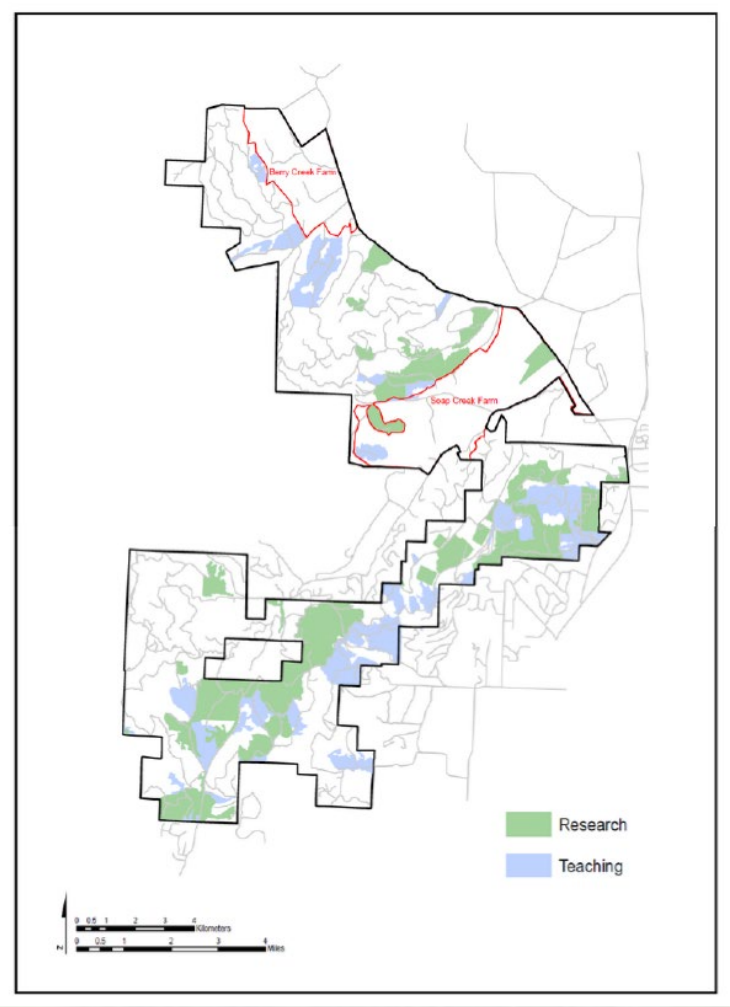
McDonald & Dunn Forest Management Planning Process

Spring 2022 – Fall 2023

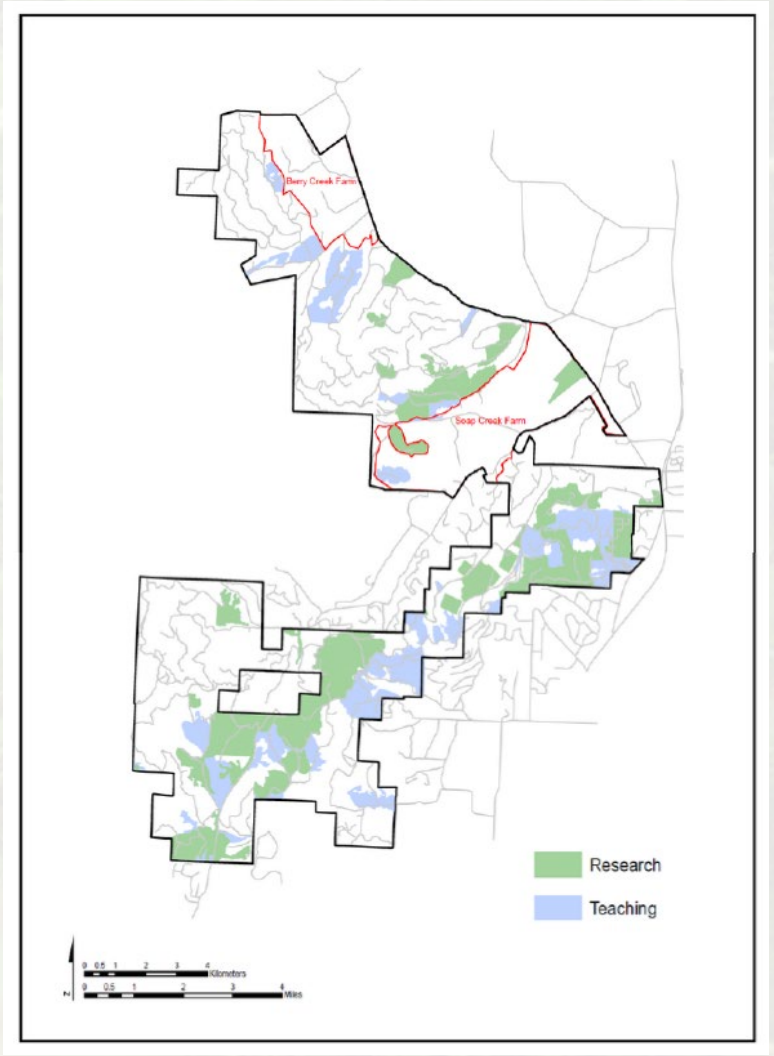
Recent Events - Academic User Listening Session [Open Forums]

