

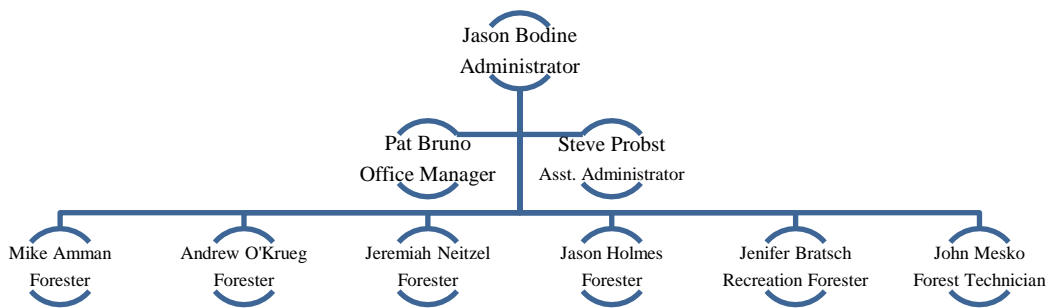
**BAYFIELD COUNTY FORESTRY AND PARKS DEPARTMENT
ANNUAL ACCOMPLISHMENT REPORT
FOR THE CALENDAR YEAR
2017**

FORESTRY AND PARKS COMMITTEE

Shawn Miller, Chair
Fred Strand, Vice-Chair
Harold Maki

Jeff Silbert
Larry Fickbohm

DEPARTMENT STAFF



LAND AREA

Below is the current amount of county forest acreage located within each Township:

Barnes	40,540.36	Cable	5,556.33	Oriente	4,720.00
Bayfield	32,792.56	Clover	5,386.57	Port Wing	8,876.18
Bayview	13,151.47	Hughes	24,685.20	Russell	8,570.82
Bell	14,585.03	Iron River	6,042.22	Tripp	6,539.52
Namakagon	546.80				

Official County Forest Acreage: 171,993.06

There are approximately 3,500 acres of county tax title lands, not including lots and small parcels, in addition to the above listed county forests lands. On occasion, the Forestry and Parks Department (hereafter “Department”) will monitor these parcels for land and/or timber sales, monitor for potential trespass issues, and negotiate road/utility easements and sand and gravel permits.

COMPREHENSIVE LAND USE PLAN

A comprehensive land use plan that will guide the management of the county forest for the next 15 years was developed in 2005 and approved by the county board in January 2006. This plan will be

periodically reviewed and amended, as necessary. Amendments must be approved by the County Board of Supervisors.

There were no Land Use Plan amendments in 2017. However, the Forestry and Parks Committee and County Board of Supervisors approved the Department's 2017 work plan. The annual work plan gives direction and meaning to the Forestry and Parks Department budget, further defines and supplements the Comprehensive Fifteen Year Land Use Plan, and emphasizes current goals and needs of the County Forest, Parks and Trails Programs.

Previous amendments include: revisions to Chapter 700 (Access Management) were approved by the county board in 2013. Revisions to the county forest blocking boundary map were approved by the county board in 2014 (the map is located in Chapter 900 of the Land Use Plan).

FOREST MANAGEMENT

The forest management program is one of the most significant responsibilities of the Department and one of the largest (and in many years, the largest) of any county forest program in the state.

There are three major facets of the program: 1) forest management (primarily timber sale establishment and administration), 2) reforestation (natural and artificial), and 3) forest reconnaissance (stand and/or compartment updates). The quality and quantity of goal accomplishments, as well as the sold value of timber sales, are some of the best indicators used to evaluate performance.

For more detailed information on current goals, policies, procedures and general direction regarding the management of the county forest, please refer to the Fifteen Year Land Use Plan, the 2018 Budget Narrative and 2018 Department Annual Work Plan. All documents can be found online at: <http://www.bayfieldcounty.org/243/Plans>.

Below are accomplishment summaries of the major forest management goals, priorities and objectives:

- 1) **Sustainable Timber Harvest Goals:** sustainable timber harvest goals for every major forest type are calculated based upon sound silvicultural guidelines and principles.

Existing stand information, silvicultural prescriptions, responses to previous management/treatments, reactions to insect and disease outbreaks or other natural disasters, short or long-term adjustments due to predicted or unexpected management challenges, and more, are all part of the goal development process.

Total acres accomplished can be somewhat variable and often times impacted by some or all of the factors described in the paragraph above. Acreage goals are essentially targets and are influenced by a variety of variables, including, but not limited to, existing stand conditions, current management direction, long term projections and/or objectives, and available staff hours.

Table 1 displays the sustainable harvest goals and accomplishments of the timber sale program by major forest type since 2012.

Table 1: Bayfield County Forest Sustainable Harvest Goals and Accomplishments (acres)

Species	2012		2013		2014		2015		2016		2017		Average	
	Goal	Accomp.	Goal	Accomp.	Goal	Accomp.	Goal	Accomp.	Goal	Accomp.	Goal	Accomp.	Goal	Accomp.
Aspen ¹	1,005	1,230	1,170	1,151	1,265	1,314	1,300	1,292	1,340	1,340	1,375	1,416	1,189	1,223
Nor. Hdwd	1,321	1,349	970	1,069	900	857	835	804	895	870	890	809	953	894
Red Oak	763	577	795	680	700	981	820	823	870	872	900	772	791	764
Paper Birch	100	132	50	15	90	131	40	53	30	0	30	55	93	73
Scrub Oak	140	142	215	254	205	275	250	247	255	288	215	227	181	224
Red Pine	991	917	900	952	880	811	855	1,041	935	906	915	912	916	909
Jack Pine	504	493	275	274	190	182	165	194	365	498	345	386	363	378
White Pine	100	93	120	169	120	127	100	97	90	87	90	47	90	84
Fir/Spruce	60	25	130	119	40	36	40	44	40	44	30	1	68	74
Swamp Conifer ²	130	138	140	141	120	54	130	98	140	40	140	45	118	85
Swamp Hdwd. ²	120	87	50	41	110	74	110	88	100	41	100	94	90	53
Total	5,234	5,183	4,815	4,865	4,620	4,842	4,645	4,781	5,060	4,986	5,030	4,764	4,850	4,759

¹ Greater accomplishments are a result of managing some of the backlog

² Timber types included in goals starting in 2011

Accomplishment Summary

As part of the timber sale program, a total of 4,764 acres of county forest was sustainably managed in 2017. This represents an increase of roughly 32% when compared to the average accomplishments prior to 2012. The significant increase in accomplishment is a direct result of adding a new forester position in 2011.

Total sustainable harvest accomplishments were nearly 95% of the overall goal for 2017. The goal for most major timber types fell within the target range.

The harvest goal for red pine was achieved at the 100% level (under by 3 acres). The goal for aspen was over by 41 acres, primarily due to acreage fluctuations/variability as part of timber sale design/establishment. The goal for jack pine was over by 41 acres, primarily due to the discovery of another stand exhibiting high levels of mortality.

Scrub oak was over by 12 acres, for reasons similar to the aspen accomplishments. The accomplishment for swamp hardwood was nearly at target (under by 6 acres, primarily due to timber sale design). The accomplishment for white pine was under by 43 acres, primarily due to a stand not being ready for management.

Accomplishments for northern hardwood were slightly under goal by 81 acres. The treatment of a few stands previously scheduled for an un-even aged harvest was delayed, primarily due to field observations (stands not ready for treatment) or poor responses to previous management.

The goal for red oak as under by 128 acres, primarily because a few stands scheduled for an overstory removal were not ready for management (poor or inadequate desired regeneration). These stands will continue to be monitored for adequate and desirable

regeneration and will be treated once they reach an acceptable level (they may also require additional inputs by the Department in order to achieve that desirable level).

Accomplishments for a few timber types fell well outside the target range. Goals for fir/spruce and swamp conifer were accomplished at a rate of 3% and 32% respectively. The fir/spruce stand was not ready for harvest and targets for swamp conifer management have always been relatively fluid.

Traditionally, swamp conifer types were not part of the annual harvest goal (added in 2011), primarily due to the nature of the stands (i.e. low productivity, wet soils, poor markets, etc.). Over a relatively short period of time, once the mature and suitable stands have been managed, it is expected that the goal for swamp conifer will decrease significantly. Swamp types are primarily included on the harvest schedule as an attempt to identify priority stands and treat those that need, or are suitable for, management.

In general, the sustainable harvest accomplishments are in the form of a timber sale, however, there are occasions when a stand is updated and managed at a later date. Updates typically occur when a stand has not attained the predicted amount of growth in between harvests, when a stand simply isn't ready for management, when the data describing the stand is incorrect, or when the stand is removed from management due to a restrictive feature i.e. riparian buffers or inoperable slopes.

On average, roughly 10% of the stands are either not ready for management, are incorrectly typed or are removed from the harvest schedule, as described above. However, one primary objective of the reconnaissance program is the provide accurate, up to date stand information across all timber types.

Table 2 displays a summary of the accomplishments for the sustainable timber harvest program, from 2010 through 2017.

Table 2: Bayfield County Forest Sustainable Harvest Summary (acres)

Year	Management Goal	Timber Sale Establishment	Stand Update^a	Total Accomplishments
2010	4,285	3,331	326	3,657
2011	5,108	4,491	499	4,990
2012	5,234	4,588	595	5,183
2013	4,815	4,348	517	4,865
2014	4,620	4,331	511	4,842
2015	4,645	4,289	492	4,781
2016 ^b	5,060	4,718	304	5,022
2017 ^c	5,030	4,354	465	4,819
Average	4,850	4,306	464	4,770

^a Stands are updated, in part, due to inaccuracies in the data or insufficient growth for management.

^b Includes 89 acres of blowdown salvage sales and 36 acres of other forest types, not inc. on harvest goals table.

^c includes 55 acres of other forest types not inc on harvest goals table.

In 2017, roughly 90% of the total accomplishment acres were in the form of a timber sale (roughly 10% removed for the reasons described above). This is a little below the average for stand updates over the past seven years (a little over 10%), but a slight increase when compared to 2016 (when roughly 6% of the harvest goal was in the form of an update).

Updating stand information, on a routine and regular basis, should significantly reduce the number of stands being removed from harvest consideration due to incorrect data. When most of the stand information has been updated, the expectation is that a higher percentage of stands will be actively managed in the future.

- 2) **Timber Sale Program:** Bayfield County offers two timber sale lettings per year, one in the spring and one in the fall. In 2017, a third letting was held, solely for the re-offering of sales not sold during the fall.

Table 3 displays the summary of timber sale offerings since 2008, including the total number of sales sold per year, total acres, the total value of the winning high bids, the average bid value per acre and total revenues received from the sale of timber during each calendar year.

Table 3: Bayfield County Forest Timber Sale Summary

Calendar Year	Sales Offered	Acres Offered	Sales Sold	Acres Sold	Acres Not Sold	Timber Sale Bid Values	Bid Value per Acre	Timber Revenues
2008	58	3,546	55	3,507	39	\$2,381,513	\$679	\$2,621,308
2009	45	3,297	42	3,100	197	\$2,510,601	\$810	\$2,305,259
2010	40	3,218	40	3,218	0	\$2,404,178	\$747	\$2,047,663
2011	54	4,156	54	4,156	0	\$3,629,330	\$873	\$2,477,066
2012	53	4,782	53	4,782	0	\$4,900,194	\$1,025	\$2,696,756
2013	54	4,275	53	4,177	98	\$3,614,091	\$865	\$3,904,104
2014	61	4,388	61	4,388	0	\$5,252,530	\$1,197	\$4,537,661
2015 ^a	57	5,215	54	4,958	257	\$6,507,887	\$1,313	\$5,006,565
2016 ^{bc}	65	4,750	65	4,750	0	\$4,745,850	\$999	\$5,057,393
2017	53	4,272	50	4,101	171	\$3,719,320	\$907	\$5,009,892
Average	54	4,190	53	4,114	76	\$3,966,549	\$941	\$3,566,367

^a Timber revenues include \$13,506.80 generated from the management of non county forest lands.

^b Includes 89 acres of blowdown salvage sales.

^c Timber revenues include \$15,393.90 generated from the management of non county forest lands.

