THE 2019 BREEDING STATUS OF COMMON LOONS IN VERMONT

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ABSTRACT: The Vermont Loon Conservation Project, a program of the Vermont Center for Ecostudies and the Vermont Fish and Wildlife Department, documented 101 nesting loon pairs and 129 territorial pairs statewide. Of the 101 pairs that attempted nesting, 75 successfully hatched 115 eggs, with 87 chicks surviving through August (chick survival rate 76%, 0.67 chicks surviving per territorial pair). Six new nesting pairs and 4 new potential territorial pair were identified. Twenty-two pairs that have nested in recent years did not nest in 2019. Of 33 pairs whose first nest attempts failed, 10 re-nested, and 8 were successful. Known causes of nest failure included depredation (6 nests), flooding (13 nests), and loon disturbance (2 nests). The remaining failed nests were abandoned for unknown reasons with predators and disruption from intruder loons being the most likely causes. The causes of most chick mortality were unknown. At least 9 chicks disappeared after interactions with intruder loons, 2 were taken by Bald Eagles (Green River Res., Miles P.), and 1 chick was likely hit by a boat (Maidstone L.). During the summer months, 8 adult loon mortalities were documented. Six of these were sent to Tufts University for necropsies with 2 dying from lead fishing gear, 2 from a respiratory fungal disease, and 2 from unknown causes. We monitored several other loons reported in distress, caught in fishing line, or observed in open water holes surrounded by ice. Four loons were observed entangled in fishing line/gear, but were not observed during follow-up surveys. We suspect the one on Lake Champlain died, while there is a chance the others picked the line off (Connecticut River, Holland P., Peacham P.) A VFWD game warden captured a fifth loon entangled in fishing line and released it on Lake Ninevah. Three other Common Loons and 2 Red-throated Loon were rescued after crash-landings and released after examinations. About 200 volunteers surveyed lakes throughout Vermont on 20 July as part of the Loonwatch program, an annual statewide loon count. Loons were observed on 121 of 176 surveyed lakes, where observers counted 339 adults, 89 chicks, and 4 subadult loons. The total number of adult loons increased substantially compared to the 2013-17 period when 297 to 308 loons were counted each year. To provide a historical perspective, volunteers counted 179 and 225 adult loons in 2003 and 2008, respectively. Thirty of the 101 breeding pairs nested on nesting rafts, 34 on islands, 29 in marshes, and 8 on shorelines. Forty-three nesting rafts were placed on known or potential nesting waterbodies. Warning sign buoys were placed around 50 of the 101 nests. Volunteers provided technical assistance through the placement and maintenance of nest warning signs and/or nesting rafts on 50 lakes as part of the adopt-a-lake program. Twenty loon conservation programs were presented to over 650 people statewide. We continued to distribute 2 informational brochures on loon conservation and conservation of lakeshores, and sent hundreds of brochures to 4 lake associations for further distribution. Loon conservation brochures were available in self-serve boxes at over 20 boat access areas.

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INTRODUCTION

In 1977, the Vermont Loon Conservation Project (VLCP) was initiated to assess the status of Common Loons *(Gavia immer)* in Vermont and found that the breeding population had significantly declined (Laughlin 1977). As a result, the VLCP began a loon monitoring and management program in 1978. Numbers of breeding pairs peaked at 19 in 1982, and then dropped sharply to 7 pairs in 1983 for unknown reasons. From 1983 to 1989, Vermont's breeding loon population gradually increased at an average rate of 1 pair per year, stabilized between 1989 and 1994 at 14-16 breeding pairs, and then experienced a marked increase since the mid-1990s to 101 nest attempts in 2019. The VLCP is a program of the Vermont Center for Ecostudies (VCE) and the Vermont Fish and Wildlife Department (VFWD).

In 2005, the Common Loon was removed from the Vermont Endangered and Threatened Species list. Conservation and educational efforts by many groups and individuals enabled the achievement of this milestone. Through the guidance of VCE and VFWD, monitoring and management programs were implemented throughout the 1980s and 1990s. In 1998, the Vermont Loon Recovery Plan (Borden and Rimmer 1998) was recommended for approval by the Vermont Scientific Advisory Group (SAG) on Birds and the Vermont Endangered Species Committee (ESC), and approved by the Vermont Agency of Natural Resources (ANR). The recovery plan recommended actions on management, monitoring, research, and education programs to promote the recovery of the species. The Common Loon was designated a state endangered species in 1987 following documentation of its population decline in the early 1980's. The target level to de-list as written in the Vermont Loon Recovery Plan was "40 nesting pairs averaged over 5 consecutive years", with a minimum of 5 nesting pairs in "2 geographically discrete areas." From 2000-2004, the average number of nesting loon pairs was 41, and 6 pairs nested in the southern half of Vermont. Today, the average number of nesting pairs from 2015-2019 was 94 with 20 nesting pairs in the southern half of the state in 2019.

Since the mid-1980's, the VLCP has been a joint program between VCE and VFWD. The Nongame Wildlife Fund has been the primary funding source for the VLCP (35-40% of budget) for many years, and VFWD has provided technical, law enforcement, and logistical support. Starting in 2013, the VFWD began utilizing the federal Pittman-Robertson Fund for the VLCP. VCE annually hires the VLCP biologist, provides staff support, and raises the remaining VLCP budget through donations and grants.

METHODS

Monitoring of lakes with breeding and territorial loons

The VLCP biologist, two VCE interns, and volunteers surveyed approximately 135 lakes with known histories of loon nesting, occupancy by territorial pairs, or high levels of loon activity on a regular basis (weekly to monthly). Over 180 adopt-a-lake volunteers provided technical assistance in this intensive monitoring effort.

Vermont Loonwatch day was initiated in 1983 to provide a mid-summer estimate of the statewide loon population. On the third Saturday in July each year, volunteers survey assigned lakes, ponds, and reservoirs from 8:00 to 9:00 a.m., recording the number of adult loons, subadult loons (1-2 year olds), and loon chicks on the water body, as well as relevant human and wildlife activity. The information has provided an annual statewide population estimate, an estimate of the number of non-breeding loons, and a check on lakes with previously undetected breeding pairs.

Management

Loon management practices included: 1) stabilization of water levels during the nesting period through cooperation with hydroelectric companies and others who control water levels; 2) placement of artificial nesting rafts in appropriate sites; 3) placement of warning sign buoys to discourage human intrusion at nest sites; 4) responding to all reports of distressed or dead loons, and 5) providing technical assistance to regulatory agencies. Volunteers provided important technical support for the first 4 of these practices.

The 8 hydroelectric companies and 3 agencies that regulate water levels on lakes where loons have historically nested were contacted in April by VFWD staff. Each company was requested to stabilize water levels during the nesting period so that nests would not be flooded by rising water levels or left stranded by water drawdowns.

Forty-three artificial nesting rafts were placed statewide. These rafts provided an alternative nest site to natural sites where predation from terrestrial mammals and/or fluctuating water levels had caused nests to fail in previous years. Rafts were

placed on some lakes with presumed territorial loon pairs, but where natural habitat is lacking (e.g., no suitable islands and/or marshes, highly developed shorelines). In cases where a potential pair is present and natural nest sites exist, rafts will not be considered unless the pair fails to nest after 4 or 5 consecutive years of occupancy. Rafts are considered on lakes where natural nests have failed 3 consecutive times, and the VLCP deems that rafts might prove beneficial. We also consider using rafts when natural nests are located in very close proximity to active cottages and other human activities to reduce potential disturbance. Adopt-a-lake volunteers maintained or helped with 22 rafts.

Warning sign buoys were placed around 50 of the 101 active nest sites to discourage human intrusion close to nests. These signs were also placed around 6 other nest sites where loons ultimately did not nest in 2019. Sign buoys were used in areas where repeated human disturbance was likely to occur. In most locations, people respect the presence of the signs.

The VLCP biologist coordinated responses to loons in distress with volunteers, VFWD game wardens, wildlife rehab personnel, and veterinarians (e.g., caught in monofilament, injured, road crashes, landed on ponds too small to fly from, iced-in, other).

