THE 2023 BREEDING STATUS OF COMMON LOONS IN VERMONT

Eric W. Hanson[1,2]

ABSTRACT: The Vermont Loon Conservation Project, a program of the Vermont Center for Ecostudies and the Vermont Fish and Wildlife Department, documented 108 nesting loon pairs and 148 territorial pairs statewide. Of the 108 pairs that attempted nesting, 73 successfully hatched 110 eggs, with 78 chicks surviving through August (chick survival rate 71%, 0.53 chicks surviving per territorial pair). The increased nesting rates from 2021-2023 can be explained by many new nesting pairs including Little Salem L. (failed nest), L. Memphremagog – NE (failed nest), Miles P. – west (failed nest), Minards P. (1 chick), Sherman Res. (failed nest), and Peacham P. –SE (chick disappeared) in 2023. The loon pairs on L. Hortonia, L. Morey, and L. Rescue had chick(s) for the first time ever-recorded. The chick on L. Rescue died about 5 days after a major flooding event that had forced the parent loons to leave much of the time due to low water clarity and high sediment load in the water. Loon chicks survived through August for the first time on Lowell L. and West Hill P.

Of 38 pairs whose first nest attempts failed, 6 re-nested, and 3 were successful. Known causes of nest failure included flooding (9 nests), depredation (2 nests), loon disturbance (1 nest), and human disturbance (1 nest). The remaining failed nests were abandoned for unknown reasons with depredation and disruption from intruder loons being the most likely causes. Sixteen adult mortalities were documented. The University of New Hampshire Veterinary Diagnostic Lab and the Vermont Institute of Natural Science (VINS) conducted 10 necropsies on adults and 3 on chicks. Known causes of mortality included fishing gear – lead (Harvey's L.-chick), other fishing gear (Colby P., Kent P., L. Memphremagog), boat hit (Newark P.), gunshot (Lower Symes P.), predation-bald eagle (Chittenden - East), trauma – likely loon/possibly eagle (Lyford P.), aspergillosis (Harveys L.), and lung infection (Barre). An adult found in September on Peacham Pond will be necropsied in 2024. We made 11 rescue attempts in 2023 (7 adults and 4 chicks). Eight of these loons were released (5 adults, 3 chicks). In addition, we rescued and released a red-throated loon (crash landing). We removed fishing line from a breeding adult on L. Rescue. Three other adults and 1 chick were found on or along roads/pavement (trauma – crash landing). We rescued a chick from Ricker Pond that was malnourished at about 10 weeks of age. VINS and Biodiversity Research Institute (BRI) rehabilitated the loon over several weeks.

About 170 volunteers surveyed lakes throughout Vermont on 15 July as part of the Loonwatch program, an annual statewide loon count. Volunteers counted fewer adult loons on the annual statewide Loonwatch day in part because of the flooding event a few days prior to the count and many missed surveys. For missed lakes with chicks, we made a conservative estimate of the number loons that would be present. Loons were observed on 125 of 152 surveyed lakes, where observers counted 348 adults, 84 chicks, and 2 subadult loons. To provide a historical perspective, volunteers counted 166 and 280 adult loons in 2002 and 2012, respectively.

Thirty-nine pairs nested on nesting rafts (82% successful), 37 were on islands (70% successful), 26 were in marshes (50% successful), and 6 were on shorelines (33% successful). Fifty-seven nesting rafts were placed on known or potential nesting waterbodies. Warning sign buoys were placed around 61 of the 108 nests. Volunteers provided technical assistance through the placement and maintenance of nest warning signs and/or nesting rafts on 60 lakes as part of the adopt-a-lake program. Ten loon conservation programs were presented.

[1] *Vermont Center for Ecostudies, P.O. Box 420, Norwich, VT 05055; 802-649-1431*
[2] *Vermont Loon Conservation Project Biologist, P.O. Box 22, Craftsbury, VT 05826; 802-586-8065*
[3] *Vermont Fish and Wildlife Department, 374 Emerson Falls Rd., Suite 4, St Johnsbury, VT 05819; (802)-793-3837*

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 nesting 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 108 nest attempts in 2023. 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 2019-2023 was 104 with 26 nesting pairs in the southern half of the state in 2023.

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.

In June 2021, the U.S. Fish and Wildlife Service (USFWS) awarded the Vermont Center for Ecostudies (VCE) a five-year $446,393 grant to support the Vermont Loon Conservation Project (VLCP). VCE was one of six organizations in New England and New York selected through a competitive grant process to receive funding. The grant is part of a larger settlement from the *Bouchard B-120* oil spill that killed over 500 wintering loons off the Rhode Island and Massachusetts coasts in 2003. VCE will work to improve loon populations impacted by the *Bouchard* oil spill across Vermont with the ultimate goals of increasing nesting success and reducing mortality. One approach will focus on established management activities, such as nest warning signs and nesting rafts, in particularly vulnerable areas. These include both territories with low productivity and high-risk sites where we have found management highly effective in reducing the negative effects of flooding and human disturbance. VCE will also use funds to improve rescue and rehabilitation of distressed loons, implement a fish lead free project, and enhance outreach and involvement of volunteers, community stakeholders, and the general public.

METHODS

Monitoring of lakes with breeding and territorial loons

The VLCP biologist, a VCE seasonal biologist, and volunteers surveyed approximately 150 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 200 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 when loons began nesting.

Fifty-seven artificial nesting rafts were placed statewide. These rafts provided an alternative nest site to natural sites where fluctuating water levels had caused nests to fail in previous years or there is a conflict with neary human activity. 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 25 rafts. The raft on Sugar Hill Reservoir was not placed because of very low water levels for dam repairs. Since 2021, we have placed 19 new rafts and replaced 10 existing rafts as part of the USFWS grant.

Warning sign buoys were placed around 61 of the 108 active nest sites to discourage human intrusion close to nests. These signs were also placed around 5 other nest sites where loons ultimately did not nest in 2023. 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). The VLCP biologist has also begun assisting with necropsies and will take on a larger role in this process in the future to be able to analyze fresh loons instead of frozen ones. Bren Lundborg from the Vermont Institute of Natural Science (VINS) has taken on a primary role in conducting necropsies of Vermont's loons. Tufts University Wildlife Clinic was not conducting necropsies in 2020-21 because of the COVID-19 pandemic, and will likely conduct fewer of them in the future. For certain loons, we will send loons and/or tissue samples to the University of New Hampshire Veterinary Diagnostic Lab.

Education
Public education continued to be a vital part of loon management efforts. Ten loon conservation webinars and live-programs were presented. We continued to distribute 2 informational brochures on loon conservation and conservation of lakeshores. 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.

Communication with volunteers is a major component of the program. This informal education is on-going and creates highly knowledgeable people in and around the lakes and ponds in Vermont. The biologist answers all inquiries from the public. Biologists, staff educators, and the project's volunteer network regularly informed camp owners and other lake users about loon conservation measures. The VLCP biologist contacted landowners of new nesting sites as soon as nesting was suspected or observed. Landowners and lake associations were both consulted before new nesting rafts were placed.

Two brochures directed at 1) boaters and 2) lakeshore owners were distributed. A 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.

We began implementing the fish lead free project in 2023. The USFWS B-120 grant money will support this effort. With the help of lake associations, especially those with invasive species greeter programs, we installed lead fishing gear and fishing line collection tubes along with educational information at over 25 boat access areas around the state. In 2024, we will partner with VFWD and lake associations to expand the outreach component of this program.

C*ontaminant, disease, and parasite sampling*
Abandoned eggs were collected and delivered to Biodiversity Research Institute (Portland, ME) for methylmercury (MeHg) analysis (Evers et al. 1999). Eighteen eggs were collected in 2023. BRI has archived egg samples from most of the previous 10 years. In 2023, we captured, banded, and sampled blood and feathers from loons on Lake Rescue, Chittenden Res., and West Hill Pond. The blood and feathers samples will be used for several studies on mercury, malaria, aspergillosis, and archival records for future projects. Cooperators on this research include the U.S. Fish and Wildlife Service, BRI, Loon Preservation Committee, the University of Vermont, and several other state agencies, private organizations, and universities. Ericka Griggs, a PhD. candidate at UVM, led the blood processing aspect for our sampling efforts. In 2022, we assisted with a third research project to assess aspergillosis, a fungal disease, in nest sites. The goal of the project was to test if the decaying material in nests was a potential source of aspergillosis on lakes. Thomas Hilling from the University of Western Connecticut coordinated the project as part of a M.S. program. Only one of 25 nest samples tested positive on the Caspian Lake raft. The reason this nest site tested positive is unknown, but we will continue to work with Dr. Mark Pokras of Tufts University to reduce the chances of the fungus from occurring on nesting rafts. Another finding was to avoid the use of hay and straw as a nest substrate material.

RESULTS AND DISCUSSION

Description of loon activity on individual lakes in 2023
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 148 known and potential territorial loon pairs, 108 of which were confirmed to nest on 87 lakes (Fig. 1, Table 1). Six new nesting pairs were identified in 2023, including Little Salem L. (failed nest), L. Memphremagog – NE (failed nest), Miles P. – west (failed nest), Minards P. (1 chick), Sherman Res. (failed nest), and Peacham P. –SE (chick disappeared). Three new potential territories were documented where consistent two-loon activity was observed (Colchester, Harriman, and St. Catherine). Two pairs were downlisted to loon active because less consistent pair activity was observed (Marshfield and Raponda).

Population levels and breeding success
The number of nesting pairs has remained consistent for the past 3 years (109 in 2021,106 in 2022, 108 in 2023) (Fig. 2, Table 2). We identified 148 territorial pairs statewide, a substantial increase from 139 territorial pairs in 2022. One hundred thirty-nine of these were categorized as “known territorial pairs” on water bodies where nesting or nest building had occurred within the last 3 years, and 9 were potential territorial pairs, each of which was observed consistently for 6 weeks or more. Of the 108 pairs that attempted nesting, 73 successfully hatched 110 eggs, with 78 chicks surviving through August (Thirty-one pairs that have nested in recent years did not nest in 2023 compared to 22 in 2022. At least 10 of these pairs likely did not nest because of frequent intruder loon activity, 2 were newer pairs, and 2 did not nest because of high water.