- For faculty, staff, & students who use or *could* use the forests for learning
- Intent
  - Understand which regions are used for R/T/O
  - Understand constraints in using the forest for R/T/O
- Hybrid drop-in sessions
  - 21 March 5:30-7pm
  - 22 March 8:30-10am
- Advertised to department heads across all colleges



Recent Events – Input from Academic User Listening Session [Open Forums]

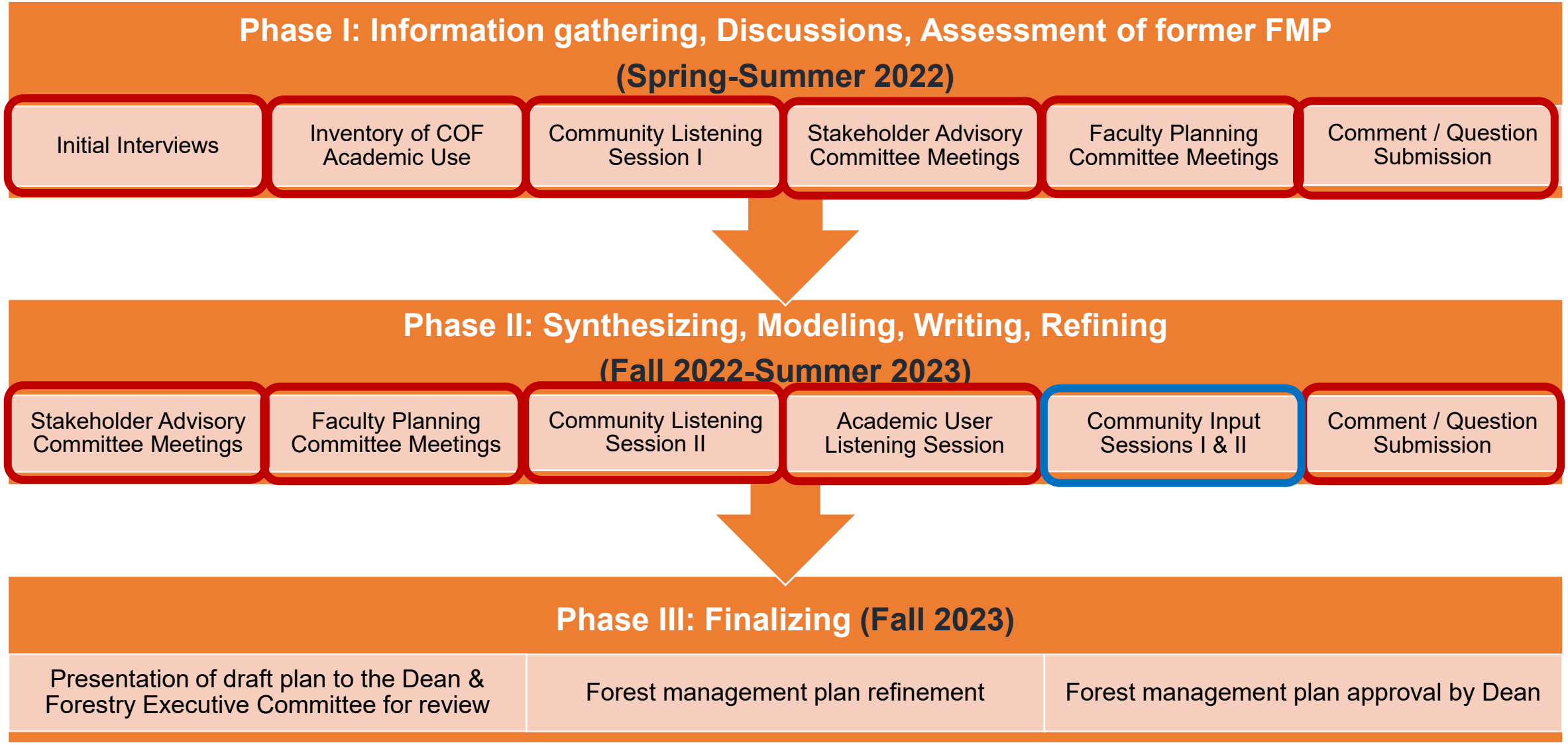
- Current use of the forest
  - Locations where research and teaching is currently occurring
- Potential future use of the forest
  - Opportunities to conduct research on tourism
  - Opportunities to collaborate more extensively with Tallwood Design Institute on outreach and education field tours
- Removing constraints
  - Request for additional personnel to manage teaching and research resources (e.g., electronics & associated data)
  - Suggestions on broadening appeal to users in disciplines outside of natural resources
- Suggestions on naming of the property



