Annual Monitoring Report Summary
Downeast Lakes Land Trust,
Downeast Lakes Community Forest

2018

Prepared by Ernest Carle

Table of Contents

I. INTRODUCTION 3

II. ANNUAL MONITORING UPDATE 4

Timber Harvest 4

Other Forest Products 6

Unanticipated Removal or Loss 6

Regeneration 6

Focus Species Habitat Management Activities 7
DLLT Self-Designated Deer Management Areas 7
Grouse and Woodcock 8
Black Bear 9
Riparian Zone Management 9
Beaver 10
Brook Trout / Atlantic Salmon 10

Exotic and Invasive Plants 10

Harvest Impacts 13

Road Monitoring 15

Pesticides and Biological Control Agents 16

Social and Economic Monitoring 17

Common Loon Monitoring 17

Forest Inventory 18

Changes in Habitat Conditions 19
Deer Management Areas 20
American Marten 21
Grouse and Woodcock 21
Black-throated Blue Warbler/Mature Hardwood Forest 23
Hard Mast Management 23

Rare Species, Natural Communities, and other Special Habitats 24

Literature Cited 24

I. Introduction

Downeast Lakes Land Trust (DLLT) periodically monitors its forest to ensure that its management objectives for wildlife, recreation, timber production, and environmental protection are being met. Some items, such as the inventory of standing timber, are conducted periodically. Others, such as monitoring timber harvest operations, may be conducted on a weekly basis as operations are ongoing. This annual report summarizes the monitoring information for members of the land trust, members of the local community, and for others interested in the results of DLLT's management. For more information on DLLT's forest management, please contact the land trust or visit www.downeastlakes.org. The monitoring update includes annual summaries for the operating year. Periodic monitoring data that are updated every 5-10 years are included in Section III.

This report covers the Downeast Lakes Community Forest, which consists of the 27,080-acre Farm Cove Tract acquired by Downeast Lakes Land Trust in 2005 and expanded in 2008 by acquisition of the 6,628-acre Wabassus Lake Tract and in 2016 by the acquisition of the 21,853-acre West Grand Lake Tract. The management plan for all tracts was updated and adopted on March 2nd, 2015. In 2018, the annual allowable cut (AAC) was increased from 6,500 cords per year to 12,000 cords per year as a result of the approximately 40 percent increase in acreage of the community forest. No major changes in policy or management strategy have taken place.

II. Annual Monitoring Update

Timber Harvest

Timber Harvest Summary	2009-2013 (Average)		2014		2015		2016		2017		2018	
Species	**Prod.**	**Cords**	**Prod.**	**Cords**	**Prod.**	**Cords**	**Prod.**	**Cords**	**Prod.**	**Cords**	**Prod.**	**Cords**
Hemlock	Stud	1748	Stud	1046	Stud	524	Stud		Stud		Stud	52
Hemlock	Pulp	1822	Pulp	2214	Pulp	191	Pulp	222	Pulp	538	Pulp	1464
Hemlock	Logs	128	Logs		Logs	251	Log	375	Log	1003	Log	663
Hemlock					WTC	972	WTC	324	WTC	361	WTC	
Spruce	Logs	426	Logs	403	Logs	480	Logs	1	Logs		Logs	
Softwood	Pulp	567	Pulp	850	Pulp	254	Pulp	284	Pulp	103	Pulp	693
Spruce/Fir	Stud	161	Stud	574	Stud	253	Stud	1109	Stud	1970	Stud	2995
Red Pine	Land Run										Land Run	325
White Pine	Logs	47	Logs		Logs		Logs	1273	Logs	243	Logs	366
Hardwood	Pulp	1492	Pulp	1352	Pulp	2399	Pulp	2444	Pulp	2478	Pulp	4582
Hardwood	Logs	3										19
Hardwood	Veneer	1										
Hardwood	Firewood	14										
Subtotal (without biomass)[1]		6409		6439		5324		6032		6696		11157
MX Biomass[1]	Chips	2007	Chips	1481	Chips	1212	Chips	3136	Chips	4502	Chips	1311
Biomass[2]	2013	1296										
Biomass[3]									2017	583		
Total w. biomass:		8675		7964		6535		9770		11781		12468

[1] Biomass sales are typically incidental to planned harvest volumes and are composed of tops or limbs that are not considered within timber inventory. In 2009, 112 cords of biomass included in the figures above was harvested during maintenance of the Farm Cove Dam Road.
[2] Biomass in 2013 was also generated from a wildlife habitat project that had no commercial timber sale, in this case the biomass was generated from the entire tree, not merely the tops.
In 2014 poor markets resulted in 789 cords to be chipped. This was counted as round wood and deducted from the allowable harvest, rather than biomass byproduct.
In 2015, hemlock markets were poor, and as a result 972 cords of whole tree hemlock were chipped for biomass.
In 2016, hemlock markets were poor, and as a result 924 cords of whole tree hemlock were chipped for biomass.
[3]Biomass in 2017 was also generated from a wildlife habitat project that had very little commercial value. In this case the biomass was generated from the entire tree, not merely the tops.

Other Forest Products

DLLT, as part of its community forest management, routinely issues permits to local users of forest products, subject to policies and procedures approved by the DLLT Board of Directors. A voluntary survey is mailed to each permit holder the following year to keep track of products harvested.

