

Tatlayoko Lake Bird Observatory

2010 Annual Report

Steve Ogle
with
The Nature Conservancy of Canada
Canadian Wildlife Service



Your support helps us protect birds and their habitats.

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THANK YOU!

Thank you to the following people for making our fifth season a great success:

Peter and Roma Shaughnessy	Harriet Rueggeberg
Barry Lancaster	Mary Mitchell
Margaret Hubble	Judy and Milt Krieger
Robb Paterson	Sue Huddart and Diane
Karen Krushelnick	Rick Howie
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Anna Plancherel	Cedar, Rod, Tiegan, Osa, Fritz, Sally Mueller
Amelie Rousseau	Bryn, Lisa, Cynan, Tao and Jude
Andrew and Gail Harcombe	Jorg Fischer and family
Amy O'Neill	Audrey and Nils Hoeg
Rick Schortinghuis	Cory Rabourn
Glenda McKim	Wendy Easton, CWS
Sam, Kelly and family	Dick Cannings
Bob Sagar	Xeni Gwet'in First Nations

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*NCC's Conservation Volunteers program
Royal Bank of Canada
Mr. James Lornie
BC Trust for Public Lands*



ABOUT US

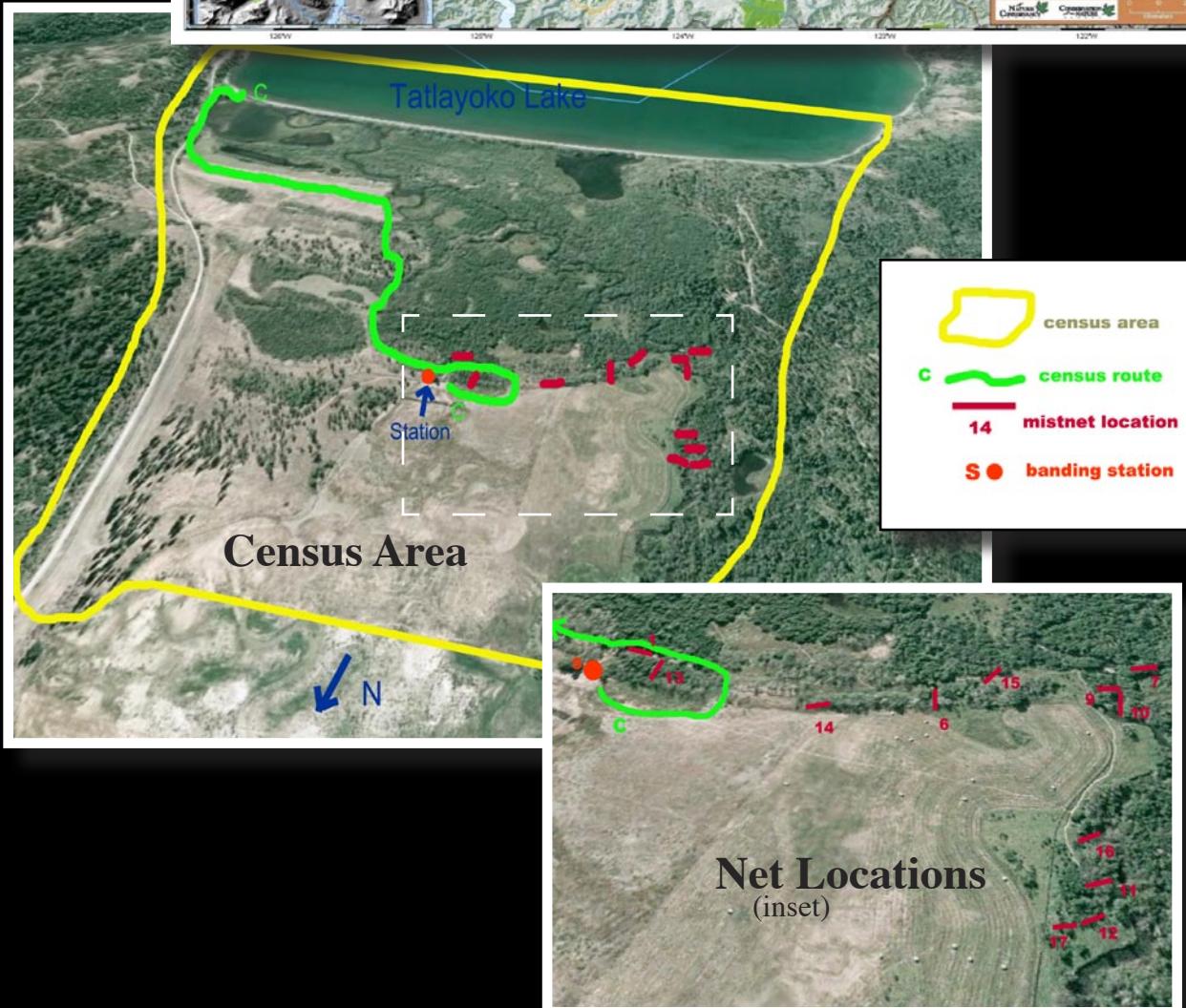
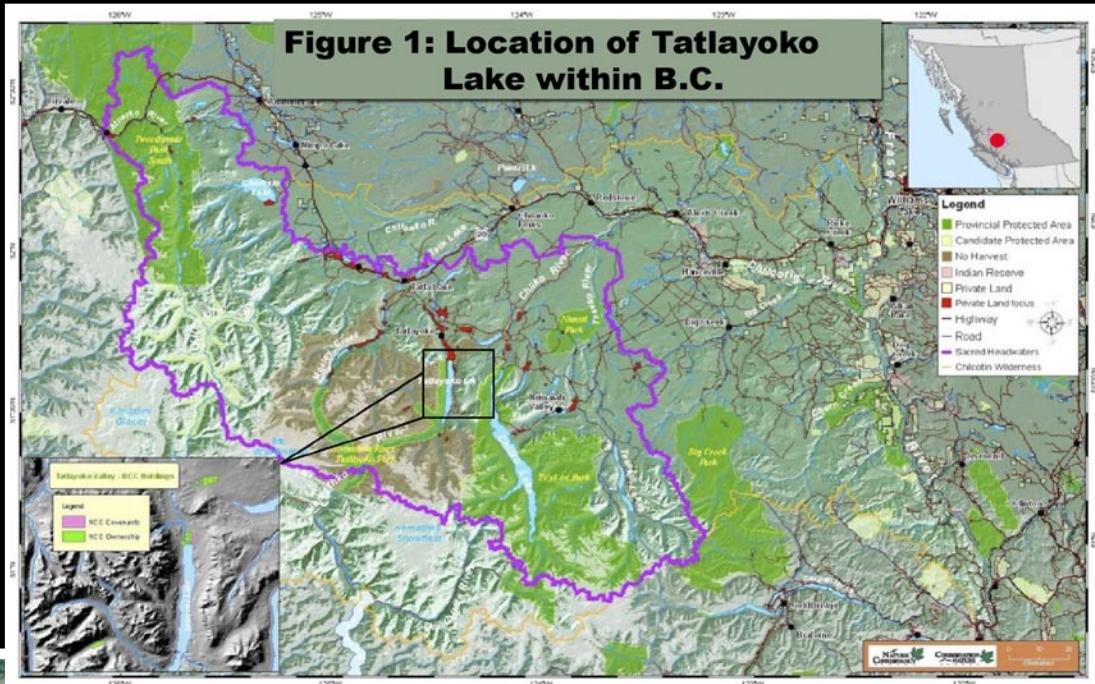
This season—August and September, 2010—was the Tatlayoko Lake Bird Observatory’s fifth season of our highly successful bird migration monitoring program. The primary objective of our operation is to monitor, assess, and demonstrate bird migration patterns in this part of British Columbia’s Coast Mountains. Founded in 2006 by the Nature Conservancy of Canada (NCC), our observatory is part of a science and monitoring initiative located on several conservation properties in the Tatlayoko Valley of south-central BC. We are based in a valley-bottom tract of active rangeland and riparian habitat