

FINAL REPORT
WESTERN CANADA COOPERATIVE BANDING PROGRAM
WILLOW LAKE, NORTHWEST TERRITORIES
SEPTEMBER 6, 2018

PERSONNEL

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ABSTRACT

In 2018, the Sahtu Renewable Resources Board (SRRB), the Tulita Renewable Resources Council (TRRC), the Government of the Northwest Territories' Department of Environment and Natural Resources (ENR), and the United States Fish and Wildlife Service (USFWS) collaborated in the 22nd year of duck banding at Willow Lake, (65° 14' N; 125° 25' W) in the Mackenzie River Valley, Sahtu Settlement Area, NWT. The annual goal is to band 2,000 Mallards (*Anas platyrhynchos*), 1,500 Northern Pintail (*Anas acuta*), and any other incidental species of ducks (up to 1,000 per species) prior to the opening day of waterfowl hunting in the Northwest Territories (01 September). The USFWS, SRRB, and ENR provided logistical support for the project. A Waterfowl Biologist (USFWS) supervised two contract employees from the village of Tulita, NWT. Both were hired by SRRB. The USFWS employee arrived in camp and departed camp via North Wright's Twin Otter on 04 August and 29 August, respectively. The two technicians from Tulita arrived and departed on the same flights. A maximum of 9 swim-in style duck traps with restricted funnels and closed trap doors were run for 22 nights and 162 trap-nights. Trap success was 9.8 ducks per trap night. The combination web address and 1-800 style leg bands were placed on a total of 1,589 ducks. Species totals and compositions are: Mallard (1,367, 86%), American Green-winged Teal (*Anas crecca*; 190, 12%), Northern Pintail (*Anas acuta*; 11, 1%), Blue-winged Teal (*Spatula discors*; 10, 1%), American Wigeon (*Mareca Americana*; 8, 1%), Northern Shoveler (*Anas clypeata*; 1, 0%), Canvasback (*Aythya valisineria*; 1, 0%), and Mallard X American Wigeon Hybrid (1, 0%). The number of ducks caught in 2018 was the 10th best (of 22) and 13% above the long-term average (1,409) at the Willow Lake Banding Site. We experienced low water levels from beginning to end, so although the North end of Willow Lake was trappable, we had to trap far out into the lakebed. Eighty-two percent (N = 1,309) of total ducks were caught away from the traditional southern point trap location. Approximately 10% of banded ducks (N = 153) were of the Hatch Year (HY) or Local (L) age classes. Of special note, 77 foreign bands (from previous years at Willow Lake or elsewhere) were recaptured and one band was worn enough to justify replacement.

INTRODUCTION AND BACKGROUND

Willow Lake, residing along the Loche River in the Mackenzie River Valley and Sahtu Settlement area of the Northwest Territories has a long history of hunting, including waterfowl hunting. So much so, that some of the “Willow Lake People” had settled on the north end of Willow Lake hundreds of years ago because of the area’s abundance of game and fish. The navigable waters enabled them to reach other settlements such as Tulita and beyond. In those days, Tulita was the natural rendezvous location for the Willow Lake, Mackenzie River, and Mountain People. The settlement at the north end of Willow Lake is appropriately called “Willow Lake”, and cabins still exist. Most of the original cabins are gone, but newer, up-to-date cabins with cellular internet, cell phone boosters, and satellite TV’s are rumored to be increasingly common. A church Bern Will Brown built is also no longer standing. Currently, there are no year-round residents at Willow Lake, but many make trips from Tulita in the spring for waterfowl hunting, and in the fall and early winter for trapping, fishing, and hunting.

One of the original and now more increasing draws of the Willow Lake area is its abundance of migratory waterfowl in the spring and fall. In spring, the Loche River flows into Willow Lake and along with warming shorelines, creates an ideal stopover and staging location for migratory waterfowl along their journey further north. In the fall, the water levels dictate migratory waterfowl usage, mainly because they don’t have the hindrance of frozen water further south. In good water years, Willow Lake can also be an important molting, breeding, stopover, and staging area for migratory waterfowl throughout the summer and fall during their journey south.