In 2017, once again, revenues from the sale of wood were at near record levels. Nearly \$5.01 million in timber sale revenue was received in 2017. This was a decrease of 1% when compared to 2016 (which was a record year for stumpage revenues at nearly \$5.06 million); a slight increase from 2015; a 10% increase when compared to 2014; nearly 86% increase from 2013; and around 2.2 times greater than the average stumpage revenues received prior to 2012. From 2015-2017, timber sale revenues have averaged \$5.024 million! The average prior to 2012 was around \$2.3 million.

In contrast, the number and total acreage of sales sold were down in 2017, as was the sold timber sale bid values. A total of 50 sales, covering 4,101 acres was sold for nearly \$3.72 million in 2017 (or about \$907/acre). Since 2011 (when modifications to the forest management program went into full effect), the Department has averaged roughly 57 sales, covering approximately 4,500 acres, with sold timber sale bid values of nearly \$4.80 million (or about \$1,045/acre).

In general, the long term sustainable timber harvest goals are projected to remain stable at around 4,500 to 5,000 acres per year. As previously stated, numerous variables can impact how many acres are actually established in any given year. Particularly, in 2017 a few stands of red oak and northern hardwood were not ready for the previously prescribed treatment (or about 220 acres were not treated).

One down year will not define a program, but fluctuations in timber sale establishment and markets have the potential to impact future revenues. Markets were generally down in 2017 and are predicted to remain that way in 2018. As a result, future timber sale revenues could hover around \$4.0 million per year (or decrease by about \$1.0 million), when compared to averages over the past three years.

Timber Sale Contracts

In 2017, the Department awarded 50 new timber sale contracts, covering 4,101 acres, with a total bid value of \$3,719,320. Total timber sales awarded in 2017 decreased by 30% when compared to the previous year. Total acreage awarded decreased by about 16% over that same time period.

The average winning bid values decreased significantly when compared to 2016, by nearly 28% (or roughly 10% when only comparing the per acre bid values). When compared to 2015 (which was a record year for acres sold, total bid values and bid value per acre), the winning bid value decreased by over 78%. The bid value per acre decreased by nearly 45% over the same time period. As stated above, this decrease is significant, as it has the potential to directly influence future revenues (see below).

Annual stumpage revenues are generated, almost exclusively, from previously awarded timber sale contracts. Revenues generated from forest products harvested on each timber sale are based solely upon the bid price per product per species agreed to as per the contract. In general, all timber sale contracts are awarded on a two-year basis, meaning a contractor has two years to complete the harvest.

However, the Department will also routinely grant contract extensions. Each contract extension adds one year to the length of the contract. It's not uncommon for a contractor to be granted one or two extensions. In some instances, three and up to four, one-year extensions have been granted. On rare occasions, where warranted, a fifth extension may be granted.

In summary, it can take up to four years or longer before a timber sale contract has been completed. Markets play a major role on when timber sales go active, but, on average, roughly 75% of all sales are completed within the initial two-year contract period. Revenue

from a healthy percentage of sales sold in 2017, as well as some to be sold in the upcoming year, will be received in 2018. If markets continue to trend downward, the county may experience a significant decrease in future timber sale returns.

Timber Sale Activity

Timber sale activity occurs in a variety of forms, including, but not limited to: pre-sale meetings, timber harvesting, forwarding, scaling, hauling, road building, contract extensions, accounts management, contract close-out requirements, and more. When any action occurs on a given contract, it’s classified as active.

A total of 94 timber sales went active in 2017. Since 2012, an average of roughly 92 timber sales are active during the year. This is a stark contrast to pre-2012 activity levels, which averaged about 52 per year (an increase of nearly 80%).

Timber sale activity can last anywhere from a period of a few days or weeks, to a few months, to most of a year, depending on the size of the sale, harvesting restrictions, operating conditions and the general goals of the contractor. As of the end of CY 2017, the Department had 127 timber sales under contract, with 37 different contractors and a total contract value of over \$11.1 million. During any point in the year, anywhere from around 10 to upwards of 20, or more, timber sales can be active at one time.

Table 4 below summarizes timber sale activity on the forest since 2009.

Table 4: Summary of Annual Timber Sale Activity¹

Year	Offered	Sold	Active²	Completed^{3,4}
2009	45	42	63	75
2010	40	40	66	70
2011	54	54	66	52
2012	53	53	64	41
2013	54	53	89	43
2014	61	61	97	64
2015	57	54	89	62
2016	65	65	93	41
2017	53	50	94	58
Average	54	52	80	56

¹ Total number per activity per year.

² Includes active harvesting, hauling, scaling, payments, close-out activities, etc.

³ Once all contract obligations have been met, a timber sale is officially closed.

⁴ in late 2009/early 2010, a large backlog of completed sales were all closed-out at once.

Timber Sale Revenue Model

When analyzing timber sale revenues and the results from previous timber sale offerings, general patterns develop that allow the Department to estimate when to expect proceeds from existing contracts. In general, roughly 45% of the revenue generated during any

calendar year comes from contracts sold during the previous year. Approximately 20% originates from those sold during the current year, 20% from two years prior, 10% from three years prior and the rest beyond that.

For example, based on the above model, the general expectation is the 20% of the revenue generated in 2018 will come from sales sold in 2018; 45% from sales sold in 2017; 20% from sales sold in 2016; 10% from sales sold in 2015 and the rest from 2014 and 2013.

Referring back to Table 3, the banner stumpage revenue received by the Department in calendar years 2015 and 2016 were a result of very strong markets from the year's prior (timber sale bid values were at an all-time high in 2015). CY 2016 was a poor market comparatively, as was 2017. As a result, and assuming a poor or below average market in 2018, the general prediction is a significant decrease in sale of wood revenues for 2018, by as much as 20 to 30%.

Harvested Volume

Table 5 displays the total volume of timber harvested from Bayfield County Forest timber sales from 2012 through 2017. Pulp (cords) and logs (Mbf – thousand board feet) are displayed for each primary timber type. For the sake of comparison, all tonnage sales (chips) were converted to cords (approximately 20% off all timber sales are sold by the ton).

Table 5 also displays the total amount of timber sale revenue received each year, as well as cord equivalents (which converts logs into cords in order to provide a general overview of the entire program).

Table 5: Timber Harvest Volume Summary (pulp in cords and logs in thousand board feet)

Species	2012		2013		2014		2015		2016		2017		Average	
	Pulp	Logs	Pulp	Logs	Pulp	Logs	Pulp	Logs	Pulp	Logs	Pulp	Logs	Pulp	Logs
Aspen	14,647	1	20,288	0	26,154	0	23,486	0	19,295	0	26,758	0	20,030	1
Mx. Hardwood ¹	13,316	129	17,960	377	25,238	506	23,705	561	26,513	655	20,216	575	20,559	409
Oak	7,916	1,127	10,796	1,293	18,162	2,439	14,004	2,103	14,262	2,814	15,408	2,056	12,711	1,729
Paper Birch	1,083	22	1,169	17	562	9	383	6	702	25	363	11	721	18
Basswood	1,022	62	1,801	252	1,538	130	2,012	372	2,087	302	1,329	262	1,553	204
Red Pine	10,694	0	14,637	0	13,266	0	10,637	0	11,921	0	9,840	0	10,553	2
Jack Pine	5,352	0	11,211	0	5,715	0	5,633	0	5,342	0	8,533	0	6,611	0
White Pine	48	0	2,083	0	460	0	630	0	848	0	1,511	0	796	0
Other Conifer ²	465	0	1,079	0	2,227	0	2,533	0	1,402	0	2,054	0	1,341	0
Total	54,543	1,341	81,024	1,939	93,321	3,084	83,023	3,042	82,372	3,796	86,012	2,904	74,875	2,364
Total Cord Equiv. ³	57,493		85,291		100,107		89,715		90,723		92,401		80,075	
Revenue	\$2,696,756		\$3,904,104		\$4,534,831		\$5,006,565		\$5,057,393		\$5,009,892		\$3,674,911	

¹ Maple, yellow birch, ash

² Spruce, Fir, Tamarack

³ Log volumes converted to cords and added to the pulp volume.

In summary, 2017 was another exceptional year for timber harvested from the county forest. A little over 86,000 cords and nearly 3,000 MBF of logs were harvested. Total cords harvested was up by about 4% when compared to 2016, but log volume decreased by roughly 30% (mostly red oak logs).

Table 5 also includes a summary of cord equivalents. This converts the log volume to cords as an attempt to simplify/quantify the total amount of wood harvested annually. Total cord equivalents in 2017 were 92,401, which was about 2% more than 2016, but 8% less than the total amount harvested in 2014 (which was a record year for total harvested volume). The average cord equivalents since 2013 is roughly 91,600 cords per year. Prior to 2013, the average was about 61,000 cords, an increase of about 50%.

In general, the amount of aspen volume harvested from the forest was at an all-time high, at nearly 27,000 cords. However, mixed hardwood volume decreased by about 30% when compared to 2016 (which was a record year for mixed hardwood volume). Red pine volume was at the lowest level since 2011, primarily due to relatively poor markets. However, jack pine volumes were significantly greater than 2016, primarily due to the increases in accomplishments over the past two years. Log volumes were about 30% lower when compared to 2016 (which established a record for total log volumes harvested), but comparable to what was harvested in in 2014 and 2015.

- 3) **Reforestation Program:** reforestation, be it natural or artificial, is a core building block of forest sustainability and a fundamental component of any forest management program. A successful reforestation program provides numerous benefits, some of which include: the restoration of forest productivity, fertility and environmental function; the assurance of a perpetual, sustainable supply of forest resources and amenities for future generations; the protection of soil and water quality; and the establishment and development of quality wildlife habitat. Newly regenerating stands are typically monitored 3 to 4 times, and sometimes more, over a 10-year period, to determine success.

Table 6 displays the summary of the reforestation program.

Table 6: Bayfield County Forest Reforestation Program Summary (acres)

Year	Planting				Seeding	Site Preparation				Maintenance				Monitoring
	Red Pine	Jack Pine	White Pine	Other ¹	Jack Pine	Trench	Fire Plow	Scarify	Spray	Fire	Spray	Bud Cap	TST ²	Regen
2008	378	207	24	0	0	796	88	0	442	0	0	0	0	1,683
2009	487	415	0	0	0	726	72	0	348	40	0	0	0	2,652
2010	367	196	0	0	0	363	118	0	420	42	305	0	0	2,183
2011	319	153	35	68	0	900	88	0	186	21	324	0	0	1,424
2012	295	107	274	0	0	0	177	120	727	32	609	0	0	2,736
2013	281	174	92	0	558	264	0	40	0	0	449	239	0	2,522
2014	0	0	0	0	0	503	20	115	264	0	273	239	0	2,929
2015	62	0	129	0	202	717	0	99	634	0	0	239	1	2,337
2016	203	39	0	0	393	570	0	102	492	0	0	239	0	2,580
2017	36	2	0	0	460	279	0	115	585	0	0	71	46	2,931
Avg.	243	129	55	7	161	512	56	59	410	14	196	103	5	2,398

¹ In 2011, tamarack and white spruce.

² Timber Stand Improvement - Hand release of established regeneration

- a) Planting and Seeding: a total of 38 acres were planted in 2017, making it one of the lowest planting programs on record. All sites were planted at a rate of about 800 seedlings per acre. All seedlings were 2-0 containerized stock and planted by contracted crews.

The artificial reforestation program has experienced some transformations over the past five years, which will continue into the foreseeable future, resulting in significantly less acreage being planted. In general, the primary reasons for the changes are as follows: re-planting of the old fuel break areas has been completed; a general lack of previously open area, which, in the past, were planted to red pine; a lack of mature stands of red pine that are ready for reforestation; movement towards an emphasis on jack pine regeneration in the Barnes Barrens Management Area; an emphasis on seeding when attempting to regenerate jack pine; and a significant decrease in stands that were severely defoliated from a significant outbreak of jack pine budworm in the early 2000's.

A total of 460 acres were seeded with jack pine in 2017, an increase of about 17% when compared to 2016. Seeding occurs at a rate of about 4 ounces per acre (with local seed purchased from the WDNR nursery). Application is performed aerially, via a contract with the DNR. All seeded acres were previously trenched and sprayed to provide the best possible site for germination and recruitment. All planted and seeded sites are monitored on a routine and regular basis to determine success.

