2014 SFMA Annual Report

Personnel

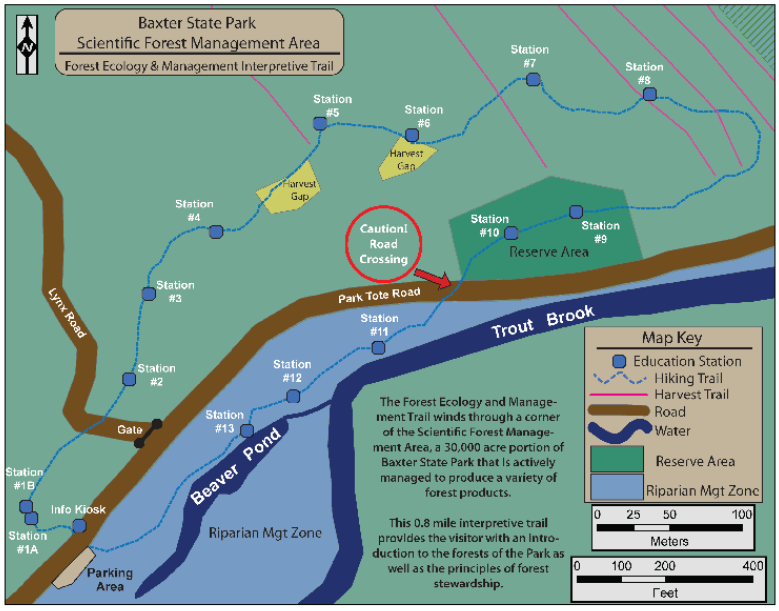
Rick Morrill left his post as resource manager in August of this year to start a consulting firm in the northeast kingdom of Vermont with this wife, Dawn Morgan. Rick left his mark on the SFMA, especially in his incredible organization of SFMA and Parkwide database. Due to his foresight and skill, we will continually improve our ability to query our datasets and plan future operations and monitoring.

Our forester, **Deidra**, started the year with the surname Brace, and finished it with the surname George after marrying the Park mechanic, Frank George. Dee continues to manage much of the field operations in the SFMA, with the stalwart assistance of **Kevin Osborne**, longtime forest technician.

Interns **Brandon Learnard and Stephen Sacks** gained valuable experience and offered an incredible work ethic and discipline. They set records for number of points cruised in a day (24 variable radius plots) and we can only hope that future summer help will be as hardworking and dedicated as these two young foresters.

Education/Development

Rick offered several talks and tours this year. Among them were presentations at Daicey Pond, the University of Maine, and our Austin Cary Forest in Harpswell, as well as several tours in the SFMA, including the annual tours for Seymour's Acadian Forest class and a meeting of the Advisory Committee in September where the baton was passed from Rick to Eben.



Rick also brought the Forest Ecology and Management Trail, a project several years in the

incubating, to fruition during the summer. The trail and accompanying educational materials are available to north end Park visitors.

We have begun the process of thinking about how climate change will affect the Park and the SFMA; in order to kickstart this difficult and nebulous discussion, Jean, Ben, and Eben participated in a Climate Change Response Framework workshop in Brunswick. Designed to help organizations get past the uncertainty and begin to take substantive action, we focused on how Frost Pond might look after 100 years, and how we might act to shape this forest to maintain its health. The Framework not only serves to nudge managers towards biting off manageable chunks of this amorphous climate change pie, but also serves as a clearinghouse for projects and plans others have produced across the north woods.

The **SFMA Advisory Committee** met in April and for a field tour in September. In April, Joe Wiley stepped forward as chair and Barrie, Rob, Gordon, Bob Seymour, and Aaron renewed their membership for another three year term. Two subcommittees formed at the September meeting—one to address the need for a riparian management zone policy (Rob, Alison D., and Joe, see below), and the other for consideration of our response to the imminent spruce budworm outbreak cycle (Joe, Gordon, Allison K). We don't expect this outbreak to have any great impacts, but nonetheless we should be prepared. The end product may include a near-term decision support tool for how to treat stands given a certain amount of defoliation in addition to a longer-looking (next outbreak cycle, probably more severe) strategic plan with respect to this native insect.

