

**FINAL REPORT**  
**WESTERN CANADA COOPERATIVE BANDING PROGRAM**  
**WILLOW LAKE, NORTHWEST TERRITORIES**  
**SEPTEMBER 6, 2017**

**PERSONNEL**

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**ABSTRACT**

In 2017, 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 21<sup>st</sup> 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 06 August and 29 August, respectively. The two technicians from Tulita arrived and departed on the same flights. A maximum of 16 swim-in style duck traps with restricted funnels and closed trap doors were run for 19 nights and 272 trap-nights. Trap success was 4.4 ducks per trap night. The combination web address and 1-800 style leg bands were placed on a total of 1,200 ducks. Species totals and compositions are: American Green-winged Teal (*Anas crecca*; 546, 46%), Mallard (508, 42%), Northern Pintail (75, 6%), Blue-winged Teal (*Spatula discors*; 38, 3%), and American Wigeon (*Mareca Americana*; 33, 3%). The number of ducks caught in 2017 was the 16th best (of 21) and 14% below the long-term average (1,401) 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. Sixty-eight percent (N = 812) of total ducks were caught away from the traditional southern point trap location. Approximately 58% of banded ducks (N = 692) were of the Hatch Year (HY) or Local (L) age classes. Of special note, 26 foreign bands (from previous years at Willow Lake or elsewhere) were recaptured but no bands were 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 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 the 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) 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 the 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 Sahtu Renewable Resources Board (SRRB) have been instrumental in the hiring of local Tulita and Norman Wells banding technicians. This partnership has been very beneficial from all sides. 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). Reasons 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 made an effort to trap ducks wherever we found them, and we did not heed traditional trapping sites as our only option. We found that without trapping multiple locations

and limiting our traps to just the south end we would have only banded 388 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 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 with willow and alder wood.



## **NARRATIVE**

Wildlife Biologist Steve Olson arrived in Norman Wells on 05 August. After a half day of gathering gear, discussing bear safety, shopping for food, and purchasing fuel, Olson departed Norman Wells on 06 August for Tulita to pick up banding technicians Antoine Horassi and Trevor Niditchie, and then 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 four traps were placed at Bidwell Point, River Bay, and Willow Lake Camp sites on 09 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. Despite all our efforts to get ducks feeding on barley and corn, this took much longer than expected, and was heavily attributed to low area numbers and low water levels. Our first ducks were captured on 12 August, and we were then running 14 traps per night among eight locations (one traditional southern and seven different bays in east and north).

By 14 August we were running 16 total traps per night among six sites. Ducks were now much more common (about 2,000 in Willow Lake vicinity) and attracted to our baiting sites. Our two most productive days were 17 and 18 of August when we banded 172 and 146 ducks, respectively (Table 2).

Only two predatory events occurred at the same site this year, both were mink. On 24 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 traps instantly upon evidence of predated ducks. The predator events were not only a disappointment, but they essentially shut down productive sites and forced us to relocate to a location not yet acclimated to by ducks.

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 finally forced to move a few sites because they had turned into mud wallows. These we moved further out into the lakebed.

On 18 August, We received a re-supply via another Twin Otter (North Wright Air) load of food, grain, and fuel. All four of us were picked up with a Pilatus Porter (North Wright Air) the morning of 29 August. Horassi and Niditchie were dropped off in Tulita, and Olson continued on to Norman Wells. Olson then flew out and home via commercial airline on 31 August.

## **METHODS**

Duck trapping was accomplished using newer and very old (most >17 years old) welded wire (1" X 2" size). Wire was cut into panels and constructed into foldable box-style funnel traps (see Benning II duck trap) using hog rings and zip ties. These traps had already been built and stored outside at the camp site from previous years. Upon arrival, we found that Willow Lake had low water, but still had to cut emergent vegetation in a few sites to open feeding areas we were creating. We used scythes to clear vegetation, and then unloaded a few hundred pounds of

barley and corn, marking heavy baited sites with willow sticks or fiberglass poles. 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, 2017, and inevitably some of our banded ducks may be subjected to those early hunting seasons.