- b) Site Preparation: to prepare sites for future planting or seeding, 279 acres were power trenched and 115 acres were scarified with a dozer and straight blade. A total of 585 acres were treated with chemicals to reduce potential competition for undesirable vegetation. All of the scarification was accomplished with assistance from the DNR. All trenching and chemical applications were accomplished with contract crews. Scarification occurred underneath an existing canopy of mature red oak to facilitate natural oak regeneration.
- c) Maintenance: in 2017, 0 acres were released from undesirable competition. Currently, most plantations are treated with herbicide prior to planting (see above), which, in combination with mechanical preparation, creates an exceptional site for young seedlings to develop, thus eliminating the need for release. In some instances, release may still be required. However, the goal is to significantly reduce the need for release by treating future plantations prior to planting. Releasing young seedlings increases the risk of damage from herbicide, something we hope to eliminate by treating sites prior to planting.

Also, 71 acres of young jack pine plantations were treated with terminal bud caps to deter browsing from white tailed deer. This represents a decrease of nearly 3.4 times the amount that was capped between 2013 through 2016 (239 acres). All bud capping was accomplished with contracted crews. Assuming browsing pressure remains high in these stands, bud capping may be necessary every year for the next two or three years (or until trees have developed beyond the reach of white tailed deer). The stands not bud capped in 2017 had reached the minimum height requirements (typically 5 to 6 feet) and were removed from future capping schedules.

Some timber stand improvements were also applied in 2017 (for the first time on a large scale level). A total of 46 acres were treated, by contractors, with mechanized hand tools (primarily brush saws). The primary goal of the treatment was to sever competing, undesirable competition in stands of regenerating northern hardwoods. The focus of TSI was in gaps, which were created to facilitate natural regeneration. These stands contained significant, dense components of ironwood, which were outcompeting and suppressing desirable tree seedlings i.e. sugar maple, yellow birch, red oak, basswood, etc. Stands will be monitored to determine success. This is a common and developing problem. As a result, unfortunately, it's anticipated that TSI will become more routine and an annual part of the reforestation program.

In 2017, an 11 acre stand of red oak was mowed with a front mounted FECON unit on a DNR skid steer. This stand was managed about 10 years prior and has been severely impacted by white-tailed deer. The stand was exhibiting extremely poor regeneration of desired tree seedlings. The goal of mowing was to re-stimulate stem development, decrease competition and provide another opportunity for desired seedlings to recruit into the overstory (similar to the goals of TSI or burning). DNR staff accomplished the work.

- d) Monitoring: a total of 2,931 acres of previous regeneration activities were monitored in 2017, the highest level of monitoring to date. This includes both artificial (planted or seeded) and natural regeneration. Red pine and jack pine are the two most common types regenerated with artificial methods. Most of the monitoring in stands regenerating naturally occurred in the red oak and northern hardwood types. These types typically require additional inputs to improve regeneration success, have larger densities of undesirable tree species competing for valuable growing space (i.e. ironwood), or have specific treatments that require more thorough monitoring.

Two, large scale deer exclusions fences are also maintained to monitor the effects of deer browsing on regenerating red oak, paper birch and white pine (50 acres in Cable and 29 acres west of Iron River). In 2017, the Department also installed numerous (9 total) smaller deer exclusion fences (ranging in size from 6'x6' to roughly ½ acre), primarily in red oak and northern hardwood stands, including the stand that was mowed (as mentioned above), with the goal of monitoring the impacts of browsing on regeneration.

More Information on Reforestation

As previously stated, reforestation can be accomplished by either natural or artificial means. Table 6 above tracks annual reforestation accomplishments, but primarily as they pertain to artificial regeneration or when additional inputs are/were required by the Department (i.e. site preparation, release, bud capping, etc.). In addition, most of the monitoring listed in Table 6 is centered around stands that were reforested artificially, those that also received additional inputs from the Department, or when the establishment of adequate and/or desirable regeneration is a concern i.e. excessive deer browse issues, most oak harvests, most white birch harvests, and some northern hardwood gaps (primarily where site quality is marginal and/or competition from ironwood is excessive).

Every stand that is managed by the Department is ultimately reforested. However, not all treatments are regeneration harvests. Some stands are thinned, where a small portion of the trees are removed, typically with the goal of improving development on higher quality stems. Termed even-aged thinnings (also improvement or intermediate harvests), these treatments generally target the removal of the poorest quality trees; those that exhibit poor form and/or vigor; and undesirable, diseased or otherwise unhealthy individuals. During the thinning process, trees are also removed to improve the development of adjacent higher quality stems, that are competing for the same limited resources i.e. light, nutrients, water, etc. Stands that are managed with even-aged thinning practices are ultimately regenerated, but only when approaching the designated rotation age for that species.

Natural regeneration (either from seed or vegetatively via root suckers or stump sprouts) is the preferred method of reforestation in all hardwood types (i.e. aspen, birch, northern hardwood, oak), as well as some stands of conifer (primarily swamp conifer i.e. tamarack and black spruce, as well as some stands of white pine).

Hardwood types such as red oak and paper birch are reforested primarily with even-aged treatments (i.e. shelterwood, seed tree and/or clearcut) and typically require additional inputs from the Department to facilitate the natural regeneration process. Site preparation, competition control, the manipulation of light, timing of seed dispersal, etc all need to be considered when regenerating red oak and white birch. As a result, these stands are monitored more intensively, as regeneration can be highly variable and the Department may need to act quickly if the stand is not responding to the treatment.

Hardwood types such as northern hardwood (typically sugar maple, basswood, and sometimes, yellow birch) can be managed with even or un-even aged techniques. Maple isn't as fickle as red oak and typically doesn't require additional inputs from the Department to encourage adequate regeneration. However, when implementing un-even aged treatments (i.e. when gaps or small groups are incorporated to initiate a new cohort or age class), the Department is discovering some issues with the process of natural regeneration. On moderate or poorer quality sites, competition from ironwood has been a growing concern. Deer exacerbate this issue, as repeated browsing slows growth (and can eventually kill the tree) and allows less desirable or undesirable (i.e. ironwood) species to attain and maintain dominance. Gaps or groups comprise a relatively small percentage of the stand (typically 10 to 25%), so it doesn't take a large population of deer to eventually locate and browse the seedlings. As a result, most northern hardwood stands that are treated with gaps or groups are monitored intensively. Additional inputs may be required to facilitate the natural regeneration of desirable hardwood seedlings.

Other hardwood types, such as aspen, regenerate prolifically after harvest and rarely require additional inputs or follow-up from the Department. These stands are regularly monitored as part of the Department's reconnaissance program. However, due to concerns with the potential impacts of a warming climate, the Department is in the process of establishing a more intensive monitoring program for regenerating stands of aspen.

Quaking aspen has been identified as one of many timbers type that could be negatively impacted due to changes in the climate. Stands developing on marginal sites are more

inherently stressed and could be most at risk (i.e. sites that are nutrient poor). Monitoring will cover a cross section of habitat types, but will prioritize stands developing on sites classified, by the Department, as marginal or nutrient poor.

Table 6a summarizes the general management or reforestation goals for every completed (closed out) sale from 2011 through 2017 (total sales sold are also included). Management is basically categorized in one of three ways: 1) with natural regeneration as the reforestation goal; 2) with artificial regeneration as the reforestation goal; or 3) as an even aged thinning (or intermediate treatment), where reforestation will come at a later date.

Table 6a: Summary of Treatments and Reforestation Activities on Completed Timber Sales (acres)

Year	Natural Reforestation¹	Artificial Reforestation²	Thinnings³	Total Completed Sales	Total Sales Sold
2011	2,408	672	745	3,824	4,156
2012	1,515	265	939	2,719	4,782
2013	1,493	803	1,040	3,335	4,177
2014	3,010	574	1,238	4,821	4,388
2015	2,730	811	888	4,428	4,958
2016	1,299	268	848	2,414	4,750
2017	1,604	625	755	2,983	4,101
Average	2,008	574	922	3,503	4,473

¹ Natural reforestation refers to stands that will regenerate via seed located naturally on site, or vegetatively via coppicing or stump sprouts.

² Artificial reforestation refers to stands that will be physically planted or seeded by the Department.

³ Thinnings encompass stands that were treated with even aged prescriptions (or intermediate harvests). These stands are eventually reforested (either naturally or artificially), at a later date, as per the designated rotation age for that particular timber type.

A timber sale is considered completed when every component of the contract has been met, to the satisfaction of the Department. This includes, but is not limited to, harvesting, hauling and stumpage payments, as well as all road maintenance and/or closure or other similar requirements.

Timber sales are sold under two year contracts and can be extended for another two to three years (and sometimes more). At any point during the contract period, a timber sale can go active. Once active, it is common for a contractor to harvest a portion of the sale and then move off, leaving more to harvest at a later date. It's also common for activity to carry over into another calendar year. A timber sale can still be classified as active even if all harvesting, hauling and stumpage payments have been met, but other contractual obligations are still outstanding i.e. road work or other similar requirements.

In Table 6a, the acres of completed sales are highly variable, ranging from a low of 2,414 in 2016 to a high of 4,821 in 2014. However, acreage of sold timber sales are generally relatively constant and stumpage revenues have been at record highs over the past three seasons (2015-2017). It is also common for significant portions of a sale to be complete, but only remain open to satisfy a specific contract requirement or to remove a few loads of wood.

Of the completed sales, a vast majority are regenerated naturally, with an average of roughly 2,000 acres per year. An average of 574 acres are reforested artificially and 922 acres are

treated with even-aged thinnings (or intermediate treatments). Red pine and red oak are the two most prominent timber types that receive intermediate treatments.

- 4) **Forest Reconnaissance Program:** forest reconnaissance, or updating stand information, is also a vital component of the forest management program. Accurate, up-to-date stand information is essential in the development of viable short and long term sustainable harvest goals. The accuracy of any sustainable harvest goal is only as good as the data from which it was derived. Therefore, it is important to update a certain level of stand information on an annual basis.

Table 7 displays the summary of compartment/stand updates from 2008 through 2017.

Table 7: Bayfield County Forest Inventory (acres)

Year	Goal	Accomplishment
2008	17,000	9,807
2009	10,000	2,872
2010	10,000	4,079
2011	10,000	9,728
2012	10,000	8,135
2013	10,000	9,316
2014	10,000	8,552
2015	12,500	16,868
2016	12,500	8,367
2017	12,500	9,906
Average	11,450	8,763

Prior to 2014, the primary goal was to update stand information on a compartment level basis. The target had traditionally been 10,000 acres per year, with the goal of completing the inventory process every 15 to 17 years.

Starting in 2014, the decision was made to focus some of the inventory goal on specific forest types. The goal of stand level inventory is to help in the development of more accurate short and long term management strategies on forest types that are, in general, mature or over mature, or where management philosophies or plans for a particular forest type have changed.

Stands of jack pine and red oak were targets in 2014. Red oak and northern hardwood were targeted in 2015. Northern hardwood and the remaining stands of red oak were targets in 2016. Additional stands of northern hardwood were also targeted in 2017. In total, roughly 4,100 acres of compartments (six compartments), 4,500 acres of mature northern hardwood and numerous other forest types were inventoried in 2017.

All of the mature jack pine and red oak stands have now been re-inventoried (roughly 3,000 and 10,000 acres, respectively). A considerable amount of northern hardwood stands still remain (roughly 3,500, which will be part of the 2018 goal). Stand information will be evaluated to determine if any short or long term management adjustments (or direction) will be required.

From 2001 through 2017, nearly 98% of the compartments (197 out of 202) have been updated (via compartments level updates). Only five compartments remain, totaling about 5,700 acres. The goal is to have all of the remaining compartments updated as part of the 2018 goal.

In addition to compartment and targeted stand updates, 465 acres of individual stands were updated during the timber sale establishment process (see Table 2). Most updates were needed to correct inaccurate data, delay harvest because a stand was not ready for treatment, or to remove a stand from the harvest schedule (i.e. riparian buffer or sensitive site).

Invasive Species

Over the past few years, the Department has become more involved in the treatment of invasive species on the county forest. Invasive species have the potential to alter the ecological relationships among native species, negatively affect the natural functions and structure of forested ecosystems, and can negatively impact the economic value of the forest.

Non-native invasive species like spotted knapweed and common buckthorn and native invasive species like black locust are the most common plants treated on the forest.