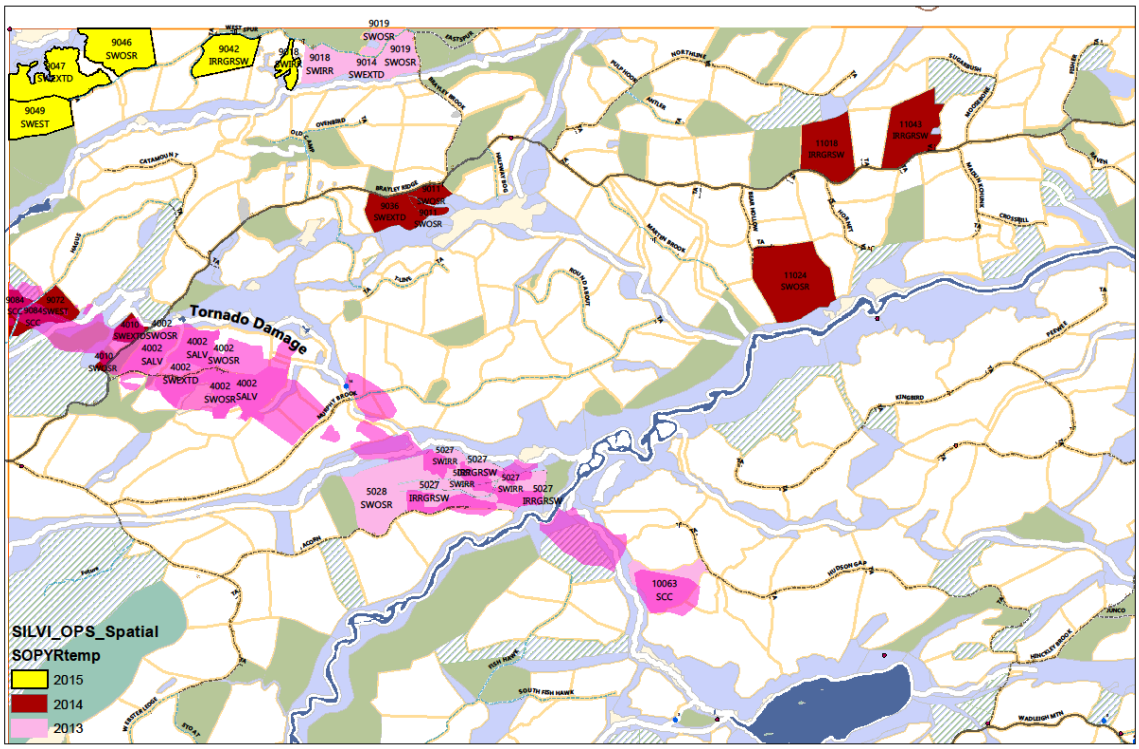
SFMA Advisory Committee Members

FName	Last Name	TermExpireDate
Aaron	Weiskittel	5/23/2017
Barrie	Brusila	5/23/2017
Rob	Bryan	5/23/2017
Craig	Troeger	5/1/2017
Robert	Seymour	5/1/2017
Gordon	Mott	5/1/2017
Ken	Laustsen	5/1/2017
Jeremy	Wilson	5/15/2016
Allison	Kanoti	5/15/2016
Jeremy	Wilson	5/15/2016
Emily	Meacham	5/10/2016
John	Bryant	5/10/2016
Jim	O'Malley	5/10/2016
Andy	Cutko	5/10/2016
Joe	Wiley	5/15/2015
Philip	Ahrens	5/15/2015
Alison	Dibble	5/15/2015

The annual **FSC audit** (SCS Global Services, Mike Dann, Auditor) closed a few corrective action requests (CARs) and minor observations, and brought up a few items where we could improve our policies and protocols (appendix 1). One was the riparian management zone guidelines, which are to be reviewed by auditors during this year's annual review (Mike Dann, having retired, will no longer act as our auditor), and have been completed with the help of the advisory committee (appendix 2). Others suggested that we put in a place a more explicit monitoring protocol for our high conservation value forests (Frost Pond, Boody Brook), and instruct ourselves on Type I and Type II old growth to better recognize these characteristics. Finally, it was observed that SFMA staff should have training on rare, threatened and endangered species identification to provide for better field recognition and potential protection. We are working with Jean to get up to snuff on this, and efforts to update the Frost Pond management plan will include provisions for better instruction in old growth characteristics.

Work continued on Lloyd Irland's financial analysis of the SFMA as a forestry industry, a difficult undertaking given how our finances are embedded within larger park coffers. The report brings up great questions about how and what we are demonstrating, and should serve as a helpful guide towards a more transparent and demonstrative financial process.

OPERATIONS
2013/14 Harvesting



2014 saw an end to the salvage cleanup of the July 2013 tornado. Crews and management were happy to return to the cutting of vertical trees with a few overstory removals (OSRs) and irregular group shelterwoods (gap treatments) completed on Brayley Ridge and Bear Hollow.

Product	% of vol
Sawlog	61.5%
Pulp	24.0%
Firewood	10.4%
Small Sawlog Sort	2.3%
Biomass	1.2%
Veneer	0.4%
Clapboard Sawlog	0.2%

Species	% of Vol
Spruce/Fir	61.5%
Hardwood	14.4%
White Pine	9.4%
Aspen	8.5%
White Cedar	5.3%
Misc Softwood	0.7%
Paper Birch	0.2%

Overall, 2013-2014 harvests treated 350 Acres and removed 4590 cords (this is inclusive of winter harvesting in Nov-Dec 2013) across 8 stands on the north end of the SFMA. The acreage treated was slightly off from target due to greater per acre volume removals from salvage operations. Salvage operations covered almost 160 acres, while regularly scheduled shelterwood type harvests covered about 210 acres. Of that, 92 acres was treated with the SFMA hallmark gap treatment (or irregular group shelterwood). Planning for this kind of cut is now quite standardized, and given our experience generally based on a 20 year return interval. We have in the past tried to ensure that 25% of these gaps were placed around areas without advanced regeneration, presumably to promote establishment of some intolerant species. This will likely be discontinued, as it appears that intolerants are pretty good as establishing themselves without silvicultural assistance, and the ownerships surrounding the Park have provided ample intolerant and early successional habitat.