2017 was the second of a two year study where feed type (corn vs. traditional barley) and trap type (oval with a large lead (see Dieter et al.) vs. traditional Benning II traps). By strategically placing traps and providing both types of feed in the same banding sites in 2016, and replicating our efforts in 2017, we hope to gain a better understanding and further increase our efficiency and effectiveness of trapping ducks in the north. This research will be analyzed and written up as a research article by winter 2017.

## RESULTS

Table 2. Daily bandings by trap location at Willow Lake, NT, 2017.

Banding Site Name	Day of August 2017																	Grand Total
	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
Bay 1			3	2	16	13	9	5	3	7	5	6	10	8	6	2	7	102
Bidwell		16	25		1	27	27	11	30	48	34	23	29	22	32	34	29	388
Narrows									2	13	3	20	8	2	1			49
River Bay				26	69	117	92	65		8	34	29	48	2	2	6	2	500
Willow Lake Camp	12	9	6	5	6	15	18	16	11	6	6	2	4	6	5	12	15	154
Y-Spot West								2	5									7
Grand Total	12	25	34	33	92	172	146	99	51	82	82	80	99	40	46	54	53	1200

\*Note: Skidoo never caught on, so moved to narrows between WLC and River Bay.

\*Note: Birch never caught on, moved to Narrows.

\*Note: Y-Spot never caught on, moved to River Bay.

\*Note: Y-Spot West caught on, but too late and low water dictated move to Bidwell Point.

\*Note: Ran out of AGWT bands so moved River Bay's Dieter trap to Bidwell Point. Now all 4 Dieters at BP.

\*Note: Mink kill at one of Narrows sites, so moved two B-2's to River Bay.

\*Note: Mink kill at other Narrows site, so moved two B-2's to Willow Lake Camp.

Figure 2. Ducks banded by day in August, 2017 at Willow Lake, NT.