Recent Events

- SAC-FPC Field Tour
  - weekday option: Mon, March 27, 1-5pm
- 9 participants

McDonald & Dunn Research Forests Management Planning Process



McDonald & Dunn Research Forests Management Planning Process

PHASE 2	SYNTHESIZING, MODELING, REFINING, WRITING
2a	**Synthesizing**
	SAC meetings *-write synthesis document to share with FPC* *-identify new 'management strategies' & 'scenarios'* *-consider structure & components of the new plan* FPC meetings *-write overarching principles document to share with SAC* *-identify new 'management strategies' & 'scenarios'* *-consider structure & components of the new plan*
2b	**Modeling, Refining**
	Round 1: Modeling Evaluation of merits of each scenario (SAC, FPC, Community Input Session I)
	Round 2: Modeling Evaluation of merits of each scenario (SAC, FPC, Community Input Session II)
2c	**Writing**
	Drafting of chapters (various work groups and individuals)

Detailed view of Phase 2 of the plan development process

Defining each new ‘Forest Management Strategy’

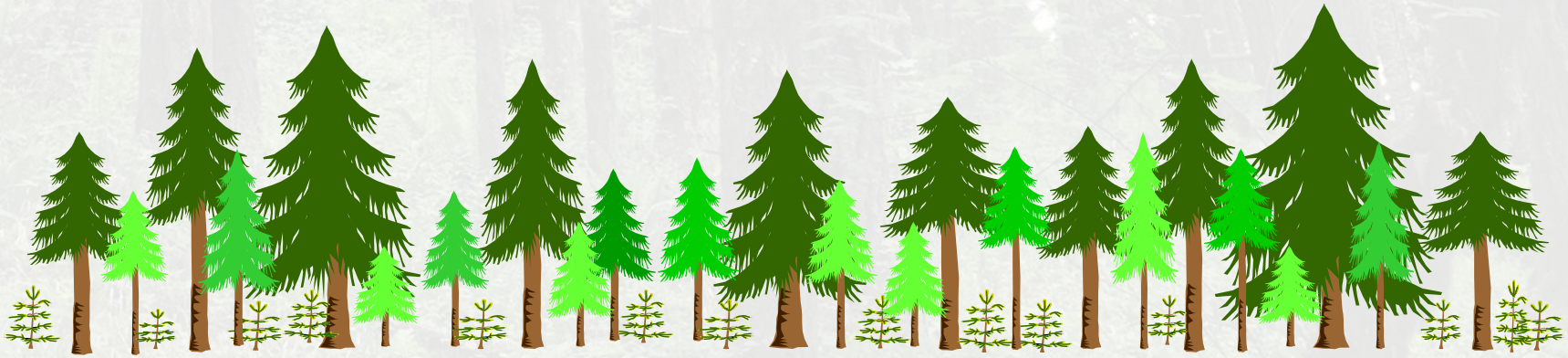
A. Even-aged, short rotation

B. Even-aged, long rotation

C. Multi-aged, multi-species

D. Managed reserves

E. Ecosystems of concern



	Even-aged short rotation	Even-aged long rotation	Multi-aged multi-species	Managed reserves	Ecosystems of concern
Guiding principles	*Manage in a way that creates learning and research opportunities about short-rotation forestry and early seral conditions, under the principle of financial sustainability, informed by both Indigenous knowledge and Western science.*	*Manage in a way that creates learning and research opportunities about long-rotation forestry and retention of legacy elements throughout the life of each stand, informed by both Indigenous knowledge and Western science.*	*Manage in a way that creates learning and research opportunities about managing multi-aged and/or multi-species stands informed by both Indigenous knowledge and Western science.*	*Manage in a way that ensures learning and research opportunities about the creation and maintenance of historical late-seral forest conditions informed by both Indigenous knowledge and Western science.*	*Manage in a way that creates learning and research opportunities about a range of restoration opportunities and intensities to improve and maintain the health and resiliency of selected ecosystems, informed by both Indigenous knowledge and Western science.*