Education

Public education continued to be a vital part of loon management efforts. The VLCP biologist contacted landowners of new nesting sites as soon as nesting was suspected or observed. Twenty slide lectures, discussions, and workshops on loon biology, conservation, and research were presented to audiences at lake associations, libraries, and other organizations (conservation groups, Road Scholar). Approximately 560 adults and 100 youth attended these programs. A sign informing boaters and anglers how to help nesting loons was placed at lake access areas. Another sign cautioning boaters to be alert for loon chicks and to watch loons from a distance was also placed at some access areas. Biologists, staff educators, and the project's volunteer network regularly informed camp owners and other lake users about loon conservation measures.

Two brochures directed at 1) boaters and 2) lakeshore owners were distributed at programs. "The Common Loon – a guide for boaters" containing information about loon conservation and natural history was available at over 20 boat access areas in self-serve boxes and at state parks with loon lakes. A second brochure "the Common Loon – a guide for lakeshore owners" contained information about the importance of riparian habitat for the health of a lake and was distributed to several lake associations. VCE mailed the *Loon Caller* newsletter to over 800 loon volunteers, donors, and other loon program contacts. The newsletter and brochures were distributed at all programs.

C*ontaminant sampling*

Abandoned eggs were collected and delivered to Biodiversity Research Institute (276 Canco Rd., Portland, ME 04103) for methylmercury (MeHg) analysis (Evers et al. 1999). Fourteen eggs were collected in 2019. Results from 2017 indicated that the eggs collected Curtis Pond and Chandler Pond had high mercury levels; results are not available for 2018. Both are shallow ponds with extensive muddy bottoms which might promote the methylation of inorganic mercury. Loon pairs on both ponds have successfully fledged numerous chicks. BRI has archived egg samples from most of the previous 10 years. Cooperators on this research include the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, BRI, the Vermont Department of Environmental Conservation, and several other state agencies, private organizations, and universities.

RESULTS AND DISCUSSION

Description of loon activity on individual lakes in 2019

Lake and loon activity descriptions are provided for nesting pairs, known and potential territorial pairs, and lakes with high levels of loon activity in Table 1. Nesting pairs nested this year, territorial pairs have nested in recent years, and potential territorial pairs have no recent history of nesting but 2 adult loons were observed throughout much of the summer.

Distribution of territorial and nesting pairs

There were 129 known and potential territorial loon pairs, 101 of which were confirmed to nest on 86 lakes (Fig. 1, Table 1). Six new nesting pairs were identified, including Branch P. (1 chick), Clyde Res. (abandoned), Harvey's L. – South (flooded), Lowell L. (2 chicks but both disappeared after a territorial fight), Mollys P. (1 chick), and Waterbury Res.

(flooded). A new pair on Halls Lake was observed nest building, but no eggs were laid. Four new potential territorial pairs were identified on Great Averill L. – South, L. Hortonia, Lewis P., and Shadow L. (Glover).

Population levels and breeding success
The number of nesting pairs increased from 91 in 2018 and 97 in 2017 to 101 in 2019. The number of territorial pairs increased to 129 from 123 in 2018. Of the 101 pairs that attempted nesting, 75 successfully hatched 115 eggs, with 87 chicks surviving through August (Fig. 2, Table 2). There were 123 known territorial pairs on water bodies where nesting or nest building had occurred within the last 3 years, and 6 potential territorial pairs, each of which was observed consistently for 6 weeks or more. Twenty-two pairs that have nested in recent years did not nest in 2019, thus 82 percent of the known territorial pairs nested. The 5-year average nesting rate of known territorial pairs from 2014-18 was 83 percent Of 33 pairs whose first nest attempts failed, 10 re-nested, and 8 were successful. Known causes of nest failure included depredation (6 nests), flooding (13 nests), and loon disturbance (2 nests). This highest number of flooded nests recorded since monitoring began; two rain events on June 4 and June 19 caused 12 of the 13 flooded nests. The remaining failed nests were abandoned for unknown reasons with predators and disruption from intruder loons being the most likely causes. Details are provided in Table 1.

The chick survival rate through August was 76% with 0.67 chicks surviving per territorial pair in 2019. Since 1979, the average chick survival rate is 82% with 0.70 chicks per territorial pair. The causes of most chick mortality were unknown. The causes of most chick mortality were unknown. At least 9 chicks disappeared after interactions with intruder loons, 2 were taken by Bald Eagles (Green River Res., Miles P.), and 1 chick was likely hit by a boat (Maidstone L.).

Eight adult mortalities were documented; 6 of these were sent to Tufts University for necropsies. Two loons died from lead poisoning from fishing gear on Mollys Falls Res. and Colby P. Two other loons died of aspergillosis, a fungal respiratory disease, on Caspain L. and Woodbury L. Both of these loons were monitored for a week prior to dying. They were weak and emaciated and there is a chance other factors contributed to them becoming susceptible to the fungal disease. Two other loons died from unknown causes on Green River Res. and South P. (Eden). The South P. loon was partially scavenged, likely by a Bald Eagle that was observed. However, it is unknown if the Bald Eagle actually killed the adult loon. Two more loons were found dead but not retrieved on L. Rescue and L. Champlain (Leddy Beach – Burlington). We suspect a loon entangled in monofilament on Lake Champlain also died based on its initial reported condition.

Management Results: artificial nesting rafts and nest warning sign buoys
Of the 101 known nests, 30 were constructed on artificial nesting rafts (90% successful), 34 were on islands (79% successful), 29 were in marshes (66% successful), and 8 were on shorelines (25% successful). Nests with warning sign buoys (n=48) had an 83% success rate compared to 66% for nests without signs (n=37). Signs are used more frequently for raft and island sites, which are often more exposed to boaters, but also tend to be more successful being away from shoreline predators. Not all signs are respected as the Fairfield Pond pair abandoned their nest after people repeatedly ignored the nest warning signs to reach land on the island in 2018. The pair did not nest in 2019. Shoreline nests are more likely to be depredated causing nest success rates to be low. We have begun placing "goose guards" on several artificial nesting rafts in April and early May to prevent Canada geese from nesting on the rafts. Geese used two rafts on Hardwick Lake and Little Averill – west as perch locations into late May and June likely preventing the loons from nesting.

Vermont Loonwatch Day
Vermont Loonwatch day was conducted on 20 July when over 200 volunteers counted 339 adult loons, 89 chicks, and 4 subadults (Table 2, Fig. 3). Loons were observed on 121 of the 176 lakes surveyed. The total number of adult loons increased in 2018 (356 adults counted) and 2019 compared to the 2013-2017 period when 297 to 308 adult loons were counted each year. Reasons for the increase are numerous. Survey conditions were relatively calm in both 2018 and 2019. During the previous few years, counts may have been suppressed because of higher winds and rainy conditions. Over 10 additional lakes were surveyed in the past 2 years. And there were likely more loons.

Sixty-eight of 339 adult loons counted were located in southern and central Vermont, an increase from 46 to 51 loons counted annually between 2015 and 2017. North central Vermont has observed the largest increase in loon numbers increasing from annual counts in the 130s in recent years to 162 in 2018 and 152 in 2019. Volunteers counted the most

loons on Green River Res. (15 adults), Lake Memphremagog (15 adults), Norton Pond (11 adults), and Caspian Lake (10 adults).

Loon Rescues

Tim Carey, a VFWD game warden, captured a breeding adult loon entangled in fishing line and released it on Lake Ninevah. Four loons were observed entangled in fishing line/gear, but were not observed during follow-up surveys. We suspect the one on Lake Champlain died, while there is a chance the others picked the line off (Connecticut River, Holland P., Peacham P.). Several loons beached themselves and were monitored closely. An adult on No. 10 Pond repeatedly went to shore to avoid a territorial conflict; the loon was captured and moved to nearby Nelson Pond. In the fall there were 3 loons that crash-landed on roads or fields and all were releaseable. In October, a loon was found in a field in Randolph, Vermont; the loon had a broken bill tip that was bleeding. The bird was brought to VINS where it was determined to be healthy. It was released on the Connecticut River in a slow moving section. Another loon was found in a field in Underhill, VT. It was examined by Craig Newman from Outreach for Earth Stewardship and released on Lake Champlain. In November, two Red-throated Loons were found near Arlington, VT and Kent Pond. Both were brought to VINS for examination and released on the Connecticut River. Three other loons that were lethargic were later found dead and sent to Tufts University for necropsies (see Population Levels and Breeding Success section). We tend to monitor weak loons with no outwardly apparent distress (e.g., fishing line). Many weak loons return to normal activity having recovered from territorial chases/exhaustion or other issues.