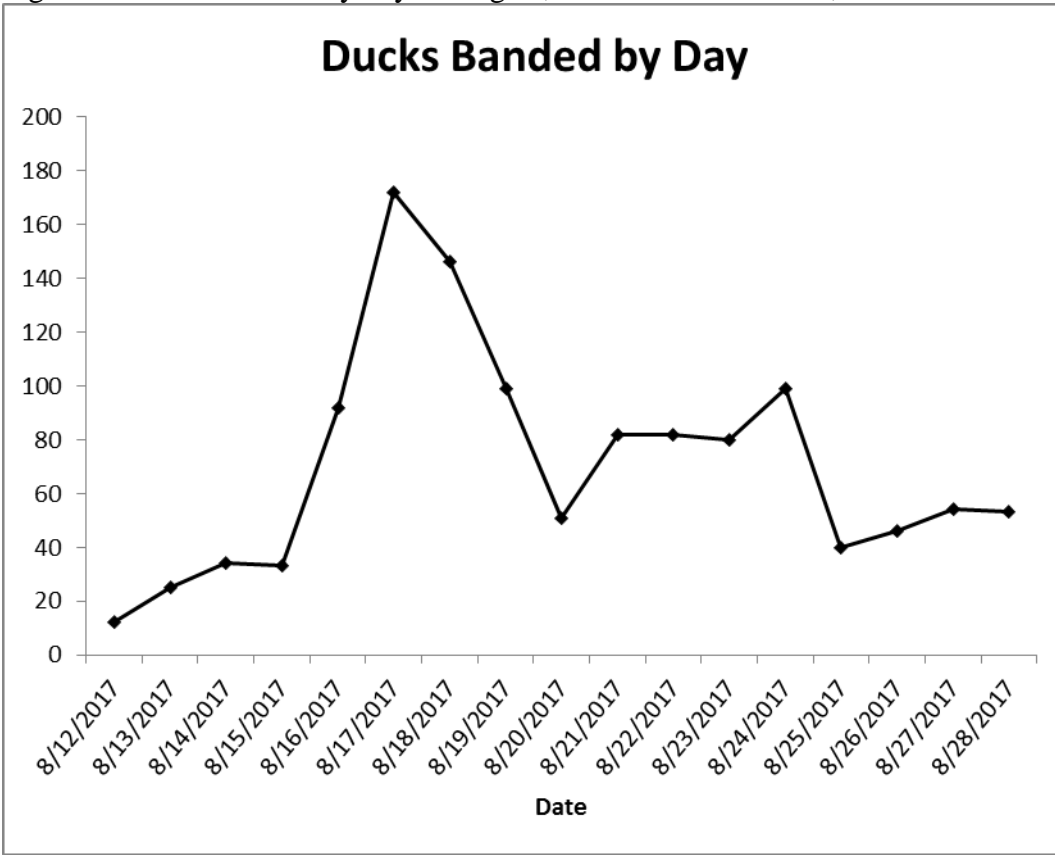


Table 3. Daily bandings by duck species at Willow Lake, NT, 2017.

Species	Day of August 2017																	Grand Total
	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
AGWT	1	4	5	26	67	115	90	69	13	22	36	49	49					546
AMWI	7	2	1		1	4	3	3	2	2		2	1	2			3	33
BWTE				1	10	11	7	1			2		4	1	1			38
MALL	1	16	27	1	14	39	40	24	35	52	40	26	41	32	36	45	39	508
NOPI	3	3	1	5		3	6	2	1	6	4	3	4	5	9	9	11	75
Grand Total	12	25	34	33	92	172	146	99	51	82	82	80	99	40	46	54	53	1200



Table 4. Duck species, age, and sex composition and summary at Willow Lake, NT, 2017.

Species	Sex		Grand Total	Species Composition	Percent Hatch Year (HY) and Local (L) by Species
	F	M			
AGWT	237	309	546	45.5%	
AHY	50	100	150		
HY	187	209	396		72.5%
AMWI	19	14	33	2.8%	
AHY	6	6	12		
HY	9	4	13		
L	4	4	8		63.6%
MALL	230	278	508	42.3%	
AHY	125	179	304		
HY	104	99	203		
L	1		1		40.2%
NOPI	45	30	75	6.3%	
AHY	10	7	17		
HY	35	23	58		77.3%
BWTE	17	21	38	3.2%	
AHY	10	15	25		
HY	7	6	13		34.2%
Grand Total	548	652	1200	100%	57.6%

Table 5. Trap mortality by location and cause of death during trapping at Willow Lake, NT, 2017.

Location	Cause of Death		
	Drowned	Mink Killed	Total
Bidwell	1		1
Narrows		19	19
Grand Total	1	19	20

Table 6. Trap nights and summary statistics at Willow Lake, NT, 2017.

<b>Willow Lake trap nights and summary statistics</b>					
<b>Date</b>	<b>Number of Traps Operating</b>	<b>Total Bands</b>	<b>Trapping Success (Total bands per Trap Night)</b>	<b>Bags of CORN used</b>	<b>Bags of BARLEY used</b>
8/6/2017	-	-	-	1	1
8/7/2017	-	-	-	3	3
8/8/2017	-	-	-	1	1
8/9/2017	4	-	-	2	2
8/10/2017	8	0	0.0	1	1
8/11/2017	12	0	0.0	1	1
8/12/2017	14	12	1.0	2	2
8/13/2017	14	25	1.8	1	2
8/14/2017	16	34	2.4	2	2
8/15/2017	16	33	2.1	2	2
8/16/2017	16	92	5.8	2	2
8/17/2017	16	172	10.8	2	2
8/18/2017	16	146	9.1	3	3
8/19/2017	16	99	6.2	3	2
8/20/2017	16	51	3.2	2	2
8/21/2017	16	82	5.1	2	2
8/22/2017	16	82	5.1	3	2
8/23/2017	16	80	5.0	3	2
8/24/2017	16	99	6.2	3	2
8/25/2017	16	40	2.5	3	2
8/26/2017	16	46	2.9	3	3
8/27/2017	16	54	3.4	6	1
8/28/2017	-	53	3.3	-	-
<b>Totals</b>	<b>272</b>	<b>1200</b>	<b>4.4</b>	<b>51</b>	<b>42</b>

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
Mean	4074	-	18	366	1401	4.1	

## DISCUSSION

Water levels for the 2017 trapping season were the lowest experienced in the last three 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 hot (record-breaking 95 degree heat) and somewhat milder this year. We had only a few days of rain and moderate winds, but 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 10–35°C (50–95°F), and overnight lows were 6–20°C (43–68°F).