McDonald-Dunn Research Forests draft guidelines for each new 'Management Strategy'

[version after FPC meeting on 20 March 2023]

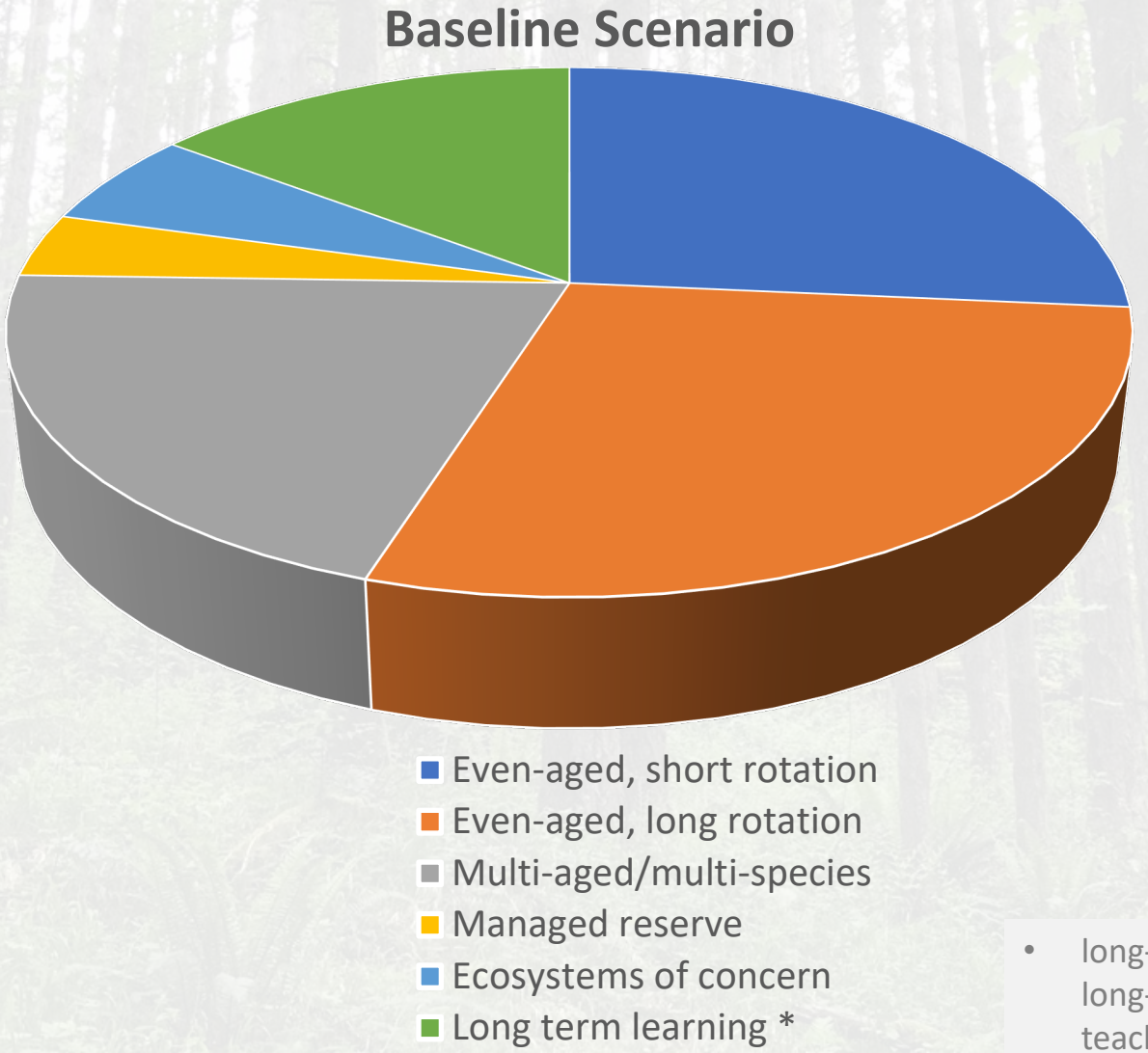
	Even-aged short rotation	Even-aged long rotation	Multi-aged multi-species	Managed reserves	Ecosystems of concern
Overview	Even-aged plantations of Douglas-fir (or other climatic-appropriate species and genetic stock) will be established and managed to be financially competitive by maximizing yields of wood products valuable for domestic mills. Clearcut harvests will not exceed 80 acres (with limited exceptions due to large-scale disturbances).	Even-aged forests of Douglas-fir (or other climatic-appropriate species and genetic stock) will be established and managed to provide older forest conditions and produce high-quality wood for domestic mills. Clearcut harvests will not exceed 40 acres (with limited exceptions due to large-scale disturbances).	Multi-aged, mixed-species forests of primarily Douglas-fir will be established and managed using *shelterwood-with-residuals, group-selection,* and *variable retention* regeneration harvests to create heterogeneity in openings, regenerate new age classes of trees, and maintain structural diversity for a variety of values. Multiple native tree species will be encouraged. These harvests will not exceed 40 acres.	These areas will be held and conserved outside the management base using only a light touch when needed to promote and maintain historical older-forest structural and compositional diversity for a variety of values, and provide for public safety. Forest succession and developmental processes following natural disturbances will proceed with little human intervention. Areas added to the existing reserve base may need more active operations to promote the development of historical conditions.	Restoration and maintenance activities will be undertaken in native oak savanna/woodlands, meadows, and riparian/aquatic systems. Two strategies will be employed: • retain and conserve the most at-risk and highest value components of ecological and cultural diversity, and • use intensive efforts where needed to improve and restore broader ecological and/or cultural functions at specific sites.