Since 1995, the United States Fish and Wildlife Service (USFWS) has collaborated with the Tulita Renewable Resources Council (TRRC), Sahtu Renewable Resources Board (SRRB), and the Government of the Northwest Territories’ Department of Environment and Natural Resources (ENR) to trap and band ducks in the vicinity of Willow Lake. The USFWS provides expertise by running a camp with a Wildlife Biologist, specifically one that has been specially trained in trapping, banding, and identifying waterfowl, while the TRRC and SRRB have been instrumental in the hiring of local Tulita and Norman Wells banding technicians. This partnership has been very beneficial to all entities. Both banding technicians and the crew leader Wildlife Biologists have much to teach each other, including the history, biology, traditions, and ways of all cultures.

The banding project was initially established at Loche Lake, the headwaters of the Loche River, but then moved to the area of Willow Lake in 1996, where it remains base camp for operations. The main initiative to band at this site was that no ducks had ever been banded in this reference area, and the USFWS (including the Pacific Flyway Study Committee) was very interested in the derivation of harvest for ducks using this area. In 2002, the base camp of operations for duck banding moved from the settlement of Willow Lake to the south end of Willow Lake (also the outlet of the Loche River). Motivation for moving the base camp of operations were two parts: 1) the substrate of the lake bed is mostly sand in the south and silt-clay in the north, making setting, maintaining, and gathering ducks and traps easier in the south, and 2) local concerns with the duck banding operations being in the traditional settlement location of Willow Lake. Since 2015, we have made every effort to trap ducks wherever we found them, given advice from technicians and support from the community. We found that without trapping

multiple locations and limiting our traps to just the south end we would have only banded 208 ducks total. This would have been considered a bust year if we had only trapped the south end.

The annual goal is to band 2,000 Mallards (*Anas platyrhynchos*), 1,500 Northern Pintail (*Anas acuta*), and any other incidental species of ducks (up to 1,000 per species) prior to the opening day of waterfowl hunting in the Northwest Territories (01 September).

Willow Lake lies within the selected lands of the Sahtu Dene and Métis under the terms of the Sahtu and Métis Comprehensive Land Claim Agreement (Dept. of Indian and Northern Affairs Canada, 1993). The SRRB is the main instrument for wildlife management in the Sahtu Land Claim area and supports this project. The Tulita Lands Corporation is responsible for approving terms of access to private lands (Sahtu Dene and Métis) within the Tulita District, including the Willow Lake and Loche River watershed. The land claim gives the TRRC the responsibility for involvement in, and approval of, wildlife research and management projects in and near their community. Therefore, we obtained permission to enter these private lands, and to construct and occupy the project's base camp, from the Tulita Lands Corporation with the support of the TRRC.

Willow Lake duck banding base camp consists of two tent frames converted to sleeping cabins, a frame-style kitchen, an outhouse, and a storage silo. The silo provides storage for large quantities of grain and trap wire for the following year, miscellaneous trapping and living supplies and tools, and some leftover nonperishable human foods. In 2015, the crew also built a smoker out of birch, spruce, and mud. It makes fantastic smoked Coney and Whitefish with willow and alder wood.

NARRATIVE

Wildlife Biologist Steve Olson arrived in Norman Wells on 02 August. After a day and a half gathering gear, discussing bear safety, shopping for food, and purchasing fuel, Olson departed Norman Wells on 04 August for Tulita, to pick up banding technicians Antoine Horassi and Philip Clement, and then onto Willow Lake. The first day at camp was spent unloading gear, going through inventory in the storage silo, and pre-baiting the closest trap site. The first three brand new traps were placed at Bidwell Point, Bay 1, and Willow Lake Camp sites on 06 August. As seen since 2015, the majority of ducks congregated along the northern bays and shorelines. A maximum of about 500 ducks were present on the entire water body of Willow Lake upon arrival. Appreciable numbers (>1,000) of ducks were not seen or counted until about mid-month. Our efforts to get ducks feeding on corn did not take long this year. Our first ducks were captured on 07 August.