In 2018, DLLT issued permits for gravel, firewood, "tips" for wreath-making, and craft wood.

Gravel: 9 permits issued, 926 cubic yards sold
Firewood: 27 permits issued (21 reported), 21.4 cords reported
Tipping: 18 permits issued (12 reported), 5,070 lbs reported
Craft wood: 2 permits issued, no volume reported

Unanticipated Removal or Loss

DLLT staff and forestry contractors monitor the forest for unanticipated loss due to insects, disease, wind, fire, excessive browsing by animals, and timber theft during routine management operations. DLLT also uses reports from members and others who use the forest to keep informed of changes in the forest.

No unanticipated losses occurred in 2018.

Regeneration

DLLT staff, board members, and forestry contractors monitor forest harvest areas to determine if regeneration is occurring as anticipated and intended in forest harvest plans. Qualitative or quantitative inspections generally will occur within three years of harvests intended to encourage regeneration.

2014 Regeneration and Monitoring Statement

Background: As specified in the management plan, 2014 harvest regeneration monitoring is being conducted in 2019. This gives forest managers an opportunity to see any other progress in the development of post harvest stands. If undesirable conditions are observed, they were noted to avoid those conditions in the future.

Results:

Winter Harvest

- **Single Tree Selection:** The regeneration in sub area two has become established although not all openings are fully stocked. The regeneration species composition is primarily Balsam Fir and Red Maple, with lesser amounts of White Pine, Spruce, Beech and a component of raspberries, especially in trails. Because the winter cut had limited scarification, birch seedlings are scarce. Red Maple has also sprouted fairly well. Seedlings in this category are primarily about 1' to 5'tall. The residual stand is now more

dominated by scattered White Pine and by shade tolerant conifers. The at risk Balsam Fir were removed. A good component of Hemlock was retained.

Focus Species Habitat Management Activities

Management for specific "focus species" is used to benefit species of interest to the local community and to provide habitat for the full range of wildlife species found on the forest. The management plan sets out specific management activities for these species.

DLLT Self-Designated Deer Management Areas

DLLT has a significant, long-term goal of restoring and expanding deer wintering areas, the availability of which is a limiting factor for local deer survival. Management activities include both building the area of mature forest softwood cover through partial harvesting in historic deer wintering areas (primary and secondary cover), harvesting to create openings that will produce browse and regenerate the forest to ensure a steady supply of future winter cover, and seeding landings to create summer food for deer and other species.

Deer Wintering Area Management Activities							
Habitat and Activity	**2008- 2012 (ac)**	**2013 (ac)**	**2014 (ac)**	**2015 (ac)**	**2016 (ac)**	**2017 (ac)**	**2018 (ac)**
Partial harvests (selection, initial shelterwood, and intermediate harvests)[2]	54	93	0	0	0	30	21
Regeneration harvest openings (patch-cut, overstory removal, and clearcut	49	0	0	0	0	0	0
Herbaceous seeding[1]	0	0	0	0	0	1	0
Management consistent with DWA 5-year operations plan	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Monitoring:							

During the winter of 2018, a timber harvest was conducted close to the town of Grand Lake Stream in DLLT's self-appointed management area with a hand crew. The harvest was focused on releasing red oak by removing over-mature aspen. Wildlife seed mix was dispersed along the yards and road.

Snowshoe Hare

The best snowshoe hare habitat is created by even-aged regeneration harvests in softwood-cover. The "regeneration harvest openings" for deer wintering area management are also used to

[1] DLLT also keeps track of species and location of species used in herbaceous seeding.
2 2018 - Bonney Brook South

monitor the amount of snowshoe hare habitat created. Snowshoe hare habitat is consistent with nearly all DLLT's shade tolerant conifer management as well.

Grouse and Woodcock

Grouse and woodcock management is based on creating a number of patches of different age classes in aspen and birch stands. The following monitoring elements have been included to track progress toward objectives outlined in the management plan.

Grouse and Woodcock Management

Annual Monitoring Element	2008-2012	2013	2014	2015	2016	2017	2018
Number of grouse/woodcock unit plans developed	Six	One	None	None	None	One	None
Cumulative number of units designated for active management	Eight	Eight	Eight	Eight	Eight	Nine	Nine
Total number of acres harvested (clearcut or overstory removal) across all management unit blocks	52.9	45	0	42	0	35	0
Number of acres of herbaceous seeding	Landings Seeded Summer 2012	Landings Seeded Summer 2013	Landings Seeded Summer 2014	Landings Seeded Spring 2016	Landings	Landings	Landings

* In the 2008 summer harvest, a set of seven patch cut harvest blocks in a poplar-birch fire origin stand on the south side of Burroughs Brook on the Farm Cove peninsula were created to provide early-successional habitat, including habitat for Grouse and Woodcock and browse for deer and moose. Average block size was 0.56 acres, with just under 4 acres harvested in total. A complete plan for this grouse/woodcock unit has not yet been developed, but the harvest plan calls for a 10-year re-entry to harvest new ½ acre patches adjacent to the patches harvested in 2008.
* In the 2009 summer harvest, a set of 3 patch cut harvest blocks in a 28 acre poplar-birch fire origin stand east of Burroughs Brook on the Farm Cove Mountain Road were created to provide early successional habitat, including habitat for Grouse and Woodcock and browse for deer and moose. The average patch size was 0.3 acres, with under 1.25 acres harvested in total.
*In the 2010 winter harvest, 130 acres of designated Grouse/Woodcock habitat were included on the Farm Cove Peninsula. In the 2010 summer harvest, there were 22 acres of designated Grouse/Woodcock habitat included. Upon closer inspection of designated grouse areas, it was determined areas were either un-merchantable, or were currently unsuitable for grouse and woodcock management.