Table 8 describes the summary of invasive species treatments on the county forest from 2013-2017.

Table 8: Invasive Species Treatment Summary

Year	Road R.O.W. (mi)¹	Hand Treatment (ac)²
2013	0	9
2014	50	15
2015	48.5	13.5
2016	48.5	11.5
2017	52.5	24
Average	39.9	14.6

¹ *Spotted knapweed treatment in the Barnes Barrens area.*

² *Primarily small isolated patches of buckthorn and black locust.*

In 2017, approximately 24 acres were treated, by Department staff, to manage common buckthorn. Most of the treatments involved foliar chemical applications, but stump treatments occurred on stems that were too large to be treated with foliar spray. It should be noted that, to date, buckthorn infestations are generally isolated and fairly widely distributed (in other words, the 24 acres treated in 2017 were not blanketed with a sea of buckthorn).

In 2015, the Department received a \$37,500 Sustainable Forestry Grant for the treatment of spotted knapweed on 48.5 miles of forest roads in the Barnes Barrens Management Area. Herbicide was used to treat spotted knapweed in the first attempt to reduce (hopefully eradicate) further spread into the barrens. The project focuses on roads that are the most heavily infested, but more still needs to be done. This grant will help kick start the program, which will require additional inputs in order to keep the problem in check.

In 2017 a few more segments of roadways were added to the program. A total of 52.5 miles were treated in the Barnes Barrens Management Area in 2017. The expectation is that these roads will need multiple treatments before the infestation is under control. Follow-up treatments will also be required to reduce the potential for spread. As knapweed becomes more manageable, it is also anticipated that less chemical will be required. Additional roads may also need treatment and will be evaluated on a case by case basis.

Land Transactions

The Department will continue efforts to acquire properties on a willing seller, willing buyer basis, when advantageous to the long-term goals of Bayfield County. A priority will be given to land located within the existing county forest blocking and/or areas possessing special or unique natural resource values. All acquisitions are typically enrolled in County Forest Law and managed as part of the County Forest.

Table 9 summarizes all County Forest Law (CFL) entries (acquisitions) and withdrawals (divestments) from 2004-2017.

Table 9: County Forest Law (CFL) Entries and Withdrawals

Year	Entries¹	Withdrawals²	Net Change
2004	278.00	40.00	238.00
2005	160.00	0.00	160.00
2006	80.00	0.00	80.00
2007	0.00	0.00	0.00
2008	320.00	161.08	158.92
2009	0.00	4.20	-4.20
2010	0.00	0.00	0.00
2011	0.00	0.23	-0.23
2012	0.00	0.00	0.00
2013	40.00	4.25	35.75
2014	40.00	0.00	40.00
2015	2,601.80	0.09	2,601.71
2016	0.00	3.36	-3.36
2017	200.00	90.20	109.80
Total	3,719.80	263.41	3,456.39
Average	265.70	23.95	241.75

¹ Land added to the county forest, typically via purchase, donation, trade or tax delinquency.

² Land removed from the county forest, typically via sale or trade.

On occasion, the county will also divest of land. Divestment is typically only considered if the land in question will be put to a higher and better use and will provide greater benefits to the citizens of Bayfield County. All divestments need to be approved by the Forestry and Parks Committee and the County Board. Also, before land is formally divested, it first needs to be withdrawn from County Forest Law (CFL). Requests for withdrawal are submitted to and reviewed by the DNR.

County forest land cannot be divested until a request for withdrawal has been approved by the state.

In December 2014, the Department received preliminary approval for two Knowles-Nelson Stewardship County Forest Land Acquisition Grants. The grants were officially awarded in June 2015. As a result, Bayfield County purchased 1,392 acres from Meteor Timber and 463 acres from Lyme Timber. Additionally, the county provided a match of 747 acres of county owned, non-county forest land. In total, 2,602 acres of land were added to the county forest in 2015.

By using the appraised value of county owned land as the required match, the Department can tailor projects that significantly reduce (or eliminate) out of pocket expenses. The Meteor Timber and Lyme Timber acquisition projects totaled roughly \$2.616 million (including the cost of land, appraisals and other associated fees). The county received approximately \$2.265 million from the Stewardship grant (which included the appraised value of matched lands). As a result, the county spent roughly \$350,000, out of pocket, to purchase over \$2.6 million in productive forest land.

In 2016, the Department acquired 200 acres of land, formerly owned by the Wisconsin DNR, near Mt. Ashwabay, in the Town of Bayfield. The property was purchased entirely with county funds at a total of \$130,650 (or roughly \$659/acre). The transaction took a little longer to finalize and was officially transferred in 2017.

When combining the land purchased in 2016/2017 and the properties made part of the 2015 Stewardship project, the Department has added a little over 2,800 acres to the county forest over the past three years.

In 2017, the Forestry and Parks Committee and County Board approved another large Knowles-Nelson Stewardship County Forest Land Acquisition Grant application. Similar to the grant awarded in 2015, this application would use, in part, the appraised value of 3,301.25 acres of county owned land (currently not part of the county forest), towards the purchase of approximately 2,350 acres of forest land currently owned by a large Timber Investment Management Organization (TIMO). If awarded, and depending on the final appraised value of the match properties, all properties would be enrolled in CFL and managed as part of the county forest. In total, approximately 5,650 acres could be added to the county forest in 2018.

As part of the 2018 Stewardship grant application, the county is also adding up to \$160,000 in cash from the sale of one (and potentially two), 80 acre tracts of land to the Red Cliff Band of Lake Superior Chippewa. In 2017, one 80 acre tract was officially sold to Red Cliff and withdrawn from CFL. A second 80 acre tract was approved for sale by both the Forestry and Parks Committee and County Board. A request for withdrawal from CFL was submitted to the DNR and is pending. If the request for withdrawal is approved, the proceeds from both sales will be used to potentially purchase land outside of the Reservation and increase the amount of forest lands available for public use.

In late 2016 (signed early 2017) a Memorandum of Understanding by and between the Red Cliff Band of Lake Superior Chippewa and Bayfield County was ratified. As per this MOU, both entities recognized the vital importance of land to each respective community. As outlined in the MOU, a major goal of Red Cliff is the repatriation of county owned lands located within the Reservation, in part, to preserve and enhance Red Cliff Tribal lands for current and future generations. The county also highly values forest lands, open for public use, for very similar reasons. Each entity pledged to

work together, with mutual cooperation and respect, towards seeking a suitable land exchange, trade of other conveyance.

As mentioned above, in 2017, 80 acres of land was withdrawn from CFL and sold to Red Cliff. This was the first such land sale to Red Cliff under the auspices of the new MOU. If the second land sale is approved by the DNR, then 160 acres of land, formally part of the county forest, will have been sold to Red Cliff, again, as part of the MOU. It's important to note that, as part of the Stewardship grant, financial contributions are matched by the state (so a \$160,000 contribution from two 80 acre land sales to Red Cliff, turns into \$320,000 in buying power). In this example, the proceeds from 160 acres of land divested from CFL within the Red Cliff Reservation, will potentially purchase approximately 260 acres of land that will be enrolled in CFL in areas located outside of the Reservation. Transactions of this nature have been perceived as a win-win for both entities.

Also in 2017, 10.2 acres of land was sold (for \$1.00) to Across the Pond Park, a non-profit organization, for the future construction of a public use Veteran's park, located along Highway 2, west of Iron River.

ROADS AND RECREATION (on the County Forest)

The Forestry and Parks Department maintains over 1,400 miles of roads and trails on the forest. These roads and trails provide a plethora of recreational opportunities. Some of the more popular pursuits include: hiking, hunting, mountain biking, snowmobiling, ATVing, cross country skiing, dog sledding, horseback riding, wildlife viewing, firewood gathering and more.

Primary Roads

Approximately 38 miles are classified as primary gas tax roads, which receive maintenance funds from the Wisconsin DOT (based on \$336/mile, but prorated depending on total miles enrolled in the program). These roads serve as primary access routes into portions of the county forest. A few of these roads located in the Towns of Barnes and Hughes also play an integral role in the wildfire protection plan that was developed in 2006 and revised in 2012.

The Department performed routine annual inspections on every mile of primary road to monitor for both road quality and invasive species in 2017. The Department, with assistance from the DNR, also performed annual routine maintenance on the rights of way for each primary road. Maintenance usually is in the form of mowing, but can also include herbicide, if encroaching vegetation is unable to be mowed. An extensive amount of grading occurred on the Flag Road, while numerous other roads were also maintained in 2017.

Town Road Aids

In 2010, Bayfield County developed the Town Road Aid Fund. This fund was created to help improve problem areas on Town Roads that provide critical access to the county forest. Town Road Aids were initially funded at 1% of total annual timber sale revenues (enacted once actual revenues exceed the budgeted amount). All projects are selected and administered by the Department.

Starting in 2013, Bayfield County increased the funding level to 2% (with a cap of \$80,000). As a result, \$80,000 was made available to Towns in 2017, based on the amount of stumpage received in CY 2016. Of the 29 County Forests in the State of Wisconsin, Bayfield County is the only one to offer this unique additional source of funding.

Once again, all Towns submitted good projects. Most projects revolve around the purchase of material i.e. gravel, but some include culverts and equipment rentals. The largest awards went to Barnes and Bayfield at \$11,000 and \$9,019, respectively. While Port Wing and Orienta received the smallest awards at \$3,700 and \$4,000, respectively. The average award amount was a little over \$6,000. The program has been very well received, with many town roads seeing significant improvements and providing much better access to county forest lands.

Recreation - Events and Use Agreements

The county forest is used for a variety of recreational purposes. Non-motorized uses such as cross-country skiing, mountain biking, hunting, trapping, hiking, nature watching and dog sledding are extremely popular. Motorized uses such as snowmobiling and ATVing are also very popular. The demand for recreational use on public land is increasing every year.

Recreational events are part of that increasing demand. Every year, numerous events are hosted on county forest land. All organized events required a permit, which is approved by the Forestry and Parks Committee.

Table 10 displays the number of recreational use permits per recreation type that were approved in 2017. All approved permits were for events that utilized a portion of the Bayfield County Forest.

Table 10: Summary of Approved Events

Type of Event	Number of Events per Year		
	2015	2016	2017
Mountain Biking	7	7	6
Cross Country Skiing	6	5	7
Running	3	4	4
Dog Sledding	1	1	1
Orienteering	1	0	1
Total	18	17	19

In addition to daily general recreational use, trails on the county forest also play an integral role in numerous popular organized events. Such events include, but are not limited to, the American Birkebeiner, Apostle Islands Sled Dog Race, Chequamegon Fat Tire Festival and the Cable Area Off-Road Classic mountain bike race.

The Forestry and Parks Committee approved 19 organized events on county forest land in 2017, a slight increase from the previous year (17). Mountain biking and cross-country skiing were the most common types, with a vast majority of events occurring in the Cable block. These events bring numerous participants and spectators to the area and are excellent examples of multiple use. The number of requests for mountain bike and cross-country skiing events has increased steadily over the past decade.

The Department also maintains land and/or recreational use agreements with a variety of organizations, some of which include: the American Birkebeiner Association, Chequamegon Area Mountain Bike Association (CAMBA), North Country Trail Association, North End Ski Club, Ashwabay Outdoor Education Foundation (AOEF), National Fish Hatchery, Town of Barnes, Bayfield County Snowmobile Alliance, Trails North ATV Club, and more.

In general, the use agreements highlight specific areas or trails within the forest and outline management or use requirements expected from each organization. Use requests are treated on a case by case basis and require approval from the Committee. Department staff regularly meet with permit holders regarding trail maintenance, timber sale activities and other recreation related concerns or issues.

Table 11 displays the approximate miles of designated trails currently located within county forest boundaries.

Table 11: Summary of Designated Recreational Trails on the County Forest (miles)

Snowmobile	Walking	Dog Sled	ATV	Cross-Country Ski	Mountain Bike
105	15	44	52	31	25

In addition to designated trails, the county forest offers an abundance of recreational opportunities on roads and trails that are not designated for a specific use (i.e. signed and maintained by friends or use groups). For example, of the approximate 1,400 miles of roads and trails on the county forest, 42% can be traveled with a licensed highway vehicle, 72% with an off-highway vehicle (i.e. ATV,UTV) and 91% with a snowmobile. In addition, all are open to hiking and virtually all are open to mountain biking, horseback riding and cross-country skiing.