A maximum of 16 swim-in style duck traps with restricted funnels and closed trap doors were run for 19 nights and 272 trap-nights. Trap success was 4.4 ducks per trap night. The combination web address and 1-800 style leg bands were placed on a total of 1,200 ducks. Species totals and compositions are: American Green-winged Teal (*Anas crecca*; 546, 46%), Mallard (508, 42%), Northern Pintail (75, 6%), Blue-winged Teal (*Spatula discors*; 38, 3%), and American Wigeon (*Mareca Americana*; 33, 3%). The number of ducks caught in 2017 was

the 16th best (of 21) and 14% below the long-term average (1,401) at the Willow Lake Banding Site (Table 7). Approximately 58% of banded ducks (N = 692) were of the Hatch Year (HY) or Local (L) age classes (Table 4). These numbers provide evidence to a high 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 an all-time station record of 546 American Green-winged Teal and we could have caught more had we not run out of bands in their size. We feel the number of teal (green- and blue-winged) were abnormally high, but may be reflective of the extreme heat and low water conditions making the marsh more suitable for smaller duck species. Also, of interesting note, was the abnormally high rate at which we caught adult teal (30%), suggesting a northward migration decision to molt after breeding in more southern areas of the continent. Arctic-nesting geese also started to arrive later in the month, and we witnessed great migrations the last two weeks of August. Hundreds and thousands of southward migrating Greater White-fronted (*Anser albifrons*) and Canada (*Branta canadensis*) Geese created a great spectacle for the last week of August.

Sixty-eight percent (N = 812) 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 388 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.

Twenty-six foreign bands (from previous years at Willow Lake or elsewhere) were recaptured, but no bands were worn enough to justify replacement. The number and percentage of original banding locations are as follows: Willow Lake, NWT (from previous years; 25, 96%), and Manitoba (1, 4%). Unlike other years, the total foreign recaps decreased this year for the total birds we handle, and 96% came from birds previously banded at Willow Lake. This is not inconsistent with our theory of an overflight the last couple years, because we saw little evidence to support that this year.

Since 1995, 29,419 ducks have been banded at the Willow Lake banding station. The species composition of the 4 most common species (99%) banded is Mallard (44%) and Northern Pintail (35%), followed by American Green-winged Teal and American Wigeon at about 11% and 9%, respectively.

General observations this year were similar to last two 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. We had no major concerns this year.

The project's boat motors, banding carousel and banding board, floats, camping equipment, bait (approximately 5,070 lbs. of corn), and supplies have been stored inside the grain silo at the camp 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. Six 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 recent 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.

Traps are located to the side of the silo, outside and fully exposed to the elements. 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.

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 this year. All holes created by rodents in the floor of the storage silo were plugged and filled with expanding foam.

#### **HIGH PRIORITY NEEDS FOR 2018:**

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 2018.
2. Purchase and deliver 6 rolls (100 ft.) of heavy duty 1" X 2" welded wire to replace some trap wire that has seen over 20 years of weathering. This can be shipped via the winter road as well.
3. Personnel (i.e., banding technicians) need to be hired in advance greater than two days prior 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, 2017.

**PHOTO 1.** The final release of American Green-winged Teal and all ducks by Willow Lake crew Steve Olson, Antoine Horassi, and Trevor Niditchie. Photo By: Steve Olson



PHOTO 2. Antoine Horassi and Trevor Niditchie carrying the catch box to the trap door in a particularly teal-loaded trap. Photo By: Steve Olson



PHOTO 3. Trevor Niditchie and Antoine Horassi showing off their new banding skills while banding two Mallards. Note the wildfire smoke in the air. Photo By: Steve Olson





PHOTO 4. Steve Olson showing off an adult female Blue-winged Teal, a rare bird for the location of Willow Lake. Photo By: Steve Olson



PHOTO 5. Trevor Niditchie and Antoine Horassi clearing and baiting a future trapping site.

Photo By: Steve Olson



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