The nest success rate was 68% (20-year average 76%). Of 38 pairs whose first nest attempts failed, 6 re-nested, and 3 were successful. Known causes of nest failure included flooding (9 nests), depredation (2 nests), loon disturbance (1 nests), human disturbance (1), and over-incubation (6 nests). The remaining failed nests were abandoned for unknown reasons with depredation and disruption from intruder loons being the most likely causes. For depredation cases, eggshells were found outside the nest bowl. There is a chance some of these eggs were depredated after the nest was abandoned for other reasons. Details are provided in Table 1.

The chick survival rate through August was 71% with 0.53 chicks surviving per territorial pair (ch/tp) in 2023. From 2003-2022, the 20-year average chick survival rate was 76% with 0.66 ch/tp. The estimate for a stable and sustainable population is 0.48 ch/tp (Evers 2006). Eagles likely killed 5 chicks. About 20 chicks disappeared within the first month after hatching for unknown causes. The decline in chicks surviving per territorial year in 2023 (0.53 ch/tp) can be attributed to an increase in territorial pairs, more pairs not nesting, along with slightly lower nest success and chick survival rates.

We documented 16 adult loon mortalities. The University of New Hampshire Veterinary Diagnostic Lab and the Vermont Institute of Natural Science (VINS) conducted 10 necropsies on adults and 2 on chicks. The loon from Peacham Pond will be necropsied in 2024. Known causes of mortality included fishing gear – hooks and monofilament (Colby P., Kent P., L. Memphremagog), boat hit (Newark P.), gunshot (Lower Symes P.), predation-bald eagle (Chittenden Res.), trauma – likely loon/possibly eagle (Lyford P.), aspergillosis (Harveys L.), and lung infection (Barre).The causes of mortality for the remaining loons was unknown.

Management Results: artificial nesting rafts and nest warning sign buoys
Of the 108 known nests, 39 pairs nested on nesting rafts (82% successful), 37 were on islands (70% successful), 26 were in marshes (50% successful), and 6 were on shorelines (33% successful). The raft success rate has typically been above 85 percent in recent years. Nests with warning sign buoys (n=61) had a 72% success rate compared to 63% for nests without signs (n=53). Most nest failures can be attributed to predation, and not human disturbance. 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. Usually shoreline nests are more likely to be depredated. 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 have used at least 18 rafts for nesting or perch sites either preventing loon pairs from nesting or delaying nesting until after the geese move on.

Vermont Loonwatch Day
Vermont Loonwatch day was conducted on 15 July when over 170 volunteers counted 348 adult loons, 84 chicks, and 2 subadult (Table 2, Fig. 3). Loons were observed on 125 of the 152 lakes surveyed. Volunteers counted fewer adult loons on the annual statewide Loonwatch day in part because of the major statewide flooding event a few days prior to the count and many missed surveys. For missed lakes with chicks, we made a conservative estimate of the number loons that would be present. The number of adult has varied from 337 to 379 since 2000. The total number of adult loons over the 2018-2023 period is higher than the 2013-17 timeframe when 297 to 308 loons were counted each year. To provide a historical perspective, volunteers counted 166 and 280 adult loons in 2002 and 2012, respectively.

Ninety-two of 348 adult loons counted were located in southern and central Vermont, which is higher than the 77 and 71 counted in 2020 and 2021, respectively, and is a large increase from the 46 to 68 loons counted annually between 2015 and 2019. West central Vermont has observed the largest percentage increase in loons during the past 5 years increasing from 25 adults in 2016 to 49 in 2023. North central Vermont has the largest concentrated population with about 138-150 adults over each of the past 5 years. Volunteers counted the most loons on Caspian L. (12 adults), Green River Res. (9 adults), L. Seymour (9 adults), L. Willoughby (9 adults), and L. Morey (8 adults). This is the largest number of loons observed on L. Morey on loonwatch day, and demonstrates the recent population increase in east central Vermont.

Loon Rescues
We made 11 rescue attempts in 2023 (7 adults and 4 chicks). Eight of these loons were released (5 adults, 3 chicks). In addition, we rescued and released a red-throated loon (crash landing). We removed fishing line from a breeding adult on L. Rescue. Three other adults and 1 chick were found on or along roads/pavement (trauma – crash landing). We rescued a chick from Ricker Pond that was malnourished at about 10 weeks of age. It had gone over the dam at the outlet. VINS and Biodiversity Research Institute (BRI) rehabilitated the loon over several weeks (feeding and allowing feathers to become waterproof again) before the bird was successfully released; it was re-observed a month after release in western Massachusetts. We rescued a chick on Harvey's L. that had left its territory; the parent loons might have been spending so much time defending the territory from an intruder that the chick was being neglected. VINS found that the chick had high lead levels, and an x-ray revealed a lead sinker. VINS transferred the loon to the Center for Wildlife in York, ME, where veterinarians removed the lead sinker by anesthizing the loon and flushing the gizzard out (lavage). After two weeks, the chick was transferred to BRI and placed in a large holding pen in a lake in western Massachusetts. After gaining weight and looking healthy, the loon died suddenly. There was an infection in the lungs possibly caused by stress, lead poisoning side-effects, and the interventions performed.

The VCE biologists spent over 110 hours in 2023 conducting capture attempts, and coordinating monitoring efforts with volunteers, game wardens, VINS, and Avian Haven. An additional 20 hours were spent processing loon mortalities and conducting necropsies. The biologist has spent 40-100 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. VINS now has a 4x8 foot pool where loons can be kept for short-term rehabilitation.

Banded Loon Recoveries and Re-observations

From 1998 to 2003, VCE and Biodiversity Research Institute (BRI) banded 29 adult loons and 3 chicks as part of a U.S. Environmental Protection Agency regional mercury study. Since 2005, we have banded 13 additional adult loons that were rescued and released. Two loons banded in New Hampshire and Maine were recovered in Vermont. Most of the loons that were banded and released for the mercury study were observed back on their territories in the years immediately after banding. Table 3 lists 21 loons that were recovered (9 found dead), re-observed either on a different lake and/or territory (9 loons), or re-observed on the original lake for more than 10 years (3 loons). We have observed several other banded loons over the years but if the color-combination could not be confirmed or did not match any records, they were not included.

Winter Migration

Three loons originally banded in Vermont were found dead along the southern New England coast at the east end of Long Island, Martha's Vineyard, and Cape Cod. These findings align with region-wide band sightings/recoveries and satellite telemetry tracking showing that most northeast loons spend the winter along the Atlantic coast from Long Island Sound to Maine. Two of these loons were found two years after banding, and one was found 15 years after banding. A banded loon that was found dead on Foster's Pond in 2022 was originally banded in 2013 on Lake George in New York during a rescue effort from being iced-in.

Summer dispersal and site fidelity

Most loons banded during the 1998-2003 period returned to their territories in subsequent years. About 70-85% of pairs return to the same territory with higher turnover rates on large lakes (Evers 2006). Two loons were observed over 16 years after they were banded on their original lake (Moore Res., Newark P.). The Newark Pond male was banded in 1998 and died from a boat hit in 2023. This loon was likely at least 6 years of age or older at the time of banding, thus he was at least 31 years of age.

Thirteen banded loons have been observed on different lakes all within 12 miles of the lake that the loon was originally banded. Five of these loons found spots in existing territories replacing another territorial loon. Four of the birds founded new territories that had not existed before (Fosters, Maidstone – North, Shadow-Concord, Somerset – North Islands). This demonstrates that new territories are often created by "experienced" loons who left their original territories for various reason including territorial takeovers. These new territories were located within 1-4 miles of the previous territory. Two loons banded as chicks in Maine and New Hampshire were part of territories in Vermont both 15 years after the hatch year. These were long-distance dispersals from their natal lakes (Aziscohos Res. Maine to Stiles Res. Vermont - 85 miles; Massabesic Lake New Hampshire to Sunset L. Marlboro Vermont - 80 miles). In 2023, a banded breeding adult on Peacham Pond – north territory was found dead in September. This loon was banded after being found on a roadway in New York 2020, and released on Lake Colby near Saranac Lake. It is unknown how long these loons had been present in Vermont.

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 53 of the 78 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. There have been recent region-wide population declines in Wisconsin and parts of Ontario. Studies by Dr. Walter Piper indicate that both chick and adult male weights have declined over the past 20 years

and correlates to decreases in water clarity. In addition, tens of thousands have died due to botulism poisoning on the Great Lakes over the past 20 years, and it is possible that the effects of these mortalities are only now being observed. After several years of fewer botulism cases, there was an increase in loon mortality in 2021. Two natural sources of mortality include predation of eggs and chicks and intraspecific competition between breeding pairs and extraterritorial (rogue/intruder) loons. See the mortality assessment in the 2022 annual report. 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, 2023

Nesting pairs: 108 Known territorial pairs: 139 Potential territorial pairs: 9 **Total territorials pairs: 148**

Chicks hatched out: 111 Chicks surviving through August: 78

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

Loonwatch Count on 15 July 2023: Adult loons - 348 New nesting pairs: 6 New territorial pairs: 3

Territories listed first followed by loon active lakes.

