

# Proposed Monitoring Plan for McDonald Dunn Forest

**DRAFT**

**November 7, 2006**

As stated on page 43 of the McDonald- Dunn Forest Plan:

“The following, goals, objectives, and sustainability indicators will be used to develop, implement, and evaluate the revised McDonald-Dunn Forest Plan and to drive the adaptive management process. Qualitative or quantitative sustainability indicators are listed by objective for annual, decadal, and sometimes longer time frames...It is anticipated that individual indicators may change during the plan period. The FEC will decide by July 1, 2006 which indicators to use for a given evaluation period and the specific level of indicator desired as a target.”

Two or more objectives are listed under each goal to provide more definition and understanding of what the goal means and how to tell whether it is being achieved. A number of potential indicators are listed under each objective. They describe what would be measured... Four desirable characteristics of indicators are as follows: they relate to the objective; their performance can be measured; measurement can occur at reasonable cost; and information gathered about the indicator will help direct change when change is needed.”

Our adaptive management plan outlines how each of these indicators would be measured if selected for use, how often measurement would occur, and the metric that would be used to gauge performance... Metrics for gauging performance...will generally be one of three types: 1) trend such class use is increasing or decreasing (requires a baseline measurement), 2) comparison to demand for a feature such as demand for particular types of forest structures, and 3) absolute standards such as a water quality standard.”

With these concepts in mind, development of the monitoring system is guided by the following principles:

1. Monitoring will assess achievement of goals and objectives. (For goals and objectives of the McDonald-Dunn Plan, see below, or pages 43-48 of the plan).
2. Indicators chosen should relate to the objective, be measurable at reasonable cost, and help direct change when change is needed.
3. Monitoring should provide an early warning system for unmet needs, and a way to learn from forest users (e.g. teachers, researchers, students).
4. Top priority is placed on monitoring the achievement of goal #1 (learning, discovery, engagement).
5. Indicators should be chosen that enable rapid learning about changes in forest conditions.

6. On questions about achievement of goals for forest use, it is helpful to ask the user—teachers, researchers, students, tour participants, recreationists.
7. Information already being gathered will be used to the degree possible.
8. Class projects will be used to gather needed data as a teaching tool and to reduce costs.
9. Each monitoring item is related to a forest plan objective and described in terms of who will measure it , how it will be measured, cost, and expectation.
10. Two budget levels will be developed—1) what can be done with little additional out-of-pocket cost, called Level 1 and 2) a complete monitoring program, called Level II. (Level 1 indicators are in white below, and the additional indicators of Level II are shaded in grey.)
11. There should be separation of evaluation from the action being evaluated--self-evaluation isn't entirely credible.
12. Periodically outsiders will be brought in for an independent review of how well plan implementation is meeting plan goals
13. Responsibility for coordinating the monitoring effort rests with the Forest Information Manager

The development of this monitoring plan began with the preliminary list of performance and sustainability indicators shown on pages 43-48 of the McDonald-Dunn Forest Plan. For each indicator, we identified a monitoring method, metric, who will measure, annual out-of-pocket cost for each of the first five years, potential as a student project, and an expectation for the value of the indicator in five years. We then reviewed this information with forest staff, Dean Salwasser, and Associate Executive Dean Hobbs and discussed it among ourselves. As a result of these discussions we revised or dropped some of the preliminary indicators. In addition we added an objective related to performance of the themes under goal #1. Our final proposed list is below.

**We request that the FEC allow the Level 1 monitoring plan (those indicators with little or no out-of pocket cost) to proceed.** (Note the “expectation” for each indicator may be revised by the FEC at a later date.)

Also, the FEC may decide to include additional portions of the Level II inventory, but those discussions should not prevent the monitoring specified under the Level I monitoring plan from beginning.

