLING HARVEST (TAKE)

- Controlling human predation (harvest): timing, location, access, weapon, etc.
- Controlling non-human predation

University of Idaho Extension

17

HABITAT MANAGEMENT

Habitat: Probably most important factor for landowners. Your primary method of management will likely be to control and manipulate habitat to achieve your wildlife goals.

University of Idaho Extension

18

BASIC PRINCIPLES AND CONCEPTS OF HABITAT MANAGEMENT

- Coarse filter vs. fine filter approaches
- Diversity of habitat tends to produce a diversity of wildlife species
- The larger the area the greater the number of species (likely encompasses more diverse habitat, and uncommon species)
- Vegetation type and structure are the primary components of habitat that are managed

University of Idaho Extension

19

BASIC PRINCIPLES AND CONCEPTS

- Managing for structural diversity or habitat heterogeneity within a habitat type often uses natural disturbance patterns as a template—e.g. forests
- The "messiness" of natural disturbance patterns in vegetation tends to increase wildlife diversity, referred to as structural heterogeneity or landscape heterogeneity
- Habitat "architecture," with the habitat manager as archetect

University of Idaho Extension

20

BASIC PRINCIPLES AND CONCEPTS

- Habitat consists of food, cover, water and their spatial arrangement
- Wildlife species have adapted over time to human occupation and alteration of the landscape, so good wildlife habitat is not necessarily "natural" habitat
- Natural vegetation is constantly changing so think in terms of processes of disturbance to maintain mix of habitats across your property over time
- Edge and "edge effect"
- Structure of habitat usually more important than species present or absolute age of vegetation (e.g. old growth)
- Wildlife (mostly) don't eat trees, so provide openings in forest for forage growth (either through clearcuts, patch cuts, and controlling canopy closure through various degrees of thinning)

University of Idaho Extension

21

HABITAT: ASSESSING YOUR PROPERTY

- What is your context? What is the potential of your property for wildlife?
- What is the limiting factor for the species of wildlife you want to enhance, and can you increase it? Food, cover, water?
- Integration with other management goals (e.g. timber, wildfire risk reduction)
- Are your goals for wildlife local, or landscape level; featured species or biodiversity?
- Plants are your primary habitat components
- Think of species life cycle and seasonal needs
- Does your property already provide good wildlife habitat for the species you are interested in?

University of Idaho Extension

22

CONTEXT

University of Idaho Extension

23

QUESTIONS?

University of Idaho Extension

24

WILDLIFE HABITATS ON FARM AND RANCH

Hay fields	Ponds, streams, wetlands
Pastures	Fence Rows/Hedge Rows
Corners and other unused areas; brushy areas	
Outbuildings	Orchards
Food plots	Landscaping around the home
Rangeland	Forest
Juxtaposition of all of the above	

University of Idaho Extension

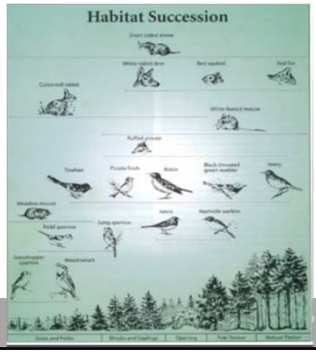
25

HABITAT MANAGEMENT IN FORESTS

University of Idaho Extension

26

- Different species prefer different successional stages
- Habitat generalists vs. specialists
- Succession typically more complex than depicted, creating greater habitat complexity



27

In addition to a variety of successional stages across the landscape (mosaic), additional heterogeneity can be created through gaps/clumps, variable degrees of thinning, and creating vertical complexity within stands (e.g. multiple age cohorts within a stand, leaving legacy trees in regeneration harvests).