The Department staff works closely with all permitted recreational user groups on the establishment and/or maintenance of trail systems. Recreational use agreements with organized clubs (as described above) continue to be pursued at every opportunity.

Recreation - Non-Motorized

Recreational trails, whether motorized and part of the state funded system, or non-motorized and part of a designated network, are an integral and important component of any forest management program. Over the past few years, the Department has emphasized the importance of recreation, incorporating efforts to maximize, or better capture, the recreational potential of the forest, including the construction of the two rustic yurts. At nearly 172,000 acres and spread out over the length of Bayfield County, the county forest provides, or has the potential to provide, a plethora of recreational opportunities.

Incorporating recreation in typical forest management strategies can sometimes be a challenge. Individuals recreating on the county forest will encounter forest management. Existing designated trails are often located within, or adjacent to, active, or future, timber sales. However, this interaction provides excellent opportunities to educate and explain general forest management practices.

Management practices are rarely altered due to the presence of a recreational trail. The Department prefers to work closely with use/friends groups to explain the upcoming harvest, as well as identify any potential issues that could arise. Combining education, direct collaboration with various user groups and occasional slight timber sale modifications, the Department can capture the sustainable management potential of the Forest and provide exceptional recreational opportunities, on the same piece of ground.

All trails are open to most forms of non-motorized use, but only a small portion are actually designated and maintained for a specific form of recreation. Trail conditions can also be highly variable. Of those that are maintained for designated uses, most are managed through partnerships/agreements with non-profit organizations, and some are maintained directly by the Department.

Currently, there are two major areas of the county forest where non-motorized recreation is more organized and intensive. These areas are the low-motorized blocks in Cable and near Mt. Ashwabay. In these areas, the Department has developed strong partnerships with numerous non-profit organizations on the designation and maintenance of the trails.

In the Cable block, the Chequamegon Area Mountain Bike Association (CAMBA) maintains miles upon miles of mountain bike trails on the county forest. The network includes a combination of single track trails, sustainably built specifically for mountain bike use, and existing logging roads. These trails connect to those located on the Chequamegon Nicolet National Forest and Sawyer County Forest to form one of the most extensive mountain bike networks in the nation. CAMBA maintains a recreational use permit with the Department that describes the partnership and how trails are maintained or developed on the Forest.

Numerous mountain bike related events are hosted on trails located within the county forest in the Cable area. Some of the most popular include: CAMBA hosts the Festival of Trails; the Cable Area Chamber of Commerce hosts the Cable Area Off-Road Classic; Life Time Fitness hosts the Chequamegon Fat Tire Festival; and the American Birkebeiner Association hosts the Fat Tire Birkie (in the winter). All of these events are extremely popular and bring thousands of riders and spectators into the area.

Also in the Cable block, the North End Ski Club and American Birkebeiner Association (ABA) maintain cross country ski and snowshoe trails on the county forest. Some of the ski trails utilize the same portion of ground as the bike trails. Snowshoe trails are also maintained on most of the single track trails. Both organizations maintain recreational use permits with the Department. Fat bike trail (big tired mountain bikes) are also gaining in popularity. In 2017, a few miles of trail were also groomed for fat bike use.

The North End Ski Club also maintains a warming cabin, outhouse and storage building on county forest land. The cabin and outhouse are open for public use. The storage building is used to house much of the gear and grooming equipment required to maintain the trails. They also host numerous cross country ski events including their flagship North End Classic race.

The American Birkebeiner Association maintains roughly three miles of the famed Birkie trail on county forest land. They also maintain a newly constructed warming/storage building and privy. The world famous American Birkebeiner cross country ski race, as well as the Kortelopet, Prince

Haakon and Birkie tour ski events are all held on county forest land. The ABA also hosts running events and the Fat Tire Birkie (see above).

Starting in 2016, the Department entered into a recreational use agreement with UP North Guided Tours. This is a for-profit company offering guided snowshoe, hiking and biking (including winter fat biking) tours in the Cable block. As part of the agreement, UP North will assist with the maintenance of the trails in that area.

In the northern portion of the Forest, the Ashwabay Outdoor Recreation Foundation (AOEF) maintains an extensive network of cross country ski and snowshoe trails, in part, on county forest land (also on county land not part of the county forest i.e. Jolly Trails). Trails are groomed for classic or skate skiing. AOEF hosts numerous events (both summer and winter events) on the trails including: the Peel Out 5k Run; WinterDASH running event; and a Fat Tire Expo/Time Trial. In addition, numerous other groups host events on these same trails, including CANSKI's Summit Cross Country Ski Race. The Bayfield and Washburn school districts have also used portions of the trails for various ski and running meets.

Recently, a branch of CAMBA (CAMBA North) was formed to develop a mountain bike trail network in the same general area near Mt. Ashwabay. In 2011, the Department approved CAMBA's proposal to construct up to 30 miles of new single track mountain bike trails on county forest land. In 2017, approximately 4 miles of new single track trail was constructed, partially funded with budgeted county capital monies.

To date, roughly 16 miles of sustainably built, single track mountain bike trails have been constructed. Approximately 4 miles will be constructed in 2018, which should complete the first phase of the project. Many of these trails are also being maintained in the winter for fat tire mountain bike use.

Non-motorized recreational opportunities abound on county forest land. In addition to those previously mentioned, some of the more popular designated trails include the North Country Trail. Approximately 8 miles of the North Country Trail travels within the county forest. These trails are maintained by local chapters of the Association. The Bayfield Chamber hosts the popular Apostle Islands Sled Dog Race, which, in part, utilizes trails on county forest land located in the Town of Bayfield (with a small portion in the Town of Bayview).

Every year, the Department works closely with all user groups on the maintenance of and/or improvements to existing trails. Periodically, new trails or re-routes are also addressed. All are treated on a case by case basis, with larger projects needing Committee approval. Groups are also informed of current or future timber sale activities located adjacent to or in the vicinity of designated trail networks. Occasionally, slight timber sale modifications may be incorporated into the sale design, and are treated on a case by case basis.

The Department is in the process of developing a new recreation strategy that will, in part, better identify existing infrastructure and future potential, as well as define future direction. Non-motorized and motorized recreation, throughout the county, will be explored as part of the process.

In the meantime, in 2017, the Department continued improvements to the Lost Creek Falls trail, located just south of Cornucopia, which provides access to the only waterfalls located on county

forest land. These improvements included the construction of nearly 730 feet of boardwalk, an additional 15 feet of new hand built trail (switchback) and the installation of hand railings on a few short stretches of existing boardwalk.

Upgrades to the Lost Creek Falls trail began in 2015. Accomplishments over the past three years, include, but are not limited to: over 1,600 feet of new hand built trail; nearly 1,300 feet of new boardwalk, some with hand rails; nearly 40 feet of new foot bridges; nearly 1,000 feet of gravel on new and existing trail surfaces; upgrades to and expansion of the trail head parking area; installation of new trail signs and markers; installation of a new informational kiosk; removal or trimming of potentially hazardous or threatening trees; and the installation of location/directional signs on County Highway C. To date, the total cost of improvements has been just under \$40,000.

The response to these improvements has been tremendous (the Department has a trail counter installed at the trail head). The average use of the trail has increased from about 2 users per day prior to improvements (averaged throughout the year) to about 20 users per day. Peak use at the Lost Creek Falls trail has been in excess of 80 people per day! The exceptional amount of use has also created the need for additional maintenance.

More boardwalk and/or gravel will be needed on the Lost Creek Falls trail in the future to minimize pressure on the landscape, while continuing to provide an enjoyable and sustainable hiking trail.

Some additional work was accomplished on the Jolly trails in 2017. Gravel was placed on the access road, parking area and portions of the trail. Work also began in 2017 to re-evaluate the Jolly network to determine current uses, the intensity of those uses, the condition of existing infrastructures and explore future direction options/potential. Trail counters are installed at the trail head or primary access point of the Jolly network to help determine the amount of use the system receives. Similar activities will continue in 2018.

Recreation - Yurts

In late summer 2016, the Department completed the construction of two rustic yurts on county forest lands. One was located north of Whiting road, in the Town of Bayfield, just north of the Bayfield/Bayview Town line; while the other was located in Cable, east of Randysek Road and east of the North End cabin.

Table 12 summarizes the rates of occupancy and total net revenues per yurt from 2016-2017.

Table 12: Yurt Occupancy (Nights Rented) and Total Net Revenue¹

Year	Bayfield		Cable		Total	
	Occupancy	Net Revenue	Occupancy	Net Revenue	Occupancy	Net Revenue
2016 ²	42	\$2,368.60	15	\$837.90	57	\$3,206.50
2017	266	\$15,640.51	164	\$9,904.86	430	\$25,545.37
Total	308	\$18,009.11	179	\$10,742.76	487	\$28,751.87

¹ The following fees/taxes apply to each reservation: Airbnb 3%; State sales tax 5.5%;

Cable room tax 4% (only at Cable location); Bayfield room tax 6.5% (only at Bayfield location).

² The Bayfield location went live on Oct 8; Cable went live on Nov. 12.

In 2017, occupancy at the Bayfield location was exceptional, averaging 73% for the entire year! Peak use was during the months of June, July and August, where occupancy rates were 87%, 97%, and 100%, respectively. The lowest rate of occupancy at the Bayfield location was during the month of November, at 43%. The average number of people staying at the yurt is around 3 to 4 people. Using an average of 3.5 people per night and 266 nights rented, a total of nearly 1,000 people stayed in the yurt and recreated on the surrounding county forest.

Occupancy at the Cable location was slightly lower than that experienced at Bayfield. The overall occupancy rate at the Cable location was 45% or a total of 164 nights rented. Peak use in Cable occurred in July, August and September, at 71%, 74% and 53%, respectively. The lowest rate of occupancy was during the month of May, at 23%. Using the same average rate of occupancy as the Bayfield location, at 3.5 people per night and 164 nights, a total of nearly 600 people stayed in the Cable yurt and recreated in the surrounding county forest.

When combining both yurt locations, a total of 430 nights were reserved in 2017, for an average occupancy rate of 59%. When considering the abundance of rave reviews the Department has received from very happy renters, around 1,500 people had a blast recreating on the county forest while staying in the yurts.

Total net revenues received in 2017 from yurt rentals at both the Bayfield and Cable sites combined was \$25,545.37. Bayfield generated roughly \$15,600 and Cable produced nearly \$10,000. As part of the process, the yurts are subjected to state and local taxes, as well as fees from Airbnb. Airbnb charges a flat rate of 3% per transaction. State sales tax is 5.5%. The room tax for the Town of Bayfield is 6.5% and the room tax for the Town of Cable is 4%.

The entire construction process for each yurt included, but was not limited to: location and clearing of the site, improvements to the primary access routes, construction of the yurt foundation and deck, installation of the yurt (purchased through Pacific Yurts), construction of the outhouse and firewood lean-to, establishment of the fire-ring and benches, installation of the furnishings, including a woodstove, two bunkbeds and associated mattresses (full on bottom and twin on top), and picnic tables (one inside and one outside), establishment of the parking area (for the Bayfield site), installation of signs and kiosks, development of rental policies and procedures (all reservations are currently handled through Airbnb), acquisition of all required local and state permits and variances, procurement of firewood (firewood for the woodstove is provided by the county) and development of informational and promotional materials.

From start to finish, the total cost of each yurt, including all out buildings, was about \$35,000.

PARTNERSHIP WITH THE DNR

In accordance with s. 28.11, the DNR oversees the county forest program. As per that partnership, the DNR provides an abundance of professional, technical and financial assistance to counties having lands entered in the county forest program. As part of the technical assistance, the DNR allocates a total of 46,000 hours, statewide, to counties having lands enrolled in the county forest program.

The amount of technical assistance (termed “time standards”) dedicated to each county is determined through a fairly complex formula. Past, present and future workloads are incorporated into the formula to determine the level of assistance required by each county.

Timber sale establishment, reforestation, regeneration monitoring, reconnaissance, timber sale administration, road and trail maintenance, as well as time associated with certification, work planning, various meetings, other professional services, and all associated paperwork (and more) are all part of the calculation. If the total request from all counties exceeds the roughly 46,000 hour annual threshold, a general proration is adopted to equally adjust the final figure accordingly.