									Rescues / Mortality / Monitor Situations								
Lake	**Town**	**2023 status**	**Nest Type (current/ past)**	**Nest Outcome**	**Nest Warning Sign Buoys**	**Chicks hatched out**	**Chicks through August**	**Chick Mortality Cause**	**Situation: Resc./ Mort./ Monitor**	**Mortality and Rescue Cause**	**Date**	**Age**	**Comments**	**# years nested**	**# years nest success**	**total # surviving chicks**	**mean annual # surviving chicks per territory yrs.**
Baker P. (Barton)	Barton	nesting	marsh	Overincubation										19	16	23	1.21
Bald Hill P.	Westmore	nesting	shoreline	Abandoned - no egg(s); Re-nest abandoned - no egg(s)									New nest location NW shoreline	20	11	13	0.50
Bean P.	Sutton	nesting	marsh	Successful		2 Ch	2 Ch						New nest location - site not found.	17	16	18	0.95
Beaver P.	Holland	nesting	island	Successful		2 Ch	1 Ch	Unknown - disappeared early						40	35	42	0.98
Berlin P. - North	Berlin	territory	marsh											19	17	17	0.68
Bourn P.	Sunderland	nesting	island	Successful		2 Ch	1 Ch	Unknown - disappeared early						22	20	21	0.84
Branch P.	Sunderland	nesting	shoreline	Overincubation; Re-nest flooded										6	5	6	0.86
Brownington P.	Brownington	nesting	raft	Abandoned-egg(s)	signs									18	7	9	0.36
Bruce P. / Clark P.	Sheffield	territory	marsh											11	1	1	0.06
Buck L.	Woodbury	territory	marsh	Flooded										15	8	8	0.31
Caspian L. - NW	Greensboro	nesting	raft	Successful	signs	2 Ch	2 Ch							9	6	10	0.59
Center P.	Newark	territory	raft											6	1	1	0.10
Chandler P.	Wheelock	nesting	raft	Successful		2 Ch	2 Ch							16	13	14	0.78
Chittendon Res. - East	Chittenden	nesting	raft	Successful	signs	2 Ch	1 Ch	Trauma - attack by other loon	Mortality	Predation	9/2/2023	Ad	9/2/2023 mortality: adult from the territory observed dead at shoreline. Bald Eagle scavenged the carcasss. On 9/1 adult observed resting in same area, thus will list this a BAEA mortality. Not collected. Adult was banded in July 2023.	19	16	19	1.00
Chittendon Res. - NE	Chittenden	territory	raft		signs									7	6	10	1.11
Clyde Res.	Newport	nesting	marsh	Successful		1 Ch	1 Ch							4	2	2	0.33
Clyde River - Buck Flats	Charleston	territory	marsh											2	2	2	0.67
Coits P.	Cabot	nesting	marsh	Abandoned - egg(s)									Pair re-formed. First nest since 2016.	4	3	2	0.40
Colchester	Colchester	potential territory											Potential pair activity into July, then more intermittent activity.				
Cole P. (Jamaica)	Jamaica	nesting	island	Successful		2 Ch	0 Ch	Predation - bald eagle; 2nd chick unknown						2	2	0	0.00
Coles P.	Walden	nesting	marsh	Successful	signs	1 Ch	0 Ch	Predation likely					Chick likely taken by BAEA	24	21	28	0.97
Curtis P.	Calais	nesting	marsh	Successful	signs	2 Ch	2 Ch		Rescue	Abandoned	6/2?/2023	Ch	6/29 2 chicks. Parents left w/ 1C and 2nd chick had fallen behind the nest and not able to get out. Volunteers took 2nd chick to south end of lake and left it near the parent loons. It was accepted.	8	6	8	0.50
Daniels /Daniels West P.	Glover	nesting	marsh	Successful		1 Ch	0 Ch	Unknown - disappeared early.					7/2 Adults usually call chick from Daniels P. to have it do a 1/3 mile overland journey. The chick did not survive. In the past, the chick(s) make it across 2 of 4 attempts in past decade.	9	7	5	0.33

Table 1 (continued). Summary of Common Loon breeding activity in Vermont, 2023									Rescues / Mortality / Monitor Situations								
Lake	Town	2023 status	Nest Type (current/ past)	Nest Outcome	Nest Warning Sign Buoys	Chicks hatched out	Chicks through August	Chick Mortality Cause	Situation: Resc./ Mort./ Monitor	Mortality and Rescue Cause	Date	Age	Comments	# years nested	# years nest success	total # surviving chicks	mean annual # surviving chicks per territory yrs.
Derby P.	Derby	nesting	raft	Successful		2 Ch	2 Ch							12	7	9	0.53
Dog P.	Woodbury	nesting	raft	Overincubation	signs									6	1	2	0.22
Dunmore L.	Leicester/ Sali	nesting	island	Successful	signs	2 Ch	2 Ch							17	12	15	0.88
East Long P.	Woodbury	nesting	island	Successful		2 Ch	2 Ch							42	34	41	0.87
Echo L. - South (Charleston)	Charleston	nesting	raft	Successful	signs	1 Ch	1 Ch							13	8	9	0.47
Eden L.	Eden	nesting	marsh	Successful; 2nd egg in nest	signs	1 Ch	1 Ch							19	14	19	0.83
Elligo L.	Greensboro	territory	island											21	18	22	1.00
Elmore L.	Elmore	territory	raft		signs									10	5	7	0.39
Ewell P.	Peacham	nesting	marsh	Flooded										15	12	14	0.58
Fairfield P.	Fairfield	nesting	raft	Successful	signs	2 Ch	1 Ch	Unknown - disappeared early.						8	3	4	0.33
Fairlee L.	Fairlee	territory	raft		signs									7	6	7	0.64
Flagg P.	Wheelock	nesting	island	Succesful		1 Ch	0 Ch	Unknown - disappeared early						10	8	8	0.57
Forest L.	Averill	nesting	marsh	Succesful		1 Ch	1 Ch						New nest site - location not found.	30	27	33	1.03
Fosters P.	Peacham	nesting	raft	Successful		1 Ch	0 Ch	Unknown - disappeared early					Egg membrane found in nest; no chick observed but hatch likely.	21	21	29	1.38
Glen P.	Castleton	territory	shoreline											1			
Great Averill L. - North	Averill	nesting	raft	Successful		1 Ch	1 Ch							28	16	18	0.58
Great Averill L. - SW inlet	Averill	nesting	raft	Successful	signs	2 Ch	2 Ch							13	9	10	0.56
Great Hosmer P. - North	Albany/ Craftst	territory	shoreline											4	1	1	0.13
Great Hosmer P. - South	Albany/ Craftst	nesting	marsh	Abandoned (no eggs); Re-nest flooded										13	10	12	0.75
Green River Res. - Access Bay	Hyde Park	nesting	island	Abandoned - no egg(s); Re-nest successful	signs	2 Ch	2 Ch							16	13	18	1.06
Green River Res. - Merganser inlet	Hyde Park	nesting	island	Abandoned - no egg(s)	signs									8	2	2	0.15
Green River Res. - NW	Hyde Park	nesting	island	Successful	signs	2 Ch	1 Ch	Unknown						45	33	47	1.02
Green River Res. - South	Hyde Park	nesting	island	Flooded	signs								Flooded in mid-June rains (not July storm)	6	3	3	0.30
Greenwood L.	Woodbury	nesting	raft	Successful	signs	1 Ch	1 Ch							13	10	7	0.35
Groton L. - North	Groton	nesting	raft	Successful		1 Ch	1 Ch							13	10	14	0.82
Groton L. - South	Groton	nesting	raft	Successful	signs	2 Ch	1 Ch	Unknown						18	14	17	0.68
Halls L.	Newbury	territory							Mortaltiy	Unknown	5/30/2023	Ad	Observed dead 5/30. Resident went out w/ game warden later in the day and they could not find the body. Active BAEA nest above location where loon found.				
Hardwick L.	Hardwick	nesting	raft	Successful		1 Ch	1 Ch							20	18	22	0.96
Hardwood P.	Elmore	nesting	island	Successful. 2nd egg collected.		1 Ch	1 Ch						2nd egg found floating in the water - collected. Chick not observed for several weeks in July (weekly visits) but then seen again.	15	13	16	0.70

Table 1 (continued). Summary of Common Loon breeding activity in Vermont, 2023									Rescues / Mortality / Monitor Situations								
Lake	Town	2023 status	Nest Type (current/ past)	Nest Outcome	Nest Warning Sign Buoys	Chicks hatched out	Chicks through August	Chick Mortality Cause	Situation: Resc./ Mort./ Monitor	Mortality and Rescue Cause	Date	Age	Comments	# years nested	# years nest success	total # surviving chicks	mean annual # surviving chicks per territory yrs.
Harriman Res.	Wilmington	potential territory							Mortality	Unknown	7/31/2023	Ad	New potential pair - possible nest building/nest on island 2/3's up, but not confirmed. If nested, it flooded in mid-June rains. Busy island used by people. 7/31/2023 Boater reported dead loon at south end on island. Decomposing. Not collected. Report as unconfirmed mortality.				
Harveys L. - North	Barnet	nesting	marsh	Flooded	signs				Mortality	Aspergillosis	6/18/2023	Ad	6/18 beaching for a day or two near the north territory nest site at stream outlet. After a day or two, it was not seen. 7/1 Bird seen NE part of lake swimming in shallows w/ head down. Not diving. Weak. Died in next 24 hours. NHVDL 23-8468 Harveys L. 7/3/23. Adult. Aspergillosis. Although death is attributed to fungal respiratory disease, this is typically a secondary infection, and a primary process is not evident. There was no evidence of fighting wounds or other trauma. Loss of condition is consistent with moderate chronicity. 3.64 kg male. Not part of north pair. Lab results pending.	15	9	8	0.44
Harveys L. - South	Barnet	nesting	raft	Successful		2 Ch	0 Ch	Unknown; Fishing gear - lead	Mortality	Fishing gear - lead	7/28/2023	Ch	7/28 2nd chick beaching, picked up at north, and brought to VINS. The chick had not been seen near parents for 4-5 days. They might be defending territory from intruder. Lead levels increased drastically over 3 days, and x-ray revealed lead object in gizzard. VINS transferred bird to Center for Wildlife. Lavage treatment conducted twice before successfully removing lead sinker. Chelation started. Chick appeared to be recovering well. 8/14 transferred to BRI and holding pen in large lake in western Mass. 8/25 Loon suddenly died after doing well. Pneumonia was likely cause of death, and probably started after anesthesia and lavage treatments. The bird was also stressed and compromised from the lead poisoning, which was the ultimate cause.	4	2	2	0.40
Holland P. - North	Holland	nesting	raft	Abandoned - egg(s)	signs				Monitor	Lethargic	7/24/2023	Ad	7/24 2Ad north, 1 behaving very lethargic near island	9	3	3	0.17
Holland P. - South	Holland	territory	island											25	18	22	0.50
Hortonia L.	Hubbardton	nesting	raft	Successful	signs	2 Ch	2 Ch							2	1	2	0.40
Inman P.	Fair Haven	nesting	island	Successful		1 Ch	1 Ch							1	1	1	1.00
Iroquois L.	Hinesburg	nesting	raft	Successful	signs	2 Ch	2 Ch							8	5	9	1.13
Island P.	Brighton	territory	island											22	15	18	0.69
Jobs P.	Westmore	territory	shoreline											13	7	8	0.32
Joe's P. - 1st Pond	Cabot/ Danvill	nesting	shoreline	Successful		2 Ch	1 Ch	Sibling rivalry						14	9	6	0.40