*In the 2011 winter harvest, 9 acres were harvested in 8 patches of between 2 and 0.5 acres each. These areas were dominated by mixed intolerant hardwoods, with some scattered hemlock and pine. This occurred on the Daugherty ridge road. In the summer of 2011, 4 clearcuts were created ranging between 3 and 6 acres in size. These patches were irregular and occurred mostly in intolerant hardwoods, with some mixed spruce and hemlock. This occurred on the Dobsis dam road.
* In the 2012 summer harvest, a plan encompassing roughly 100 acres was developed to provide early successional habitat on a rotational basis. In 2012 approximately 16 acres were clearcut in 2.5 and 4.5 acre circles along the 4th lake road between .5 and 1 mile markers.
* In the 2013 the harvest unit established in 2012 was completed, totaling 37 acres in the entire harvest unit. In addition, a new harvest unit was established on Norway point, east of farm cove. This consisted of a 40 acre stand where approximately half the area was clearcut in the form of 2 acre rectangles, in a checkerboard fashion, totaling approximately 22 acres.
* In 2015 the Belden Brook grouse and woodcock management plan was continued for its second entry. A total of 42 acres was created. Five 3 acres clearcuts were included in this project for the NRCS, qualifying us to continue with the CSP program. Other patches were generally larger, but within Cat. I status.
*In 2017, the first entry of patch-cuts was implemented on the Coca Cola Highway. A total of eight patches totaling 35 acres was cut. Additional acreage is planned to be cut in 2018 to complete the first entry.

The balance of aspen-birch age classes on the entire forest is also monitored periodically as cover type maps are updated (see Section III).

Black Bear

Black bear habitat management is accomplished through our creation and maintenance of young-forest openings by implementing the grouse/woodcock and deer wintering area management plans and implementation of the hard mast guidelines during harvest operations. These activities are monitored, and we conduct no separate monitoring of black bear habitat conditions or management.

Riparian Zone Management

Harvest and other operations monitoring forms are used to gather information on harvest activities within riparian management areas. A summary of problems identified (e.g., unsatisfactory performance relative to management plan guidelines or site-specific plans) and steps taken to correct problems described below.

Year	Unsatisfactory Implementation of RMZ Guidelines and Action Taken				
	Trout/Salmon	Beaver	Lake	Other Stream	Vernal Pool
2008-2013	No problems observed	No problems observed	No problems observed	No problems observed	No problems observed
	Action:				
2014	No problems observed	No problems observed	No problems observed	No problems observed	No problems observed
	Action:				
2015	No problems observed	No problems observed	No problems observed	No problems observed	No problems observed
	Action:				
2016	No problems observed	No problems observed	No problems observed	No problems observed	No problems observed
	Action:				
2017	No problems observed	No problems observed	No problems observed	No problems observed	No problems observed
	Action:				
2018	No problems observed	No problems observed	No problems observed	No problems observed	No problems observed
	Action:				

Beaver

Habitats modified by beaver activity have been shown to be beneficial to a wide range of wildlife, including waterfowl, wading birds, migratory songbirds, and moose. Other mammals are such as deer and bear are attracted to the early flush of nutritious vegetation in spring. Recent studies from the Moosehead lake region have found that rusty blackbirds (a declining species listed as Special Concern in Maine) were strongly associated with beaver-impounded wetlands, and olive-sided flycatcher (also Special Concern) was also found in these areas (Pelletier and Arsenault 2007). Maine has a long history of habitat management guidance that recognizes the benefits of maintaining beaver activity in the landscape, including Deifenbach et. al 2008, Foss 1999, and Bryan 2007. Only one stream in the DLCF, Burroughs Brook, has been designated as a priority beaver habitat in the Focus Species Addendum. Burroughs Brook is a slow moving stream with historic beaver use and forest cover that is less dense than that on streams with priority for brook trout and Atlantic salmon.

Brook Trout / Atlantic Salmon

In 2018, no new stream crossings were installed.

Exotic and Invasive Plants

DLLT monitors the use of exotic (non-native) species to ensure that they do not become invasive. Currently DLLT's use of exotic species is limited to planting non-invasive grasses and legumes for wildlife habitat improvement. In addition, DLLT checks for the presence of known invasive plants that may be present in the area.