On the Bayfield County Forest, the annual time commitment allocated by the DNR to the county has been calculated at 3,395 hours. This calculation was established from FY 2014 through 2018. Time standards will be revisited in CY 2018 to determine the next four to five year commitment. It is expected that the that the total annual time commitment will remain around 3,400 hours per year.

As part of the 3,395 hour time commitment, the DNR provides assistance in a variety of areas, including, but is not limited to:

1. Establishment of timber sales. Roughly 20% to 25% of the annual sustainable harvest goal is accomplished by DNR foresters.
2. Forest reconnaissance (both compartment and stand updates).
3. Forest stand data entry (WisFIRS, see below) and maintenance.
4. Regeneration monitoring, both artificial and natural.
5. Timber stand improvements (TSI).
6. Timber sale administration.
7. Mechanical site preparation for natural regeneration.
8. Mechanical site preparation for artificial regeneration.
9. County forest road and trail construction and maintenance.
10. Road right of way and wildlife (game) opening mowing/maintenance.
11. Support from professional forest management specialists, including forest hydrologists, wildlife biologists, forest ecologists, forest health specialists, GIS specialists, etc.
12. Support, manage and administer the county forest group certifications, for both SFI and FSC (both forest certificates are administered by the DNR through a group format).
13. Assistance in the development and maintenance of the comprehensive land use and annual work plans.
14. Function as a catalyst for the transfer of technology and professional or scientific information, as well as providing opportunities for training or enhancement.

Financial support through various grants, aids and loans.

FOREST CERTIFICATION

The Bayfield County Forest is dual, third party certified (as part of the Wisconsin County Forest Program group certificates, which are managed by the DNR). For the past ten plus years, the Department has maintained forest certificates with both SFI (Sustainable Forestry Initiative) and FSC (Forest Stewardship Council). The DNR maintains all aspects (administratively and financially) of both the SFI and FSC group certificates.

The standards, principles and/or strategic direction of each non-profit, independent forest certifying body are developed by their respective board members and staff, which include representation from conservation organizations, academia, tribal entities, family forest owners, private forest landowners, public forest landowners and the forest products industry. Each certifying organization is further structured into three sectors (SFI) or chambers (FSC), incorporating environmental, social and economic components. This diversity reflects the wide variety of interests in the forest management community.

As part of certification, the county forest management program is audited annually against the strict standards, guidelines and principles of each independent organization. To date, every year, Bayfield County has either met or exceeded each standard.

Maintaining forest certification isn't a mandate. The Department invites each certifying entity to analyze and scrutinize our management of the forest. We ask them to subject our forest management practices, plans and principles to their strict, rigid and dynamic internal standards, principles and guidelines. Maintaining one certificate, let alone two, is a significant commitment and demonstrates the county's desire to ensure the public that we have some of the best managed forests in the country.

In 2017, the Department continued working with each independent certifying body, as well as the DNR, by providing requested information as part of the annual surveillance certification audit (performed by each program). The general objective of the annual surveillance audit is to assess the certificate holder's conformance with each firm's program requirements. Once again, the WCFA was given numerous accolades regarding the quality and diversity of forest management across all ownerships. Bayfield County continues to maintain dual certification through both FSC and SFI.

This collaboration will help to ensure that the county forest is sustainably managed, not only to the standards and expectations of those auditing and overseeing the program, but also to the professional principles and values exhibited and demanded by all staff members within the Department.

PERMITTED USES

Permits are issued by the Forestry and Parks Department for events, rights-of-way, timber storage, private property access, firewood, miscellaneous forest products, and other recreational activities.

Table 13 displays a summary of permits issued on the forest from 2008 through 2017 (a summary of permitted events can be found in Table 10).

Table 13: Bayfield County Forest Summary of Issued Permits and Approvals

Year	Fire Wood	Balsam Boughs	Cones*	Christmas Trees	Birch Twigs	Access	Events	Disabled Hunting	Storage
2008	360	8	0	1	0	2	9	3	1
2009	423	5	1	1	0	0	10	3	1
2010	436	5	1	1	0	3	10	3	2
2011	503	7	1	6	0	9	10	10	2
2012	441	6	1	7	0	8	12	7	2
2013	406	16	13	3	2	6	17	6	2
2014	486	9	6	4	1	7	21	5	2
2015	394	8	5	5	0	10	18	9	1
2016	331	10	3	4	0	6	17	10	1
2017	285	19	1	4	0	7	19	6	1
Avg.	407	9	3	4	0	6	14	6	2

* specifically advertised for jack pine cones in 2013

Firewood comprises the vast majority of the total permits issued on an annual basis. In 2017, 285 firewood permits were issued. In general, the total amount of firewood permits have decreased markedly since the all-time high was established in 2011 (503 permits issues).

Since 2011, the total amount of firewood permits issued has decreased by approximately 76%. Firewood permits are free of charge and are available online (and have been so for the last few years). The vast majority of permit applications come via the website. The relatively mild winters may be the primary reasons for the decline in firewood permits. If permit requests continue to decline, the Department may consider incorporating methods of advertising in an attempt to alert (or remind) the public of this free permit opportunity.

A permit to collect wild edibles was also re-approved in 2017. A permit to harvest/collect tamarack stumps was also approved in 2017. Both permits were new in 2015 (tamarack stumps) or 2016 (wild edibles), are fairly unique in scope and will be monitored to determine long term viability.

Permits for balsam boughs were up by 90% when compared to last year. Otherwise, all other permits were relatively stable or aligned closely to the general annual average.

Sand and Gravel

Sand and gravel is extracted and sold from county managed pits, to be used on approved municipal projects. All projects are reviewed and acted upon by the Committee.

The Department maintains two pits on the county forest: the largest one being in the Town of Bayfield, commonly referred to as the Sand River Pit (which is also were the staging of the Apostle Islands Sled Dog Race is held); with a smaller one off the end of Tulip Lane, in the Town of Russell.

Table 14 displays the total amount of sand and gravel and revenues received from 2008 through 2017.

Table 14: Sand and Gravel Summary

Year	Yards	Value
2008	6,120	\$3,060.00
2009	300	\$150.00
2010	12,589	\$9,441.75
2011	751	\$563.25
2012*	13,029	\$19,544.00
2013	0	\$0.00
2014	11,000	\$16,500.00
2015	0	\$0.00
2016	0	\$0.00
2017	12,750	\$19,125.00
Avg.	5,654	\$6,838.40

* Highway 13 Re-Paving Project

Most revenues received from the sale of sand and gravel are deposited in a non-lapsing account for eventual site reclamation. A total of \$19,125 was generated from sand and gravel in 2017. All material was mined from the expansion pit located south of the Sand River pit, as part of a long-term agreement with the towns of Bayfield and Russell, and the Red Cliff Band of Lake Superior Chippewa. All other pits were inactive.

WILDLIFE HABITAT IMPROVEMENT/MONITORING

Table 15 displays a summary of the wildlife opening maintenance program, performed on county forest land, from 2008 through 2017.

Table 15: Summary of Maintained Wildlife Openings, by Treatment Type, on County Forest Land

Year	Mowed Number	Mowed Acres	Hand Treated ¹ Number	Hand Treated ¹ Acres	Total Number	Total Acres
2008	44	50	77	60	121	110
2009	62	70	53	24	115	94
2010	45	44	50	57	95	102
2011	46	53	52	24	98	77
2012	0	0	76	68	76	68
2013	59	52	63	53	122	105
2014	34	40	48	25	82	65
2015	24	32	50	55	74	87
2016	51	36	47	33	98	68
2017	37	44	46	36	83	80
Average	40	42	56	43	96	85

¹ using a mix of herbicide and hand cutting

Forest openings, dominated by forbs and grasses, are important habitat for a great diversity of wildlife species. Since the mid 1970's, numerous, small forest openings have been maintained on

the forest to encourage this diversity of habitat. The openings are relatively small in size (average about 1 acre) and are spread throughout the county forest (although they are more numerous in the Bayfield peninsula). Each opening is treated about every five years to discourage encroaching woody vegetation.

In 2017, 46 wildlife openings, totaling 36 acres were maintained by hand, using a mix of herbicide and cutting. Openings are also scheduled for mowing, typically four out of every five years. There were 37 openings mowed in 2017 for a total of 44 acres. In total, 83 openings, covering 80 acres were treated in 2017. All work was completed by DNR staff, using a combination of DNR and county equipment.

In 2008, a breeding bird monitoring project was developed for the county forest. In 2008 and again in 2009, 350 permanent diurnal and 40 nightjar points were completed. An additional 297 diurnal and 17 nightjar points were taken in 2010. The remaining portion of the forest was completed in the spring of 2011. In total, 1,200 diurnal and 200 nightjar points have been taken.

The results of the survey will be used to measure bird/habitat associations, anticipate how forest management may influence these relationships and predict general species occurrence. We are still periodically working with the DNR and other resource professionals to analyze the bird data and/or assist in other bird monitoring projects. Summarizing the existing survey data in the form of a user-friendly, yet to be determined end product, is a goal heading into 2018.

One related project involves the use of conspecific attraction to help in the monitoring for the presence of Kirtland's Warblers in the Barnes Barrens Management Area. Conspecific playback literally involves the broadcasting of the primary songs of a species, with the aid of sound equipment, to encourage individuals to settle in an area.

In 2014, the DNR detected one male Kirtland's Warbler, with no females or nesting being located. In 2015, three males were detected, with no females or nesting being located. In 2016, the first confirmed nesting and successful fledging of Kirtland's Warblers in Bayfield County occurred in the Barnes Barrens Management Area. All five nestlings successfully fledged. In 2017, three males were observed (one of those males was a banded 2016 nestling). However, no females or nest activity was located in 2017. Conspecific playback is expected to occur again in 2018.

The Barnes Barrens Area provides exceptional habitat for the endangered Kirtland's Warbler. If breeding success continues and an extensive population begins to develop, this area will be a prime example of how intensive, sustainable forest management can provide critical habitat for a variety of rare species.

The Barnes Barrens Area also contains one of the highest populations of sharp-tailed grouse in Wisconsin. In 2017, partly as an attempt to maintain the genetic diversity of the sharp-tailed grouse population in the Moquah Barrens, the DNR, in partnership with numerous other agencies, trapped over 200 birds in NW Minnesota and released 67 of them in the barrens.

One of those birds (a radio collared female) made her way down to the Barnes Barrens Area core area, promptly established a nest site, mated, laid 10 eggs, and hatched at least six chicks. An indirect accomplishment through a joint effort of numerous partner agencies with the goal of maintaining a healthy and genetically diverse population of sharp-tailed grouse.

Over the past few seasons, field work has been accomplished within the Barnes Barrens to create a serviceable road around the entire 1,000 acre, permanently open core area. Numerous miles of road have either been constructed or improved towards this effort. Only a few miles remain to be constructed.

In some cases, road construction is an added requirement on adjacent or nearby timber sales, but most of the work is accomplished by the Department (oftentimes with assistance by the DNR). Timber sales, and subsequent reforestation efforts are also accomplished in accordance to the Barnes Barrens management plan.

The Barnes Barrens Management Area has been very well received by the professional community. The plan has been viewed as a ground-breaking model that blends sound, landscape level forest (pine barrens) management, with the maintenance and development of optimal and perpetual wildlife habitat for a variety of species, including many of greatest conservation need.

FINANCIAL ASSISTANCE – GRANTS AND AIDS

Financial assistance plays a major role in helping to achieve annual and long-term objectives.

Table 16 outlines some of the major grants and aids awarded to the Department from 2008 through 2017. Every award listed in the table, with the exception of the Arbor Day grant, has come from the State of Wisconsin.