The VLCP biologist spent over 60 hours in 2019 conducting capture attempts and coordinating monitoring efforts with volunteers and game wardens. The biologist has spent 40-90 hours annually dealing with loons in distress in recent years. Volunteers were instrumental in the monitoring and capture attempts of all these birds with volunteer time exceeding 50-100 hours per year.

Volunteer Effort

Volunteers provided important technical assistance for loon conservation efforts in Vermont. The efforts of adopt-a-lake volunteers, who helped monitor over 70 lakes statewide, varied from a few surveys over the summer to daily observations. Volunteers assisted with either loon nest warning signs and/or nesting rafts on 51 of the 69 lakes where these management tools were used. Volunteers were critical in helping to inform the VLCP biologist about lakes and ponds with increased loon activity, potential territorial pair development, and loons in distress. Volunteers or other citizens aware of the loon program helped determine the status of most of the potential territorial pairs through repeated surveys.

Threats to Vermont's loons

Vermont's loons continue to face many short- and long-term threats to their viability, including: (1) water level fluctuations on lakes where water levels are regulated; (2) shoreline development and human disturbance; (3) mortality through lead poisoning, entanglement with monofilament fishing line, and fishing gear ingestion; (4) environmental background of bio-accumulating mercury and methyl-mercury, (5) oil spills in wintering coastal areas, and (6) disease such as aspergillosis and botulism. Two natural sources of mortality include predation of eggs and chicks and intraspecific competition between breeding pairs and extraterritorial (rogue/intruder) loons. Background and historic information on these threats are provided in the Vermont Common Loon Recovery Plan (Borden and Rimmer 1998, pp. 5-10) and the VLCP 2000 and 2009 annual reports.

Table 1. Summary of Common Loon breeding activity in Vermont, 2019

Nesting pairs: 101 Known territorial pairs: 123 Potential territorial pairs: 6 **Total territorials pairs: 129**

Chicks hatched out: 115 Chicks surviving through August: 87

Lake list divided into sections: 1) nesting pairs and known and potential territorial pairs, and 2) loon active lakes.

Loonwatch Count on 20 July 2019: Adult loons - 339 New nesting pairs: 6 New territorial pairs: 4

									Rescues / Mortality / Monitor Situations							
Lake Name	Town	2019 status	Nest Type	Nest Outcome	Nest Warning Sign Buoys	Chicks hatched out	Chicks through August	Chick Mortality Cause	**Date**	Age	Rescue/ Mortality/ Monitor	Mortality and Rescue Cause	Comments	# years nested	# years nest success	total # surviving chicks
Baker P. (Barton)	Barton	nesting	marsh	Successful		2 Ch	2 Ch							15	13	19
Bald Hill P.	Westmore	nesting	shoreline	Flooded. Re-nest successful; 2nd egg collected.		1 Ch	1 Ch							17	11	13
Bean P.	Sutton	nesting	marsh	Successful		1 Ch	1 Ch							14	14	16
Beaver P.	Holland	nesting		Successful		1 Ch	1 Ch							36	31	37
Beecher P.	Brighton	nesting		Successful		1 Ch	1 Ch							5	4	4
Berlin P. - north	Berlin	nesting	marsh	Successful; 2nd egg collected	signs	1 Ch	0 Ch	Unknown - disappeared early						16	14	15
Bourn P.	Sunderland	nesting	island	Abandoned										18	16	18
Branch P.	Sunderland	nesting	marsh	Successful		2 Ch	1 Ch	Unknown - disappeared early					1st recorded nest since 1979	2	2	2
Brownington P.	Brownington	territory	marsh	Last nested in 2018										16	7	9
Buck L.	Woodbury	nesting	marsh	Successful; 2nd egg collected		1 Ch	1 Ch						1 ch hatched; 2nd egg left in nest	12	7	7
Caspian L.	Greensboro	nesting	raft	Successful	signs	2 Ch	1 Ch	Trauma - attack by other loon	7/26/2019	adult	Mortality	Aspergillosis	Territorial takeover occurred July 5; chick and adult moved 1 mile south; new pair NW. It is possilbe adult was hurt in territorial fight and died later in July. Surviving chick not observed with an adult after July 22; reared itself. Necropsy: aspergillosis, emaciated.	5	4	6
Center P.	Newark	nesting	shoreline	Flooded									First nest attempt since 2015	4	0	
Chandler P.	Wheelock	nesting	raft	Successful		1 Ch	1 Ch							12	9	9
Chittendon Res. - East	Chittenden	nesting	raft	Successful	signs	2 Ch	2 Ch							15	12	15
Chittendon Res. - North	Chittenden	nesting	raft	Abandoned - no egg(s)	signs									4	3	5
Clyde R.	Newport	nesting	marsh	Abandoned - egg(s)									First confirmed nest; built a nest bowl in 2018	1	0	
Colby P.									7/23/2019	adult	Mortality	Fishing gear - lead	Loon lethargic, occasional beaching, but also some diving for a week before dying.			
Coles P.	Walden	nesting	marsh	Successful	signs	2 Ch	1 Ch	Other - intruder loon responsible					Chick disappeared after territorial chases	20	17	24
Curtis P.	Calais	nesting	marsh	Over-incubation - 2 eggs collected	signs									4	2	2
Daniels /Daniels West P.	Glover	territory	marsh	Last nested in 2018										7	6	5
Derby P.	Derby	nesting		Abandoned - no egg(s)	signs									10	5	5
Dog P.	Woodbury	nesting	shoreline	Depredated - mammalian										4	1	2
Dunmore L. / Mud P.	Leicester/ Salisbury	nesting	island	Flooded	signs									13	9	10

Table 1 continued									Rescues / Mortality / Monitor Situations							
Lake Name	Town	2019 status	Nest Type	Nest Outcome	Nest Warning Sign Buoys	Chicks hatched out	Chicks through August	Chick Mortality Cause	**Date**	Age	Rescue/ Mortality/ Monitor	Mortality and Rescue Cause	Comments	# years nested	# years nest success	total # surviving chicks
East Long P.	Woodbury	nesting	island	Successful		2 Ch	1 Ch	Unknown						38	30	36
Echo L. (Charleston)	Charleston	territory	raft	Last nested in 2018									Pair on and off raft in new location; probably too near to human activity. Will move raft again in 2019.	9	4	4
Eden L.	Eden	territory											Extra loons frequent	15	12	16
Elligo L.	Greensboro	nesting	island	Successful	signs	2 Ch	2 Ch							18	15	19
Elmore L.	Elmore	nesting	marsh	Successful; 2nd egg collected	signs	1 Ch	1 Ch							8	3	3
Ewell P.	Peacham	nesting	marsh	Depredation - mammalian										11	10	11
Fairfield P.	Fairfield	territory	raft	Last nested in 2018										5	0	
Fairlee L.	Fairlee	nesting	raft	Successful	signs	1 Ch	1 Ch							4	4	5
Flagg P.	Wheelock	nesting	island	Successful		1 Ch	1 Ch						Nest location unknown; late nest not detected until chich observed.	7	5	7
Forest L.	Averill	nesting	raft	Successful		2 Ch	0 Ch	Unknown						26	23	27
Fosters P.	Peacham	nesting	raft	Successful		2 Ch	2 Ch							17	17	27
Glen P.	Castleton	potential territory														
Great Averill L. - North	Averill	nesting	raft	Depredated - mammalian; re-nest successful		1 Ch	1 Ch							25	14	16
Great Averill L. - South		potential territory												0		
Great Averill L. - SW inlet	Averill	nesting	raft	Abandoned - no egg(s)									Changed territory name to SW inlet; new poential territory in south end.	9	6	6
Great Hosmer P. - North	Albany/ Craftsbury	nesting	marsh	Flooded; 1 egg collected										2	0	
Great Hosmer P. - South	Albany/ Craftsbury	nesting	marsh	Successful		1 Ch	1 Ch							9	8	11
Green River Res. - Access Bay	Hyde Park	nesting	island	Abandoned - egg(s); 1 egg found in water	signs									12	10	13
Green River Res. - Merganser inlet	Hyde Park	nesting	island	Successful	signs	2 Ch	1 Ch	Predation					Predation - Bald Eagle (observed)	5	2	2
Green River Res. - NW	Hyde Park	nesting	island	Successful	signs	2 Ch	2 Ch							41	31	44
Green River Res. - South	Hyde Park	nesting	island	Flooded	signs	1 Ch	1 Ch		8/17/2019	adult	Mortality	Unknown - analyzed	Not part of territorial pair. No pathology identified. Badly decomposed.	5	3	3
Greenwood L.	Woodbury	nesting	raft	Successful; 2nd egg collected	signs	1 Ch	0 Ch	Other - intruder loon responsible					Chick disappeared after territorial chases	9	7	5
Groton L. - North	Groton	nesting		Successful	signs	1 Ch	1 Ch							9	6	8
Groton L. - South	Groton	nesting	shoreline	Flooded; re-nest successful	signs									16	13	16
Halls L.	Newbury	territory											Nest building observed in south marsh - first time ever observed			
Hardwick L.	Hardwick	territory	raft										Canada geese used raft as perch site	16	14	19
Hardwood P.	Elmore	nesting		Successful		2 Ch	2 Ch						New pair - first nest attempt since 2002	11	10	13