Exotic and Invasive Plants						
	2008- 2013	**2014**	**2015**	**2016**	**2017**	**2018**
Wildlife Plantings						
Number of sites planted	harvest landings from 16 seasons and excavated ditches,	Summer 2013 and winter 2014 harvest landings and excavated ditches	Summer 2014 and winter 2015 harvest landings and excavated ditches	Summer 2015 harvest landings and excavated ditches	Winter 2017 road and landings	Summer 2017 harvest landings and excavated ditches
Species	Conserv. Mix (Contains non-native grasses & legumes)	Conserv. Mix (Contains non-native grasses & legumes)	Conserv. Mix (Contains non-native grasses & legumes)	Conserv. Mix (Contains non-native grasses & legumes)	Conserv. Mix (Contains non-native grasses & legumes)	Conserv. Mix (Contains non-native grasses & legumes)
Estimated total area planted	3 acres	?	?	?	2 acres	?
Seed mix does not contain species on Maine's list of invasive plants (Y/N)	Y	Y	Y	Y	Y	Y
Location identified in GIS (Y/N)	Y	Y (general location of harvest areas and roads)	Y (general location of harvest areas and roads)	Y (general location of harvest areas and roads)	Y (general location of harvest areas and roads)	Y (general location of harvest areas and roads)
Number of sample sites checked for undesirable spread	Twenty four (Earlier Plantings)	Three (earlier plantings)	Three (earlier plantings)	Three (earlier plantings)	None	Four (earlier plantings)
Undesirable spread noted?	No	No	No	No	No	No
Invasive Plants						
All harvest sites checked?	Yes, During routine operations and tour	Yes, During routine operations and tour	Yes, During routine operations and tour	Yes, During routine operations and tour	Yes, During routine operations and tour	Yes, During routine operations and tour
Species found?[1]	No	No	No	No	No	No

[1] Describe severity or impacts of any invasive species or exotic species and develop an action plan if management is feasible and warranted.

Harvest Impacts

Harvest sites and road improvement projects are monitored by DLLT's Forest Manager, Executive Director, and Board of Directors to ensure compliance with applicable laws and Best Management Practices designed to protect soil and water quality. Harvest operations are also monitored to ensure that operations comply with silvicultural prescriptions, damage to standing timber and regeneration is minimized, sensitive sites are protected, and site-specific wildlife practices and objectives are being met.

	Compliance with Harvest Guidelines					
Monitoring element/guideline	**2008-2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Hard Mast referenced in harvest plans for applicable stands	S	S	S	NA	S	S
Satisfactory execution of hard mast guidelines during harvest	S	S	S	S	S	S
Wildlife trees and downed logs	S	S	S	S	S	S
Retention patches	S	S	S	NA	NA	NA
Wildlife Trees retention Patch: quantitative sample of selected harvest blocks (number of blocks, performance)	S	S	S	NA	S	NA
Riparian and Lakeshores: applicable guidelines referenced in management plans	S	S	NA	S	NA	S
Riparian and Lakeshores: applicable guidelines and BMPS implemented	S	S	S	S	NA	S
BMPs beyond riparian and lakeshore zones	S	S	S	S	S	S
# vernal pools known prior to harvest plan: (1	0	0	0	0	0	1
# new vernal pools identified	0	0	0	0	0	0
Vernal pools identified in harvest plans and guidelines implemented during harvest	NA	NA	NA	NA	NA	S

S – Satisfactory
U - Unsatisfactory, problem ongoing (describe below)
U/S – Unsatisfactory, problem corrected (describe below)
Except where noted above, all harvests are monitored for all element
(1 Vernal pool referenced from page 2 of the 2018 DLLT Operations Plan, III. Landscape-scale Resources

Unsatisfactory Harvest Conditions: Identification and Resolution

During 2018, harvest conditions were generally satisfactory in terms of both silvicultural and ecological objectives. The harvest contractor has continued to demonstrate a strong understanding of DLLT goals and objectives.

Road Monitoring

Road Monitoring Summary	
YEAR	**Roads Inspected, Problems Identified and Corrected**
2008	4th Lake Rd: Entire road monitored; previously approved maintenance project completed, including installation of 10 culverts, and ditching and re-shaping on portions of 7 miles of the road, and routine grading occurred. Brushing of the road way was completed in 2007. Installation of a new bottomless arch culvert at Rolfe Brook to to improve aquatic habitat and fish passage completed. Additional ditching, culvert, and graveling work is planned for 2009 and beyond.
	Farm Cove Dam Rd.: entire road monitored, brushing completed; installation of new bottomless arch culvert at Scott Brook to improve aquatic habitat and fish passage and two new nearby cross-drain culverts completed
	Farm Cove Mountain Rd: road north to Burroughs Brook monitored; ditching and surface maintenance completed as needed to support harvest activities.
	Dobsis Dam Rd: entire road monitored; surface condition poor and limited surface erosion occurring; no substantial watershed impacts but maintenance improvements recommended for recreational use as funds available. Roadside brushing was completed in 2007.
2009	4th Lake Rd: Entire road monitored; routine seasonal gradings conducted, culvert replaced at mile 8.6.
	Farm Cove Dam Rd.: Entire road monitored; culvert replaced at mile 2.8
	Farm Cove Mountain Rd: road north to Burroughs Brook monitored; ditching and surface maintenance completed as needed to support harvest activities.
	Dobsis Dam Rd: entire road monitored; surface condition poor and limited surface erosion occurring; no substantial watershed impacts but maintenance improvements recommended for recreational use as funds available.
	Third Lake Rd: on Wabassus Tract acquired 12/08: entire road monitored; surface condition poor and limited surface erosion occurring; no substantial immediate watershed impacts but maintenance improvements recommended. Arch culvert installed at Wabassus tributary stream (see “Brook Trout” above). Major erosion risk exists on section of road below Wabassus Mt with highly eroded ditch that lacks functional cross drains; drainage restoration project planned for 2010.
	43-00-0 / Little River Rd: on Wabassus Tract acquired 12/08: entire road monitored; surface condition poor and limited surface erosion occurring; no substantial immediate watershed impacts but maintenance improvements recommended. Major portions lack adequate drainage ditches or cross drains and are at risk for erosion, surface extremely rough. Restoration project planned for 2010
	42-00-0 / Little River Rd: on Wabassus Tract acquired 12/08: entire road monitored; surface condition poor and limited surface erosion occurring; no substantial immediate watershed impacts but maintenance improvements recommended. Lacks adequate drainage ditches or cross drains and is at risk for erosion, surface extremely rough. Restoration project planned for 2010
	Wabassus Mt Rd: on Wabassus Tract acquired 12/08: entire road monitored; surface condition poor and limited surface erosion occurring; no substantial immediate watershed impacts. Lower priority for restoration.
2010	4th Lake Rd: Entire road monitored; routine seasonal gradings conducted
	42-00-0 and 43-00-0 Rds: Drainage and surface restoration projects completed, including culvert installations
	88 Rd: arch culvert installed at North Br; see “brook trout” above.
	Wabassus Mt Rd: arch culvert installed at North Br; see “brook trout” above.
2011	4th Lake Rd & Little River Rd: Entire roads monitored; routine seasonal gradings conducted