This was the last year of a 5 year contract with the Pelletier Brother Inc. to cut and haul our wood to various markets across the state. For salvage operations, we paid about $1 more per 1000 pounds. Clint and Corey continue to do an excellent job, and are now ever more valuable given their institutional memory gained from applying 10 years of silvicultural prescriptions, as well as their enthusiasm and comfort with adopting new technologies.

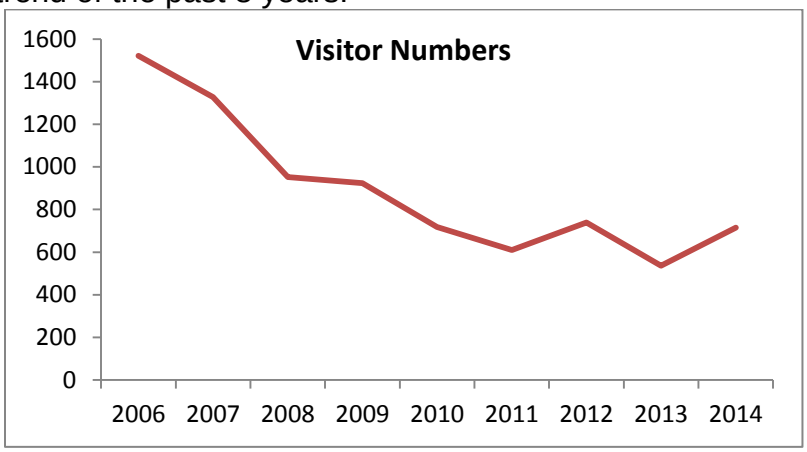
Pelletier Brothers Incorporated		
Eldon	Pelletier	President
Aaron	Pelletier	Director of Operations
Clint	Morrow	Processor Operator
Corey	Morrow	Forwarder Operator
Brian	Boutelier	Grader/Dozer/Plow

sop	MU	year	RX	cds removed	acres	cds/ac
525	10063	2013	Salv-SCC	680.2	37	18.4
526	5027	2014	Salv-SWirr	1160.3	81	14.3
527	9084	2014	Salv-SCC	444.5	18	24.7
528	9072	2014	Salv-Swest	225.1	13	17.3
529	4010	2014	Salv-SWirr	45.1	2	22.6
530	4010	2014	Salv-SWirr	129.8	8	16.2
531	9011	2014	Swosr	319.9	14	22.9
532	9036	2014	Swextd	388.8	26	15.0
533	11024	2014	SWOSR	791.4	76	10.4
535	11018	2014	IrrGrSW	186.1	44	4.2
536	11043	2014	IrrGrSW	219.1	48	4.6
				4590.4	367	

*full appendices will be added after final winter 2015 trip tickets have been collected.

VISITOR USE

Self-reported visits to the SFMA were up slightly from last year, perhaps suggesting a change from the declining trend of the past 8 years.

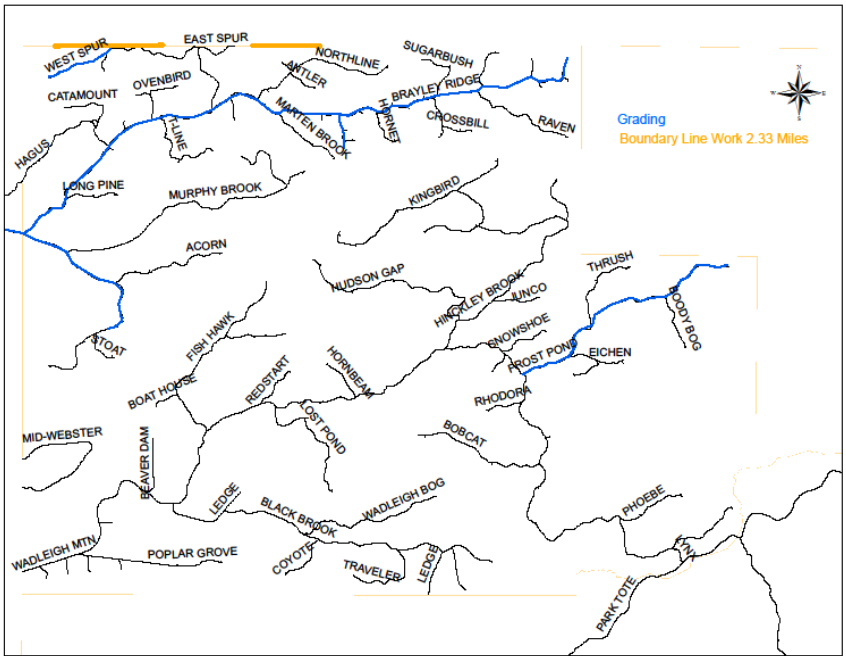


This use is on average 85% hunting, 8% fishing, 3% sightseeing, 2% hiking, and 1% trapping, at least in terms of primary activity reported (choices on the current cards we have at start of Brayley Ridge and Wadleigh Ridge road systems include Hunting, Fishing, Forestry, Trapping, Sightseeing, and Hiking. Of those visitors reporting their origins (153 failed to do so), 86% were Mainers. Mainer activity drove the general activity patterns. All folks from out of state came primarily for hunting, and hailed from MA, NH, VT, NY, OH, NC, and VA.