By 15 August we were running 9 total brand new traps per night among seven sites. Ducks were now much more common (about 4,000 in Willow Lake vicinity) and attracted to our baiting sites. Our two most productive days were 09 and 11 of August when we banded 156 and 131 ducks, respectively (Table 2).

Only one predatory event occurred at the same site this year, and the cause was mink. On 17 August, we discovered our first signs of mink predation at the Narrows site. Because of prior experience with mink at Willow Lake, we moved the problematic trap instantly upon evidence of predated ducks. The predator events are not only disappointing, but they essentially shut down productive sites and forced us to relocate to a location not yet acclimated to by ducks. One interesting note is the mink didn't have time to kill and take all ducks. In fact, we surmise the disturbance created by mink/s attracted three wolves, which stole the mink's ducks they had taken from the trap and scared the mink away. We don't know the exact timeline of events, but could track three wolves and 1-3 mink and still had ducks alive in the trap when we arrived.

Despite the mink issues, we continued to explore and trap the north sites with variable but reliable success. Unlike other years where we had water access deep into the heart of bays, we had to improvise and trap far out into the lakebed. As the water level continued to recede throughout the month, we were very close to having to move a few sites because they had turned into mud wallows. We have learned to start in the deepest water allowable to avoid moving traps late in August.

On 16 August, We received a re-supply via Pilatus Porter (North Wright Air) load of food and fuel. All three banders were picked up with a Pilatus Porter (North Wright Air) the morning of 29 August. Horassi and Clement were dropped off in Tulita, and Olson continued on to Norman Wells. Olson then flew out and home via commercial airline on 30 August.

METHODS

Duck trapping was accomplished using six brand new bales of wire (galvanized and welded, 1" X 2" size, 14 gauge, and 100ft bales) cut into thirds. The new traps replace 15-20 year-old wire, originally used for Benning II style smaller box traps. The old traps had already been built and stored outside at the camp site from previous years. Upon arrival, we found that Willow Lake

had the lowest water in four years, and we did not have to cut emergent vegetation at banding sites to open feeding areas. We unloaded a few hundred pounds of corn at locations used in the past, and marked them with willow sticks. These sites were checked daily, and feeding area sizes were increased as needed to provide enough room for traps, loafing, and general sense of security. As in a lot of my experiences, especially in low duck density situations, we found that ducks visited our sites or were attracted at higher rates when we provided loafing and preening bars made from the cut and piled vegetation. It was also evident that loafing bars further increased catch rates in tucked-away bays when the entrance to the funnel was facing the loafing bar. The adverse was seen when a loafing bar was facing the backside of a trap and no entrance was visible. Also, the Bidwell Site (Figure 1 and Table 1) is a pure sand substrate (bottom), and we had to find the most solid sites we could in the north. These northern sites became worse for walking and wading with a reduction of water throughout the month and after being worked by feeding waterfowl and our own foot traffic. That being said, there exists incredible waterfowl habitat in the north, and substrate has not dictated our success.

Duck identification was achieved through years of professional experience and expertise of the USFWS Wildlife Biologist. Willow Lake's duck species composition is normally very predictable and so the chance of misidentification of odd species is highly unlikely. Aging and sexing ducks was accomplished using a variety of techniques such as feather colors, wing characters, bill and leg characters, and cloaca examinations. Further, the USFWS Wildlife Biologist has trapped all over North America, has personally banded very odd species, and constantly monitored the banding technicians for quality control. The USFWS Wildlife Biologist used every opportunity to teach the banding technicians not just how, but why a duck belonged to a certain species, age, and sex.