*Note: Metrics are cumulative, i.e. class survey measures include all measures in column*

**Goal 1. Learning, Discovery, Engagement**

**Provide diverse opportunities for learning, discovery, and dissemination of new knowledge and technologies related to forest ecosystems, forest management and forest products/services for forest managers/owners, scientists, teachers, students and the general public.**

**Objective 1. Provide a diverse array of high quality outdoor learning opportunities for students from the CoF, OSU, and other institutions of higher education.**

	Indicator	Monitoring method	Metrics	Who will measure	1 (Base line) M\$	2 M \$	3 M\$	4 M\$	5 M\$	Student project?	5-yr expectation	Comments
1-1-1	Sites used for classes	Class use survey every 2 years	<ul style="list-style-type: none"> <li>• Number and kind of classes</li> <li>• Spatial distribution /location</li> <li>• Conditions/practices utilized</li> </ul>	KNJ class	0	0	0	0	0	F460	<p>Increase in class use</p> <p>At least X% satisfied/increase in satisfaction over time (if below X)</p>	
1-1-2	Accommodation of educational needs (requests for conditions and practices): (staff information)	Disposition of requests annually	Type and number of requests for conditions and practices and whether requests were granted /Reasons for not granting access	Academic Support Manager	0	0	0	0	0		All met that do not conflict with goals	
	Survey information	Survey of teachers every 2 years	<p>Teacher satisfaction with College process and results. Reasons for satisfaction/dissatisfaction</p> <p>Unmet needs</p>	KNJ class						F 460	At least X% satisfied/increase in satisfaction over time (if below X)	<i>Survey should reveal teacher satisfaction with process and results and unmet needs</i>
1-1-3	Accommodation of educational needs (staff assistance)	Disposition of requests annually	Type and number of request for staff assistance in teaching and tours/whether requests were granted/reasons for not granting assistance	Academic support manager	0	0	0	0	0			

	Survey information	Survey of teachers every 2 years	Teacher satisfaction/ Reasons for sat/dissat.  Unmet needs	KNJ class						F 460	At least X% Satisfied/ Increase in satisfaction over time (if below X)	<i>Survey should reveal teacher satisfaction with process and unmet needs</i>
1-1-4	Identification and management of dedicated teaching sites (staff information)  Survey information	Summary of R&T database annually  Survey of teachers every 2 years	Number of teaching sites and written plans  Degree of satisfact. Reasons for sat/dissat.	Academic Support Manager  KNJ class	0	0	0	0	0	F460	All have written plans  Management follows plans  At least X% satisfied/increase in satisfaction over time	

**Objective 2. Contribute to the creation of new knowledge and technologies**

1-2-1	Research and demonstration projects and associated management plans (staff information)  Survey information	Summary of T&R database annually  Survey of researchers every 2 years	Number of projects/ type of projects/ number with written plans	Academic Support Manager  KNJ class	0	0	0	0	0	F 460	All have written research/demonstration plans	
1-2-2	Accommodation of requests for research and demonstration projects	Survey of researchers every 2 years	Number and type of projects registered/ Projects rejected with reasons for rejection  Degree of satisfaction with process	KNJ class	0	0	0	0	0	F 460	Research requests compatible with goals are accepted  Increase in research projects  At least X% satisfied/Increase in sat if less than X sat.	

1-2-3	Identification and protection of active research sites during operations (forest information)  Survey information	Summary of T&R database annually  Survey of researchers every 2 years	Number of affected projects  Seriousness of damage/degree of sat.	Academic Support Manager  KNJ class	0	0	0	0	0	F 460	100% of sites identified and protected  At least X% sat/Increase in sat if less than X sat.	
1-2-4	Publications from projects on the College Forest	Survey project researchers every five years	Number and list of publications based on COF work	Academic Support Manager	2	0	0	0	0		Increase	
1-2-5	Research publications from projects on College Forests cited in academic and trade publications.	Utilize web search facilities (Google Scholar) to identify how often cited and where cited	# of times cited in academic and trade journals	Academic Support Manager	2	0	0	0	0		Increase	.
1-2-6	College Forests operations, research, and demonstration plots featured in outreach events and tours being conducted by OSU and others	Survey outreach people every 5 years	Type and number of outreach events and tours	Academic Support Manager	0	0	0	0	0		Increase	Use of sites on the forest for outreach events indicates that forest conditions are relevant to OSU and others.
1-2-7	Accommodation of demonstration needs (forest information)  Survey information	Summary of requests for access, tours, and conditions for demonstration purposes whether or not accommodated, annually  Survey	Type and number of requests met/ kinds of requests not met  Degree of satisfaction with process and results	Academic Support Manager  KNJ class	0	0	0	0	0	F 460		