ROAD /BOUNDARY MAINTENANCE

Reopening of west spur

To prepare for winter operations, we needed to reclaim about 4400 feet of the West Spur and about 1500 feet of Partridge Road from the saplings that had grown in since we harvested in that northwest corner of the Park in the early 90s. After struggling to secure a feller-buncher for the job, we ended up putting a D6 bulldozer in there which seemed to do a decent, albeit somewhat messy job. We'll seed in this reclaimed winter road section in the spring of 2015. Brian Boutellier of Pelletier Brothers Inc. did the work (which cost about $5000) in a few days, and remarked that he remembered little of these roads, despite the fact that it was he who built them back in the early 90s. As we get into these older road systems that we haven't been able to mow, we'll have a few more miles of this kind of thing to do.

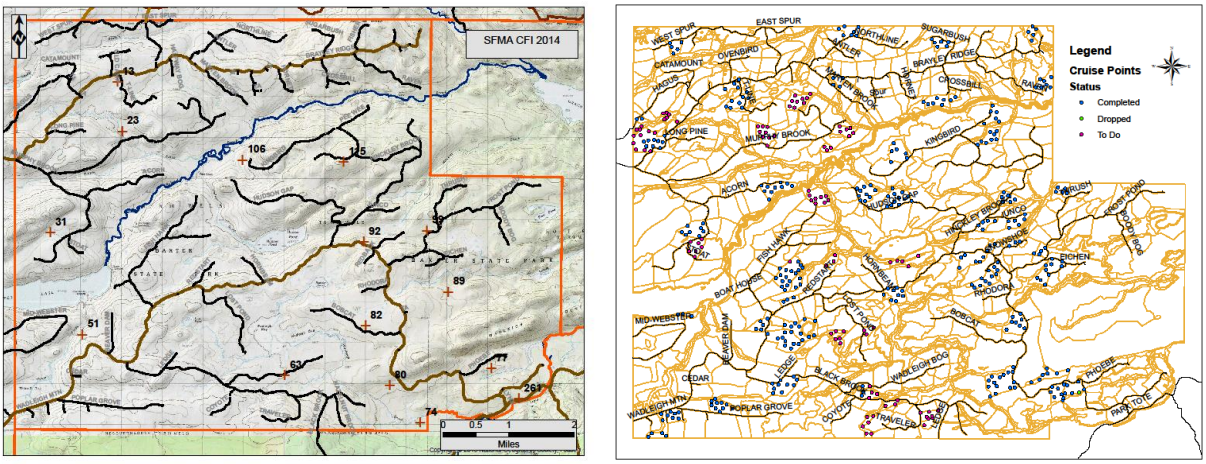


PCT
SFMA staff pre commercially thinned another few acres down the end of the Peewee road, bringing our total to about 3 acres. We have been discussing whether it is wise to continue with this program at a small scale (each SFMA employee does about 2 acres, totaling 10 acres annually), discontinue it in deference to the threat of spruce budworm outbreak, or ramp it up into a commercial level (involving hiring crews to do 40-50 acres/year, though probably not every year). We have our eyes out for stands where this would be appropriate.

Winter plan
"*Want to make God laugh? Tell Him your plans*."
-unknown
We planned to tackle about 2500 cord on 230 acres down the winter portion of the West Spur. Due to equipment failures and a month-delayed start, we harvested closer to 1600 cord on less than 200 acres.

INVENTORY
Of the 423 **variable radius plots** planned for the rotating inventory, 325 were completed. We will continue with a similar, albeit scaled back, plan this year and try to make more accurate assumptions about staff time performing inventory.

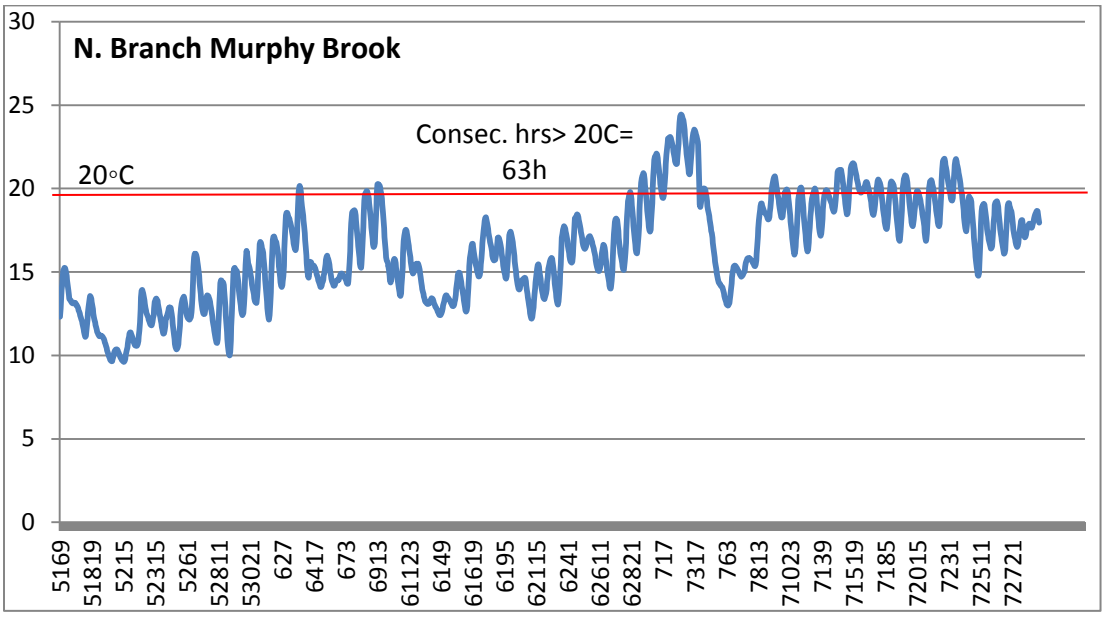
The rolling **CFI inventory** continued as planned, as staff completed the requisite 11 plots. Five more plots were added as part of a collaboration with Shawn Fraver and his blowdown beetle project. These will be added to the regular roll of CFI (10 year remeasurement cycle).