Table 1 continued									Rescues / Mortality / Monitor Situations							
Lake Name	Town	2019 status	Nest Type	Nest Outcome	Nest Warning Sign Buoys	Chicks hatched out	Chicks through August	Chick Mortality Cause	**Date**	Age	Rescue/ Mortality/ Monitor	Mortality and Rescue Cause	Comments	# years nested	# years nest success	total # surviving chicks
Harveys L. - North	Barnet	nesting	marsh	Flooded; re-nest successful	signs	2 Ch	1 Ch	Unknown - disappeared early					Extra loons and Bald Eagle observed frequently	11	8	7
Harveys L. - South		nesting	shoreline	Flooded; 2 eggs collected									First confirmed nest	1	0	
Holland P. - North	Holland	nesting	raft	Successful		1 Ch	1 Ch		8/26/2019	adult	Monitor	Fishing gear - lure	Fishing lure observed on bill of adult loon. Three days later, we could not find any loon with lure. First successful nest ever-recorded.	5	1	1
Holland P. - South	Holland	nesting		Successful		2 Ch	2 Ch							22	15	18
Hortonia L.	Hubbardton	potential territory											New potential territorial pair	0		
Iroquois L.	Hinesburg	nesting	island	Successful	signs	2 Ch	2 Ch						First successful nest ever recorded	4	1	2
Island P.	Brighton	nesting	island	Abandoned - no egg(s)										19	15	17
Jobs P.	Westmore	territory	shoreline										Nest searching observed	11	6	7
Joe's P - inlet	Cabot/ Danville	nesting	raft	Successful	signs	1 Ch	0 Ch	Trauma - attack by other loon						20	20	25
Joe's P. - 1st Pond	Cabot/ Danville	nesting	shoreline	Flooded; Abandoned										10	6	4
Keiser P.	Danville/ Peacham	nesting	shoreline	Successful		1 Ch	1 Ch							15	11	10
Kent P.	Killington	nesting	island	Successful; 2nd egg collected	signs	1 Ch	1 Ch		12/1/2019	unknown	Rescue	Trauma - crash landing	Red-throated loon found near Kent P. along road. Brought to VINS for evaluation. Minor abrasions. Appeared healthy and released on the Connecticut.	10	7	9
Kettle P.	Groton/ Marshfield	nesting	raft	Successful	signs	2 Ch	2 Ch							28	18	25
Knapp Brook P.	Reading	territory	island										Pair built nest bowl on SE shore of smaller island nearest boat access.	3	2	2
Lewis P.	Lewis	potential territory											New potential territorial pair	0		
Little Averill L. -North	Averill	nesting	raft	Successful		2 Ch	2 Ch						First nest attempt since 2015	7	5	3
Little Averill L. -West	Averill	territory		last nested 2016										29	17	24
Little Hosmer P.	Craftsbury	nesting	island	Successful	signs	2 Ch	0 Ch	Other - intruder loon responsible					Chick disappeared after territorial chases	19	11	9
Long P. (Eden)	Eden	nesting	marsh	Abandoned - no egg(s)										8	5	7
Long P. (Greensboro)	Greensboro	territory	marsh	last nested 2018										2	1	1
Long P. (Westmore)	Westmore	nesting	island	Successful	signs	1 Ch	0 Ch	Unknown - disappeared early						21	16	20
Lowell L.	Londonderry	nesting	island	Successful	signs	2 Ch	0 Ch	Trauma - attack by other loon					First confirmed nest	1	1	0
Lower Symes P.	Ryegate	nesting	marsh	Loon disturbance										16	14	20
Lyford P.	Walden	nesting	marsh	Successful		2 Ch	2 Ch							10	8	9
Maidstone L. - North	Maidstone	nesting	marsh	Successful		2 Ch	1 Ch	Trauma - boat hit					Nest location unknown; chick found floating in water after speed boats in area; bird not retrieved	9	7	5
Maidstone L. - SE	Maidstone	nesting	island	Successful		1 Ch	1 Ch							9	5	7
Maidstone L. -SW	Maidstone	nesting	island	Successful	signs	2 Ch	2 Ch							37	34	40

Table 1 continued									Rescues / Mortality / Monitor Situations							
Lake Name	Town	2019 status	Nest Type	Nest Outcome	Nest Warning Sign Buoys	Chicks hatched out	Chicks through August	Chick Mortality Cause	**Date**	Age	Rescue/ Mortality/ Monitor	Mortality and Rescue Cause	Comments	# years nested	# years nest success	total # surviving chicks
Martins P.	Peacham	nesting	raft	Successful	signs	2 Ch	2 Ch							23	23	34
May P.	Barton	nesting	marsh	Successful		1 Ch	1 Ch						Nest location unknown	23	20	28
Metcalf P.	Fletcher	nesting	island	Loon disturbance; re-nest successful	signs	1 Ch	1 Ch							7	3	5
Miles P.	Concord	nesting	island	Abandoned; re-nest successful	signs	2 Ch	0 Ch	Trauma - sibling rivalry; Predation					Sibling rivalry; predation - bald eagle (talon marks found in chick)	24	18	23
Miller P.	Strafford	territory	marsh	Last nested 2018									Pair built nest bowl	5	5	7
Mitchell L.	Sharon	nesting	marsh	Depredation - mammalian										3	0	0
Molly's Falls Res. - Island	Cabot	territory	raft	Last nested 2018					7/13/2019	adult	Mortality	Fishing gear - lead	Dead loon found in water at edge in the far south end.	6	5	9
Molly's Falls Res. - North	Cabot	nesting	raft	Successful	signs	2 Ch	2 Ch							25	23	32
Mollys P.	Cabot	nesting	marsh	Successful		2 Ch	1 Ch	Unknown					First confirmed nest	1	1	1
Morey L.	Fairlee	potential territory												0		
Neal P.	Lunenberg	nesting	marsh	Depredation - mammalian										3	0	
Newark P.	Newark	nesting	island	Successful	signs	2 Ch	2 Ch							29	22	31
Nichols P.	Woodbury	nesting	raft	Successful	signs	2 Ch	1 Ch	Unknown					Intruder loons frequent, including in mid-Sept. when chick disappeared	19	17	19
Ninevah L.	Mount Holly	nesting	island	Successful	signs	2 Ch	2 Ch		8/6/2019	adult	Rescue	Fishing gear - monofilament	VFWD game warden captured and removed line; no tissue damage or ingestion.	25	23	32
No. 10 P. (Mirror L.)	Calais	nesting	raft	Successful	signs	2 Ch	2 Ch		5/19/2019	adult	Rescue	Trauma - attack by other loon	Likely territorial chases caused loon to beach itself to avoid conflict. Repeated over a week. Captured and moved to Nelson P.; appeared healthy	12	11	15
Norford L.	Thetford	territory		Last nested 2018									Private pond - no public access	1	1	1
Norton P. - Island	Norton	territory	raft	Last nested 2018										39	32	41
Norton P. - North	Norton	nesting	raft	Successful	signs	2 Ch	2 Ch							11	5	9
Norton P. - South	Norton	nesting	raft	Successful		2 Ch	2 Ch							19	17	20
Old Marsh P.	Fair Haven	nesting	island	Successful		2 Ch	0 Ch	Unknown - disappeared early						2	2	1
Osmore P.	Peacham	nesting	island	Successful		2 Ch	1 Ch	Unknown						11	7	8
Parker L.	Glover	territory	marsh	Last nested 2018										1	0	0
Peacham P. - North	Peacham	nesting	island	Successful	signs	1 Ch	1 Ch						Territory now restricted to inner part of north cove by dam because of East territory.	41	34	38
Peacham P. - east	Peacham	nesting	marsh	Flooded									Pair shifted territory from SE to NE part of lake	7	2	3
Peacham P. - SW	Peacham	territory							8/26/2019	adult	Monitor	Fishing gear - monofilament	Loon with fishing gear not re-observed after VFWD game warden reported it.	27	19	23
Pensioner P.	Charleston	nesting	raft	Over-incubation	signs									12	10	12
Pigeon P.	Groton	nesting	raft	Abandoned; re-nest successful		1 Ch	1 Ch							5	3	5
Raponda L.	Wilmington	territory	marsh	Last nested 2018										3	2	2
Ricker P.	Groton	nesting	raft	Successful	signs	1 Ch	0 Ch	Trauma - attack by other loon						17	14	11