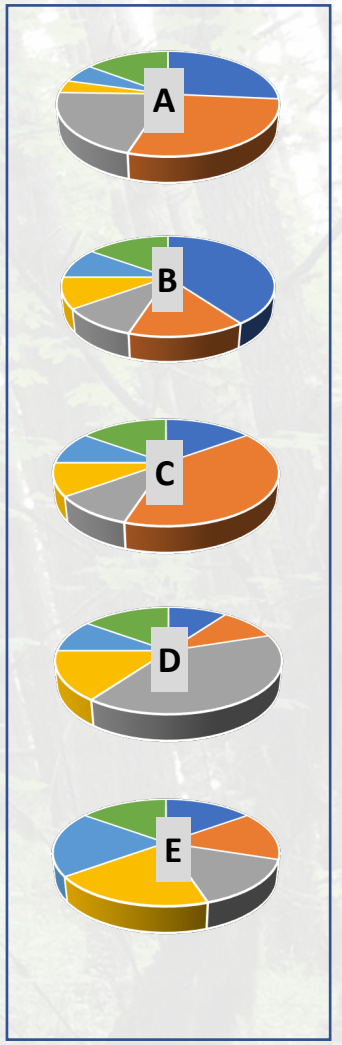
	Even-aged short rotation	Even-aged long rotation	Multi-aged multi-species	Managed reserves	Ecosystems of concern
Stand establishment	Employs intensive site preparation following industry standards (prescribed fire and vegetation control) for ease of planting and early stand establishment. Planted seedlings will be from the best genetically selected material available for timber production but will also consider genetic seed sources adapted to a changing climate. Planting densities will be sufficient to meet the Oregon Forest Practices Act and with the intent to avoid the need for precommercial thinning, but PCT would be allowed if warranted. Spacing will be more or less uniform. Competing vegetation will be managed to minimize growth loss of tree seedlings for the first 1-5 years until trees are free-to-grow, and then competing vegetation will be allowed to grow. A minor component (minimum of ~5% cover) of hardwood trees and/or resprouts will be identified and purposely left free to grow in throughout the rotation.	Employs adequate site preparation to plant and establish a stocked young stand. Planted seedlings will be from the best genetically selected material available for timber production but will also consider genetic seed sources adapted to a changing climate with an eye to longer rotations. Initial stocking rates will be appropriate for the site conditions with enough established trees to accommodate multiple commercial thinning harvests within the rotation, with the intent to avoid PCT but allowed it if warranted. Spacing can be variable and appropriate to the site. Competing vegetation will be managed with less herbicide than short rotations, with the intention of limiting tree seedling mortality during the first 1-3 years, and then competing vegetation will be free to grow. A modest component (minimum of ~10% cover) of hardwood trees and/or resprouts will be identified and purposed left free to grow throughout the rotation.	A combination of pile burning, broadcast burning, and limited surface herbicide treatments will be used for site preparation in understory and/or small openings. Seedlings will be interplanted to augment natural regeneration of conifers from seed and hardwoods from both sprouts and seed, with an eye to species richness and genetic variability. *Shelterwood with residuals* will maintain an appropriate overstory density to allow understory trees to grow. Overstory trees may be spaced uniformly or variably, dictated by site, stand, and windthrow risk conditions. *Group-selection harvests* will contain small (1.5-4.0 acre) openings. *Variable retention regeneration harvests* will retain individual trees, clumps of thinned and unthinned trees, and/or no-touch areas that are dictated by site, stand, and windthrow risk conditions.	Typically, stands will regenerate continuously on their own from natural seeding. Active conifer and hardwood regeneration efforts may occur in areas subjected to large-scale disturbances (e.g., windstorms, ice storms, or wildfires), or when adding acres to the reserve base. Invasive vegetation will be managed with judicious use of herbicides and alternative measures when necessary to ensure establishment and growth of tree seedlings and culturally significant species.	*Oak savanna/woodlands* – in areas designated to receive intensive restoration treatment, oaks may be purposefully established through seed or seedlings at appropriate densities along with other native and culturally significant vegetation that historically occurred in these ecosystems. Site preparation with prescribed fire and/or judicious surface herbicide use may be required. *Meadows* – may require site preparation with prescribed fire and/or judicious surface herbicide use and seeding of other appropriate native herbaceous vegetation. *Riparian systems* - in areas designated to receive small-scale restoration treatment, limited harvests will occur with site preparation and planting at appropriate densities along with other native vegetation that historically occurred in these ecosystems. There may be judicious use of herbicides.