CFI plots remeasured this year (10 year remeasurement cycle). Variable radius plots for rolling inventory.

Water and air temperature monitoring continued on 9 streams and 4 air temp monitoring locations. We have begun to look into stream habitat restoration, and so this data going back 15 years should prove useful soon. For now we are sorting through and organizing it and trying to apply some sort of context. One threshold to monitor will be the number of consecutive hours over 20◦C that any stream gets up to, as brook trout biomass is fairly well related to stream temperature, along with woody material and maximum riffle depth. Further investigations into stream temperature regimes will help guide us towards those streams we may want to restore to pre-log drive hydrological and biological function. An example follows; N. Branch Murphy Brook stream temperature regime for the summer—this particular spot in the stream stayed above 20◦C for 63 hours in early July, suggesting that brook trout would

likely not be temperature limited, even in this fairly open spot just above the bridge on the Murphy Brook Rd.



RESEARCH

Work continued on Fraver, Kenefic, and Seymour's project examining the response of **spruce bark beetles** and other coleopterans to the July 2013 blowdown. One more year of field measurements will take place and 5 new CFI plots (from which data was lost after measuring last year) will be measured and added to the other 116 plots on rotation.

John Clare, a UMO PhD student, will be leading a study on **marten populations** around the SFMA and a few surrounding ownerships in the winter. He will be using game cams, hair traps and DNA analysis to test these methods for feasibility for a state monitoring program as well as a shot at understanding the current marten populations in various forest ownerships (and structures).

Stephen Dunham's work continued on the population dynamics of **spruce grouse** in the SFMA and surrounding ownerships, and will be passed along to

Bucky Owen, Jerry Longcore, and Stephen Norton published a long-awaited paper on the *Characteristics of Two Mineral Springs in Northern Maine* in *Northeastern Naturalist.* The paper describes the calcium enriched areas near Hudson Pond and at the base of Wadleigh Mountain. Upon reviewing the SFMA annual report from 2004, it appears data collection on wildlife usage and soil and water characteristics began 10 years ago.

OTHER

Starting January 1 2015, Katahdin Forest Management will impose a toll ($0.60 per ton) on crossing the 100+ foot Chamberlain Bridge to fund its redecking. While it is not surprising that this company would like to start recouping costs of maintaining such critical infrastructure, it is representative of larger shifts in the forestry industry and landownership patterns in Maine that the SFMA was the second largest wood hauler over this bridge in the past 5-6 years. Our 8500 tons/year, which in former years would not be considered much wood at all, was second

in weight only to the 12000 ton BPL hauled. Along those lines, we are discussing a road continuing the Brayley Brook road onto Snowshoe Partners, our neighbor to the north. This came up as a possibility a few years ago, but was tabled because the Park could not imagine allowing Snowshoe to haul wood over us. Our concern over access and road maintenance has made us more willing to consider such a compromise. Another neighbor to our east continues to make waves as nearby towns vote on whether they would like to see a national park around the East Branch of the Penobscot or not.

Appendix 1.

2.1 Annual Audit Itinerary and Activities

Date: July 16, 2014	
FMU / Location / sites visited	**Activities / notes**
BSP headquarters	Opening meeting – introductions, confirm scope of audit, finalize itinerary, review of open CAR/Obs.
Frost Pond Forest	Discussion of Type II old growth, management to retain potential old growth characteristics.
MU127 &153 Hinckley Brook road	Group selection in 2002 In mixedwood stand. Discussion of late successional attributes and management and legacy tree retention.
MU151 Peewee Road	Softwood stand that had blown down after a shelterwood cut in 2004. Area has been precommercially thinned. Discussion of thinning protocol.
Date: July 17, 2014	
FMU / Location / sites visited	**Activities / notes**
MU 9011 Murphy Brook area	Shelterwood overstory removal with retention in a softwood stand. Excellent regeneration retention. Discussion of draft riparian area management policy which is allowing conservative management within some riparian areas that had previously been left unmanaged.
MU 11024	Shelterwood overstory removal in 2014 with a dangle head processor. Comparison of dangle head vs fixed head processor damage to regeneration. While there is increased damage, it is in no way excessive; there is still more than sufficient regeneration of desired species.
MU4002	Tornado and Blowdown salvage 2013. Discussion of salvage policy that retained any tree leaning less than 45 degrees. Some reserve areas left where salvage will not occur. Long term study in place in cooperation with the University of Maine to study insect population dynamics.
BSP headquarters	Closing meeting, discussion of findings and resolution of open CARS/OBS.