Table 1 continued									Rescues / Mortality / Monitor Situations							
Lake Name	Town	2019 status	Nest Type	Nest Outcome	Nest Warning Sign Buoys	Chicks hatched out	Chicks through August	Chick Mortality Cause	**Date**	Age	Rescue/ Mortality/ Monitor	Mortality and Rescue Cause	Comments	# years nested	# years nest success	total # surviving chicks
Seymour L. - Winape	Morgan	territory		Last nested 2017										20	15	20
Shadow L. - (Concord)	Concord	territory	marsh	Successful		2 Ch	2 Ch							12	6	8
Shadow L. (Glover)	Glover	potential territory												0		
Silver L. (Leicester)	Leicester	nesting	raft	Successful		1 Ch	1 Ch						First time using raft	5	5	7
Somerset Res. - Dandeneau Cove	Somerset	territory	island	Last nested 2018										37	26	33
Somerset Res. - Narrows	Somerset	nesting	island	Successful	signs	1 Ch	1 Ch							7	3	3
Somerset Res. - North Islands	Somerset	nesting	island	Successful	signs	2 Ch	1 Ch	Unknown						12	9	12
South P. (Eden)	Eden	nesting	island	Abandoned - no egg(s)	signs				6/27/2019	adult	Mortality	Unknown - analyzed	Possible Bald Eagle harassment while nesting; adult mortality not part of territorial pair. Dead loon partially scavenged.	21	16	22
South P. (Marlboro)	Marlboro	nesting	marsh	Successful	signs	1 Ch	1 Ch							5	5	8
Spectacle P.	Brighton	nesting	raft	Successful	signs	2 Ch	1 Ch	Unknown - disappeared early						25	23	26
Spring L.	Shrewsbury	nesting	raft	Successful		2 Ch	2 Ch							17	12	17
Stiles Res.	Waterford	territory	marsh	Last nested 2018									Nest searching observed	15	9	13
Sugar Hill Res.	Goshen	nesting	raft	Successful	signs	1 Ch	1 Ch							4	4	5
Thurman Dix Res.	Orange	nesting	island	Flooded; re-nest successful		1 Ch	1 Ch							39	32	37
Ticklenaked	Ryegate	nesting	marsh	Successful	signs	1 Ch	1 Ch							5	3	2
Wallingford P.	Wallingford	nesting	marsh	Successful		2 Ch	2 Ch							19	14	23
Wantastiquet P.	Weston	nesting	island	Successful		1 Ch	1 Ch							11	9	13
Warden P.	Barnet	nesting	shoreline	Depredation - mammalian									First confirmed nest	1	0	
Waterbury Res.	Waterbury	nesting	island	Flooded									First nest attempt since ealry 1990s, but question the reliability of survey in 1990s.	4	1	1
West Mountain P.	Maidstone	territory		Last nested 2017										17	11	7
Wolcott P.	Wolcott	nesting	marsh	Successful		1 Ch	0 Ch	Unknown - disappeared early					Banded male returned with yellow band on right leg and silver band on left leg; originally banded as chick on Zack Woods Pond in 2001.	27	23	25
Woodbury L. (Sabin)	Woodbury	nesting	raft	Successful	signs	1 Ch	1 Ch		7/21/2019	adult	Mortality	Aspergillosis	Loon was lethargic and still had gray feathers on the head from winter plumage. Emaciated.	13	13	15
Woodward Res.	Plymouth	nesting	island	Flooded; over-incubation										13	9	11
Zack Woods P.	Hyde Park	nesting	island	Successful	signs	2 Ch	2 Ch							23	21	33

Table 1 continued									Rescues / Mortality / Monitor Situations							
Lake Name	Town	2019 status	Nest Type	Nest Outcome	Nest Warning Sign Buoys	Chicks hatched out	Chicks through August	Chick Mortality Cause	**Date**	Age	Rescue/ Mortality/ Monitor	Mortality and Rescue Cause	Comments	# years nested	# years nest success	total # surviving chicks
Baker P. (Brookfield)	Brookfield	loon active							10/21/2019	adult	Rescue	Trauma - crash landing	Crash landed in Brookfield, VT. Baker P. nearest waterbody. Found in field. Broken tip of bill was bleeding, but stopped. Appeared strong and healthy.			
Berlin P. -South	Berlin	loon active														
Bruce P. / Clark P.	Sheffield	loon active		Last nested 2017									Pair not present this year; mostly singles or none. Multi-lake territory in the past.	8	0	
Carmi L.	Franklin	loon active														
Champlain L.	Colchester	loon active							4/29/2019 10/30/19	adult,	Monitor, Mortality	Case 1: Fishing gear - lure; Case 2: unknown	Case 1: Observed in reeds 4/27 in Mallet's Bay. Searched entire area. Game warden searched 4/30. Outcome likely mortality, beaching sign of waterlogged, hypothermia. Case 2: October - Leddy Beach - Found dead on shore, when returned to pick up it was gone.			
Coits P.	Cabot	loon active		Last nested 2016										3	3	2
Connecticut River - midstate	Hartford	loon active							5/3/2019	adult	Monitor	Fishing gear - monof	5/2 Observed swimming with fishing line around the head. Bird not found again.			
Crystal L.	Barton	loon active														
Lakota L.	Barnard	loon active		Last nested 2018									Pair not present in 2019	1	1	2
Little Salem P.	Derby	loon active														
Long P. (Sheffield)	Sheffield	loon active											New potential territorial pair; report of chick in August, but no loons on pond during follow-up survey			
Nelson P.	Woodbury	loon active		nested once in 2010										1	0	
Noyes P.	Groton	loon active												1	0	0
Rescue L.	Ludlow	loon active							6/17/2019	adult	Mortality	Unknown - not analyzed	Found at edge of shore highly decayed; not sent to Tufts			
Shaftsbury L.	Shaftsbury	loon active							11/8/2019	adult	Rescue	Trauma - crash landing	Red-throated loon found in Arlington Vermont on road (Shaftsbury L. nearest waterbody). Brought to VINS for evaluation. Minor abrasions. Appeared healthy and released on the Connecticut.			
Sunset L. (Benson)	Benson	loon active														
Sunset L. (Marlboro)	Marlboro	loon active	island	Last nested 2017									Pair only observed twice based on 10 +/- surveys	9	7	6
Willoughby L.	Westmore	loon active														
Winona L.	Bristol	loon active							11/26/2019	adult	Rescue	Trauma - crash landing	Crash landed in Lincoln, VT. (Winona L. nearest waterbody). Appeared strong and healthy. Released on L. Champlain.			