Table 1 (continued). Summary of Common Loon breeding activity in Vermont, 2023									Rescues / Mortality / Monitor Situations								
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Joe's P. - inlet	Cabot/ Danville	nesting	raft	Abandoned - no egg(s)	signs									24	23	26	0.87
Johnson P.	Shrewsbury	nesting	marsh	Abandoned										2	1	1	0.50
Keiser P.	Danville/ Peac	territory	marsh										Nest building observed; no nest confirmed.	18	11	10	0.53
Kent P.	Killington	nesting	island	Successful	signs	2 Ch	0 Ch	Unknown	Mortality; mortality; monitor	Unknown; Fishing gear - fishhook; iced-in	/2023; 9/24/20	Ad; Ad	9/3/2023 Dead loon found. 9/24 Second loon found dead. Both sent to UNH VDL for necropsy. Necropsy reports of two adults: NHVDL 23-8469 Kent P. 9/3/23. Adult. 5.98 kg male. Unknown cause. Good nutritional health suggest acute/sudden cause. Healed puncture wound on left side of sternum. Some necrotic debris and exuded protein. Lab results pending. NHVDL 23-8465 Kent P. 9/24/23. Adult. 5.59 kg female. Fishing gear – fishhook. 2 cm hook fragment in the liver and 3.5 cm hook fragment attached to serosal (internal membrane) surfaces. Puncture wound in the ventriculus (gizzard). Poor body condition. Immature reproductive tract indicates this was not one of the breeding birds on the territory. 12/5 Loon surrounded by ice, but likely took-off successfully.	14	11	13	0.87
Kettle P.	Groton/ Marsh	nesting	raft	Successful	signs	1 Ch	1 Ch							32	21	29	0.76
Knapp Brook P.	Reading	territory	island										Nest building observed; no nest confirmed.	3	2	2	0.25
Lewis P.	Lewis	territory	shoreline											3	2	3	0.60
Little Averill L. - North	Averill	nesting	raft	Abandoned - egg(s)									Egg found underwater 30 feet away.	11	8	7	0.44
Little Averill L. - West	Averill	nesting	raft	Overincubation	signs								Geese used raft as perch in May and early June, before we cleaned up the raft and loons used it.	32	19	26	0.57
Little Hosmer P.	Craftsbury	nesting	island	Depredation - mammalian; Re-nest successful		2 Ch	0 Ch	Predation - bald eagle; Trauma - attack by other loon					First nest on big island; eggshells found in middle of island. Re-nest on little island to the north for first time in a decade. Extra loons consistent after hatch. Bald Eagle also present at time first chick disappeared. Second chick disappeared within a week.	22	12	9	0.33
Little Salem P.	Derby	nesting	marsh	Abandoned - no egg(s)									First nest ever-recorded. Pair likely uses Big Salem Lake which is connected by a channel.	1	0		
Long P. (Eden)	Eden	nesting	marsh	Successful		1 Ch	1 Ch							12	6	8	0.67
Long P. (Greensboro)	Greensboro	territory	marsh											5	4	6	0.46
Long P. (Sheffield)	Sheffield	territory	shoreline											2	2	1	0.25
Long P. (Westmore)	Westmore	nesting	island	Abandoned - no egg(s)	signs									25	17	22	0.79

Table 1 (continued). Summary of Common Loon breeding activity in Vermont, 2023									Rescues / Mortality / Monitor Situations								
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Lowell L.	Londonderry	nesting	island	Successful	signs	2 Ch	1 Ch	Unknown	Mortality	Unknown	7/1/2023	Ch	NHVDL 23-8466 Lowell L. 7/15/23. Chick. Unknown cause. Lowell L. the body was in poor postmortem condition. The head, neck, thoracic vertebrae, and all viscera were missing. No lesions were evident in remaining tissues.	5	4	1	0.20
Lower Symes P.	Ryegate	nesting	marsh	Successful		2 Ch	2 Ch		Mortality	Gunshot	5/7/2023	Ad	5/7 bird found scavenged and decomposing. Radiograhs reveal gunshot as cause of mortality. VFWD investigating.	19	17	23	1.00
Lyford P.	Walden	nesting	marsh	Abandoned - no egg(s)					Mortality	Unknown	6/16/2023	Ad	6/8 beaching loon, ruffled feathers back of head. Wing-rowed off from shore. Yodeled 4-5 times over 10 minutes. Possible territorial fight? 2nd Ad in separate area. 6/12 nest predation. 6/15 male died and collected. TV230071 – Lyford Pond, Walden, VT AD, M, thin, but not in bad body condition. There was major damage to the muscles at the back of the head (occipital area) and dorsal aspect of upper neck. The bleeding was not fresh, and it was estimated that the injury had taken place at least a week prior to death. Cause: likely loon fight or predator attack (eagle?), injured, and died a week later.	14	11	13	0.93
Maidstone L. - North	Maidstone	territory	marsh											12	8	5	0.26
Maidstone L. - SE	Maidstone	nesting	island	Loon disturbance										12	6	8	0.47
Maidstone L. - SW	Maidstone	nesting	island	Successful	signs	1 Ch	0 Ch	Trauma - attack by other loon						41	37	41	0.89
Martins P.	Peacham	nesting	raft	Successful	signs	2 Ch	1 Ch	Dead in nest						27	25	36	1.24
May P.	Barton	nesting	marsh	Flooded	signs									25	20	28	0.76
McConnell P.	Brighton	potential territory	marsh										Not suveyed in 2023. Trying to find access.	16	12	16	0.50
Memphremagog L. - Islands	Derby	nesting	island	Abandoned - no egg(s)									First nest in this region since 2010 near the Johns River and Bell Island in 2004.	1	0		
Metcalf P.	Fletcher	nesting	island	Abandoned - no egg(s); Re-nest successful	signs	1 Ch	1 Ch							11	6	8	0.67
Miles P. - island	Concord	nesting	island	Successful	signs	1 Ch	1 Ch							28	22	27	0.69
Miles P. - West	Concord	nesting	marsh	Disturbance - other									First nest ever-recorded. Two pairs now occupy Miles P.	1	0		
Miller P.	Strafford	nesting	marsh	Abandoned - no egg(s)	signs									9	7	7	0.70
Minards Res.	Rockingham	nesting	marsh	Successful		1 Ch	1 Ch						9/30/23 report of adult and older chick. Checked ebird and found record in august of adult and chick. First time nest. Site unknown.	1	1	1	1.00
Molly's Falls Res. - Island	Cabot	nesting	raft	Successful; 2nd egg in nest		1 Ch	1 Ch							10	9	15	1.25
Molly's Falls Res. - North	Cabot	nesting	raft	Successful	signs	2 Ch	0 Ch	Unknown; Unknown					extra loons and Bald Eagles present	29	27	36	0.95

Table 1 (continued). Summary of Common Loon breeding activity in Vermont, 2023									Rescues / Mortality / Monitor Situations								
Lake	**Town**	**2023 status**	**Nest Type (current/ past)**	**Nest Outcome**	**Nest Warning Sign Buoys**	**Chicks hatched out**	**Chicks through August**	**Chick Mortality Cause**	**Situation: Resc./ Mort./ Monitor**	**Mortality and Rescue Cause**	**Date**	**Age**	**Comments**	**# years nested**	**# years nest success**	**total # surviving chicks**	**mean annual # surviving chicks per territory yrs.**
Mollys P.	Cabot	territory	marsh										Not surveyed well in 2023.	3	3	4	0.50
Morey L.	Fairlee	nesting	raft	Successful	signs	1 Ch	1 Ch						First successful nest ever-recorded in 2nd year of nesting.	2	1	1	0.13
Neal P.	Lunenberg	territory	marsh										Nest searching observed in May.	3	0		0.00
Nelson P.	Calais	potential territory											Potential pair present.	1	0		0.00
Newark P.	Newark	nesting	island	Successful	signs	2 Ch	0 Ch	Unknown - disappeared early; Unknown	Mortality	Trauma - boat hit	6/8/2023	Ad	Banded male from 1998 found dead 6/8/23. Blunt trauma to right side - boat hit. Sinker in gizzard but not lead. Likley one of breeding birds but female remated right away and nested. Loons built up nest during 7/10 flood event succesfully. Lost chick.	33	25	34	0.83
Nichols P.	Woodbury	nesting	raft	Overincubation	signs									23	20	22	0.81
Ninevah L.	Mount Holly	nesting	island	Successful	signs	2 Ch	1 Ch	Unknown						29	27	37	1.28
No. 10 P. (Mirror L.)	Calais	nesting	raft	Successful	signs	1 Ch	1 Ch							16	14	17	0.68
Norton P. - Crescent Isl.	Norton	nesting	island	Abandoned - no egg(s)										2	1	1	0.33
Norton P. - Island	Norton	nesting	raft	Successful	signs	1 Ch	1 Ch							42	35	45	0.98
Norton P. - North	Norton	nesting	raft	Successful-2egg in water	signs	1 Ch	1 Ch							15	8	12	0.75
Norton P. - South	Norton	nesting	raft	Successful		1 Ch	1 Ch							23	20	23	0.88
Noyes P.	Groton	potential territory												1	0		0.00
Osmore P.	Peacham	territory	island										Pair present.	14	8	10	0.42
Parker L.	Glover	nesting	marsh	Abandoned - no egg(s)	signs									4	1	0	0.00
Peacham P. - NE	NE	nesting	island	Successful	signs	1 Ch	1 Ch							8	3	4	0.24
Peacham P. - North	North	nesting	island	Successful	signs	2 Ch	1 Ch	Predation likely	Mortality	Unknown	9/15/2023	Ad	Chick likely taken by BAEA; Breeding adult found dead. Banded in 2020 Lake Colby, NY after being found on roadway. Awaiting necropsy. The band number is 111816222. Left leg: yellow over white, Right leg: silver over red (white dot).	44	35	39	0.85
Peacham P. - SW	SW	nesting	marsh	Depredation - mammalian	signs									29	19	23	0.59
Peacham P.- SE	SE	nesting	marsh	Successful	signs	1 Ch	0 Ch	Unknown						1	1	0	0.00
Pensioner P.	Charleston	nesting	raft	Successful. 2nd egg in nest	signs	1 Ch	1 Ch							16	14	16	0.84
Pigeon P.	Groton	nesting	raft	Successful		2 Ch	2 Ch							9	7	11	0.55