	Even-aged short rotation	Even-aged long rotation	Multi-aged multi-species	Managed reserves	Ecosystems of concern
Intermediate treatments	Thinning and other intermediate stand treatments will only be done if justifiable economically or if needed to respond to an unplanned disturbance event to maintain the health of each the stand. ~5% cover of hardwoods will be retained in thinning treatments to provide habitat diversity.	The first commercial thinning will occur as dictated by stand conditions, likely around 28-34 years of age. Additional commercial thinning entries will be done until final harvest using a variety of thinning approaches. The last thinning will occur no later than 10-15 years before final harvest. ~10% cover of hardwoods will be retained in thinning treatments to provide habitat diversity.	*Shelterwood-with-residuals* - understory trees may be commercially thinned when needed (likely 30-40 years of age) depending on the overstory density. If overstory trees die, replacement trees may be assigned from the understory cohort to maintain the two-storied canopy structure over time. *Group-selection* – Periodic thinning will be used to increase vertical and horizontal structure, maintain health, and provide interim income. *Variable retention regeneration harvests* – Periodic thinning will be used to increase vertical and horizontal structure, maintain health, and provide interim income.	All areas may receive intermediate treatment under limited circumstances: • Treatment of invasive species • Removal of individual trees due to safety concerns • Prescribed burning to emulate historical processes and for research purposes. Areas newly added to the reserve base may need intermediate treatment under limited circumstances: • Irregular thinning or creation of gaps to promote characteristics of historical late-seral forest conditions typical of the region and in light of climate change.	*Oak savanna/woodlands* - treatments could include prescribed burning, control of invasive plants, and/or precommercial thinning to remove young invading conifers. *Meadows* – treatments could include repeat prescribed burning and control of invasive plants and invading conifers. *Riparian systems* – treatments could include additional structural thinning, repeat prescribed burning, and control of invasive plants. *Aquatic systems* – In-stream and pond treatments could include removal of invasive species, including invasive aquatic plants.