4.2 New Corrective Action Request (or observation)s and Observations

	Finding Number: 2014-1
Select one: ☐ **Major CAR** ☐ **Minor CAR** ☒ **Observation**	
FMU CAR/OBS issued to (when more than one FMU):	
Deadline	☐ Pre-condition to certification ☐ 3 months from Issuance of Final Report ☐ Next audit (surveillance or re-evaluation) ☐ Other deadline (specify):
FSC Indicator:	FSC-Us Forest Management Standard V1.0 6.1.a. (see also 7.3.a)
Non-Conformity *(or justification in the case of observations)*: There are a number of on-going surveys in BSP by in-house and outside professionals addressing the elements of this indicator. SFMA staff calls on BSP naturalist for consultations.	

SFMA staff interviews indicated that they had not had formal training in the identification of most common RTE plants and rare ecological communities.	
Corrective Action Request *(or observation)*: Formal training on the identification of RTE species, especially plants, and rare ecological communities would improve staff's ability to identify potential RTE sites during initial field inspections and other activities conducted to complete environmental impact assessments.	
FME response *(including any evidence submitted)*	
SCS review	
Status of CAR:	☐ Closed ☐ Upgraded to Major ☐ *Other decision (refer to description above)*
	Finding Number: 2014-2
Select one: ☐ **Major CAR** ☐ **Minor CAR** ☒ **Observation**	
FMU CAR/OBS issued to (when more than one FMU):	
Deadline	☐ Pre-condition to certification ☐ 3 months from Issuance of Final Report ☐ Next audit (surveillance or re-evaluation) ☐ Other deadline (specify):
FSC Indicator:	FSC-Us Forest Management Standard V1.0 6.3.a.3
Non-Conformity *(or justification in the case of observations)*: The SFMA has established significant reserves containing old growth. There are stands within the SFMA that have not been evaluated for the presence of Type I or II old growth. Staff does not have a written protocol for the identification of potential Type I or II old growth.	
Corrective Action Request *(or observation)*: A written protocol defining old growth based on the definitions in the standard and the regional context, as well as a procedure for assessing its presence or absence, would improve staff knowledge and efficiency in the field.	
FME response *(including any evidence submitted)*	
SCS review	
Status of CAR:	☐ Closed ☐ Upgraded to Major ☐ *Other decision (refer to description above)*

	Finding Number: 2014-3
Select one: ☐ **Major CAR** ☐ **Minor CAR** ☒ **Observation**	
FMU CAR/OBS issued to (when more than one FMU):	
Deadline	☐ Pre-condition to certification ☐ 3 months from Issuance of Final Report ☐ Next audit (surveillance or re-evaluation) ☐ Other deadline (specify):
FSC Indicator:	FSC-Us Forest Management Standard V1.0 6.5.e.1 (see also 6.5.e.2)
Non-Conformity *(or justification in the case of observations)*: The SFMA is developing a new riparian management zone policy; now in draft form.	
Corrective Action Request *(or observation)*: The final policy should be reviewed at the next audit to ensure conformance with the applicable indicators.	
FME response *(including any evidence submitted)*	
SCS review	
Status of CAR:	☐ Closed ☐ Upgraded to Major ☐ *Other decision (refer to description above)*

	Finding Number: 2015-4
Select one: ☐ **Major CAR** ☒ **Minor CAR** ☐ **Observation**	
FMU CAR/OBS issued to (when more than one FMU):	
Deadline	☐ Pre-condition to certification ☐ 3 months from Issuance of Final Report ☐ Next audit (surveillance or re-evaluation) ☐ Other deadline (specify):
FSC Indicator:	FSC-Us Forest Management Standard V1.0 9.4.a.
Non-Conformity *(or justification in the case of observations)*: The Frost Pond Forest was designated to study late successional and/or Type II old growth management. No activity has occurred since 2003 when an initial harvest was conducted. A protocol for monitoring HCVF attributes and the effectiveness of the harvest in maintaining them does not exist.	
Corrective Action Request *(or observation)*: A monitoring protocol should be in place prior to any further activity.	
FME response *(including any evidence submitted)*	
SCS review	
Status of CAR:	☐ Closed ☐ Upgraded to Major ☐ *Other decision (refer to description above)*

Appendix 2.

RIPARIAN ZONE MANAGEMENT

BACKGROUND

In the late 80's and early 90's, Jensen Bissell laid out the SFMA road system to minimize stream crossing with the understanding that such sensitivity to watershed structure and topography would often result in longer haul distances. In addition, 1st and 2nd order streams were often used as stand boundaries to provide an opportunity to create a restrictive buffer around them. This framework, combined with riparian zone delineation based on landscape features such as changes in slope, plant community type, and wildlife use patterns, has been part of the effort to protect the water and wildlife resources of the SFMA. These riparian zones were left as "semi-protected" areas, where "sensitive and thoughtful harvesting" could occur as long as it did not damage water quality, wildlife habitat, or decrease vertical structure. Because the identification of on-site indicators determined their lines, these zones vary from 50' to more than 1000'in width[1]. They have been gently treated in a few places, but more often not treated at all.