**Objective 3. Provide neighboring communities with a source of high-quality forest learning opportunities for a variety of audiences including neighbors, youth, recreational users, civic groups, and other visitors.**

1-3-1	Requests for public tours and how they are accommodated	Web-based database of requests and events compiled annually	Number of requests/ types and numbers accommodated./Number and type that couldn't be accommodated	Information Manager	0	0	0	0	0			
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1-3-2	Requests for educational activities from K-12 school groups	Web-based database of requests and events compiled annually	Number and type of requests	Information manager	0	0	0	0	0			Help identify demand for K-12
1-3-3	Knowledge gained by participants in programs on the College Forests regarding forests, forest management and the impact of College Forests on OSU and surrounding communities	Extension-type evaluation form filled out at end of tours	Rating of knowledge gained		??							
1-3-4	Knowledge gained by College Forest visitors from informational kiosks	Survey visitors every 5 years		Recreation Manager	15	0	0	0	0	Potential student project	Informational kiosks should help educate forest visitors about management of the forest.	

**Objective 4. Include potentially attractive examples of different strategies and practices for managed forests in the region.**

1-4-1	Representative examples of strategies and practices implemented for each of the four major themes	Cumulative summary updated annually from silviculture database	Acres implemented by theme	Forest Information Officer	0	0	0	0	0			
1-4-2	Perception of forest management practices by forest managers	Bi-annual survey of forest managers	Summary of their rating	KNJ class	0	0	0	0	0	FOR 460	Forest managers should perceive College Forests as leaders in develop. and applic. of innovative for. mgt.	

**Objective 5. Test the effect of different silvicultural themes and associated management practices. [NEW OBJECTIVE]**

1-5-1	Stocking and growth of planted seedlings	Reforestation surveys year 1, 3 and 5 after planting	<ul style="list-style-type: none"> <li>Trees/acre</li> <li>Average height growth</li> </ul>	Silviculturist	0	0	0	0	0		Meet or exceed industry standard based on survey of managers (Themes 1 and 2)	Early seedling growth and survival should be comparable to target growth and survival for each theme---growth of plantations is crucial to sustained income level
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1-5-2	Growth of established plantations	Permanent inventory plots established in plantations, at time of plantation establishment remeasured every 5 years	<ul style="list-style-type: none"> <li>• Trees/acre</li> <li>• Average height and diameter growth</li> </ul>	Information manager	2	2	2	2	2		Meet projected growth curves by theme	Growth of plantations is crucial to sustained income level
1-5-3	Treatment or retention of overstory hardwoods; retention of character trees, raptor nests	Pre- and post- harvest evaluation	<ul style="list-style-type: none"> <li>• Hardwood basal area/acre</li> <li>• Number of character trees/acre/disposition of raptor nests</li> </ul>	Silviculturist	0	0	0	0	0		Post-treatment should be consistent with the guidelines on page 25 of the plan	.
1-5-4	Structural characteristics of the treated acres within each theme	Summary of age classes and structural features of treated acres by theme every 2 years	<ul style="list-style-type: none"> <li>• Acres by age class</li> <li>• Acres by structural class</li> </ul>	Information manager	0	0	0	0	0		Should reflect structural characteristics of themes	
1-5-5	Bird use of each theme	Point counts on a sample of stands measured baseline year and every 2 years	Bird species by theme	Information manager	??	0	0	0	0	Potential student project	As the plan is implemented, the number and diversity of bird species may vary by theme	
1-5-6	Mammal use of each theme	Need method	Need metrics	Information manager	??					Potential student project	As the plan is implemented, the number and diversity of small mammal species may vary by theme	
1-5-7	Amphibian/Reptile use of each theme	Need method	Need metrics	Information manager	??					Potential student project	As the plan is implemented, the number and diversity of amphibian and reptile species may vary by theme	

**Goal 2. Net Revenue**

**Optimize net revenue from College Forests operations to support education, research, and outreach missions of the College.**

**Objective 1. Manage and harvest forest growth sustainably through time in conformance with themes and goals for particular forest management areas.**