Table 1 (continued). Summary of Common Loon breeding activity in Vermont, 2023									Rescues / Mortality / Monitor Situations								
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Rescue L.	Ludlow	nesting	island	Successful	signs	1 Ch	0 Ch	Infection	Rescue; Mortality	Fishing gear - monofilament; Infection	1/2023; 7/16/2	Ad; Ch	Rescue: 6/24/2023 Fishing line removed from breeding adult. Bird banded. Mortality: 7/16/23 Chick died 4-5 days after major flooding and water turned to pea soup. Collected carcass. Possible infection in gastrointestinal tract. NHVDL 23-8467 L. Rescue 7/17/23. Chick. 1.61 kg. Infection and weakening due to lack of food. Speculatively, irritation of the gastrointestinal tract might be a result of limited feeding or irritation induced by ingestion of stormwater sediment. Over 8-9 inches of rain fell on 7/10 causing lake water to become opaque and full of sediments. Adult loons left the lake with brief returns. Age about 4 weeks.	2	1	0	0.00
Ricker P.	Groton	nesting	raft	Successful	signs	1 Ch	1 Ch		Rescue	Other	8/16/2023	Ch	8/16/2023 successfuly rescued chick that went over the dam. Put it back on Ricker P. On 8/21 rescued chick again. Weak. Parent loons ignoring chick. Brought to vins. Health seems o.k. except not waterproof. As of 8/28 feathers improving. Transferred to Biodiversity Research Institute holding pens on 9/12 to Buckley-Dunton Lake, Becket, MA. Fledged by 9/28.	21	18	16	0.70
Seymour L. - Winape	Morgan	territory	raft		signs									21	15	20	0.65
Shadow L. - (Concord)	Concord	territory	marsh	Extra loons frequent.									Pair present. Extra loons frequent.	13	7	9	0.53
Shadow L. (Glover)	Glover	potential territory											Potential pair present. Report of pair copulating.				
Sherman P.		nesting	island	Human disturbance	signs				Mortality	Unknown	9/22/2023	Ad	First nest ever-recorded. 9/23/2023 dead loon found. NHVDL 23-8470 Sherman Res. 9/22/23. Adult. Unknown cause. Poor to moderate nutritional condition. Testes inactive. Right lung was diffusely red and heavy. No sign of trauma. 5.24 kg. Lab results pending.	1	0		
Silver L. (Leicester)	Leicester	nesting	raft	Successful		2 Ch	2 Ch							9	9	14	1.40
Somerset Res. - (NE) Streeter lsl.	Somerset	nesting	island	Successful	signs	1 Ch	1 Ch							4	2	2	0.50
Somerset Res. - Dandeneau Cove	Somerset	nesting	island	Overincubation	signs									41	27	34	0.76
Somerset Res. - Narrows	Somerset	nesting	island	Successful	signs	1 Ch	1 Ch							9	5	4	0.29
Somerset Res. - North lsl.	Somerset	nesting	island	Successful	signs	2 Ch	2 Ch							16	11	15	0.68
South P. (Eden)	Eden	nesting	island	Successful	signs	2 Ch	2 Ch							25	19	27	0.93
South P. (Marlboro)	Marlboro	nesting	marsh	Successful	signs	1 Ch	1 Ch							9	9	13	1.18

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Spectacle P.	Brighton	nesting	raft	Successful	signs	2 Ch	1 Ch	Unknown						28	26	29	0.78
Spring L.	Shrewsbury	nesting	raft	Successful	signs	2 Ch	2 Ch							21	16	24	1.09
St. Catherine L.	Poultney	potential territory											5/25 Volunteer observed nest building in channel to Little Pond on a lily pad mat. No nest confirmed.				
Stiles Res.	Waterford	territory	marsh										Pair present	15	9	13	0.54
Sugar Hill Res.	Goshen	nesting	shoreline	Abandoned									Late report of shoreline nest. Observed in June. Failed nest. Reservoir filled w/ water for 1st time in 3 years.	5	4	5	0.71
Sunset L. (Marlboro)	Marlboro	nesting	island	Flooded	signs									11	7	6	0.50
Thurman Dix Res.	Orange	territory	island										Brief period where one adult loon observed but nesting not confirmed.	42	33	38	0.88
Ticklenaked	Ryegate	territory	marsh										Pair present.	6	4	2	0.22
Turtle P.	Holland	territory	marsh											4	2	1	0.20
Wallingford P.	Wallingford	territory	marsh											22	17	29	1.21
Wantastiquet P.	Weston	nesting	island	Abandoned - no egg(s)										15	11	16	1.07
Warden P.	Barnet	potential territory	shoreline											1	0		0.00
Waterbury Res. - Cotten Brook	Moscow	nesting	island	Flooded	signs									5	1	1	0.09
West Hill P.	Cabot	nesting	marsh	Successful		2 Ch	2 Ch						July - banded both chicks and obtained blood and feather samples.	2	2	2	1.00
West Mountain P.	Maidstone	territory	island	Pair present.										18	11	7	0.27
Wolcott P.	Wolcott	potential territory	marsh	Potential pair present.										28	24	25	0.71
Woodbury L. (Sabin)	Woodbury	nesting	raft	Successful	signs	2 Ch	1 Ch	Unknown						16	16	20	0.95
Woodward Res.	Plymouth	nesting	shoreline	Successful;2nd egg in nest	signs	1 Ch	0 Ch	Predation - bald eagle	Mortality	Unknown	5/14/2023	Ad	5/14/2024 Adult loon found dead in water. Brought to VINS.	17	12	14	0.74
Zack Woods P.	Hyde Park	nesting	island	Successful	signs	2 Ch	2 Ch							27	24	37	1.28
Loon Active Lakes																	
Amherst L.	Plymouth	loon active											7/5 Rescue: loon that crash-landed at Rutland airport released on Amherst L.				
Barre - town	Barre								Mortality	Infection	7/4/2023	Ad	7/4 crash landing in parking lot at washington county mental health building on south main st in Barre. Bird died at VINS 1-2 days later. Sent to UNHDVL - Infection (bacterial): 23-483 Primary findings were renal/visceral gout and acute bronchopneumonia/tracheitis. The pathologist suspected but did not see bacteria and suggested culture of lung tissue.				
Beebe P. (Hubbarton)	Hubbardton	loon active															
Beecher P.	Brighton	loon active												5	4	4	0.57
Berlin P. -South	Berlin	loon active															
Bomoseen L.	Castleton	loon active															
Burr P.	Sudbury	loon active (2 loons)															

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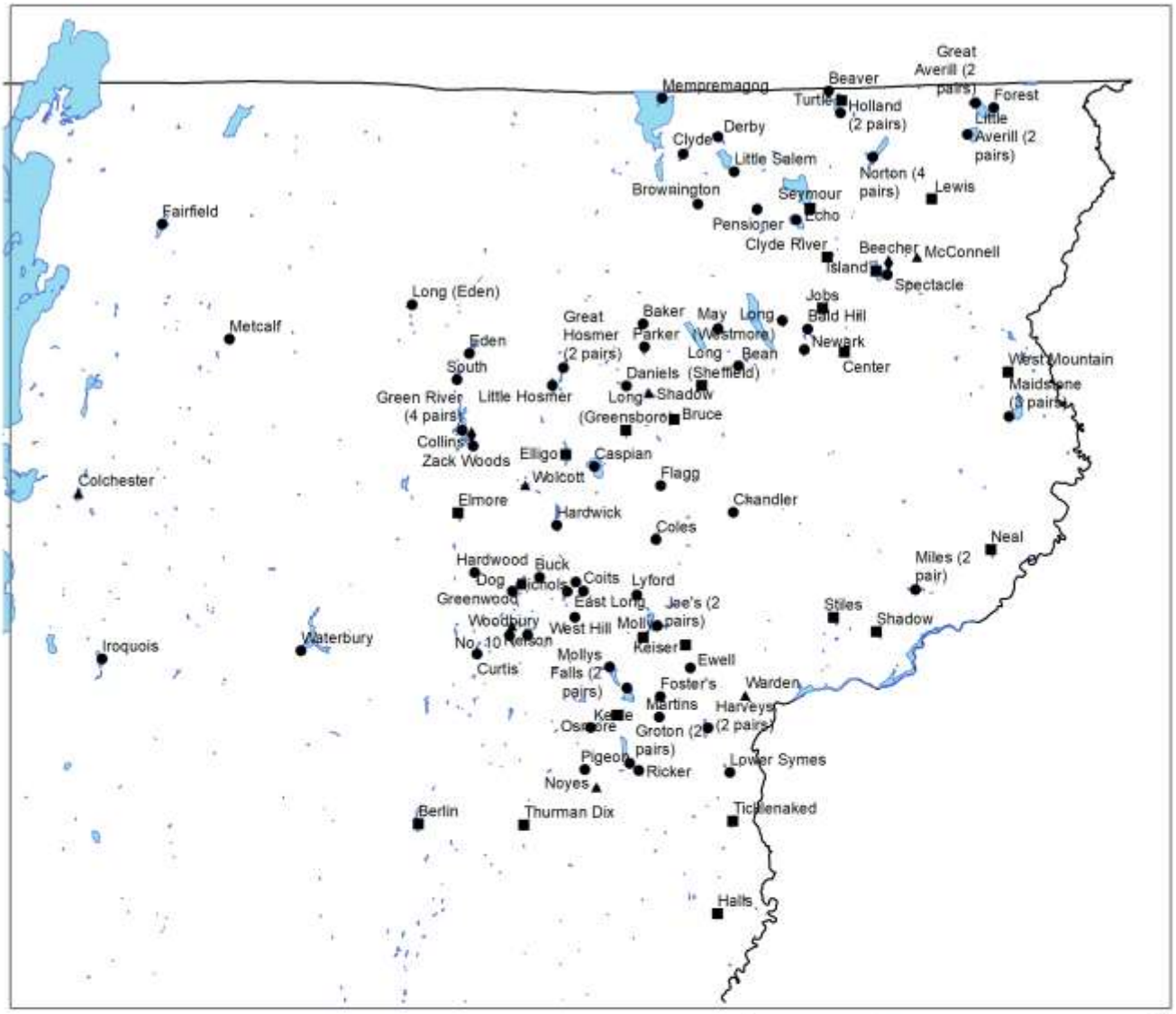
Carmi L.	Franklin	loon active (2 loons)															
Cedar L.	Monkton	loon active (2 loons)															
Champlain (Isle La Motte)	Isle La Motte								Monitor	Beaching	8/19/2023	Ad	8/19/23 Loon beached for several hours before swimming off.				
Champlain L. (Addison) - Potash Bay	Addison								Mortality	Unknown	7/16/2023	Ad	7/16/2023 Tom Woodward found a dead loon in Potash Bay on shore. Disappeared within a few days. Not collected. Photos.	2	0	0	0.00
Chittenden Res. - West	Chittenden	loon active (2 loons)															
Clark P./ Bruce multi-lake	Glover	loon active												1	0		0.00
Colby P.	Plymouth	loon active							Mortality	Fishing gear - fishhook	8/5/2023	Ad	8/5/2023 Beached loon brought to VINS. Blood in trachea, alert, eating. 8/11 bird died. Fishhook in ventriculus (gizzard) likely w/ swivel.				
Collins P.	Hyde Park	loon active												1	0	0	0.00
Comerford	Waterford	loon active															
Crystal L.	Barton	loon active (2 loons)															
Dunmore L.- North	Leicester/ Sali	loon active															
Echo L. (Plymouth)	Plymouth	loon active															
Fern L.	Leicester	loon active															
Gale Meadows Res.	Winhall	loon active												2	0	0	0.00
Great Averill L. - South	Averill	loon active (2 loons)							Mortality	Unknown	10/2/2023	Ad	10/2/2023 Dead loon observed floating toward south end. Not retrieved.				
Greensboro - town	Greensboro								Rescue	Trauma - crash landed	12/13/2023	Ch	12/13/23 Loon found on Greensboro Bend Rd about 1-2 miles from Caspian Lake. Local residents captured the bird and brought to VINS. Rehabbed for two days to improve waterproofing of feathers. Released at Wilder Dam on the Connecticut River.				
Grout P.	Stratton	loon active															
Guilford - town	Guilford								Rescue	Trauma - crash landed	6/12/2023	Ad	6/12 Adult loon 100 meters from river in lumber yard. Brought to VINS. Blood tests normal and radiograph looked o.k. Feisty. Loon released near Brattleboro.				
Hartwell P.	Glover	loon active															
Indian Brook	Essex	loon active															
Marshfield P.	Marshfield	loon active (2 loons)												0			
Memphremagog L. - Holbrook Bay	Newport	loon active															