Data management was achieved by taking field notes on the start and end of strings of bands. In 2016, a "banding board", which is a modified band carousel used by many other crews, was constructed out of willow sticks and a piece of plywood. The banding board allowed for strings of bands to be allocated to the four age/sex categories for size 6 and 7 bands (our two most commonly used bands). This new addition greatly decreased our handling time of the birds and also made data collection more efficient. These data were then transferred to an Excel spreadsheet on a computer every night. These data were then worked for submission to the Bird Banding Laboratory upon returning from the bush. Every effort was made to submit banding data as soon as possible upon returning because duck hunting seasons start September 1, and inevitably some of our banded ducks may be subjected to those early hunting seasons.

RESULTS

Table 2. Daily bandings by trap location at Willow Lake, NT, 2018.

Banding Site Name	Day of August 2018																												Grand Total
	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28							
Bay 1		30	38	49	19	11	11	9	11	14	4	10	16	5	7	4	13	7	5	5	6	11	285						
Bidwell	6	34	26	16	31	7	4	11	16		13	9	12	13	11	16	11		1	7	10	26	280						
Narrows											3	4	5	7	3	3	3	2	2	8	2	42							
River Bay						4			7	40	10	23	11	26	15	31	18	14	19	8	21	14	261						
Willow Lake Camp			43	11	59	9	13	20	27	14	15	20	3										234						
Y-Spot East								28	37	15	20	1	15		12	9	7	15	16	6	9	14	204						
Y-Spot West			49	2	22	28	29	20	10	6	9	23	4	10	7	10	11	8	9	8	4	14	283						
Grand Total	6	64	156	78	131	59	57	88	108	89	71	89	65	59	59	73	63	47	52	36	58	81	1589						

Figure 2. Ducks banded by day in August, 2015–2018 at Willow Lake, NT.