2-1-1	Relation of actual harvest to decadal harvest scheduling targets met for each theme	Harvest and cut-out report for the decade, updated annually	Scheduled and Harvested MMBF, Acres,	Sale Administrator & Information Manager	0	0	0	0	0		Actual harvest within 5% of plan harvest volume and acres by theme (evaluated at end of decade)	.
2-1-2	Relation of growth and yield to decadal and long-term expectations	Forest inventory, every five years	Actual growth (board feet) compared to simulated	Information manager	0	0	0	0	0		Actual growth equals or exceeds expected growth	
2-1-3	Progress in rehabilitation of under performing stands (relative to theme goals)	Compiled annually from silviculture database	<ul style="list-style-type: none"> <li>• Acres rehabilitated</li> <li>• Effect on sustained cash flow</li> </ul>	Information manager	0	0	0	0	0		Underperforming stands within theme treated if can positively contribute to sustained cash flow. Others treated if justified by contribution to theme	Areas that are not performing as they should within a particular theme may require investment

**Objective 2. Manage the College Forest efficiently**

2-2-1	Net annual revenue to the College of Forestry from College Forests operations	Actual net revenue, gross revenue, and costs compared to anticipated net revenue, gross revenue, and costs	Dollars	Sale Administrator, Accountant, and Information Manager	0	0	0	0	0		At least \$800,000 per year net revenue (KNJ will provide expected gross revenue and costs)	The College Forest cannot control all variables affecting net revenue but we need to understand how and why actual revenue compares to expected revenue
2-2-2	Cost effectiveness of College Forest operations (roads, harvest, etc.)	Comparison of operational costs to costs of similar organizations		Consultant	0	0	0	0	50		Operational costs should be comparable to similar organizations.	

2-2-3	Options explored to reduce operations costs	Annual summary	List of actions	Director	0	0	0	0	0			
2-2-4	Options explored for enhancing revenues	Annual summary	List of actions	Director	0	0	0	0	0			
2-2-5	Gross revenue from harvested products	Comparison of our average gross revenue to that published in <i>Log Lines</i> , by species and grade, compiled annually.	Gross dollars/MBF	Information manager/ Sale Administrator	0	0	0	0	0		Meet or exceed values in <i>Log Lines</i>	

**Goal 3. Natural Heritage and Forest Ecosystem Services**

**Sustain forest ecosystem services generally associated with forest environments and ecological diversity commensurate with land capabilities, to meet legal requirements and to capture opportunities to test policy-relevant management options or to feature distinct resource values of the forest.**

**Objective 1. Meet or exceed state, federal, or other laws, except where research requires deviation from laws and rules, and exemption is obtained from the appropriate regulatory agencies.**

3-1-1	Success in operational practices meeting or exceeding OR FPA regulations, except where research projects test alternate approaches	Compiled annually from silviculture database (ODF citations/warnings)	Number of citations and warnings	Information manager	0	0	0	0	0		No citations	Operational practices should meet legal requirements
3-1-2	College Forest participation in the Oregon Plan for Salmon and Watersheds	Annual summary	Dollars	Director	0	0	0	0	0			The Oregon Plan for Salmon and Watershed relies on participation from all land managers in Oregon to help restore and sustain native fish stocks and aquatic systems.
3-1-3	Success in plans and practices complying with regulations for at-risk and federally listed species.	Surveys of species by experts	Results from surveys	Contractors/ Information Manager	0	0	0	0	0		No legal difficulties or public embarrassments	Operational practices should meet legal requirements and

**Objective 2. Sustain, and restore if necessary, known examples of natural heritage resources.**

3-2-1	Protection of habitats for of special interest	Report every year on status of butterfly meadows and the NRF habitat In the south zone		Information Manager	0	0	0	0	0			
3-2-2	Protection of designated old growth groves	Report every two years		Information manager	0	0	0	0	0			

**Objective 3. Learn how to track carbon balance and demonstrate to others.**

3-3-1	Estimates of carbon balance for each theme	Report every five years	Tons of Carbon	KNJ class	0	0	0	0	0	F 561		
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**Objective 4. Sustain or restore native plant and animal species, fish and wildlife habitats, and ecosystem diversity commensurate with overall themes or purposes for each area of the forest.**