	3rd Lake Rd (60-00-0): Drainage and surface restoration project completed on northern portion of road, including culvert installations
2012	4th Lake Rd & Little River Rd: Entire roads monitored; routine seasonal gradings conducted Wabassus Mt. Rd, portion of 3rd Lake Rd, portion of Dobsis Dam Rd, drainage and surface restoration project completed, including culvert installations; small culvert installation on ATV trail near Billy Brown field
2013	4th Lake Rd & Little River Rd: Entire roads monitored; routine seasonal gradings conducted Planned gradings completed on 3rd Lake Ridge Rd, Dobsis Dam Rd, Farm Cove Dam Rd, Wabassus Mt Rd. Drainage and surface restoration projects completed on portions of 4th Lake Rd, 4th Lake Landing Rd, Belden Brook Rd, 3rd Lake Ridge Rd, and Farm Cove Dam Rd, including culvert installations; approx. 10.5 miles of roadside brushing completed
2014	4th Lake Rd & Little River Rd: Entire roads monitored; routine seasonal gradings conducted Planned gradings completed on 3rd Lake Ridge Rd, Dobsis Dam Rd, Farm Cove Dam Rd, Wabassus Mt Rd Drainage and surface restoration projects completed on portions of 4th Lake Rd, including culvert installations.
2015	4th Lake Rd & Little River Rd: Entire roads monitored; routine seasonal gradings conducted. 4 culverts were also installed Planned gradings completed on farm cove dam rd, 3rd lake Ridge road, 3rd lake outlet road, and a portion of the Beldon brook rd. Gravel was screened for the first time in the Elsemore pit.
2016	4th Lake Rd & Little River Rd: Entire roads monitored; routine seasonal gradings conducted 4 arch culvert installations, 1 decommissioning 6 drainage culvert installations and 9 miles brushing on Amazon Road
2017	4th Lake Rd, Little River Rd, Amazon Rd: Entire roads monitored; routine seasonal gradings conducted 1 bridge installation, 3 decomissionings ¼ mile ditching 1 gate installation
2018	4th Lake Rd., Little River Road, Amazon Rd.: Entire roads monitored; routine seasonal gradings conducted No bridge installations. ½ mile of ditching and turnpiking on Fourth Lake Dam Road.

Pesticides and Biological Control Agents

DLLT does not currently use pesticides or biological control agents. If in the future a need to use the agents arises, DLLT will prepare evaluate the risks, prepare appropriate application plans, and monitor use in accordance with the Downeast Lakes Community Forest Management Plan, the conservation easement, and Maine law and Forest Stewardship Council certification standards.

Social and Economic Monitoring

Social and Economic Monitoring						
Element	**2008-2013 (Avg)**	**2014**	**2015**	**2016**	**2017**	**2018**
Total volume of wood harvested (cords)	6346	6483	5323	6032	6696	11157
Number of permanent DLLT employees	3	4	4	4	4	4
Number of temporary DLLT employees	0	2	2	2	2	4
Number of contractor and subcontractor employees	Appr. 13*	Appr. 13*	Appr. 10*	Appr*. 10	Appr*. 10	Appr*.10

* contractors and subcontractor employees include foreman, operators, truckers, and other employees of harvest contractor Davis Forestry Products; only harvest-related contractor employees are included here.

DLLT's board members and staff, and public meetings attended or hosted by DLLT are the major means by which DLLT monitors the public reaction to management.

2018- In the past year, DLLT has heard many positive comments regarding the Trust's road management, conservation of lands, and efforts to preserve the lakeshores. Specific comments included positive reactions to the grading on Amazon Road. We also received positive comments regarding the acquisition of the West Grand Lake Tract. (from 2017).