In our modeling we generally counted any wood in these zones as off-limits; we considered any volume gleaned from these areas as "gravy", and did not factor it into our planning and projections. The riparian zones occupy more than 15% of the terrestrial habitats in the SFMA, offer value for extraction, and can be sustainably managed with appropriate guidelines as a demonstration for other landowners.

RIPARIAN ZONE GOALS AND GUIDELINES

The following section includes overall goals and specific guidelines for different water body types. The intent of this document is to provide more specific guidance to managers that will allow a portion of these areas in our harvest planning and volume projections while ensuring that the primary values of riparian zone goals are protected.

These guidelines should be considered on a management unit (MU) basis. As MUs with adjacent riparian zones are planned for entry, each riparian area directly adjacent to an MU should be considered as a unit. In other words, if we were to extend the boundaries of the MU down to the relevant watercourse, that would create the unit of riparian zone management. Therefore, those riparian areas adjacent to reserve blocks will become de facto part of that reserve block.

In practice, riparian management zones have been delineated based mainly on where the slope down to the watercourse begins, with attention paid to changes in soil drainage and plant species composition. Wildlife experts suggest that this top of the slope terrace is also where a great deal of wildlife mobility occurs. This practice will continue to be employed as the outer layer of riparian protection. An inner layer of additional protection will be established.

Water quality protection, sensitive plants, and wildlife habitat are the primary considerations in riparian zones. Timber and recreation management are secondary uses. This is meant to be similar to the Bureau of Parks and Lands "Wildlife Dominant Areas"[2]. In order to focus our management of wildlife habitat, brook trout, bald eagle and vernal pool guidelines from Maine Audubon's Focus Species Forestry [3]and vernal pool habitat management guidelines[4] will be used as a foundation. Stream crossing guidelines will be addressed in another section.

These guidelines are not intended to limit special projects to accomplish other wildlife goals, such as protecting habitat for pileated woodpecker, barred owl, pine marten, and fisher, or projects aimed at stream

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[1] Bissell, J. 1998. BSP SFMA Forest Management Plan. http://www.baxterstateparkauthority.com/pdf/sfma/MgtPlans/SFMA%20Forest%20Management%20Plan%201998.pdf

[2] As defined in ME DOC, BPL 2009. Eastern Interior Region Management Plan. Pg 14-15.

[3] Bryan, R. 2007. Focus Species Forestry: A guide to integrating timber and biodiversity in Maine. Maine Audubon, 98 pages. http://www.forestsynthesis.com/files/FocusSpeciesForestryMaine.pdf

[4] Calhoun, A.J.K, and Phillip deMaynadier, 2004. Forestry habitat management guidelines for vernal pool wildlife. MCA technical paper No. 6, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, NY. http://maineaudubon.org/wp-content/uploads/2012/08/Vernal-Pool-HMG-final.pdf

habitat restoration, as long as the overall riparian goals are met. The layout process should also serve to conduct cursory monitoring for rare understory plant species.

OVERALL RIPARIAN GOALS

Water quality protection
- Avoid soil disturbance
- Maintain shade over watercourses
- Follow all Best Management Practices [5]

Wildlife habitat protection, development
- Maintain shade
- Manage for large snags, cavity trees, and large woody recruitment to streams
- Manage for vertical forest structure
- Maintain wildlife corridor connectivity

Plant community protection
- Protect riparian plant communities

ASSESSMENT PERIOD

These guidelines shall be reviewed by SFMA staff after five years of implementation. Each riparian harvest unit should be monitored following the harvest in the course of normal post- harvest monitoring protocols.

BROOK TROUT STREAMS

Goal is to provide high quality cold water fisheries habitat. This entails maintaining shade on the watercourse, ensuring water stays cold and clear, and managing for large retention trees so as ensure recruitment of large woody material to streams (as well as future snags and coarse woody materials). Additional wildlife goals include maintaining wildlife corridor connectivity and managing for vertical forest structure and continuous cover. Management should not degrade recreational opportunities on Webster Stream.

Guidelines:

Within currently delineated riparian
- Maintain an average of >50% canopy cover[6]
- Retain well-distributed overstory
- [7]No canopy openings >10,000 ft^2, openings should be 100' apart
  - Retain 2-3 well-formed trees per opening (1 should be large diameter)

Within 75',
- No equipment entry (may reach in with boom)
- Manage for permanent large tree retention
- Maintain shade on watercourse
- No soil disturbance that results in any stream sedimentation

SMALL STREAMS | INTERMITTENT STREAMS

Goals are to protect water quality, maintain shade on the watercourse, and maintain or develop vertical structure and continuous cover for the benefit of wildlife.

Guidelines:

Within currently delineated riparian
- Maintain an average of >50% canopy cover
- Retain well-distributed overstory
- No canopy openings >10,000 ft^2, openings should be 100' apart
  - Retain 2-3 well-formed trees per opening (1 should be large diameter)

Within 75'
- Maintain shade on stream channel
- No soil disturbance that results in any stream sedimentation

[5] http://www.maine.gov/dacf/mfs/publications/handbooks_guides/bmp_manual.html

[6] the proportion of ground or water covered by a vertical projection of the outermost perimeter of the natural spread of foliage or plants, including small openings within the canopy —*note* total canopy coverage may exceed 100 percent because of layering of different vegetative strata (SAF dictionary, http://dictionaryofforestry.org/dict/term/canopy_cover)

[7] LUPC Timber harvesting regulation in a P-GP.