University of Idaho Extension

28

University of Idaho Extension

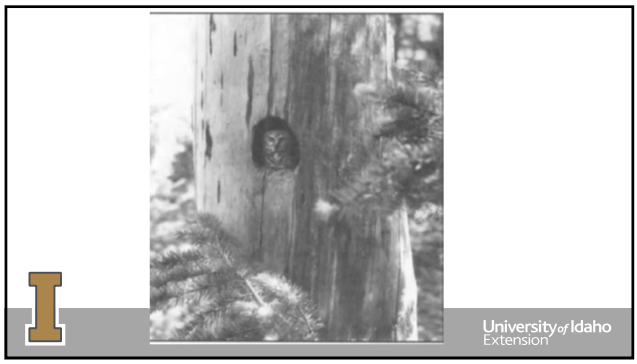
29

SNAGS AND LARGE DOWNED WOOD

- Important for wildlife
- Dozens of bird and mammal species rely on snags for food and cover
- Larger snags provide more habitat and last longer than smaller snags
- Live trees can be intentionally injured to create snags (caution regarding bark beetles)
- Manage for snag recruitment over time as old snags fall
- Note, however, that snags present a hazard to people and workers in the forest
- Large downed wood on forest floor

University of Idaho Extension

30



31

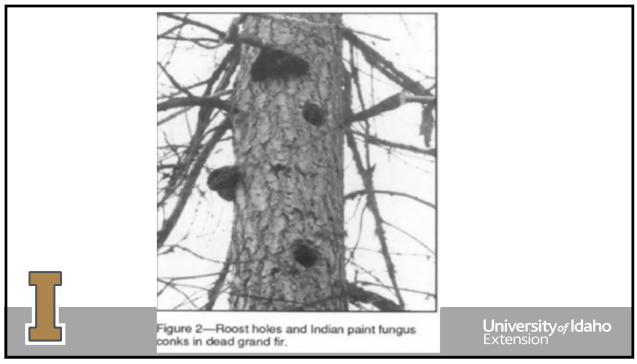


Figure 2—Roost holes and Indian paint fungus conks in dead grand fir.

32

33

INTEGRATING HABITAT AND TIMBER MANAGEMENT

- Variable density thinning and other ecological forest management approaches
- Forest health
- Openings
- Ladder fuels
- Tree competition vs. habitat
- Leaving hardwood shrubs and trees in understory
- Trade offs: all resource management involves trade offs

University of Idaho Extension

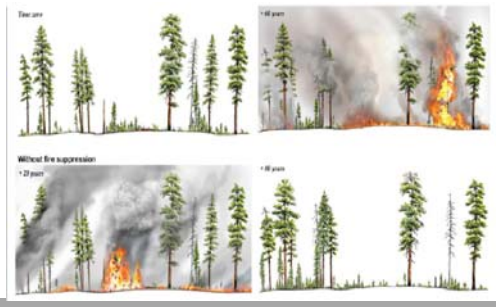
34

HABITAT MANAGEMENT: SUMMARY

Diverse habitat for wildlife can be created by mixing different habitat types and creating horizontal and vertical complexity within a vegetation type. The arrangement of vegetation in space is the primary habitat element we have to work with.

University of Idaho Extension

35



University of Idaho Extension

36

University of Idaho Extension

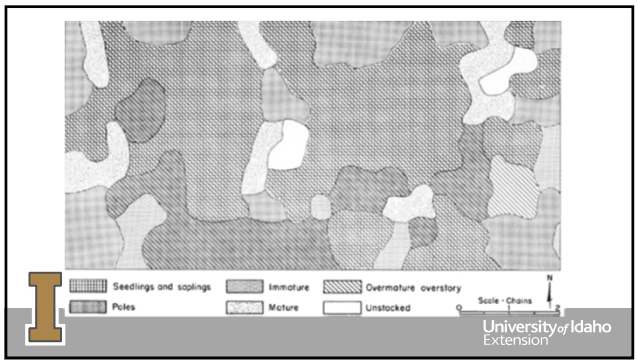
37

University of Idaho Extension

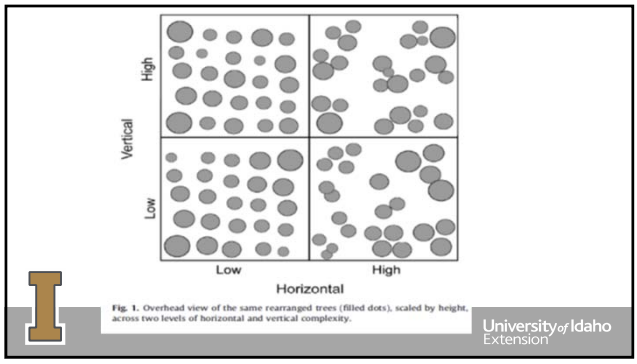
38

University of Idaho Extension

39


Seedlings and saplings
Poles
Immature
Mature
Overmature overstory
Unstocked
Scale - Chains
N
University of Idaho Extension