Common Loon Monitoring

In addition to monitoring activities directly related to management of the Downeast Lakes Community Forest (formerly the Farm Cove Community Forest) described in this report, DLLT has had a program of monitoring common loon productivity on lakes throughout the region, a project to establish a baseline set of data on loon reproduction that began in 2001 in cooperation with the U.S. Fish and Wildlife Service and Biodiversity Research Institute, and also involved Maine Audubon in 2011. This monitoring effort concluded in 2011. An executive summary of the loon monitoring report is available upon request.

III. Periodic Forest Monitoring Data

Because the following data are gathered periodically (for example, every 5-10 years), this section of the report will be only updated as new data become available.

Forest Inventory

Standing Timber

Forest inventory is the basis of good forest management. The following is a summary of the data that have been collected on the forest. A forest-wide inventory took place in 2000 on the original Farm Cove Property. An inventory of the Wabassus Lake Tract was completed in 2008. In the fall of 2014, aerial photos and stand type maps were developed.

New inventory points were completed in 2010 on the original Farm Cove Community Forest, exclusive of the Wabassus Lake Tract. After processing the cruise data collected by Fountains Forestry, the following results were compiled using the 7 Islands inventory program, MBG tools. The following table contains current cruise information (2010) and past cruise data and estimates.

Summary	Entire Ownership (excl Wabassus)	Without LSMA or Eco Reserve	Without Eco Reserve	LSMA Only	Ecological Reserve Only
Cords per Acre 2003	17	?	?	?	?
Estimated Cords per Acre 2008	18.1	17.6	17.5	17	21
Cords per Acre 2010	18.4	17.8	18.1	19.3	19.7

In 2015, this inventory information was updated in 2014 with re-measured post-harvest plots, and "grown" plot information received from Finite Carbon as part of our Carbon monitoring program. This data was processed using LMS (Landscape Management Systems) and formulas developed by the Forest Service, to update the inventory once again. The results were not surprising, there is a clear annual net gain. Harvest rates are approximately half of growth. More inventory information can be delivered upon request.

Based on the most recent ***round wood*** cruise data, the following has occurred:

- Farm Cove Tract, 2005-2015
    - The average net (growth-harvest) increase in stocking from 2005 to 2015 was 0.35 cords per acre per year.
    - The Average Gross Growth (excluding harvest) was 0.63 cords per acre per year.
- Wabassus Tract, 2007-2014

  - The average net (growth-harvest) increase in stocking from 2007-2015 was 0.31 cords per acre per year.
  - The Average Gross Growth (excluding harvest) was 0.47 cords per acre per year.
- West Grand Lake Tract
  - The average net (growth-harvest) increase in stocking from 2009-2014 is unknown. The property was not in the possession of DLLT until July of 2016.
  - The Average Gross Growth (excluding harvest) is unknown. The property was not in the possession of DLLT until July of 2016.

*Numbers are based on roundwood only.

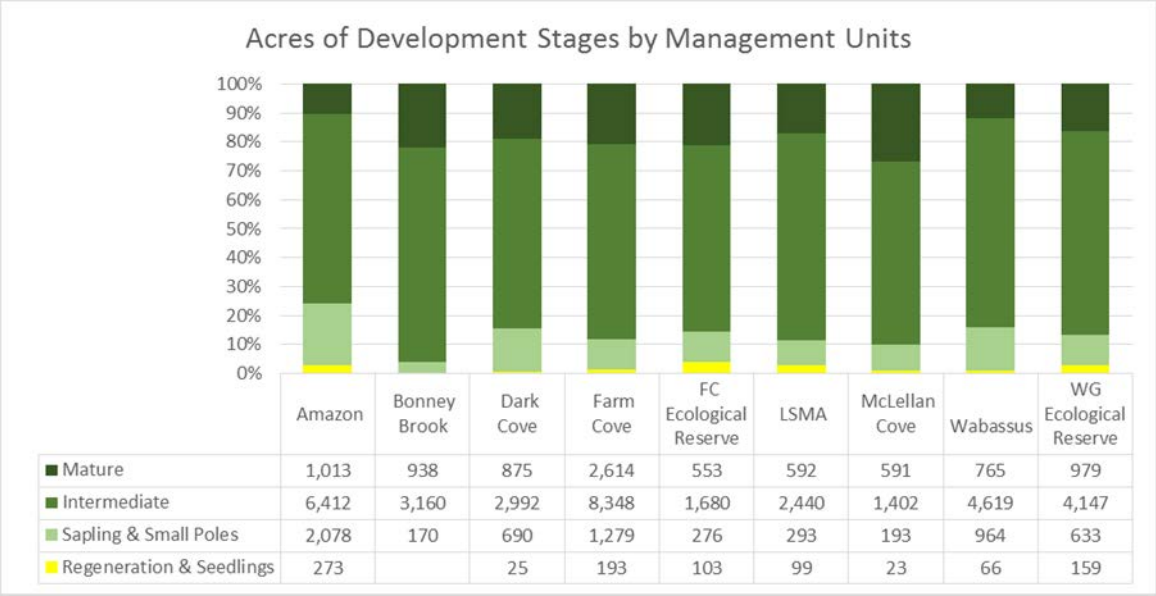
In 2015 most of the Farm Cove Community Forest was re-inventoried with fixed 1/15 acre plots as part of our FC Carbon project. This new inventory, although conducted on the same plot location, came out with an additional 76,312 cords, averaging out to an additional 3.6 cords per acre (25.6 cords/acre). With the addition of the West Grand Lake Tract, our Annual Allowable Cut (AAC) has increased to 12,000 cords per acre per year.