Table 16: Bayfield County Forestry and Parks Department Summary of Major Grants and Aids

Year	County Forest Administrator	Wildlife Habitat Improvement	County Forest Road Aid	Sustainable Forestry	County Conservation	Arbor Day	FEMA	Knowles-Nelson Stewardship	Total
2008	\$31,933	\$16,929	\$10,440	\$39,720	\$4,125	\$0	\$0	\$0	\$103,146
2009	\$35,762	\$16,945	\$12,126	\$33,000	\$2,289	\$0	\$0	\$0	\$100,122
2010	\$44,039	\$8,472	\$11,390	\$6,205	\$3,807	\$20,400	\$0	\$0	\$94,313
2011	\$44,039	\$8,472	\$11,347	\$0	\$0	\$46,202	\$0	\$0	\$110,060
2012	\$46,877	\$8,472	\$11,330	\$0	\$6,500	\$18,450	\$0	\$0	\$91,629
2013	\$47,814	\$8,416	\$11,896	\$46,329	\$0	\$12,450	\$43,945	\$0	\$170,849
2014	\$52,885	\$8,015	\$11,917	\$0	\$4,183	\$0	\$0	\$0	\$77,000
2015	\$51,210	\$7,991	\$11,918	\$0	\$0	\$13,260	\$0	\$2,259,857	\$2,344,237
2016	\$51,382	\$7,986	\$11,942	\$37,500	\$0	\$20,250	\$0	\$0	\$129,059
2017	\$53,595	\$8,068	\$11,953	\$0	\$24,211	\$4,340	\$41,467	\$0	\$143,635
Average	\$45,954	\$9,976	\$11,626	\$16,275	\$4,512	\$13,535	\$8,541	\$2,259,857	\$336,405

The Sustainable Forestry grant and County Conservation Aids tend to be the only state awards that are variable. Both are awarded based on the state fiscal year and revenues are received after projects are completed. In some cases, a project can be completed in one year, with actual reimbursement received the following year.

The Sustainable Forestry grant is also competitive with other county forest programs, and, therefore, not guaranteed. The Arbor Day grant is privately funded and also competitive. Funding from this grant covers trees purchased as part of the planting program.

The Knowles-Nelson Stewardship and Federal Emergency Management Agency grants are also very sporadic, but, when awarded, have the potential to be substantial. Both are listed in Table 16, primarily as a reference.

In 2017, a little over \$143,000 was received from the major grants and aids. This was an increase of over 11% when compared to 2016. Reimbursement from the FEMA grant was one of the primary reasons for the increase. Work to repair damage to various trail infrastructures was completed in 2016 and 2017. Final reimbursement for that grant occurred in 2017.

Additionally, many grants are awarded in a specific calendar year, but full or partial re-imbusement is not realized until the project is complete. Also, most grants are awarded by state or federal agencies and are based on the fiscal year, with a contract length of typically two years. Most can also be extended, without penalty, for another full year.

GOOD NEIGHBOR AUTHORITY (GNA)

In spring 2016, Bayfield County entered into a GNA Memorandum of Understanding (MOU) with the DNR. As part of the MOU, the county agreed to become a contractor of the state, with the ultimate goal of assisting in the establishment of timber sales on federal land. Program contracts are established with the state on an annual basis and subject to a mutually agreed upon scope of work. All work performed by the county as part of the GNA MOU is accomplished outside of normal business hours. As a result, the focus on, and completion of, core Department goals and objectives are not impacted by the MOU.

The scope of work defines the level of involvement the Department is willing to provide, outlines general goals and expected accomplishments and establishes an estimated budget. All salary, fringe, supplies, services and overhead costs, contributed by the county as per the GNA program contract, are reimbursed by the state.

The scope of work is subject to annual revisions and Department involvement is highly dependent on opportunities located within the Washburn Ranger District of the Chequamegon-Nicolet National Forest. The scope of work generally involves, but is not limited to: initial stand assessments; prescription development and writing; timber sale boundary establishment; timber marking and cruising; timber sale write-up; and timber sale administration.

In 2016 (the first year of the MOU), the county entered into a program contract with the DNR to manage 381 acres of red pine (15 stands) within Washburn Ranger District. It was estimated that approximately 430 hours would be required to manage the workload. In 2017, the county entered into a second program contract to manage 675 acres of red pine (20 stands). It was estimated that 971 hours would be required to manage that workload. Contracts with the state are based on the fiscal year and, therefore, workloads often carry over into the following calendar year.

As part of the 2016 program contract, a total of 326 hours was required to manage the designated workload. Some of that workload was completed in the spring of 2017. To date, as part of the 2017 program contract, a total of 287 hours has been attributed towards the management of 355 acres of red pine (plus partial management of remaining stands that will be completed in the spring of 2018).

Work on the 2017 program contract will continue in 2018. In addition, a third GNA program contract with the state will be developed in early 2018, most likely for the management of red pine stands on the Washburn Ranger District. Timber sale administration will also occur once a contract starts. This could happen at any point within the next few years.

ADDITIONAL FOREST MANAGEMENT ACCOMPLISHMENTS (Continuous Forest Inventory and New Position)

As approved in 2017, with implementation starting in 2018, the Department will begin the development of a new long-term forest monitoring program, termed continuous forest inventory (or CFI for short). As part of the program, a total of about 670 permanent plots will be randomly located throughout the forest. The plots will be established throughout all cover types and will conform with Wisconsin DNR CFI protocols. The Wisconsin DNR will be providing some assistance in the establishment of the program, particularly in the early stages.

Forest regeneration sub-plots will also be incorporated as part of the CFI. The Department is currently in the process of implementing/fine tuning a system of forest regeneration monitoring, utilizing the WDNR Forest Regeneration Metric (FRM), on all stands that have received management, but primarily where obtaining adequate and desirable regeneration is a primary concern (also in the process of developing a sub-sample for the aspen type). Regeneration data obtained from CFI will be used to supplement the already exhaustive FRM information that will be collected, by the Department, at the stand level.

The goal is to establish all 670 plots over a three-year period, as complete implementation in one year is unrealistic. Data collection will begin at year one (starting in 2018), with a goal of completing the initial data collection phase in three years (roughly 223 plots per year). Starting at year four, all plots would be placed on a five-year re-measurement schedule (roughly 134 plots per year). Depending on the time required to establish the plots and collect all associated data, an additional year may be required to complete the first round of CFI.

A new position was approved in 2017 to, among other things, manage both the CFI and FRM programs. The position will start around the first of February 2018 and will be titled Inventory and Analysis Forester. In addition to managing the CFI and FRM programs, this position will also be charged with performing various analyses of the data; the management of various databases; the development of various summaries and reports; and numerous other field forestry related tasks.

Please refer to the 2018 Forestry and Parks Department Work Plan for additional information of the CFI and FRM programs.

OTHER RECREATION ACCOMPLISHMENTS (State Funded Motorized Trails)

In July 2013, the management of the Bayfield County Trails program was assigned to the Forestry and Parks Department. The primary responsibilities revolve around the administration, oversight, coordination and grant/aid management of the state funded snowmobile and ATV trails located on county and private lands (also the grooming/maintenance of state funded snowmobile trails on federal land).

Table 18 lists the total miles per motorized trails type, managed by the Department, as well as the amount of state maintenance aids received.

Table 18: Mileage and Funding For Trails Managed by Bayfield County

Trail Type	Miles	Rate/Mile	Total
Snowmobile	437	\$300	\$131,100
ATV Summer	86.75	\$600	\$52,050
ATV Winter	168.15	\$100	\$16,815
UTV Summer	86.75	\$100	\$8,675
Total	778.65		\$208,640

The State of Wisconsin provides annual aids for the maintenance of existing motorized trails (see Table 18) and also offers some additional funding opportunities for individual trail rehabilitation and new trail development projects.

Below are some of the more noteworthy accomplishments on the state funded motorized trails systems in 2017:

- ✓ Completed nearly one mile of re-route on snowmobile Trail 13, on private lands, between Washburn and Valhalla. All work was accomplished internally, with county staff and equipment.
- ✓ Mowed heavy encroaching brush on snowmobile Trail 13, as part of the above re-route, to re-establish an old connection on state land. County staff and Highway equipment were used to complete the project.
- ✓ Finished the installation of a privy and access ramp at the intersection of Trails 22 and 24. Funded with a combination of DNR Trail grant and Recreational Trail Aids (RTA).
- ✓ Completed a re-route of snowmobile Trail 15, near Kimball Road. This was a joint project with the Forest Service, funded with a DNR snowmobile trail grant.
- ✓ Completed culvert installation on snowmobile Trail 1, at the crossing on Happy Hollow Road. Funded with DNR trail maintenance grant.
- ✓ Minor trail surface repair and erosion control on snowmobile/ATV Trail 19, near Valhalla. County staff and equipment were used to complete the project.
- ✓ Completed the installation of a new culvert on snowmobile Trail 15, at the crossing on County Highway D. A joint project with the Highway Department.
- ✓ Completed the installation of two culverts along Highway 63, just south of Drummond, on snowmobile trail 7/63. This was also a joint project with the Highway Department and Forest Service, and was funded with supplemental federal dollars, as per an annual maintenance agreement with them.
- ✓ Installation of new culverts on snowmobile Trail 13, at the crossing with Cherryville Road. A joint project with the Highway Department. Funded through DNR trail maintenance grant.
- ✓ Beaver control near the snowmobile bridge on Trail 31, over the Ounce River. Nuisance beaver were removed and dams were addressed, in a response to rising water threatening the integrity of the bridge.
- ✓ Minor surface work on snowmobile/ATV Trail 13 within the Washburn city limits. A joint project with the City. Funded through the DNR trail maintenance grant.

- ✓ Repair of a significant washout on snowmobile Trail 13, located west of North Church Corner Road. Work was completed with county staff and equipment. Funded with DNR trail maintenance grant.
- ✓ Continued repair work on numerous trails damaged from the two significant July 2016 storms (first the flooding event and then the major wind storm). The more significant repairs included:
 - Additional repair work on snowmobile Trail 1, east of Swedlund Road. As part of the FEMA grant.
 - Additional repair work on snowmobile Trail 4, east of Mason. Repaired trail washout and approach over stream crossing.
 - Some minor work on Trail 31, north of the Sawyer County line, still needs to be addressed as part of the previously awarded FEMA grant. The wet summer of 2017 made it operationally difficult to complete the required work (very wet soils). The goal is to finish the minor repairs in 2018, assuming the site is dry and accessible.
- ✓ Numerous re-routes of the snowmobile trail system as a result of closure on private lands. This will continue to be a problem in the future.
- ✓ Placement of gravel on numerous sections of ATV trail.

Bayfield County works with local clubs (both ATV and snowmobile) and the Snowmobile Alliances to ensure that all trails are in a safe and enjoyable riding condition. All routine or minor maintenance activities are typically accomplished by the clubs, while most major rehabilitation projects are administered by the Department.

During any given year, routine maintenance can include the posting/maintenance of signs, brushing, removal of debris, mowing, grooming, minor washout or rutting repair, grading, placement of gravel, etc.

Major rehabilitation can include significant culvert washouts, bridge repair, significant damage occurring as a result of flooding or other major storm event, etc. Addressing concerns or questions from private landowners (generally regarding trails approved for use on their property) is also a significant part of managing the motorized programs.

In addition to the state funded trails, the Forest provides numerous opportunities to recreate with a motorized vehicle. As previously stated, there is a total of just over 1,400 miles of inventoried roads and trails on the county forest. Of that total, approximately 72% are accessible with an ATV/UTV and 42% accessible with a highway vehicle. The county monitors the condition of roads and trails and performs routine maintenance on a case by case basis.

PARKS & CAMPGROUNDS

In September 2010, the management of all county owned parks and campgrounds were assigned to the Forestry and Parks Department. This includes the management of three campgrounds (Twin Bear Lake, Delta Lake and Big Rock) and one day use park (Atkins Lake).

Most of the major improvements have been focused on the two largest and most popular campgrounds, Twin Bear and Delta Lake. Below is a summary of all major accomplishments, at Twin Bear and Delta Lake, since the transition (accomplishments for 2017 are labeled).