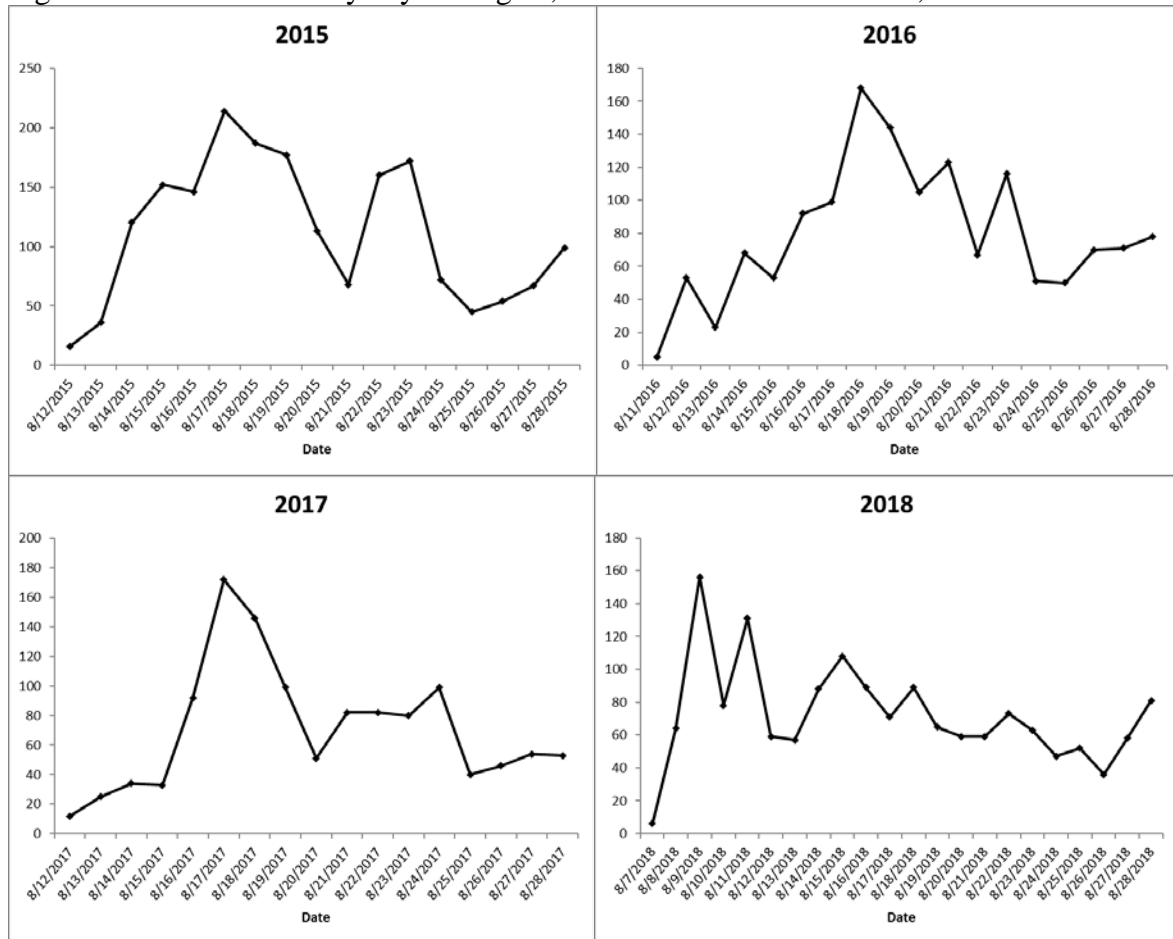


Table 3. Daily bandings by duck species at Willow Lake, NT, 2018.

Species	Day of August 2018																												Total
	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28							
MALL	5	40	94	58	95	55	51	81	98	82	60	76	61	57	59	72	60	47	46	36	57	77	1367						
AGWT		21	56	16	31	4	5	6	10	5	10	12	3	2			1	5			3	190							
NOPI			1	1	1					2		1					2		1		1	1	11						
BWTE	1	3	2	2	1											1							10						
AMWI			2	1	3		1						1										8						
NSHO											1												1						
CANV			1																				1						
AMWI/MALL								1															1						
Total	6	64	156	78	131	59	57	88	108	89	71	89	65	59	59	73	63	47	52	36	58	81	1589						

Table 4. Duck species, age, and sex composition and summary at Willow Lake, NT, 2018.

Species	Sex		Grand Total	Species Composition	Percent Hatch Year (HY) and Local (L) by Species
	F	M			
MALL	357	1010	1367	86.0%	
AHY	309	951	1260		
HY	47	56	103		
L	1	3	4		7.8%
AGWT	60	130	190	12.0%	
AHY	38	115	153		
HY	21	15	36		
L	1		1		19.5%
NOPI	6	5	11	0.7%	
AHY	3	3	6		
HY	3	2	5		45.5%
BWTE	6	4	10	0.6%	
AHY	5	4	9		
HY	1		1		10.0%
AMWI	2	6	8	0.5%	
AHY		6	6		
HY	2		2		25.0%
NSHO	1		1	0.1%	
HY	1		1		100.0%
CANV		1	1	0.1%	
AHY		1	1		0.0%
AMWI/MALL		1	1	0.1%	
AHY		1	1		0.0%
Grand Total	432	1157	1589	100%	9.6%

Table 5. Trap mortality by location and cause of death during trapping at Willow Lake, NT, 2018.

Location	Cause of Death			Grand Total
	Drowned	Killed - Eagle	Killed - Mink	
Bidwell	1	1		2
Willow Lake Camp	1		2	3
Grand Total	2	1	2	5

Table 6. Trap nights and summary statistics at Willow Lake, NT, 2018.