Table 1 (continued). Summary of Common Loon breeding activity in Vermont, 2023									Rescues / Mortality / Monitor Situations								
Lake	Town	2023 status	Nest Type (current/ past)	Nest Outcome	Nest Warning Sign Buoys	Chicks hatched out	Chicks through August	Chick Mortality Cause	Situation: Resc./ Mort./ Monitor	Mortality and Rescue Cause	Date	Age	Comments	# years nested	# years nest success	total # surviving chicks	mean annual # surviving chicks per territory yrs.
Memphremagog L. - John's River	Derby	loon active							Mortality	Fishing gear - monofillament	6/1/2023	Ad	6/1/23 Warden recovered dead loon with fishing line around the head. Sent to Mark Pokras.	4	2	1	0.08
Molly's Falls Res. - South	Cabot	loon active															
Moore Res.	Waterford	loon active (2 loons)															
Mud P. (Hyde Park)	Hyde Park	loon active															
Notch P.	Ferdinand	loon active															
Nulhegan	Brighton	loon active															
Old Marsh P.	Fair Haven	loon active											Pair likely moved and nested on Inman P. In past years, pair has used both ponds.	5	4	3	0.60
Pittsford - town	Pittsford								Rescue	Trauma - crash landed	12/5/2023	Ad	12/5/2023 Rescue: trauma - crash landing. Red-throated loon. Adams Rd in Pittsford, VT. Residents successfully contained the loon and delivered to VINS. Appeared healthy. Released on CT river at Wilder Dam.				
Raponda L.	Wilmington	loon active (2 loons)												5	2	2	0.25
Rood P.	Williamstown	loon active (2 loons)															
Rutland - town (airport)	Rutland								Rescue	Trauma - crash landed	7/5/2023	Ad	7/5/2023 Rescue: adult loon crash-landed at Rutland airport. Scrapes on feet and heat stress. Released by VFWD warden Tim Carey at Amherst Lake.				
Salem L.	Derby	loon active (2 loons)															
Seymour L. - West	Morgan	loon active												1	1	2	0.40
Silver L. (Barnard)	Barnard	loon active															
Silver L. (Georgia)	Georgia	loon active															
Somerset Res. - South	Somerset	loon active															
St. Albans Res. - North	Fairfax	loon active															
Stratton P.	Stratton	loon active															
Sunrise L. (Benson)	Benson	loon active															
Sunset L. (Benson)	Benson	loon active (2 loons)												1	0		
Waitsfield - town	Waitsfield								Rescue	Trauma - crash landed	12/6/2023	Ad	12/6/23 Loon found in Waitsfield, VT. Local residents captured the bird and brought to VINS. Appeared healthy. Released at Wilder Dam on the Connecticut River. Smaller bird: ~2800g and wing chord (33cm) and tarsus length (90mm)				
Wallace P.	Canaan	loon active															

Table 1 (continued). Summary of Common Loon breeding activity in Vermont, 2023									Rescues / Mortality / Monitor Situations								
Lake	Town	2023 status	Nest Type (current/ past)	Nest Outcome	Nest Warning Sign Buoys	Chicks hatched out	Chicks through August	Chick Mortality Cause	Situation: Resc./ Mort./ Monitor	Mortality and Rescue Cause	Date	Age	Comments	# years nested	# years nest success	total # surviving chicks	mean annual # surviving chicks per territory yrs.
Walton P.	Woodbury	loon active (2 loons)															
Wapanacki P.	Wolcott	loon active (2 loons)															
Waterbury Res. - South	Waterbury	loon active (2 loons)		More loon actiivty this year.					Monitor	Unknown	6/25/2023	Ad					
Willoughby L.	Westmore	loon active (2 loons)											Nesting has never been documented. Often 6-10 loons reported.				

Figure 1a. Common Loon Nesting and Territorial Pairs in Vermont 2023 – Northern Area
(* Map will be updated with 2022 version)



Location of Loon Pairs - 2023

- nesting
- potential territory
- territory
- loon active

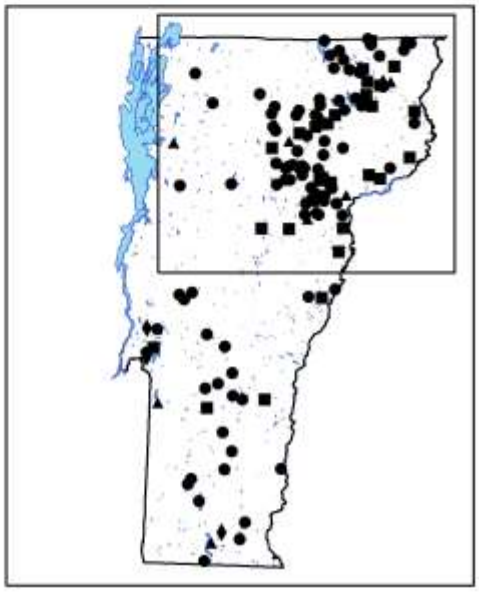
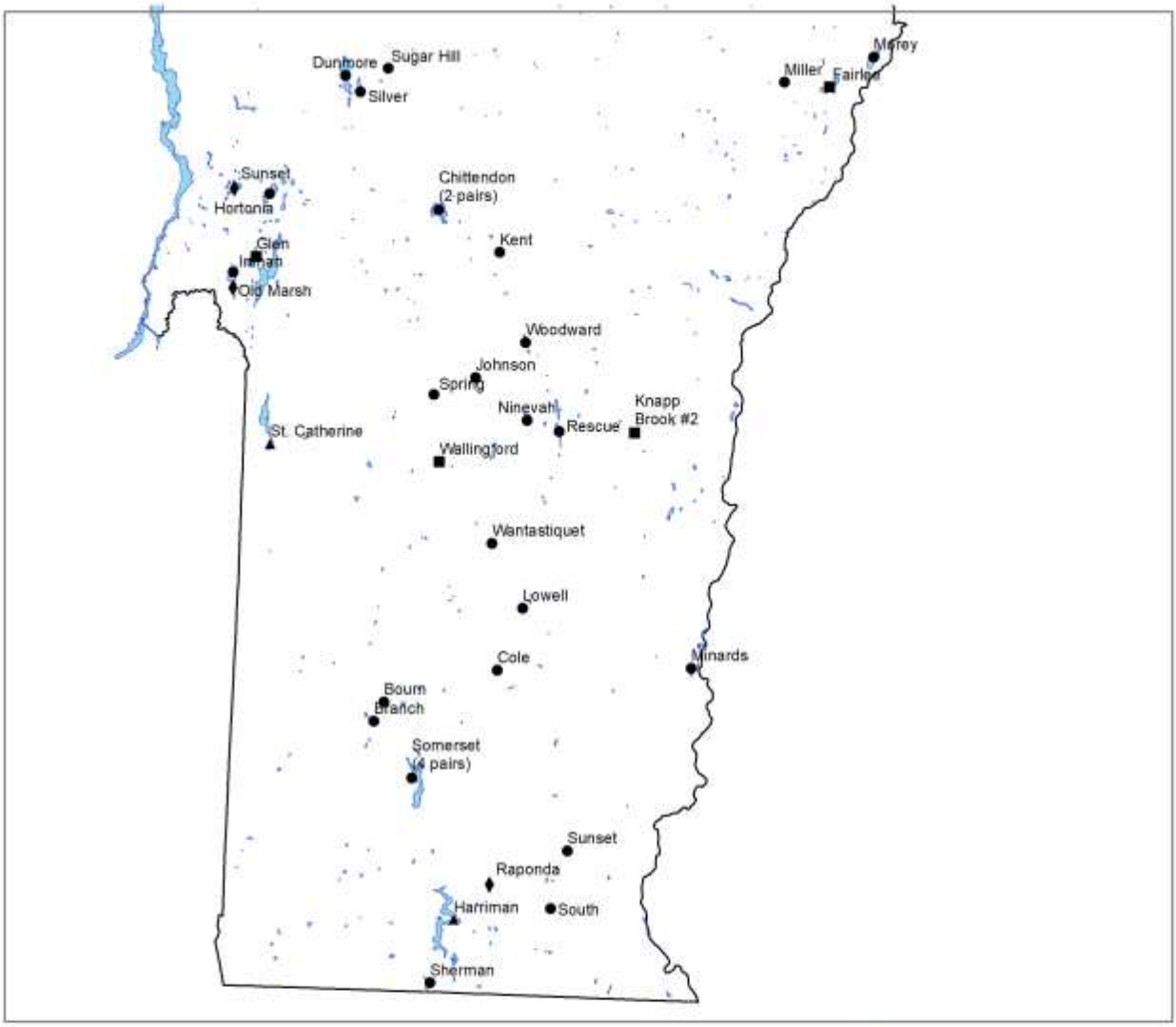