	Even-aged short rotation	Even-aged long rotation	Multi-aged multi-species	Managed reserves	Ecosystems of concern
Stand age	Rotation lengths will be regulated primarily by age that maximizes net revenue production. Rotations will be 30-60, likely 35-45 years.	Rotations typically will be 60-90 years, with a small percentage (<10%) managed to 120 years to represent a variety of common and uncommon rotation lengths and provide a diversity of conditions across a landscape scale.	*Shelterwood-with-residuals* - Final harvest of understory trees will be 60-70 years. The age of the oldest trees harvested from these stands will be 60-120 years, regulated primarily by the complexity of habitat desired for each stand. *Group-selection* - Re-entry harvest will occur every 15-30 years to create 3-4 age classes. Minimum proximity of group selection openings to previous harvest entries will be >200 feet. *Variable retention harvest* – Re-entry harvest will occur every 15-30 years to create 3-4 age classes.	NA. The age of the oldest trees in these stands will continue to increase over time adding to the age-class diversity across the forest.	NA. The age of the oldest trees in oak ecosystems will tend to increase over time. For riparian ecosystems, tree age will increase for long-lived conifers but for alders and other short-lived species, tree age may decrease as they achieve senescence and die.
Legacy elements	Procedures will follow OFPA regulations (i.e., retain wildlife trees and CWD in harvest units >25 acres).	Procedures will exceed OFPA regulations (i.e., retain additional legacy trees, green trees, snags, and CWD).	This management system maintains abundant living and dead structure constantly within each stand in an effort to create and sustain diverse forest conditions.	NA – it is the legacy	*Oak savanna/woodlands* – old conifers with an open grown character dating to pre-settlement will be retained. *Meadows* – NA *Aquatic/riparian systems* - large old trees and big logs will be retained or enhanced both in-stream and in riparian zones.

The FPC discussed 5 ‘scenarios’ to be modeled

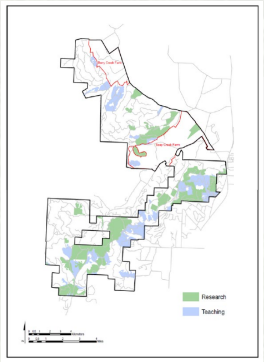




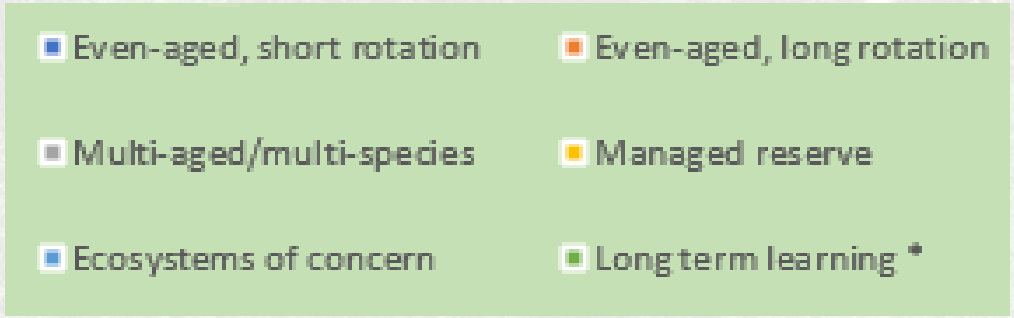
- long-term learning = acreage used for long-term research and recurring teaching and demonstrations