Changes in Habitat Conditions

The Downeast Lakes Community Forest is managed for a range of forest types and ages to provide diverse and abundant habitat for wildlife species of interest to the local community. Aerial photographs and cover type maps are used to assess forest habitat conditions for most species. To help manage the forest, the management plan has divided the forest into the following management units.

LSMA	North of the 4th Lake Ecological Reserve including Beldon Brook Area and southwest of Third Lake Ridge Road
Dark Cove:	South of Dobsis Dam to Fourth Lake Road and West to Buck Knoll
McLellan Cove:	North of West Grand Lake
Farm Cove:	South of West Grand Lake and east of the Wabassus-Pocumcus thoroughfare. Includes 30 acres on Kitchen Cove Point
Wabassus Lake:	T43, area south of Fourth Lake Road
Bonney Brook:	Areas below the Milford Road, and along the Bonney brook Rd
Amazon:	Area to the North and South of the West Grand Lake Ecological reserve
Amazon-Musquash Ecological Reserve:	East side of Amazon Road and south of Otter Brook Road. Also West side of Amazon Road north of Otter Brook Road

The graph below represents forest habitat conditions as of 2015 summarized from the cover type data. The next update of the cover type maps and data is expected in or before 2025.



	Amazon	Bonney Brook	Dark Cove	Farm Cove	FC Ecological Reserve	LSMA	McLellan Cove	Wabassus	WG Ecological Reserve
Mature	1,013	938	875	2,614	553	592	591	765	979
Intermediate	6,412	3,160	2,992	8,348	1,680	2,440	1,402	4,619	4,147
Sapling & Small Poles	2,078	170	690	1,279	276	293	193	964	633
Regeneration & Seedlings	273		25	193	103	99	23	66	159

Deer Management Areas

Long-term monitoring of deer wintering areas is based on the percent of mapped primary and secondary cover in mapped DMAs. Based on aerial imagery from 2014, DLLT has identified eight management areas totaling 19,836 acres. The objective is to have at least 25% of each DMA in primary cover and at least 50% in primary and secondary cover combined. Due to heavy harvesting under previous ownership, none of the areas meet the state DWA cover criteria.

Deer Wintering Areas														
	Primary		Secondary		Primary + Secondary		Future Secondary		Never Cover		NA		Total	Goals Met?
DMA	%	ac	%	ac	%	ac	%	ac	%	ac	%	ac	ac	Yes/No
Amazon	8%	544	23%	1649	31%	2193	48%	3396	3%	212	18%	1255	7055	No
Belden Bk	43%	696	20%	335	63%	1031	23%	373	11%	177	3%	56	1637	Yes
Burroughs Bk	36%	323	33%	292	69%	615	21%	187	8%	73	2%	20	895	Yes
Bonney Bk	11%	202	4%	74	16%	276	43%	770	12%	215	13%	238	1775	No
Grand Lake Bk	22%	664	13%	398	36%	1062	58%	1727	0%	0	7%	201	2990	No
Hayes Bk	30%	639	24%	515	53%	1154	41%	887	3%	54	3%	63	2159	Yes
Wabassus	18%	424	13%	299	31%	723	53%	1232	12%	276	5%	106	2338	No
Whitney Cove	34%	339	28%	281	63%	620	35%	343	2%	18	1%	5	987	Yes
Grand Total	20%	3831	19%	3843	39%	7674	45%	8915	5%	1025	10%	1944	19836	No

*Total cover includes all primary, secondary, and non-cover areas.
** GL Brook was increased to match acreage of marten management area

Section II includes a summary of annual management activities in DMAs.

American Marten

The management plan for American marten is based on maintaining large patches (over 1,200 acres) of mature forest. Monitoring is based on periodic inventories and cover type maps (i.e., every 10 years) to quantify habitat conditions.

Marten Habitat by Management Unit								
Unit	Total Area	Potential Habitat	Primary Habitat		Secondary Habitat		Current Habitat	
	ac	ac	ac	%	ac	%	ac	%
Amazon	7055	5818	4115	70%	696	12%	4810	82%
Belden Bk	1637	1581	1074	68%	466	29%	1540	97%
Bonney BK	1733	1496	945	63%	476	32%	1422	95%
Burroughs Bk	895	837	594	71%	240	29%	834	100%
Grand Lake Bk	2990	2769	1884	68%	736	27%	2620	95%
Hayes Bk	2159	2024	1542	76%	313	15%	1855	92%
Wabassus	2338	2195	1435	65%	259	12%	1693	77%
Whitney Cove	987	967	515	53%	414	43%	929	96%
Grand Total	19794	17687	12104	68%	3600	20%	15703	89%

Grouse and Woodcock

Long term potential high-value grouse and woodcock habitat is indicated by the total area and balance of development stages in the aspen-birch forest type. This is only a portion of the total area of habitat, because grouse will also be found in young and intermediate-aged northern hardwood and hardwood-dominated mixed forests.