3-4-1	Protection of candidate plant and animal species (tall bugbane)	Survey reports for each monitored species summarized each remeasurement year (varies by species)	Forest effect on abundance	Information Manager	??					Possible class project	No negative effect on abundance through operations	Candidate species for ESA listing can be perpetuated on the forest if we protect and monitor their survival.
3-4-2	Distribution of species, size, and structural forest characteristics.	Inventory/GIS stand data summarized annually	<ul style="list-style-type: none"> <li>Species</li> <li>trees/ac by diameter cl</li> <li>avg. qmd and height</li> <li>basal area</li> </ul>	Information Manager	0	0	0	0	0		Over time the structural characteristics of each theme meet theme goals	
3-4-3	Distribution, quality, and characteristics of standing and fallen deadwood.	Forest-wide baseline inventory of snags and down wood, remeasured every 10 years	<ul style="list-style-type: none"> <li>Cubic vol/ac</li> <li>Decay class distribution</li> </ul>	Information Manager	15	0	0	0	0		Over time the amount of snags and downwood will meet theme goals	
3-4-4	Distribution, quantity, and characteristics of legacy structures and character trees in harvest units	Compiled annually from silviculture database	Size and number of trees left in harvest units	Information Manager	0	0	0	0	0		Over time legacy structures and character trees will meet theme goals	
3-4-5	Distribution, quantity and characteristics of wetlands, meadows, oak savannas, and/or other sites of exceptional conservation value identified, restored and sustained.	Forest-wide survey of these features and expert opinion every 5 years	<ul style="list-style-type: none"> <li>Acres</li> <li>Quality ranking</li> </ul>	Information Manager and Faculty or Consultants	20	0	0	0	0			

3-4-6	Control of the disrupter species (e.g., false-brome, Himalaya blackberry, elk).	Survey of key disrupter species every 10 years ( <i>completed in 2006</i> )	Number and/or acres by species	Information Manager	0	0	0	0	0		Decline in extent in disrupter species	
3-4-7	Damage to the water resource or riparian habitat by management activities.	Stream habitat surveys conducted every 10 years; data analyzed by a stream ecologist	<ul style="list-style-type: none"> <li>• Pools (# &amp; depth)</li> <li>• Channel size</li> <li>• Channel gradient</li> <li>• Substrate size and type</li> <li>• Vegetation cover</li> <li>• Dead wood (cubic feet)</li> </ul>	Information Manager and Faculty or Consultants	25	0	0	0	0			

**Goal 4. Cultural Heritage Sites**

**Identify, protect, and perpetuate the cultural heritage resident on College Forests**

**Objective 1. Protect cultural heritage sites during forest operations**

4-1-1	Success in identifying cultural resources prior to ground-disturbing activities	Annual summary of pre- and post-disturbance survey results	% of sites found before disturbance/ Listing of type not found and why not found	Information Manager	0	0	0	0	0			
4-1-2	Success in avoiding damage to identified cultural heritage sites.	Annual summary of post-disturbance survey results	Number and/or acres of sites disturbed that were identified/Coast of damage	Information Manager	0	0	0	0	0		100% success	
4-1-3	Success in avoiding damage to sites discovered during operations	Annual summary of post-disturbance survey results	Number and/or acres of sites disturbed that were identified/Coast of damage	Information Manager	0	0	0	0	0		100% success  Sites will be protected as they are identified during operations	

**Objective 2. Maintain relations between the College, and the recognized indigenous Tribes of Oregon that are based on trust and mutual respect.**

