Forest Management and Wildlife

- Some Basics
- Clearcutting and wildlife
- Guilds - 'Life Forms'
- Snags
- Dead and Fuel wood
- Fires and Wildlife
- "Old Growth"
- Woodlot management
- Featured Species Management

Forest Management Basics

- History
  - Early period in N.A. there was no forest mgt.
    - get in - get timber out - and get out
  - 1900's beginning of forest management
    - timber as a renewable natural resource
    - Setting aside of national forest lands
    - Gifford Pinchot - 1st Director of U.S. Forest Service
    - sustained yield of wood products
  - 1950-70's - Multiple-use management
    - timber, range, wildlife, water, recreation

Important terms / concepts

- Stand
  - arbitrary boundary around a group of trees of fairly similar composition, age, structure...
- Clearcut
  - removal of all trees from an area
- Select cuts
  - removal of some trees selecting types desired
  - leaving others for shelter, seed, wildlife, etc.
- Rotation
  - number of years between cutting a tree and the time it is replaced by another harvestable tree or stand

Important terms / concepts Cont.

- Cutting cycle (Entries)
  - number of years between cuts on a particular area or the number of times you enter an area to remove trees
- Shade tolerance / intolerance
  - refers to ability of trees to reproduce and grow in shade
- Even-aged vs. Uneven-aged management
  - all trees in stand approx. same age and size (even) or different ages and sizes (uneven)
  - How do we achieve these with clearcuts or select cuts ?

Even vs. Uneven - Aged forest management

- Even Aged
- clearcut, shelter, seed
- shade intolerant
- uniform tree height each stand
- patchwork of various aged stands
- mobile, early to mixed successional species

- Uneven-Aged
- single-group selection
- shade tolerant
- varied tree heights within stands
- large expanse of mixed sizes of trees
- species adapted to mature forest conditions

Clearcut model for sustained yield

Cut Year 0	Cut Year 10	Cut Year 20	Cut Year 30
Cut Year 40	Cut Year 50	Cut Year 60	Cut Year 70
Cut Year 80	Cut Year 90	Cut Year 100	Cut Year 110
Cut Year 120	Cut Year 130	Cut Year 140	Cut Year 150

Clearcut a forest to achieve a steady flow of wood products over time.

Cut a different section every 10 years. Cutting cycle = 10 years, 16 entries. each cut will yield about the same amount of timber.

If rotation period is 160 years, where will you cut in Year 160 ??

Clearcutting and wildlife

- Do clearcuts help or harm wildlife ?
- It depends
- How large is the clearcut ?
  - size is important - how large an opening will the wildlife you are managing for use ?
- How long to regenerate the clearcut ?
  - what is the rate of succession - how long will this opening you have created be in different successional stages ?
- What are adjacent stands ?
  - relates to how big the 'habitat patch' is - particularly are there adjacent stands that provide cover habitats needed ?

Recall our succession model

The guild concept - "life forms"

- How do you manage the great diversity of wildlife species if they all have different requirements ?
- Animals that use the similar resources in a similar manner (e.g., similar niche in a habitat) would likely respond the same way to chages in those resources.
  - example: Life Form #13 woodpeckers & nuthatches
    - reproduces in own hole excavated in tree
    - feeds in trees, bushes or on the ground

“life forms” Cont.

- Manging by “life forms” requires:
  - inventorying forest animals
  - determining breeding & feeding habits of each species
  - grouping species into categories
  - determining the influence of cutting on each of the various life forms
- It is done to give proper recognition of wildlife as a part of the forest community

Snags

- **Snag** is an upright trunk of a dead or dying tree; important for feeding, perching, and/or nesting sites for many bird species
- How are snags produced ?
  - trees must grow to a certain size before beginning to die
- Evolution of a snag
- Maintaining snags in a managed forest

Dead and fuel wood management

- Dead and down woody material plays an important role in forest ecosystems
  - nurse logs
  - habitat for wildlife
- Managing fuel wood
  - ranking wood species for values as timber, fule, and wildlife habitats.
  - incorporating non-timber values in timber management decisions

Fires and Wildlife

- Attitudes towards forest fires
  - turn of the century fires
  - Bambi and Smokey Bear
- Forest fires and wildlife mortality
  - What makes you think wildlife is killed in fires
- Most wildlife can escape fires
  - how and what are the exceptions ?

Fires and Wildlife - Cont.

- Fire history in Western forests
  - fire scars
- Effects of 75 years of fire suppression
  - fuels build up
  - catastrophic fires - Yellowstone example
- Fire as a tool to manage successional stages
  - prescribed fire - what makes a fire a prescribed fire ?

Fires and Wildlife - Cont.

- Fire benefits to wildlife
  - increased productivity
  - increased palatability / digestiblity
  - changed successional stage
- Some habitat types are closely tied to fires
  - examples: aspen, lodgepole pine, ponderosa
  - examples: California chapparal, grasslands
- When do we suppress fires and when do we let them burn ?
  - criteria ….

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"Old Growth" - a special case ?

- What is "Old Growth" ?
- A virgin forest, a climax forest that has not been cut and contains dead and decaying trees. Most remaining 'old growth' is in the Pacific Northwest
- Uneven-aged forests; gigantic trees stand beside young trees, and sunshine reaches ground only where old trees have fallen
- Why is it important ?
  - Why have we been unable to re-create this habitat type ?

"Old Growth" - Cont.

- Harvesting timber at a rate that will not 'regenerate' "Old Growth" before what remains is all gone.
- Management objective conflict
  - maximum productivity of wood resources
  - multiple resource values - wildlife etc.
- Wildlife species dependent upon "Old Growth" will become extinct when their habitat is lost
  - Spotted owl issue (Pro- and Con-)

Private woodlot management

- Scope of problem
  - distribution of private woodlands
  - scale issues
- Some specific recommendations that can be made
  - edge, snags, food/nest/den trees
  - erosion management, plantings

Species management tradeoffs

- Featured species
  - management policies keyed to a single species. perhaps to the expense of others - often used for endangered species but also applied to more abundant species
- Species diversity (abundance)
  - management objective to maximize number of different species in habitats or area rather than specific species
  - composed of species richnes and species eveness
- Indicator species
  - a ***KEY*** organism -often a plant- that serves as an indicator of ecological condition of the system. Range & wildlife biologists often use the abundance of indicator species to determine range habitat condition