40


High
Vertical
Low
Low
High
Horizontal
Fig. 1. Overhead view of the same rearranged trees (filled dots), scaled by height, across two levels of horizontal and vertical complexity.
University of Idaho Extension

41


University of Idaho Extension

42

43

44

45

QUESTIONS?

University of Idaho Extension

46

BREAK

University of Idaho Extension

47

MANAGEMENT GUIDELINES FOR INDIVIDUAL SPECIES

University of Idaho Extension

48

WHITE TAIL DEER

The more mixed the habitat is, the more valuable it will be. For example, a mosaic pattern of cover areas and foraging areas will be much more valuable than one block for cover and another block for forage.

In general, habitat enhancement that creates a patchy pattern of early successional vegetation stages will provide the most benefits to whitetail deer.

(From Knight, 2008)

University of Idaho Extension

49

WHITE-TAILED DEER

- Escape/hiding cover: scattered 5-10 ac patches of dense vegetation, no more than ¼ mile apart (e.g. conifer thickets, brush)
- Thermal cover: dense conifer thickets with at least pole size overstory, protected from wind, 4-5 ac size patches (recent research suggests thermal cover not needed)
- Fawning cover: low shrubs from 2-6' tall in area with 50% overstory in 2-5 ac scattered patches

University of Idaho Extension

50

WHITE-TAILED DEER

- Forage: forbs, shrubs, grass
- Openings, such as from recently logged areas provide sunlight for increase shrub and forb growth
- Food plots: establish close to cover, several scattered, smaller plots (less than 5 ac) better than one large field

University of Idaho Extension

51

ELK

For land mangers who are interested in increasing healthy elk populations, their focus would be better spent on providing forage opportunities rather than cover.

(Cook, 2013)

University of Idaho Extension

52

ELK

. . . High-quality summer forage is critical to the survivability of elk through the winter months . . . Mostly in the forage classes of grasses, sedges, annual forbs and deciduous shrubs, provide a more concentrated source of energy than the less-preferred ferns, evergreen shrubs and conifers (Cook 2005).

University of Idaho Extension

53

ELK

- Favor areas with less human activity. When repeatedly disturbed, elk will avoid even quality habitat.
- Elk typically graze more than deer (grass and forbs), but also utilize browse, especially in winter with snow cover.

University of Idaho Extension

54

ELK

- Black bears are major predators of elk calves in spring, with some studies showing 50% of calves taken by bears
- Landscape vision is most important for elk, as few landowners will have enough land to satisfy all elk habitat needs
- Elk prefer moderately steep south-facing slopes in winter

University of Idaho Extension

55

ELK

- Forest cover interspersed with openings with forage provide good elk habitat. Elk need escape, hiding cover, as well as forage near escape cover.
- Large blocks of escape cover away from roads and other human activity are important for holding elk in an area (~250ac over ½ mile from road open to motorized use)
- Forage is found in early succession of forest areas, such as after clearcuts, wildfire, or patch cuttings

University of Idaho Extension

56

ELK

RMEF recommends commercial seed mixes containing the following for deer and elk: buckwheat, timothy, oats, chicory, annual ryegrass, red clover, white clover, perennial ryegrass and crimson clover.

University of Idaho Extension

57

ELK

To provide habitat and forage for deer in elk in forest areas:

- Thin stands to below 50% crown cover
- Retain natural meadows and opening by removing encroaching conifers
- Create gaps of 1 – 5 ac in stands and away from roads
- In created gaps plant native shrubs that provide fruit, nuts, berries or browse
- Seed all disturbed soil with seed mixes that provide high forage value

University of Idaho Extension

58

QUESTIONS?