4-2-1	Engagement of the appropriate tribes' cultural resources staff in early stages of revisions to College Forest management plans to obtain tribal input to the formulation of goals and	Discussion with appropriate tribes on their level of engagement on current plan revision and future plans	Summary of discussion responses	Plan Leaders	0	0	0	0	0			The tribes should have an opportunity to provide input on the future management of lands that contain sites that are sacred to their people.
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	objectives for cultural resources.											
4-2-2	Development of Memoranda of Understanding (MOU) with appropriate tribes that cover collaborative activities between the tribes and College in protecting and enhancing tribal cultural sites on College Forests.	Discussion with appropriate tribes on the protection of cultural sites on the College Forests.	Summary of discussion responses	Director	0	0	0	0	0			MOUs may help provide structure needed to ensure good relations between the College and tribes
4-2-3	Implementation of the MOUs and modification as necessary.	Annual summary	Items from the MOU implemented	Director/ Information Manager	0	0	0	0	0			If the MOUs are correctly implemented (or modified according to needs agreed on by both the College and Tribe) then relations should remain strong.
4-2-4	Discussion of annual operations plans, and ideas to improve cultural resources stewardship with the College Forest staff and the appropriate tribes' cultural resources staff.	Summary of periodic meetings between College and appropriate tribes	Summary of meetings	Director	0	0	0	0	0			If the tribes understand annual operations before they occur they can comment on operations that they feel might impact their cultural sites or traditional cultural properties.

**Goal 5. Recreation**

**Provide safe, quality recreation opportunities, compatible with College Forest characteristics and other goals.**

**Objective 1. Provided non-motorized recreation desired by local users within the social and ecological carrying capacity of each management area.**

5-1-1	Estimated number of recreation use visits per year by major category of use.	Survey every 5 years	Number of visits by category and area of use	Recreation Manager	75	0	0	0	0	Potential student project		Understanding recreation use patterns can help to reduce conflict and allocate recreation resources
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5-1-2	Provision of a safe environment for recreation use.	Summary of database on accidents every two years including type and cause  Survey every 2 years		Recreation Manager  KNJ class	0	0	0	0	0	F 460	Decrease in accidents	
5-1-3	Ecological damage from recreation use.	Survey every 3 years	Density of unauthorized trails	Recreation Manager	20	0	0	0	0	Potential student project	Decreasing amount of unauthorized trails	

**Objective 2. Minimize conflicts among recreation users, between recreation users and adjacent landowners, and between recreation users and forest management, teaching, research, and demonstration operations.**

5-2-1	Conflict among recreation users	Survey users every five years	Percent of users with conflicts	Recreation Manager	??	0	0	0	0	Potential student project	Decreasing conflict	If recreation use is compatible then conflicts should not increase.
5-2-2	Conflict between recreation users and researchers	Summarize reported problems every five years	Percent of researchers with conflicts and/or vandalism (list of actions taken)	Academic Support Manager and Recreation Manager	0	0	0	0	0		Decreasing damage	If conflict is not managed between recreation users and researchers then the usefulness of the forest for research may be lessened.
		Survey project researchers every five years		KNJ class	0	0	0	0	0	F 460		

**Objective 3. Engage recreation users through the Forest Recreation Advisory Council to address ways of best meeting the above goals and to explore opportunities to finance recreational services of the Forests.**

5-3-1	Actions taken to engage recreation users	Volunteers, FRAC, Public Meeting	<ul style="list-style-type: none"> <li>Hours of participation</li> <li>List of actions</li> </ul>	Recreation Manager	0	0	0	0	0			Engaging recreation users may improve the quality of recreation opportunities and reduce conflicts on the forest.
5-3-2	Funding/support of recreation program through non-forest-derived revenues or via volunteer activities	Summarize recreation budget by forest and non-forest revenue	Percent of recreation budget	Recreation Manager	0	0	0	0	0		Increasing percent and full cost recovery within five years	

**Goal 6. Relations with Neighbors and Others**

**Proactively establish, maintain, and enhance good relationships with neighbors and others connected with College Forest properties.**

6-1-1	College Forest communication of Forest Plan and annual operations plan to neighbors and community.	Annual meeting  Survey every two years	Summary of discussion points  Assess opportunity to learn about annual operations and express concerns	Director  KNJ class	0	0	0	0	0	F 460	Neighbors should have an opportunity to learn about annual operations and express their interests or concerns.	
6-1-2	Experiences of neighbors with nearby forest operations and in working with forest staff.	Annual meeting  Web page for neighbors to report conflicts  Survey every two years	Summary of experiences	Director  Information Mgr.  KNJ class	0	0	0	0	0	1  FOR 460	Neighbors should be notified of near-by actions before they occur and have a vehicle to register concerns and have the actions explained.	.