Figure 1a. Common Loon Nesting and Territorial Pairs in Vermont – Northern Area

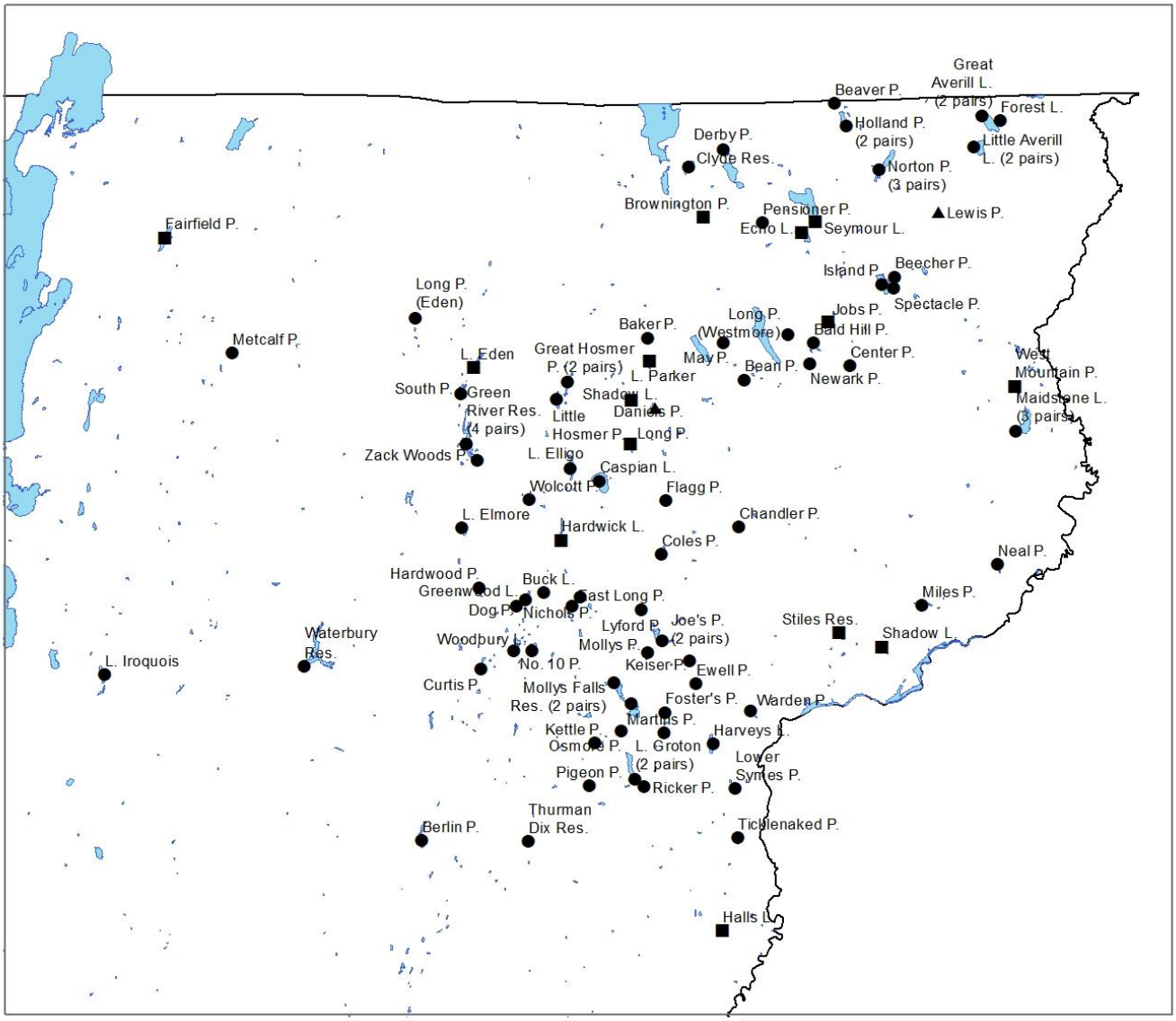
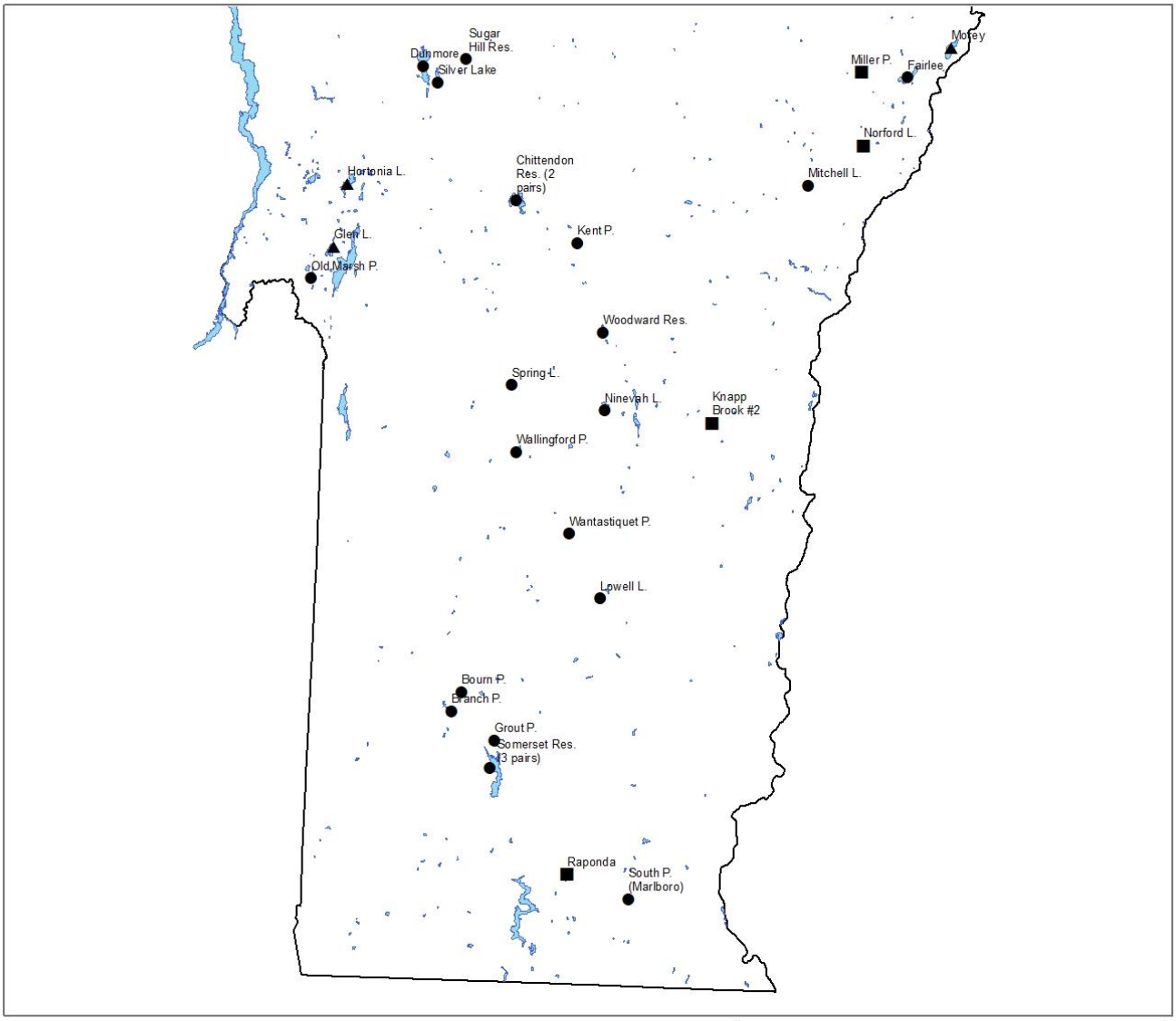
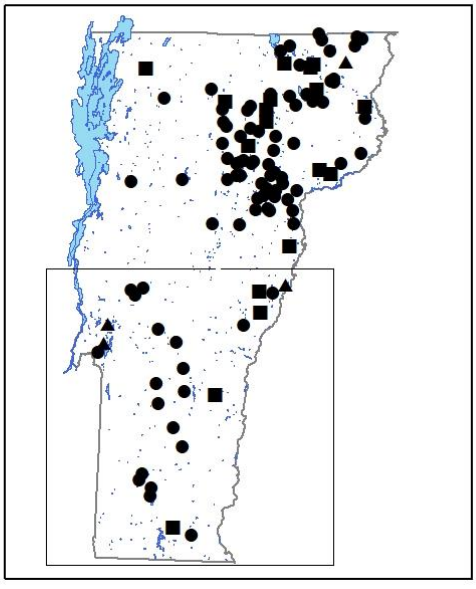