VERNAL POOLS | SEEPS | OTHER UNIQUE HYDROLOGIC FEATURES

Goal is to manage for high quality amphibian (specifically spotted salamander) habitat. This entails maintaining shade, a supply of coarse woody material, the banking structure of the water feature, and covered corridors for amphibian dispersal.

Guidelines[8]:

Within 400' "amphibian life zone"

- Maintain and average of 50% canopy cover[9] of trees >20ft in height
- Openings should be less than 1 acre
- Harvest in frozen or dry condition
- Maintain abundant large coarse woody material

Within 100' "Vernal Pool Protection Zone"

- Harvest in frozen or dry condition, no rutting
- Maintain abundant coarse woody material
- Maintain a well-distributed average of 75% canopy cover

Vernal Pool Depression

- Identify and flag pool boundary
- Do not disturb the pool with equipment, logging debris, or sediment.

LAKES | PONDS

Goal is to provide high quality bald eagle habitat. This entails maintaining shade along the waterbody and managing for large tree and snag retention. Other considerations for this zone include buffering visual impacts from logging for recreational users on lakes and ponds, and maintaining water quality.

Guidelines:

Within currently delineated riparian

- Maintain minimum of 6 large white pines per mile of shoreland
- Maintain well-distributed overstory
- No canopy openings >10,000 ft^2, openings should be 100' apart
  - Retain 2-3 well-formed trees per opening (1 should be large diameter)

Within 75'

- No equipment entry (may reach in with boom)
- Manage for permanent retention of large trees
- No soil disturbance that results in any waterbody sedimentation

[8] From Calhoun, A.J.K, and Phillip deMaynadier, 2004. Forestry habitat management guidelines for vernal pool wildlife. MCA technical paper No. 6, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, NY. http://maineaudubon.org/wp-content/uploads/2012/08/Vernal-Pool-HMG-final.pdf

APPENDIX 1: LUPC STATEWIDE STANDARDS

LUPC Statewide Standards:

PSL-1 large streams and P-GP ponds/lakes:
-No clearcuts within 50'
-Retain well-distributed stand of trees within 50' of stream
-From 50' to 250', no one opening >14,000 ft^2 (about 1/3 acre)
-Single canopy openings >10,000 ft^2 must be ≥100' apart
PSL-2 small streams:
-Maintain shade
-Avoid sedimentation

APPENDIX 2 (NEXT TWO PAGES): FSC STREAMSIDE MANAGEMENT ZONE REGIONAL REQUIREMENTS

APPENDIX E: STREAMSIDE MANAGEMENT ZONE (SMZ) REGIONAL REQUIREMENTS
Indicator 6.5.e

This Appendix addresses regionally explicit requirements for Indicator 6.5.e and includes SMZ widths and activity limits within those SMZs for the Appalachia, Ozark-Ouachita, Southeast, Mississippi Alluvial Valley, Southwest, Rocky Mountain, and Pacific Coast regions. The forest owner or manager will be evaluated based on the sub-indicators within their specific region, below.

APPALACHIA REGION
The SMZ is designed to allow harvesting and provide flexibility for silvicultural management.

6.5.e.1.a All ***perennial streams*** have buffers (streamside management zones, SMZs) that include an inner SMZ and an outer SMZ. SMZ sizes are minimum widths that are likely to provide adequate riparian habitat and prevent siltation. If functional riparian habitat and minimal siltation are not achieved by SMZs of these dimensions, wider SMZs are needed.

Table 6.5.f (APP only) Widths of inner and outer Streamside Management Zones. Widths of outer SMZs are applicable where data do not support narrower widths*

Stream zone type	SLOPE CATEGORY				
	1-10%	11-20%	21-30%	31-40%	41 % +
Inner Zone (perennial)	25'	25'	25'	25'	25'
Outer Zone (perennial)	55'	75'	105'	110'	140'
Total for perennial	80'	100'	130'	135'	165'
Zone for Intermittent	40	50'	60'	70'	80'

*All distances are in feet -slope distance and are measured from the high water mark.

6.5.e.1.b (APP only) The inner SMZ for *non-high-quality waters* (see state or local listings describing the highest quality waters in the state or region) extends 25 feet from the high water mark. Single-tree selection or small group selection (2-5 trees) is allowed in the inner SMZ, provided that the integrity of the stream bank is maintained and canopy reduction does not exceed 10 percent (90 percent canopy maintenance). Trees are directionally felled away from streams. Note: The inner SMZ is designed as a virtual no-harvest zone, while allowing the removal of selected high-value trees.

6.5.e.1.c (APP only) Along perennial streams that are designated as *high-quality waters* (see state or local listings describing the highest quality waters in the state or region), no harvesting is allowed in the inner SMZ (25 feet from the high water mark), except for the removal of wind-thrown trees. Stream restoration is allowed if a written restoration plan provides a rational justification and if the plan follows local and regional restoration plans.