University of Idaho Extension

59

BLACK BEAR

- Classified as a carnivore (Order carnivora), they are actually omnivores in diet, and consume mostly fruits and other plant material
- Can cause significant damage to tree plantations
- However, bears do prey on other animals, and are major predators of elk calves in NC Idaho

University of Idaho Extension

60

BLACK BEAR

- Have home ranges of 4 to 19 square miles for females, and 18-160 square miles for males
- Forest openings, old burned areas, and meadows are critical for forage plants
- Bears avoid large openings, such as large clearcuts, and prefer dense timber stands on steep slopes for hiding/bedding cover
- Corridors of cover help bear move undetected between core cover areas and/or forage areas

University of Idaho Extension

61

of Idaho

62

WILD TURKEY

- Omnivore, but poults rely heavily on insects for first few weeks of life like most gallinaceous (Order galliformes) birds
- Need open water
- Prime habitat includes open forests with grassy openings
- Nesting areas need at least 60% canopy cover of understory to reduce predation
- Roost trees

University of Idaho Extension

63

RUFFED GROUSE

- Dense understory for nesting sites to reduce predation
- Like turkeys and other game birds, young susceptible to prolonged inclement weather after hatching
- Prefer early stages of successional forest and dense brush
- Grouse prefer aspen and aspen buds, but also utilize serviceberry, snowberry, wild rose, chokecherry, huckleberry, and RM maple.

University of Idaho Extension

64

RUFFED GROUSE

The ruffed grouse is dependent on several early and mid-stages of forest succession with large blocks of mature timber least productive.

(From: Managing Small Woodlands for Ruffed Grouse, 1989)

University of Idaho Extension

65

SONGBIRDS

- Different species depend on different stages of forest succession, however most studies indicate that stands with multiple age classes provide the best habitat for most species
- A mix of trees and shrubs of different heights increases the diversity of the overall bird community
- While more bird species prefer edge, and early successional habitats, some species require large tracks of undisturbed forest
- Even-aged stands managed for timber are generally low in habitat diversity, unless managed intentionally to provide structural diversity for wildlife
- Snags

University of Idaho Extension

66

SONGBIRDS

- Timber harvest layouts that leave large patches of unharvested timber for interior bird species and group harvest patches of less than 10 ac for early successional and edge bird species is a good strategy.
- Creating openings and thinning increase shrub growth

University of Idaho Extension

67

SONGBIRDS: CONSERVATION ISSUES IN THE INTERIOR COLUMBIA BASIN

- Loss of shrub understory and increase in closed canopy forests especially in dry p. pine and D. fir forests
- Loss of open, fire-maintained, p. pine forests (e.g. flammulated owl, mountain quail)
- Each species is unique and therefore cannot be lumped into groups for which management guidelines can be prescribed
- Active management that references natural disturbance regimes over large areas
- Little research has been conducted on effects of habitat fragmentation on migratory birds in the west

University of Idaho Extension

68

BIRDS OF PREY

- Like most wildlife prefer a diversity of vegetative types and structures
- Single trees extending above the canopy make excellent nest sites for hawks
- Mature timber stands tend to favor buteos such as the red-tailed hawk, while young successional stages are good for accipiters

University of Idaho Extension

69

QUESTIONS?

University of Idaho Extension

70

71

SUMMARY

- Use natural disturbance patterns as a reference for creating habitat heterogeneity on your property in three dimensions (3D): horizontal (successional stage, clumps, gaps), vertical (canopy layers), and temporal (change through time)
- Consider trade-offs between wildlife management, timber, livestock, aesthetics, agriculture, and other property goals (can't maximize every resource, and every species, on every acre)
- Good wildlife habitat looks messy, the more your property looks like a park or golf course, the less value it will have for wildlife

University of Idaho Extension

72

DANGEROUS WILDLIFE?





University of Idaho Extension

73

QUESTIONS?

University of Idaho Extension

74