Figure 1b. Common Loon Nesting and Territorial Pairs in Vermont – Southern Area





Location of Loon Pairs - 2019

- ● nesting
- ▲ potential territory
- ■ territory

Figure 2. Summary of Common Loon breeding activity in Vermont, 1978-2019

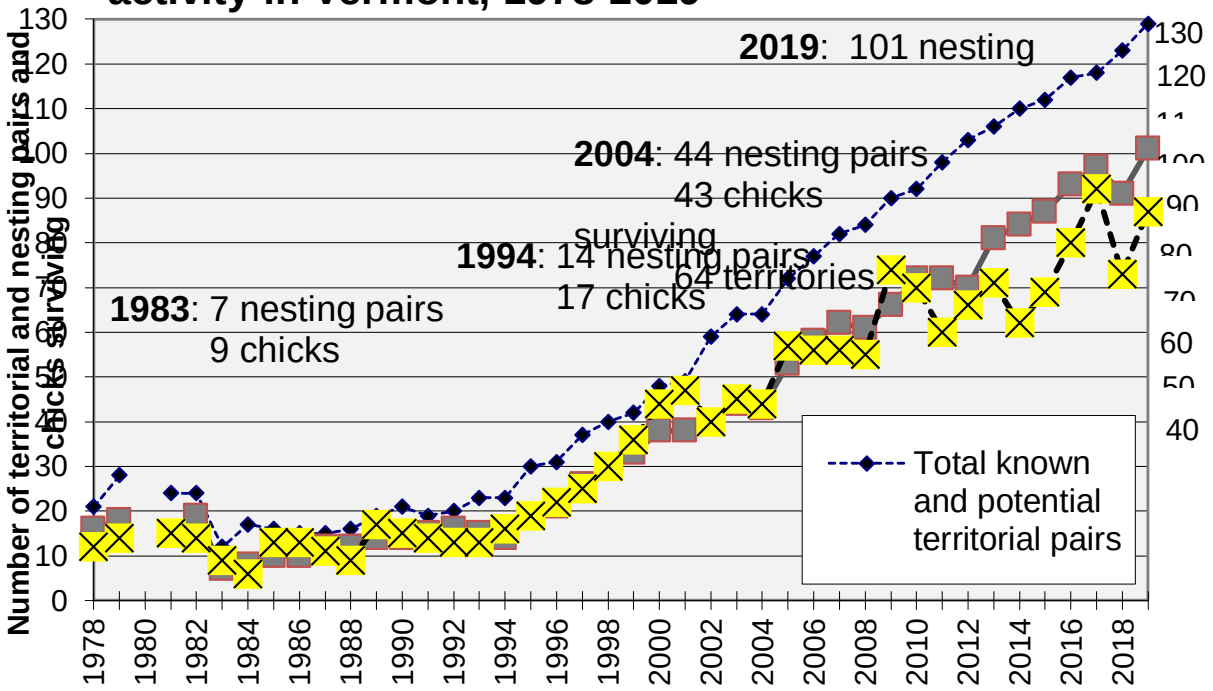


Table 2. Summary of population changes and reproductive success of Common Loons in Vermont, 1979-2019

Year	'79	'80	'81	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19
TOTAL territorial pairs	28	0	24	24	12	17	16	15	15	16	19	21	19	20	23	23	30	31	37	40	42	48	49	59	64	64	72	77	82	86	90	92	98	103	106	110	112	117	118	123	129
Known terr. prs.	21	--	18	19	9	12	11	11	12	13	16	17	16	18	17	21	22	24	29	34	39	44	44	49	53	57	60	65	71	75	80	85	88	92	93	100	102	111	113	117	123
Potential terr. prs.	7	--	6	5	3	5	5	4	3	3	3	4	3	2	6	2	8	7	8	6	3	4	5	10	11	7	12	12	11	11	10	7	10	11	13	10	10	6	5	6	6
Nesting pairs	**18**	**--**	**15**	**19**	**7**	**8**	**10**	**10**	**12**	**12**	**14**	**14**	**15**	**16**	**15**	**14**	**19**	**21**	**26**	**30**	**33**	**38**	**38**	**40**	**44**	**43**	**53**	**58**	**62**	**61**	**66**	**72**	**72**	**70**	**81**	**84**	**87**	**93**	**97**	**91**	**101**
Successful pairs	12	--	11	12	5	6	8	9	9	7	10	9	10	10	11	13	15	14	21	23	25	36	34	34	38	34	47	44	47	49	53	57	52	50	62	57	65	65	74	66	75
Chicks hatched	--	--	--	--	10	7	--	16	12	11	19	18	16	15	18	20	21	25	32	37	41	56	56	52	62	54	68	66	71	75	83	85	76	87	97	93	103	102	117	97	115
Chicks surviving through August	14	--	15	14	9	6	13	13	11	9	17	15	14	13	13	17	19	22	25	30	36	44	47	40	45	44	57	56	56	55	74	70	60	66	71	62	69	80	92	73	87
Chicks surviving per nesting pair	0.78	--	1.00	0.74	1.29	0.75	1.30	1.30	0.92	0.75	1.21	1.07	0.93	0.81	0.87	1.21	1.00	1.05	0.96	1.00	1.09	1.16	1.24	1.00	1.02	1.02	1.08	0.97	0.90	0.90	1.12	0.97	0.83	0.94	0.88	0.74	0.79	0.86	0.95	0.80	0.86
Chicks surviving per total territorial pair	0.50	--	0.63	0.58	0.75	0.35	0.81	0.87	0.73	0.56	0.89	0.71	0.74	0.65	0.57	0.74	0.63	0.71	0.68	0.75	0.86	0.92	0.96	0.68	0.70	0.69	0.79	0.73	0.68	0.64	0.82	0.76	0.61	0.64	0.67	0.56	0.62	0.68	0.78	0.59	0.67
% chick survival	--	--	--	--	90%	86%	--	81%	92%	82%	89%	83%	88%	87%	72%	85%	90%	88%	78%	81%	88%	79%	84%	77%	73%	81%	84%	85%	79%	73%	89%	82%	79%	76%	73%	67%	67%	78%	79%	75%	76%
Lakes with nesting pairs	17	--	14	19	7	8	10	10	11	11	13	13	14	15	14	14	18	21	25	29	32	36	36	38	41	39	49	52	57	54	61	63	63	63	72	72	76	83	84	78	86

Loonwatch results [a,b] (statewide annual survey)

Number of adults	--	--	--	--	29	30	37	50	45	41	47	79	74	86	71	83	97	79	99	106	127	126	135	166	179	184	191	201	218	223	228	201[c]	271	280	297	301	298	301	308	356	339
Number of chicks	--	--	--	--	9	16	13	17	9	9	16	15	15	15	14	11	17	21	21	26	36	45	45	39	44	40	45	53	54	42	65	53	52	63	69	66	63	74	85	65	89
Number of subadults	8	--	11	6	7	1	0	5	15	9	9	33	18	23	11	14	10	9	2	6	6	10	2	5	0	3	5	2	9	8	6	0	7	9	3	6	9	2	0	3	4
Number of lakes surveyed																					150	107	131	133	123	98	122	133	148	148	129	129	162	150	162	161	162	153	161	174	175
Number of lakes occupied																										68	69	84	86	84	89	76	102	98	106	103	116	112	111	132	121