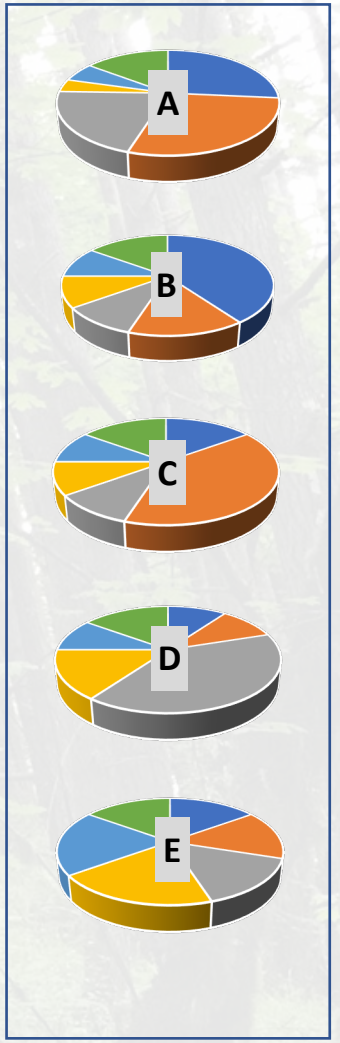
5 Scenarios to be modeled

Proportion	Scenario A (baseline)	Scenario B (lots of EASR)	Scenario C (lots of EALR)	Scenario D (lots of MAMS)	Scenario E (lots of MR & EOC)
Even-aged, short rotation	27%	40%	15%	10%	15%
Even-aged, long rotation	29%	15%	40%	10%	15%
Multi-aged/multi-species	21%	10%	10%	40%	15%
Managed reserve	4%	10%	10%	15%	20%
Ecosystems of concern	6%	10%	10%	10%	20%
Long term learning *	15%	15%	15%	15%	15%
TOTAL	100%	100%	100%	100%	100%



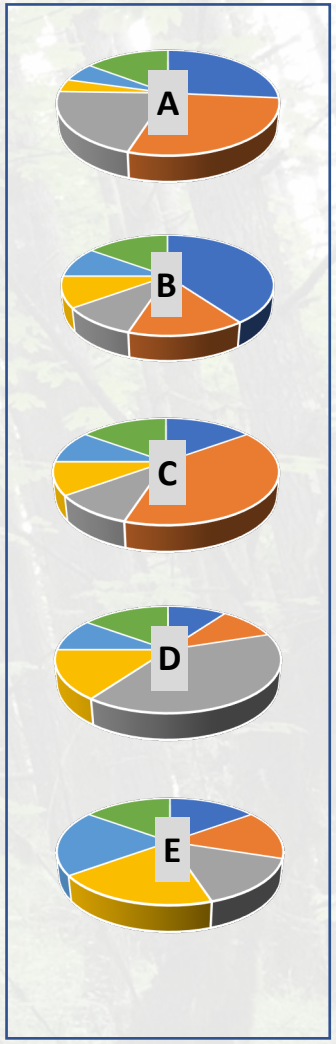
- long-term learning = acreage used for long-term research and recurring teaching and demonstrations





What metrics should be used to evaluate scenarios?

Forest Value	Scenario A (baseline)	Scenario B (lots of EASR)	Scenario C (lots of EALR)	Scenario D (lots of MAMS)	Scenario E (lots of MR &EOC)
Biodiversity					
Carbon storage					
Cultural values					
Forest products					
Recreation suitability & needs					
Resilience					
Revenue					
Wildfire risk					



Metrics proposed to reflect forest values, to be used to evaluate the merits of each scenario

Value	Relevant Metrics	Explanation
Biodiversity	Stand age class distribution	a measure of the diversity of forest age class
	Forest cover	a measure of habitat suitability for some species
	Tree species richness or diversity	a measure of vegetative diversity
	Composite index of risk	a measure of suitability for specific rare species
	Snag density, diameter, and/or basal area	a measure of habitat for some species
Carbon storage	Aboveground biomass	a measure of biomass of stem wood, bark, and foliage
Cultural values	Tree species of cultural value	a measure of tree species of cultural value
Forest products	Log diameter and length	a measure of forest product value
	Total board feet and cubic ft by species, defect	a measure of forest product value
Recreation suitability & needs	Qualitative measure of preference	a measure reflecting preferences for various rec users
Resilience to natural disturbances	Stand Density Index	a measure of tree density and size
Revenue	Projected	a dollar value projected to be earned through timber harvest & used for restoration
Wildfire risk	Composite index of risk	a measure derived from Canopy bulk density, Canopy base height, Canopy cover