1. Twin Bear Campground

- a. Complete electrical rebuild and upgrade throughout the entire campground.
 - b. Repair of all major outbuildings and store.
 - c. New seasonal mooring dock (2017).
 - d. New transient mooring dock, with steps (2017).
 - e. Construction of new overflow parking area (2017).
 - f. Construction of new fenced in storage area adjacent to garage (2017).
 - g. Reconstruction of the beach area.
 - h. New fishing pier near the beach area.
 - i. New ADA access ramp to the beach area.
 - j. Creation of new tent camping site.
 - k. Re-grade of the parking area to control runoff and improve drainage.
 - l. New gas hot water heaters, for each shower, in the shower building.
 - m. Installed high-speed wireless internet service throughout the entire campground.
 - n. Installed new playground equipment near the beach area.
 - o. Re-established and re-surfaced the walking path near Puig's Point.
 - p. Improved an old dock and added a new access point to the lake.
 - q. Changed out all locks to the same keyset.
 - r. Partnered with Brule River Canoe to provide canoe and kayak rentals.
 - s. Trimming of hazard branches and removal of hazard trees.
 - t. Numerous other minor improvements throughout the campground.
2. Delta Lake Campground
- a. Complete camping pad re-grade on nearly all campsites.
 - b. New playground equipment near beach area.
 - c. Removed old access boardwalk near the playground and replaced with graveled path (2017).
 - d. Minor repairs to the beach area (2017).
 - e. New fishing pier.
 - f. Repair of all major outbuildings.
 - g. New electric added to last four remaining powerless campsites.
 - h. A small timber sale was established to remove all dead and dying hazard trees. Mostly over mature white birch and aspen.
 - i. Installed high-speed wireless internet service throughout the entire campground.
 - j. Added another mooring dock/fishing pier and small picnic area.
 - k. Installed another section on additional mooring dock.
 - l. Replaced hot water heater in the shower building.
 - m. Changed out all locks to the same keyset.
 - n. Partnered with Brule River Canoe to provide canoe and kayak rentals.
 - o. Minor maintenance on the wooden access ramp.
 - p. Re-located the fee tube due to previous theft related issues.
 - q. Numerous other minor improvements throughout the campground.
3. Atkins Lake Park (day use)
- a. New boat launch dock (2017).

In addition to the physical improvements to the parks and campsites, many logistical improvements have also been made. At both Twin Bear and Delta Lake, seasonal sites have been re-structured in

a way to better capture the value potential in each campground. The reservation system for each was also adjusted to give all interested an equal chance at reserving a site.

Table 17 summarizes the total amount of occupancy at each campground from 2011 through 2017.

Table 17: Campground Rates of Occupancy and Total Revenues (Seasonal and Transient)¹

Year	Twin Bear			Delta Lake			Big Rock		
	Seasonal	Transient	Revenue	Seasonal	Transient	Revenue	Seasonal	Transient	Revenue
2011	22	755	\$50,849	13	327	\$23,210	0	317	\$2,812
2012	26	632	\$56,448	18	246	\$27,998	0	327	\$3,860
2013	26	519	\$52,018	10	387	\$19,950	0	286	\$3,524
2014	28	539	\$53,822	10	388	\$19,303	0	303	\$3,733
2015	17	1,034	\$56,835	10	251	\$20,176	0	405	\$5,118
2016	18	876	\$57,401	12	298	\$25,304	0	491	\$6,209
2017	19	1,132	\$64,617	13	422	\$31,705	0	625	\$7,689
Average	22	784	\$55,998	12	331	\$23,949	0	393	\$4,706

¹ Seasonal represents the total number of campsites rented for an entire season; Transient is a summary of the total number of days non-seasonal campsites were rented at each campground.

The seasonal category represents the total number of sites that were rented for an entire camping season (May 1 through October 31), while the day use category represents the total number of days non-seasonal campsites were rented within each campground over the entire camping season. Total revenues received are also included (total revenues include seasonal sites, day use sites, boat launching, boat mooring, canoe rentals and other miscellaneous charges).

Twin Bear is, by far, the most popular campground managed by the Department. With 43 campsites, it's also the largest. In 2017, 19 sites were rented by the season (an increase of one when compared to 2016), while the remaining transient (or day use) sites were rented for a record total of 1,132 days (an increase of nearly 30% when compared to 2016).

Starting in 2015, seasonal sites located at Twin Bear were reduced in number and day-use sites were re-evaluated as an attempt to maximize the potential use of the park. As a result, day use has increased significantly (by 80% when compared to the average day use from 2012-2014) and, at nearly \$65,000, total revenues received in 2017 were at an all-time high (an increase of nearly 13% when compared to 2016). High-speed internet was installed in the campground in 2015.

Delta Lake contains 34 campsites, 13 of which were rented by the season in 2017. All allotted seasonal sites were reserved in 2017, with the remaining transient sites rented for a total of 422 days. The number of transient rentals in 2017 established an all-time record, and were nearly 42% higher than day use rentals in 2016. Total revenues received in 2017 also established an all-time high at nearly \$32,000 (an increase of over 25% when compared to 2016). Seasonal sites were also modified, starting in 2013, as an attempt to maximize the use of the park. High-speed internet was also installed in the campground in 2015.

Big Rock is the smallest of the three campgrounds, with a total of 13 sites. All sites are generally considered rustic, none of which have access to power. In 2017, day use at Big Rock established an all-time high, at 625 total rentals (revenues were also at an all-time high). This was an increase of over 27% when compared to 2016, which was the previous all-time high. A portion of the

increased use may still be explained as a reaction to the major wind storm event that occurred during the summer of 2016.

The wind storm severely damaged Birch Grove campground (a popular rustic campground managed by the Forest Service, not too far, as the crow flies, from Big Rock) resulting in the closure of that park. The park remained closed in 2017. Campers who would have used that campground may have chosen to camp at Big Rock. Trends will continue to be monitored to evaluate use. Improvements to Big Rock will occur in 2018.

Atkins Lake is a small day use park, but also contains a boat launch. Starting in 2015, the use of the boat launch was free of charge. Overall use at this location is difficult to track. We may install counters at the entrance to the park in an attempt to determine general use patterns.

In total, when combined, activity at all three campgrounds established all-time use (and revenue) records. In addition to camping, boat launch activity (available at both Twin Bear and Delta Lake, for a fee, and Atkins Lake, for free) were at all-time highs. Day use of the playground equipment (available at Twin Bear and Delta Lake), as well as the beach (again, at Twin Bear and Delta Lake) has also significantly increased. Total use of the parks, in terms of overnight camping and day time use of the grounds, has increased dramatically over the past few years.

PROFESSIONAL DEVELOPMENT, REPRESENTATION AND PARTICIPATION

Most staff members of the Department are active members, representatives or participants in various professional committees or organizations. Participation can vary from casual interactions to formal representation. Some of the more noteworthy are as follows:

1. The Department hosted the 2017 Wisconsin County Forest Association's (WCFA) summer tour. This was a two-day event that highlighted facets of all major programs administered by the Department: forest management, reforestation and recreation. The event was held primarily in the Cable and Barnes areas and addressed numerous topics, some of which included: red oak and northern hardwood management, the Barnes Barrens Management Area, the Cable yurt and the challenges associated with forest management within high use recreational areas. Representation from all 29 county forests, including many partner agencies and local, regional and state representatives participated in the event. In total, nearly 150 people attended at least one day, of the two day tour. The second day of the event involved a narrated tour of the Apostle Islands, aboard the Island Princess. The entire staff participated and help organize the event.
2. Member of a Committee that updated the Economics chapter of the WDNR Silvicultural Handbook – Steve Probst.
3. Member of a Committee that updated the Jack Pine chapter of the WDNR Silvicultural Handbook – Andrew O'Krueg.
4. WCFA representative on the Wisconsin Initiative on Climate Change Impacts, Forestry working group – Jason Holmes.
 - a. Presented and was part of a panel discussion regarding climate change, as part of a Wisconsin Master Naturalist program – Jason Holmes.
5. Member of the WDNR Natural Regeneration Ad Hoc Team – Mike Amman.
6. Forestry stakeholder representative on the Wisconsin County Deer Advisory Council (CDAC) – Mike Amman.

- a. Presentation regarding the significance of deer browse on county lands as part of a Wisconsin Outdoor Communications Association meeting – Mike Amman.
7. Guest presenter as part of a forestry class at Northland College – Jason Holmes.
8. Hosted a forest management field tour as part of a forestry class at Northland College – all forestry staff.
9. Hosted professional tours of various forest management activities on the county forest, including, but not limited to, numerous visits to the two deer exclusions fences; the Barnes Barrens Management Area; and red oak regeneration site visits.
10. As part of professional development, all staff members attend various meetings, conferences and technical training sessions throughout the year.

MEET THE STAFF

The information listed above describes the general Departmental accomplishments for CY 2017. Below is a brief background history of Department and DNR staff employed to accomplish those goals.

Administrator: Jason Bodine.

- a. Experience: Forester with Bayfield County from 2000 to 2009. Administrator from 2009 to present.
- b. Highest Level of Education: Master of Science in Forestry from Michigan Technological University.
- c. Primary Role: administers and manages all aspects of the forestry, parks and recreation programs. Directs day to day operations and all planning efforts. Supervises all employees working within the Department.

Assistant Administrator: Steve Probst.

- a. Experience: Forester with Bayfield County from 1999 to 2000. Assistant Administrator from 2000 to present.
- b. Highest Level of Education: Bachelor of Science in Forest Management from UW Stevens Point.
- c. Primary Role: assist the administrator in all facets of the forest management program. Provides lead field role in all aspects of timber sale administration.

Forester: Mike Amman.

- a. Experience: Forester with Bayfield County from 2003 to present.
- b. Highest Level of Education: Bachelor of Science in Natural Resources from UW Madison.
- c. Primary Role(s): timber sale establishment, forest reconnaissance, reforestation and regeneration monitoring and database management (GIS and WisFIRS). Assist in other aspects of the forest management program.

Forester: Andrew O’Krueg.

- a. Experience: Forester with Bayfield County from 2010 to present.
- b. Highest Level of Education: Bachelor of Science in Forest Management from UW Stevens Point.
- c. Primary Roles(s): timber sale establishment, forest reconnaissance, reforestation and regeneration monitoring and database management (GIS and WisFIRS). Assist in other aspects of the forest management program.

Forester: Jeremiah Neitzel.

- a. Experience: Forester with Bayfield County from 2011 to present.
- b. Highest Level of Education: Bachelor of Science in Forest Management from UW Stevens

Point.

- c. Primary Roles(s): timber sale establishment, forest reconnaissance, reforestation and regeneration monitoring and database management (GIS and WisFIRS). Assist in other aspects of the forest management program.

Forester: Jason Holmes.

- a. Experience: Forester with Bayfield County from 2012 to present.
- b. Highest Level of Education: Master of Science in Forestry from Michigan Technological University.
- c. Primary Roles(s): timber sale establishment, forest reconnaissance, reforestation and regeneration monitoring and database management (GIS and WisFIRS). Assist in other aspects of the forest management program.

Recreation Forester: Jenifer Bratsch.

- a. Experience: Recreation Forester with Bayfield County from 2016 to present.
- b. Highest Level of Education: Master of Science in Physical Geography from the University of Calgary.
- c. Primary Roles(s): assist in the management of state funded ATV and snowmobile programs, all recreation related activities on county forest lands, including all designated non-motorized trails and yurts, and county owned campgrounds and day use parks.

Forest Technician: John Mesko.

- a. Experience: Forest Technician with Bayfield County from 2001 to present.
- b. Highest Level of Education: employed in the general field of forest management for over 30 years.
- c. Primary Roles(s): heavy equipment operation, road and trail maintenance, repair and construction, parks maintenance, assist in the timber sale program, assist in the reforestation program.

Office Manager: Patricia Bruno.

- a. Experience: Office manager with the Forestry and Parks Department from 2011 to present. Employed in other departments within Bayfield County from 1994 to 2011.
- b. Highest Level of Education: Vocational School Certificate.
- c. Primary Roles(s): maintains accounts receivable and payable, prepares vouchers for all expenditures, manages all accounts and paperwork associated with the timber sale program, manages and prepares all financial records, statements and reports, provides customer service.

WDNR – County Forest Liaison Forester: Joseph LeBouton.

- a. Experience: WDNR - County Forest Liaison Forester from 2011 to present.
- b. Highest Level of Education: PhD candidate in the Department of Forestry at Michigan State University for five years where he studied links between forest landscape composition, white-tailed deer densities and northern hardwood forests.
- c. Primary Roles(s): coordinating the DNR's contribution to Bayfield County Forest management activities. The DNR provides the county with enough forest management assistance annually to set up 25% of the sustainable harvest, perform roughly 50% of the required forest reconnaissance updates, as well as contribute to road maintenance, forest improvement activities, prescribed fire, and wildlife habitat improvement projects.