Willow Lake trap nights and summary statistics					
Date	Number of Traps Operating	Total Bands	Trapping Success (Total bands per Trap Night)	Bags of CORN used	Bags of BARLEY used
8/4/2018	-	-	-	3	0
8/5/2018	-	-	-	4	0
8/6/2018	3	-	-	3	0
8/7/2018	3	6	2.0	4	0
8/8/2018	4	64	21.3	4	0
8/9/2018	4	156	39.0	4	0
8/10/2018	4	78	19.5	4	0
8/11/2018	6	131	32.8	4	0
8/12/2018	7	59	9.8	3	0
8/13/2018	7	57	8.1	4	0
8/14/2018	7	88	12.6	3	0
8/15/2018	9	108	15.4	4	0
8/16/2018	9	89	9.9	4	0
8/17/2018	9	71	7.9	3	0
8/18/2018	9	89	9.9	4	0
8/19/2018	9	65	7.2	4.5	0
8/20/2018	9	59	6.6	4.5	0
8/21/2018	9	59	6.6	5	0
8/22/2018	9	73	8.1	6	0
8/23/2018	9	63	7.0	6	0
8/24/2018	9	47	5.2	6	0
8/25/2018	9	52	5.8	6	0
8/26/2018	9	36	4.0	8	0
8/27/2018	9	58	6.4	8	0
8/28/2018		81	9.0		0
Totals	162	1589	9.8	109	0

Table 7. Trapping success and banding at Willow Lake, NT, 1995–current.

Year	Grain Used (lbs)	Dates Trapped in August	Maximum Number of Traps	Trap Nights (TN)	Number of Ducks Banded	Trapping Success (Ducks / TN)	Crew Leader
1995	1500	2 to 21	7	119	509	4.3	Popko
1996	4500	9 to 30	17	195	1892	9.7	Popko
1997	3500	8 to 29	14	291	1687	5.8	Popko
1998	4000	13 to 30	16	262	1700	6.5	Popko/Bidwell
1999	5620	3 to 31	16	439	1248	2.8	Bidwell
2000	4463	3 to 30	18	490	1600	3.3	Bidwell
2001	3940	4 to 30	18	451	404	0.9	Bidwell
2002	6100	5 to 29	18	416	2168	5.2	Bidwell
2003	5061	6 to 30	18	423	1348	3.2	Bidwell
2004	4022	9 to 30	20	470	1298	2.8	Bidwell
2005	3030	8 to 30	13	293	1019	3.5	Bidwell
2006	3856	8 to 30	19	408	2083	5.1	Bidwell
2007	4022	12 to 30	18	324	374	1.2	Zimpfer
2008	5126	13 to 1	20	398	1944	4.9	Zimpfer
2009	3975	11 to 31	24	486	1549	3.2	Zimpfer
2010	Station was not operated						
2011	3550	10 to 31	25	511	1674	3.2	Zimpfer
2012	Station was not operated						
2013	2950	13 to 31	21	385	1137	3	Zimpfer
2014	3150	11 to 27	19	320	1251	3.9	Zimpfer
2015	3974	10 to 27	27	462	1898	4.1	Olson
2016	4637	9 to 27	18	268	1436	5.4	Olson
2017	4568	9 to 27	16	272	1200	4.4	Olson
2018	4807	6 to 28	9	162	1589	9.8	Olson
Mean	4107	-	18	357	1409	4.4	

DISCUSSION

Water levels for the 2018 trapping season were the lowest experienced in the last four years, and we were able to utilize only the areas further into the lakebed of Willow Lake. In concert with historical reports, the water level continued to decrease throughout the season, and almost all traps needed to be moved either a few yards or to an entirely new site depending on the area surroundings and general slope of the substrate. Weather was very cold and rainy, and felt like fall weather all August. We had only a few days of sun. Most days were rainy and moderate winds, but we were able to safely accomplish crossing the lake and checking traps by following the lee side of the lake. Estimated daily high temperatures during banding operation were 8–22°C (46–72°F), and overnight lows were 3–13°C (37–55°F). On the coldest morning, snow had fallen and stuck on the hills at 400 ft higher altitude.