Figure 1b. Common Loon Nesting and Territorial Pairs in Vermont 2023 – Southern Area



Location of Loon Pairs - 2023

- ● nesting
- ▲ potential territory
- ■ territory
- ♦ loon active

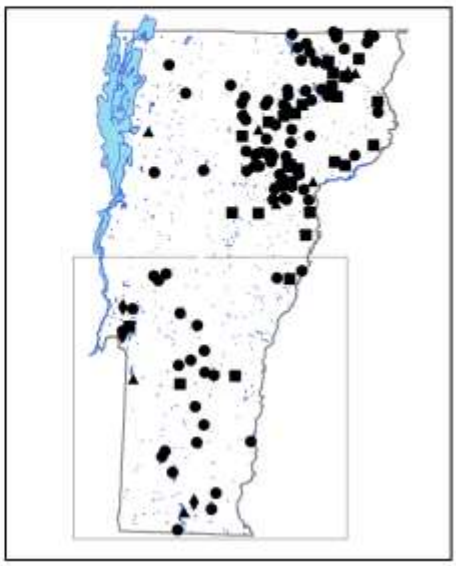


Figure 2. Summary of Common Loon breeding activity in Vermont, 1978-2023

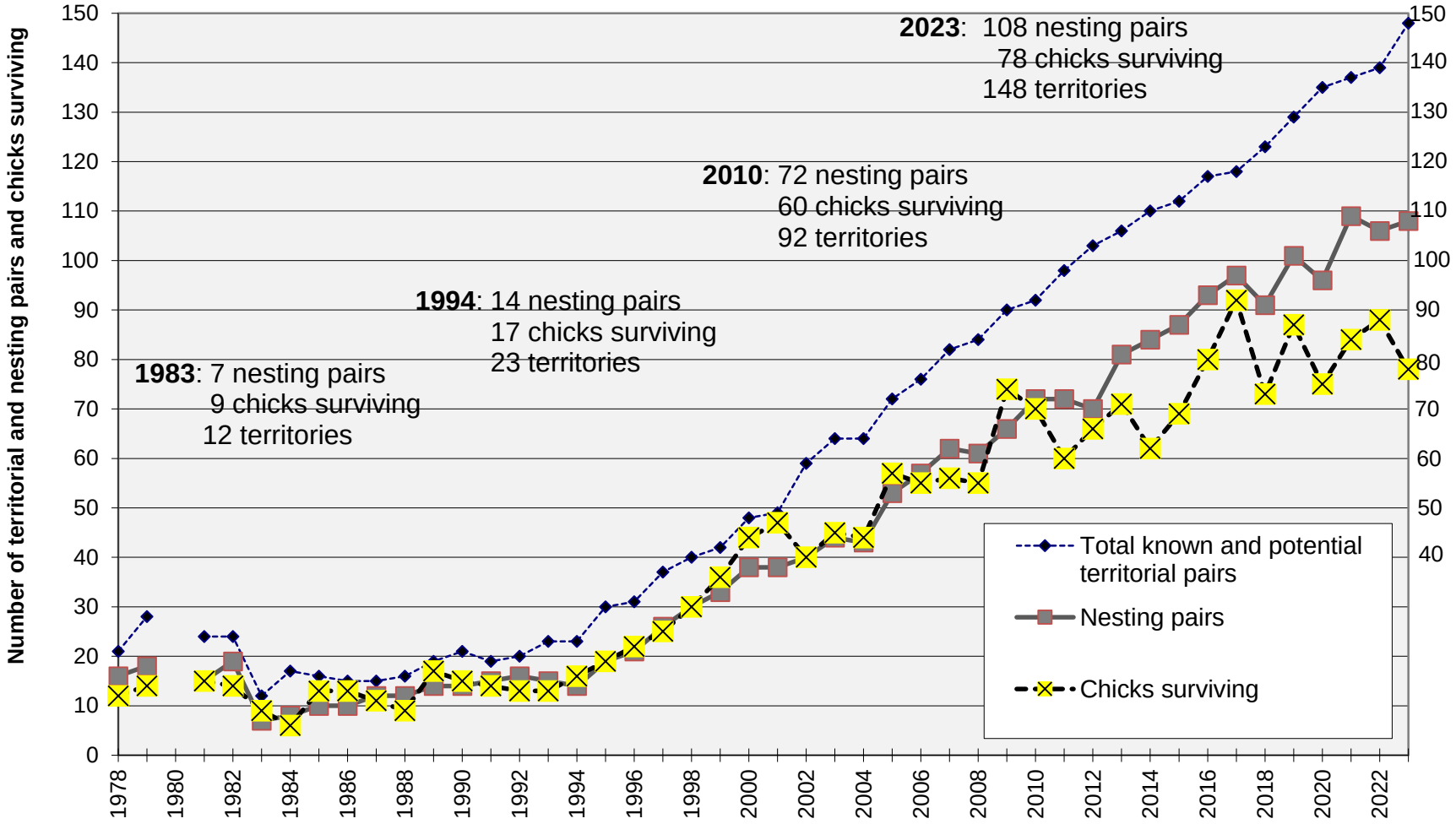


Table 2. Summary of population changes and reproductive success of Common Loons in Vermont, 1979-2023

Year	'79	'80	'81	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00
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
Known terr. prs.	21	--	18	19	9	12	11	11	12	13	16	17	16	18	17	21	22	24	29	34	39	44
Potential terr. prs.	7	--	6	5	3	5	5	4	3	3	3	4	3	2	6	2	8	7	8	6	3	4
Nesting pairs	**18**	**--**	**15**	**19**	**7**	**8**	**10**	**10**	**12**	**12**	**14**	**14**	**15**	**16**	**15**	**14**	**19**	**21**	**26**	**30**	**33**	**38**
Successful pairs	12	--	11	12	5	6	8	9	9	7	10	9	10	10	11	13	15	14	21	23	25	36
Chicks hatched	--	--	--	--	10	7	--	16	12	11	19	18	16	15	18	20	21	25	32	37	41	56
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
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
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
% chick survival	--	--	--	--	90%	86%	--	81%	92%	82%	89%	83%	88%	87%	72%	85%	90%	88%	78%	81%	88%	79%
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
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
Number of chicks	--	--	--	--	9	16	13	17	9	9	16	15	15	15	14	11	17	21	21	26	36	45
Number of subadults	8	--	11	6	7	1	0	5	15	9	9	33	18	23	11	14	10	9	2	6	6	10
Number of lakes surveyed																					150	107
Number of lakes occupied																						

[a] The number of lakes surveyed for Loonwatch increased in 1999.

[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.

Table 2 (continued). Summary of population changes and reproductive success of Common Loons in Vermont, 1979-2023

Year	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19	'20	'21	'22	23
TOTAL territorial pairs	49	59	64	64	72	77	82	86	90	92	98	103	106	110	112	117	118	123	129	135	137	139	148
Known terr. prs.	44	49	53	57	60	65	71	75	80	85	88	92	93	100	102	111	113	117	123	122	128	129	139
Potential terr. prs.	5	10	11	7	12	12	11	11	10	7	10	11	13	10	10	6	5	6	6	12	9	10	9
Nesting pairs	**38**	**40**	**44**	**43**	**53**	**58**	**62**	**61**	**66**	**72**	**72**	**70**	**81**	**84**	**87**	**93**	**97**	**91**	**101**	**96**	**109**	**106**	**108**
Successful pairs	34	34	38	34	47	44	47	49	53	57	52	50	62	57	65	65	74	66	75	65	77	78	73
Chicks hatched	56	52	62	54	68	66	71	75	83	85	76	87	97	93	103	102	117	97	115	102	125	115	111
Chicks surviving through August	47	40	45	44	57	56	56	55	74	70	60	66	71	62	69	80	92	73	87	74	84	88	78
Chicks surviving per nesting pair	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	0.77	0.77	0.83	0.72
Chicks surviving per total territorial pair	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	0.55	0.61	0.63	0.53
% chick survival	84%	77%	73%	81%	84%	85%	79%	73%	89%	82%	79%	76%	73%	67%	67%	78%	79%	75%	76%	73%	67%	77%	70%
Lakes with nesting pairs	36	38	41	39	49	52	57	54	61	63	63	63	72	72	76	83	84	78	86	81	94	95	86
Loonwatch results [a,b] (statewide annual survey)																							
Number of adults	135	166	179	184	191	201	218	223	228	201[c]	271	280	297	301	298	301	308	356	339	358	349	379	348
Number of chicks	45	39	44	40	45	53	54	42	65	53	52	63	69	66	63	74	85	65	89	66	86	87	84
Number of subadults	2	5	0	3	5	2	9	8	6	0	7	9	3	6	9	2	0	3	4	1	1	4	2
Number of lakes surveyed	131	133	123	98	122	133	148	148	129	129	162	150	162	161	162	153	161	174	175	171	167	173	152
Number of lakes occupied				68	69	84	86	84	89	76	102	98	106	103	116	112	111	132	121	125	124	129	125

[a] The number of lakes surveyed for Loonwatch increased in 1999.

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

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

[d] In 2023, over 38 lakes were not surveyed because of a major flood statewide on July 10-11. We used survey results from other times in July for these lakes with known loon occupancy.