2005 Grouse and Woodcock Habitat Conditions

Management Unit	Focus Species Development Stage (ac)				Aspen-Birch Total	All Types Total
	Early Successional R/S	Early Successional S/SP	Intermediate	Mature		
Dark Cove (exclusive of the Ecological Reserve and LSMA)	28	444	76	14	562	4,546
Whitney Cove		46	187	60	293	2,703
Farm Cove		206	422		629	11,992
Aspen-Birch Total	28	697	685	74	1,484	19,240
Total Forest Acres						25,369

2015 Grouse and Woodcock Habitat Conditions

Management Unit	Focus Species Development Stage (ac)				Aspen-Birch Total	All Types Total
	Early Successional R/S	Early Successional S/SP	Intermediate	Mature		
Amazon	8	119	157	6	290	10,212
Bonney Brook		64	505	270	839	4,549
Dark Cove		121	57		178	4,746
Farm Cove	12	76	510		598	12,911
4th Lake Ecological Reserve		62	372		434	3,696
LSMA	61	59	438		558	3,568
McLellan Cove			148		148	2,408
Wabassus		15	209	7	232	6,628
A-M Ecological Reserve	7	122	242		371	7,092
Aspen-Birch Total	88	638	2638	283	3648	
Total Forest Acres						55,930

When examining the updated data, it's clear that the acres of aspen birch forest type is decreasing over time. The baseline (2005) data for Dark Cove, McLellan Cove, and Farm Cove had a total of 1,484 acres of Aspen-Birch forest type. That number has dropped to 924. This is due to forest succession and harvesting practices. Many aspen birch stands have developed significant shade tolerant conifer cohorts, making it difficult to justify retaining cover type.

DLLT is considering several options in preserving the presence of the forest type.

Black-throated Blue Warbler/Mature Hardwood Forest

Black-throated blue warbler is the focal species for older intermediate and mature northern hardwood forest. In 2005 about 60% of this forest type in the DLLT FCCF as a whole was in the early successional stage and 6% was in the mature stage. The objective was to increase mature northern hardwoods to 15% of the total northern hardwood area by 2015 and 30% by 2025.

With the current updated cover type maps, changes were observed. Currently, 36% of northern hardwood forest is in the early successional stage. This shows an increase in stand development. We also increased TOTAL northern hardwood acreage on the DLCF. With the new total acreage, we have actually seen a slight decrease in mature hardwood acreage, in percent cover. If the original acreage is used to calculate current mature cover, than we have actually increased to 7% mature cover.

It is believed that the increase in total acres in northern hardwood cover is due to forest succession, or possibly some minor mis-typing in forest types in 2005. It is also believed that the growth rates required to achieve mature northern hardwood status is may have been underestimated.

Hard Mast Management

Long-term plans for hard mast include experimental planting of American chestnut and red oak by 2012. These plots and chestnuts planted prior to 2007 will be monitored.

Year	Number of plots	Year Planted	Type of Planting	Year Monitored Monitored	Results
Planted Prior to 2008	8	2006	Seedlings	2008	Qualitative inspection only; surviving seedlings appear healthy and have received only moderate browse pressure; survival appears better away from raspberry vines in old wood yards
2008					
2009					
2010					
2011					
2012					
2013					
2014					The planting of Chestnut is being reconsidered, but in a drastically different manor than before. Any future plantings will likely focus on Red oak.
2015					
2016					
2017					
2018					

Rare Species, Natural Communities, and other Special Habitats

During 2002-2003 DLLT contracted with Dr. Norm Famous and Janet McMahon to inventory the anticipated DLLT acquisition lands for the presence of rare, threatened, or endangered wildlife and plant species. The final report and recommendations were completed in August of 2007. Additional information, including a list of rare species that could potentially be observed on the Community Forest, was requested and received from the Maine Natural Areas Program, and is summarized in the Farm Cove Community Forest Management Plan (2008). The Wabassus tract was acquired in 2009, and a focus species plan was developed in 2010. With the acquisition of the West Grand Lake Tract in 2016, DLLT decided to combine all management into a single document, Downeast Lakes Land Trust Forest Management Plan (2015). DLLT's approach is to protect species by protecting their habitat, including areas designated as special management areas, late-successional forest, and ecological reserve. Monitoring for general conditions or unintended adverse impacts occurs primarily during forest harvest operations planning and implementation when harvests occur near or in special management areas.

Literature Cited

Bryan, R.R. 2007. Focus Species Forestry: A Guide to Integrating Timber and Biodiversity Management in Maine. Maine Audubon, Falmouth.

Deifenback, D.R, S.J. Lovett, and R.B. Owen, Jr. Beaver and wetlands. 1988. P. 38-41 in Elliott, C.A., ed., A Forester's guide to Managing Wildlife Habits in Maine. University of Maine Cooperative Extension Service and Maine Chapter of the Wildlife Society.

Foss, C.R. 1999. Beaver influenced wetlands. P. 61-64 in Elliot, C.A., ed. Biodiversity in the Forests of Maine: Guidelines for Land Management. UMCE Bulletin 7147. University of Maine Coop Extension, Orono.

Pelletier, S.P. and M.P. Arsenault. 2007. Pre-filed direct testimony on Behalf of Plum creek Timber Company in support of the Moosehead Region Concept Plan. ftp://ftp.state.me.us/outgoing/PlumCreek/ReceivedFromPlumCreek/2007-08-31%20PCFilings/08-31-2007%20PrefiledDirectTestimony/Volume04/2007-08-31_PLUMCREEK_WoodlotTestimony.pdf