A maximum of 9 swim-in style duck traps with restricted funnels and closed trap doors were run for 22 nights and 162 trap-nights. Trap success was 9.8 ducks per trap night. The combination web address and 1-800 style leg bands were placed on a total of 1,589 ducks. Species totals and compositions were: Mallard (1,367, 86%), American Green-winged Teal (*Anas crecca*; 190, 12%), Northern Pintail (*Anas acuta*; 11, 1%), Blue-winged Teal (*Spatula discors*; 10, 1%), American Wigeon (*Mareca Americana*; 8, 1%), Northern Shoveler (*Anas clypeata*; 1, 0%), Canvasback (*Aythya valisineria*; 1, 0%), and Mallard X American Wigeon Hybrid (1, 0%). The number of ducks caught in 2018 was the 10th best (of 22) and 13% above the long-term average (1,409) at the Willow Lake Banding Site (Table 7). Approximately 10% of banded ducks (N = 153) were of the Hatch Year (HY) or Local (L) age classes (Table 4). These numbers provide evidence of a low production year if we assume young birds were available to be caught at similar rates as adults and that they were available at the time we were trapping. We caught the second most Mallards ever at this station (1,367) and broke the 1,000 mark for the first time since year 2000. Also, of interesting note, was the abnormally high rate at which we caught adult teal (81%), suggesting a possible northward migration decision to molt after breeding in more southern areas of the continent. Arctic-nesting geese started to arrive later in the month, but we didn't witness great migrations until the last day of banding. Hundreds of southward migrating Greater White-fronted (*Anser albifrons*) and Canada (*Branta canadensis*) Geese created a great spectacle for our last day in the marsh.

Odd species caught: We caught and banded the first Canvasback on Willow Lake this year and also banded a Northern Shoveler. But the oddest species captured this August was identified as a Mallard X American Wigeon Hybrid. This bird was an adult and took on the large physical attributes characteristic of a Mallard, but had the markings and smaller blue bill of an American Wigeon. Lastly, the Willow Lake banding station finally eclipsed 30,000 ducks banded in total since 1995. These highlights certainly eased our depression during a cold and rainy month and are a testament to all the hard work and effort applied the last 24 years.

Eighty-two percent (N = 1,309) of total ducks were caught away from the traditional southern trap location (Bidwell site). Because we were able to, we trapped the north side of Willow Lake. Without this strategic motion to trap where the ducks wanted to be, we would have only banded 280 total ducks and we would have been explaining a bust year. The north side of the lake should continue to be considered premier waterfowl habitat when water is available, and

should be trapped as long as we have permission to. In previous years, locals with cabins on the north side of the lake have voiced concerns, but this is the best site on the entire lake, and every effort should be made to be granted permission to do so.

Seventy-seven foreign bands (from previous years at Willow Lake or elsewhere) were recaptured, and one band was worn enough to justify replacement. The number and percentage of original banding locations are as follows: Willow Lake, NWT (from previous years; 71, 92%), Fairview, AB (2, 3%), Peace River, AB (1, 1%), Tilley, AB (1, 1%), Coleharbor, ND (1, 1%), and Ladd Marsh, OR (1, 1%).

Since 1995, 30,919 ducks have been banded at the Willow Lake banding station. The species composition of the 4 most common species (equaling 99%) banded is Mallard (46%), Northern Pintail (33%), American Green-winged Teal (11%) and American Wigeon (8%).

General observations this year were similar to last three year's observations. We experienced very low densities of ducks early in the month, and estimate only 500 ducks were in the entire vicinity when we arrived. We estimated this by taking trips around the lake to scout for possible banding sites. We did notice a gradual increase in the total number of ducks using the Willow Lake area later in the month, and the greatest numbers seen was during our last week on the lake (>5,000).