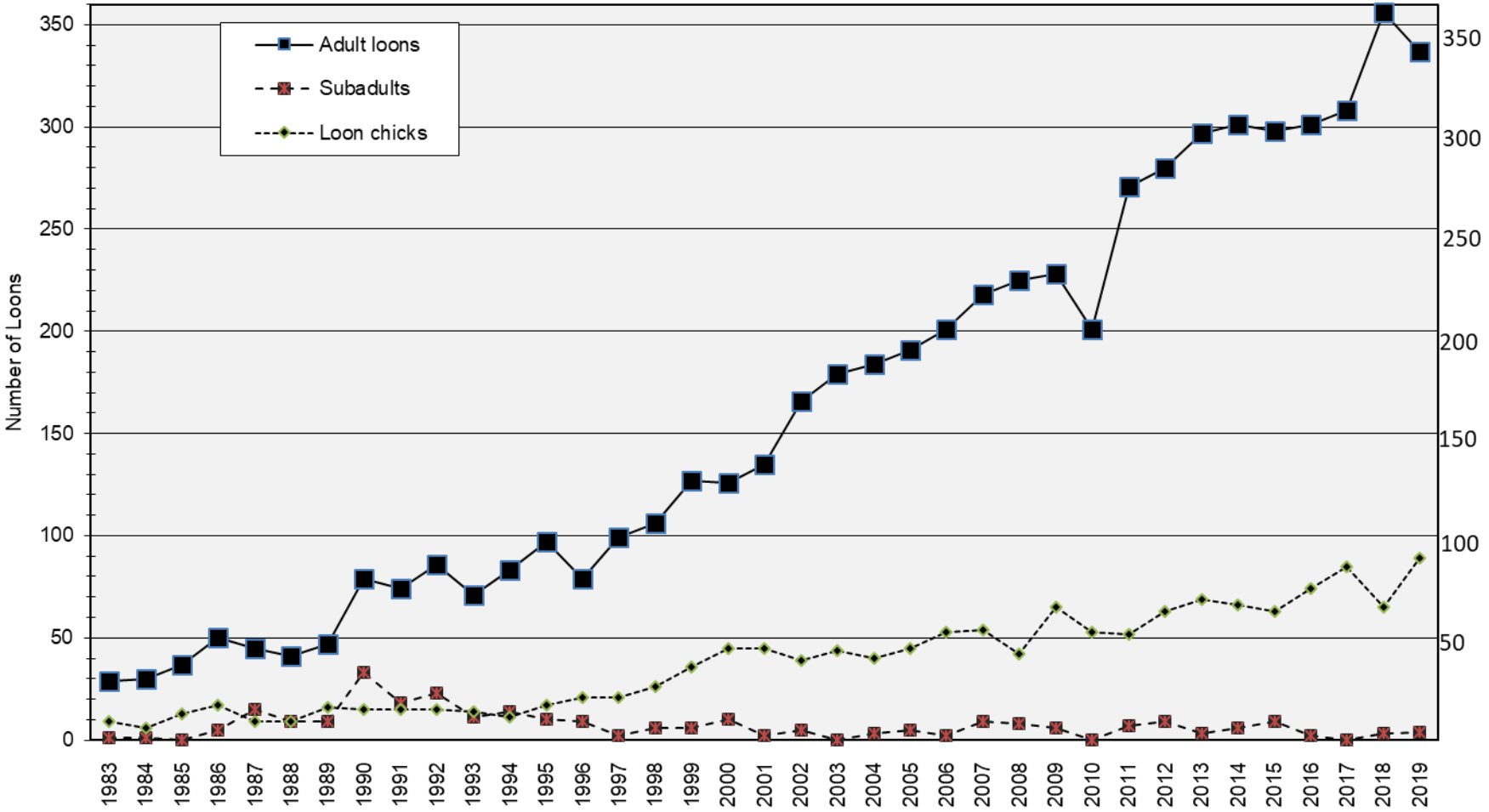
[a] The number of lakes surveyed for Loonwatch increased in 1999. It is possible survey adult loon counts during the mid-1990s were slightly lower.

[b] Data since 2002 do not include Lake Champlain survey results, because of the large-scale survey effort conducted in that year.

On July 19 and 20 in 2002, 28 adult and 18 subadult loons were counted in non-overlap regions on Lake Champlain.

[c] Over 10 known lakes with loon activity were missed in 2010.

Figure 3. Vermont Loonwatch Results, 1983-2019
(an annual statewide loon census on the third Saturday of July)



RECOMMENDATIONS

The total adult loon population and numbers of nesting pairs have steadily increased since the mid-1990s. These results suggest that conservation efforts have aided the loon recovery in Vermont, in spite of persistent threats identified above. Increasing numbers of territorial pairs and ponds with more consistent loon activity indicate a potential for further growth in the breeding population. The invaluable assistance of volunteer observers, cottage owners, VFWD biologists and game wardens, and Vermont State Park and Green Mountain National Forest staff have greatly enhanced the effectiveness of statewide loon conservation efforts. Monitoring and management efforts, participation of volunteers, education of lake-users, and water level management should continue to be the primary tools for ensuring success of Vermont's breeding loons.

Implementation of the comprehensive Vermont Loon Recovery Plan (Borden and Rimmer 1998) has been ongoing and has helped the VLCP realize its population recovery goals. The majority of the short-term, high priority goals have been implemented since the mid-1990s. The post-delisting monitoring and management plan addresses continued threats to loons in Vermont and the species' dependence on the VLCP's management and educational efforts. It should be emphasized that over 50% of the breeding loons in Vermont have directly benefited from VLCP management programs, and that many of these pairs would likely fail without such assistance. The Vermont Loon Recovery Plan will continue to guide loon conservation efforts in the future.

With most short-term goals of the Recovery Plan having been achieved, the VLCP must now address the Plan's long-term, medium priority actions while monitoring potential changes due to delisting and the lead sinker ban. Many of the actions and recommendations below have been in place for several years, but resources have limited their implementation. These include:

1. Development of a comprehensive database would allow us to better assess and summarize Vermont's loon population trends, share and compare data with New Hampshire, Maine, Massachusetts, and New York, develop a detailed population viability assessment for Vermont, and more efficiently coordinate volunteers.
2. We would like to provide more detailed training packets for adopt-a-lake volunteers.
3. Other future initiatives to consider should focus on improving the awareness of lake users on busy lakes. Actions could include (a) developing an information sheet and set of management protocols for loon breeding lakes, especially those requiring intensive management and education, and (b) developing permanent displays at State Parks and at kiosks on busy lakes.
4. Capture methods have improved over the past decade. It would be helpful to upgrade equipment for both summer and winter rescues. Loons caught in open water openings surrounded by ice continue occur, and the public expects rescues to occur. If the situation is safe, we will potentially attempt to conduct ice rescues. We need to invest in ice-rescue equipment to make these situations even more safe.
5. Further work should assess other means to protect nesting sites, including conservation easements. The Trust for Public Land has indicated an interest in prioritizing critical shorelines for protecting nesting areas.
6. Future research needs should be assessed and prioritized including the effects of climate change.

The VLCP will continue its involvement with the Northeast Loon Study Working Group (NELSWG), a coalition of state and federal agency representatives, universities, non-profit organizations, and other interested parties addressing the conservation problems of loons in eastern North America. This is a valuable partnership and forum for information exchange.

Acknowledgments

Major contributors: We sincerely thank the VFWD for ongoing, core financial support through the federal State Wildlife Grant program and the Nongame Wildlife Fund. We are also sincerely grateful for Great River Hydro's continued generous support of our efforts to monitor and manage nesting loons on Somerset Reservoir. Many individual donors have provided critical support to maintain VLCP programs. Without them, VCE's statewide loon conservation work would not be possible.

Professional assistance: Jake Campbell and Rose West provided support as VCE interns. VFWD biologist Doug Morin provided general support for the VLCP. We greatly appreciate ongoing support from VFWD game wardens who assisted with the project. We thank the hydroelectric companies and other groups that regulate water levels for their continuing stabilization efforts. We are especially grateful to Mathew Cole from Great River Hydro, Sylvain Breault from Coaticook River Water Power Company, John Sutter from Green Mountain Power, Hardwick Electric Department, Craig Myotte and John Pilton of Morrisville Water and Light, Bill Rogers from Great Bay Hydro, and Reg Abare from the Barre Public Works Department for their efforts to ensure stable water levels during the nesting season. Vermont Parks and Recreation staff at Brighton, Maidstone, New Discovery, Ricker, and Stillwater state parks helped with outreach efforts. Craig Newman at Outreach for Earth Stewardship, veterinarians Dan Hament in Richmond, VT and Robert Hoppe in St. Johnsbury, VT, the Vermont Institute of Natural Science (VINS), Kappy Sprenger, and Avian Haven have assisted loons in distress over the past several years. Thanks also go to Dr. Mark Pokras of Tufts University Wildlife Medicine Program, John Cooley and Harry Vogel of the LPC, and Alex Daulton of BRI. Chris Rimmer, Susan Hindinger, Steve Faccio, Mistie Boule, and Sarah Carline of VCE assisted in VLCP fundraising and administration.

Volunteer assistance: We extend special thanks to the more than 280 Loonwatch and adopt-a-lake volunteers who care so deeply about Vermont's loons. We received assistance from dozens of lakeshore owners in reporting loon sightings and allowing access to lakes. Numerous volunteers helped distribute loon conservation brochures and promote awareness about loon conservation. Volunteers and staff spent hundreds of hours monitoring and attempting to catch loons in distress over the past several years

Vermont Wildlife Action Plan: The efforts of VFWD staff and many contributing partners resulted in the formal acceptance of the congressionally mandated Vermont Wildlife Action Plan in November 2005. The plan draws attention to the 323 Species of Greatest Conservation Need in Vermont, including the Common Loon. Now that the Common Loon has been removed from the Vermont Endangered and Threatened Species list due to many years of dedicated monitoring and management of this species, the Vermont Wildlife Action Plan provides for continued attention to our natural heritage. For more information, visit http://www.vtfishandwildlife.com/SWG_home.cfm.

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