Figure 3. Vermont Loonwatch Results, 1983-2023
(an annual statewide loon census on the third Saturday of July)

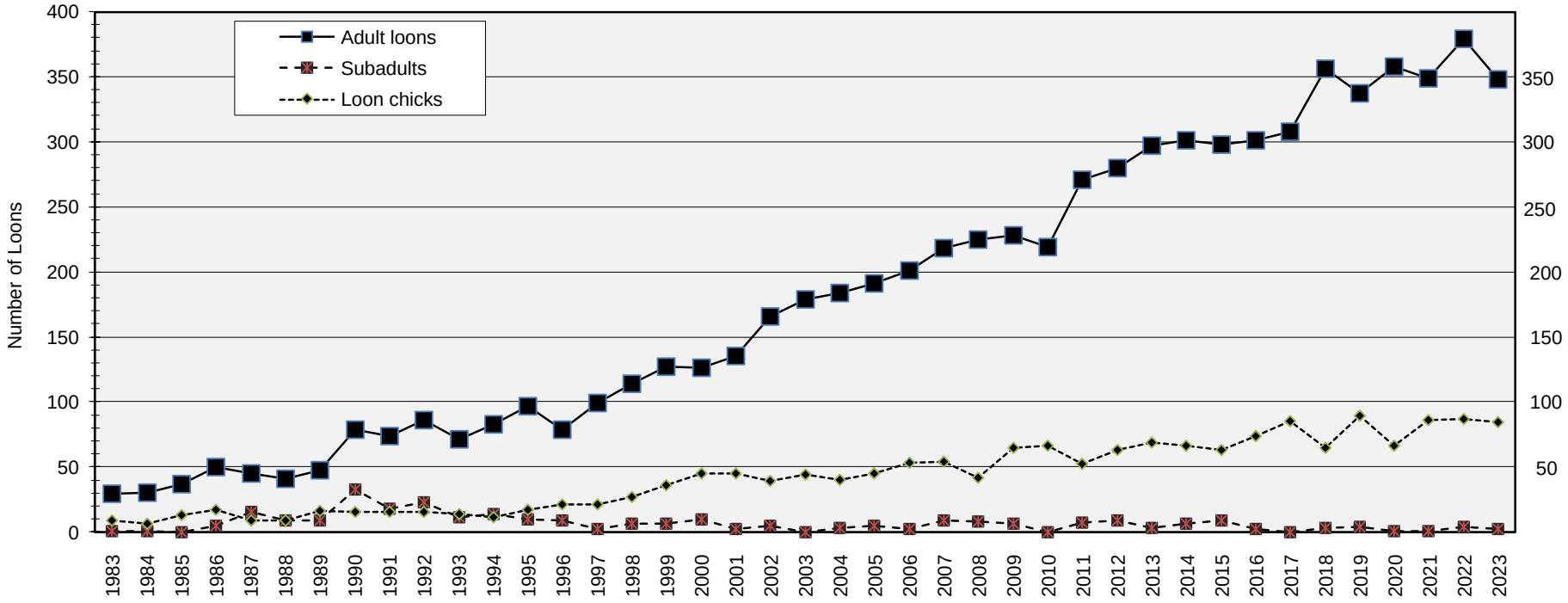


Table 3. Common Loon Band Recoveries and Re-observations in Vermont

Winter Migration Movments

Band_Num	Band Year	Site Banded	Age	Year re-observed	Location re-observed	Distance moved	Years between obs.	How observed	Rec_Comments	Left leg bands	Right leg bands
0938-06483	2000	Molly's Falls Res., Cabot, VT	Adult	2015	East Hampton, NY (Long Island)	300	15	Found dead	Migratory - entered as wintering bird. Unknown cause of death.	red / red	white stripe / silver
0898-09124	1998	Jobs P., Westmore, VT	Adult	2000	Chatham, MA (Cape Cod)	280	2	Found dead	Migratory - entered as wintering bird. Unknown cause of death.	red	yellow/silver
0938-06485	2000	Island P., Brighton, VT	Adult	2002	Martha's Vineyard, MA	300	2	Found dead	Migratory - entered as wintering bird. Unknown cause of death.	orange / orange	silver / blue dot
Summer Dispersal											
Band_Num	**Band Year**	**Site Banded**	**Age**	**Year re-observed**	**Location re-observed**	**Distance moved**	**Years between obs.**	**How observed**	**Rec_Comments**	**Left leg bands**	**Right leg bands**
not recorded or misplaced	1994	Aziscohos Res., Lincoln, ME	Chick	2009	Stiles Res., Waterford, VT	85	15	Found dead	Unknown cause of death. Likely part of territorial pair on Stiles Res. This is a long dispersal for a chick from it's natal lake.		
898-098-22	1999	Bald Hill P., Westmore, VT	Adult	2005	West Burke, VT	10	6	Rescued from small pond	Landed on farm pond where could not take off for about 4-5 days. Rescued. Replaced "faded" band with blue. Bird was originally banded on Bald Hill P. but we did not know at the time of rescue. Released onto L. Willoughby. 2 adults on Bald Hill 2 days later (one incubating). In mid-July, banded female confirmed with chick on Bald Hill P. 2007 - Found dead L. Willoughby 7/07 (cause unknown).	white/ white	silver/ yellow dot
0938-44468	2013	Bald Hill P., Westmore, VT	Adult	2015	Jobs P., Westmore, VT	2	2	Part of territorial pair	7/1/2013 Rescued from ingestion and entanglement of fishing line. Observed on Ball Hill P. 8/15/2013 looking healthy; unknown if part of Bald Hill Pond territorial pair. 6/4/2015 Part of pair on Jobs Pond. 6/19/2017 re-sight L. Willoughby (unknown if still occupying Jobs P).	orange/ orange	silver/ green
not recorded or misplaced	2006	Eden L., Eden, VT	Adult	2021	Green River Res.	8	15	Part of territorial pair	Resight on GRR summer 2007, 2012, 2015 with chick NW territory, 2016, 2019 moved to Merganser Inlet - part of pair, 2021 mid-reservoir - likely still part of MI pair. Yellow stripe now looking whitish (white w/ black stripe).	orange/ yellow	yellow stripe/ silver

Table 3 (continued). Common Loon Band Recoveries and Re-observations

Summer Dispersal

Band_Num	Band Year	Site Banded	Age	Year re-observed	Location re-observed	Distance moved	Years between obs.	How observed	Rec_Comments	Left leg bands	Right leg bands
0938-44415	2013	Fairlee L., Fairlee, VT	Adult	2015	Post Pond, Lyme NH	12	8	Part of territorial pair	Loon was trapped by shifting ice sheets and crawled on ice, displaying both hind legs. NH loon org LPC confirmed colors. VCE: 2021 loon observed on Post Pond (Tig Tillinghast), thus likely still part of breeding pair.	green/ orange	silver/white
0938-44414	2013	Greenwood L., Woodbury, VT	Adult	2013	Curtis P., Calais, VT	7	same year	Observed on Curtis P.	8/6/2013 Found on road 800 m down marshy stream from lake. Possible reasons: getting away from territorial pair or crashed on nearby pond too small to fly from. Appeared healthy; released on non-territorial Valley L (Dog P). 9/1/2013 resight on Curtis P. in Calais, VT.	red/ blue	yellow/ silver
938-064-84	2000	Island P., Brighton, VT	Adult	2001	Island P., Brighton, VT	0	1	Found dead	Recaptured earlier in the summer in 2001; Found dead in Nov. Necropsy indicated loon died from lead poisoning from sinker.	red / yellow	silver / white stripe
938-064-57	2000	Maidstone L. - S., Maidstone, VT	Adult	2005	Maidstone L. - North, Maidstone, VT	2	5	Part of territorial pair	Moved to north part of Maidstone L. Founded new territorial pair.	red	silver / blue dot
938-064-58	2000	Martin's P., Peacham, VT	Adult	2005	Fosters P., Peacham, VT	1	5	Part of territorial pair	Moved to Fosters P (Peacham) 2005. Founded new territorial pair. First nest attempt in 2006.	orange / blue	silver / white stripe
0938-44861	2006	Massabesic L., Auburn, NH	Adult	2021	Sunset L., Marlboro, VT	80	15	Part of territorial pair; died	7/16 Found alive on downstream side of dam on Sunset L.; returned to lake and swam off. Repeated 7/18. 7/20 2 Adults swimming. 7/21 found dead with 2nd adult nearby. Likely part of pair. Sinker found, mild aspergillosis. Loon was banded on Massabesic Lake, NH (near Manchester) in 2006 as a chick Left leg: 0938-44861. Sinker 0.034 oz (suspected) lead based on density but still needs official testing.		
898-099-91	2001	Miles P., Concord, VT	Adult	2007	Shadlow L., Concord, VT	4	6	Part of territorial pair	Moved to Shadow L (Concord) 2007. Founded new territorial pair; failed nest.	white	silver
938-064-56	2000	Molly's Falls Res., Cabot, VT	Chick	2006	East Long P., Woodbury, VT	8	6	Found dead	Found dead East Long P 2006 (fishing line ingestion); unknown if part of breeding pair.	yellow / red	silver / blue dot
938-064-68	2000	Moore Res. - Walker's Pit, Concord, VT	Adult	2016	Moore Res., Waterford, VT	4	16	Non-breeder	Observed further west on the reservoir. NH LPC seasonal reported the sighting but had left leg color reversed IF this is the bird. No other matches in BRI database.	red / white	green dot / silver

Table 3 (continued). Common Loon Band Recoveries and Re-observations

Summer Dispersal

Band_Num	Band Year	Site Banded	Age	Year re-observed	Location re-observed	Distance moved	Years between obs.	How observed	Rec_Comments	Left leg bands	Right leg bands
898-09100	1998	Newark P., Newark, VT	Adult	2020	Newark P., Newark, VT	0	22	Part of territorial pair	Part of original territory. Possibly gone from territory for a few years but observations of banded bird minimal.	green/ orange	yellow/ silver
898-098-21	1999	Somerset Res.- Dandeneau Cove, Somserset, VT	Adult	2005	Somerset Res. - North Islands	2	6	Part of territorial pair	Likely left Dandeneau Cove territory and founded new territory 2 miles north	orange/ yellow	silver/green
0649-08823	2005	Wallace P., Canaan, VT	Adult	2009	Forest L., Averill, VT	6	4	Found dead	Possible territorial fight.	red/ yellow	yellow stripe/ silver
0938-15297	2001	Zack Woods P., Hyde Park, VT	Adult	2015	Hyde Park, VT	7	14	Foun dead. Illegally shot	They found the bird with a bullet hole in its neck, bird had likely died several days before.	white / white	silver / green stripe
938-152-19	2001	Zack Woods P., Hyde Park, VT	Chick	2014?	Wolcott P.	5	13	Part of territorial pair	Banded as a chick. Re-observed as part of territorial pair on Wolcott Pond. Need to confirm first year of sighting but present about 2014-2020. Not observed in 2021 and pair on Wolcott P. not present.	silver	yellow "A5"

RECOMMENDATIONS

The total adult loon population and numbers of nesting pairs have steadily increased since the mid-1990s. These results demonstrate 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, the Vermont Institute of Natural Science, 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 VCE/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 be less successful 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. In 2022, we began the development of a comprehensive database will 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. We will also be developing a user-friendly online reporting form for volunteer observations.
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 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. The lake associations at Lake Fairlee and Lake Raponda designated space on their websites for loon conservation, which can serve as models to provide to other associations.
4. Improve outreach about lake water quality and shoreline conservation practices using loons as a focus for action.
5. 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 surrounded by ice continue to occur, and the public expects to attempt rescues. 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.
6. 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.

7. 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

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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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