All garbage was flown out of camp and taken for disposal at the Norman Wells landfill. Multiple black bears (*Ursus americanus*) were seen this year (one was witnessed being shocked by our electric bear fence), and wolves (*Canis lupis*), bald eagles (*Haliaeetus leucocephalus*), and osprey (*Pandion haliaetus*) numbers all increased and were seen around camp and some of our trapping sites. The increase of aerial predators could pose a future impact if birds of prey become accustomed to attacking ducks upon release after banding. The wolf pack on the SE shoreline of Willow Lake has grown to a sustaining 15 or so individuals, and another pack has also formed on the West side of the lake (amounting to about another 10-15 individuals). Wolves were seen almost every day throughout our travels around the lake and in camp, but none made their way into traps (although they checked out many, given tracks discovered) nor into camp beyond our electric fence. Many nights we were witness to the auditory chorus of howling, and it would go on for sometimes hours. Overall, we had no major concerns this year. One last note is the increase in beaver numbers. Beavers, like the wolves, seemed omnipresent.

The project's boat motors, banding carousel and banding board, floats, camping equipment, and supplies have been stored inside the grain silo at the camp for next year. Given the last two year's concerns over mice invading the storage shed for grain, we used all remaining corn this year and left none for next year. Boats (12' Lund and 18' flat bottom Jon boat) were dragged up the shoreline just downstream of camp, flipped upside down, and tied to trees for the off-season. A few jerry cans of regular fuel were left in the storage silo, as we had no means to transport it back to town. We continue to lock the silo with two pad locks to prevent and discourage break-ins, which have occurred in previous years. This is not only disappointing, but a major hassle because we don't know what is stolen until we arrive. Further, replacing those stolen items is impossible for the current year. Upon arrival this year, we found no evidence of tampering with the silo, and all items were intact.

The old traps are located to the side of the silo, outside and fully exposed to the elements. Prior to this year, this has caused a few issues with some traps now rendered unusable because of the threat they pose to the safety of the crew and the birds. All nine of the newly built traps are now safely inside the storage shed and take up the space the grain used to take.

Finally, the banding camp buildings will need to be moved back away from the river sometime in the near future. Due to over-story clearing and warming temperatures, the camp continues to see river bank settling from the thawing of the permafrost, and the river bank has been eroding into the Loche River. In 2015, this created an immediate need to lift one of the sleeping cabins which was >14 inches below level. We were able to lift and re-set this cabin about 10 inches. This is only a temporary fix, and a more permanent solution will be needed soon. The crew also moved the outhouse, cleaned and reorganized the storage silo, and replaced the wood stove and piping in the kitchen building in 2017. All holes created by rodents in the floor of the storage silo were plugged and filled with expanding foam in 2017 and looked to be working well for 2018.

HIGH PRIORITY NEEDS FOR 2019:

1. Purchase and deliver >5000 lbs. (or 100 bags) of corn for the 2018 season. This is normally delivered on the winter road to Norman Wells in January or February of 2019.
2. Personnel (i.e., banding technicians) need to be hired in advance to their departure, and they need to be available to be picked up on the day we fly out to camp. It was proven very hard to open and run a bush camp and band ducks with only two people in 2016.

APPENDIX A. Pictures and captions from Willow Lake, NT banding camp, 2018.

PHOTO 1. The final release of Mallards and all ducks by Willow Lake crew Antoine Horassi, Steve Olson, and Philip Clement. Photo By: Steve Olson



PHOTO 2. New wire allowed us to build very large traps which caught a lot of Mallards. All nine traps would catch about this many (>60) Mallards per day. Photo By: Steve Olson



PHOTO 3. Antoine Horassi, Steve Olson, and Philip Clement showing off the 30,000 duck banded at the Willow Lake banding station. It was fitting that it was an adult male Mallard. Photo By: Steve Olson



PHOTO 4. Steve Olson showing off an adult male Mallard X American Wigeon Hybrid, a rare bird for anywhere, especially Willow Lake. Photo By: Philip Clement



PHOTO 5. Antoine Horassi showing off the adult male Canvasback we caught. This was a first for the Willow Lake banding station. Photo By: Steve Olson



PHOTO 7. Willow Lake duck banding camp. Note low water level and amount of exposed shoreline. Photo By: Steve Olson