known as the Tatlayoko Ranch, acquired by NCC in 1999. This tract of land, especially the riparian area, is a productive stopover point for birds passing through during the fall migration season (see TLBO reports 2007-2009). Our data is submitted annually to the Canadian Migration Monitoring Network (CMMN), part of an international program to evaluate migratory bird population trends over the long term.

As an ongoing project, the Tatlayoko Lake Bird Observatory (TLBO) will not only help evaluate the success of NCC’s conservation strategies but also provide research and educational opportunities for local, regional and international initiatives. Data is shared with the Canadian Wildlife Service, Bird Studies Canada and other research and monitoring programs.



Visitors make our day

Location:



Activities:

TLBO operates twelve 12-metre mist-nets designed to catch birds moving through understory forest. On each day, two banders and varying numbers of volunteers are present at the site. **Banding** occurs every morning for six hours during the two-month season, as weather permits. Captured birds are extracted from nets at regular intervals and brought to the station for banding and the following measurements: Species, age, sex, weight, wing length, moult, and fat score. Data are entered into our database using MS Excel. Birds that are already banded are sometimes captured again sometime later, in which case all of the above measurements are re-recorded. Same-day recaptures are released at the net.

Census is done every day by an experienced observer following the standard route shown above. All birds are counted during the roughly one hour duration, as long as they are within the census area boundary (yellow line).

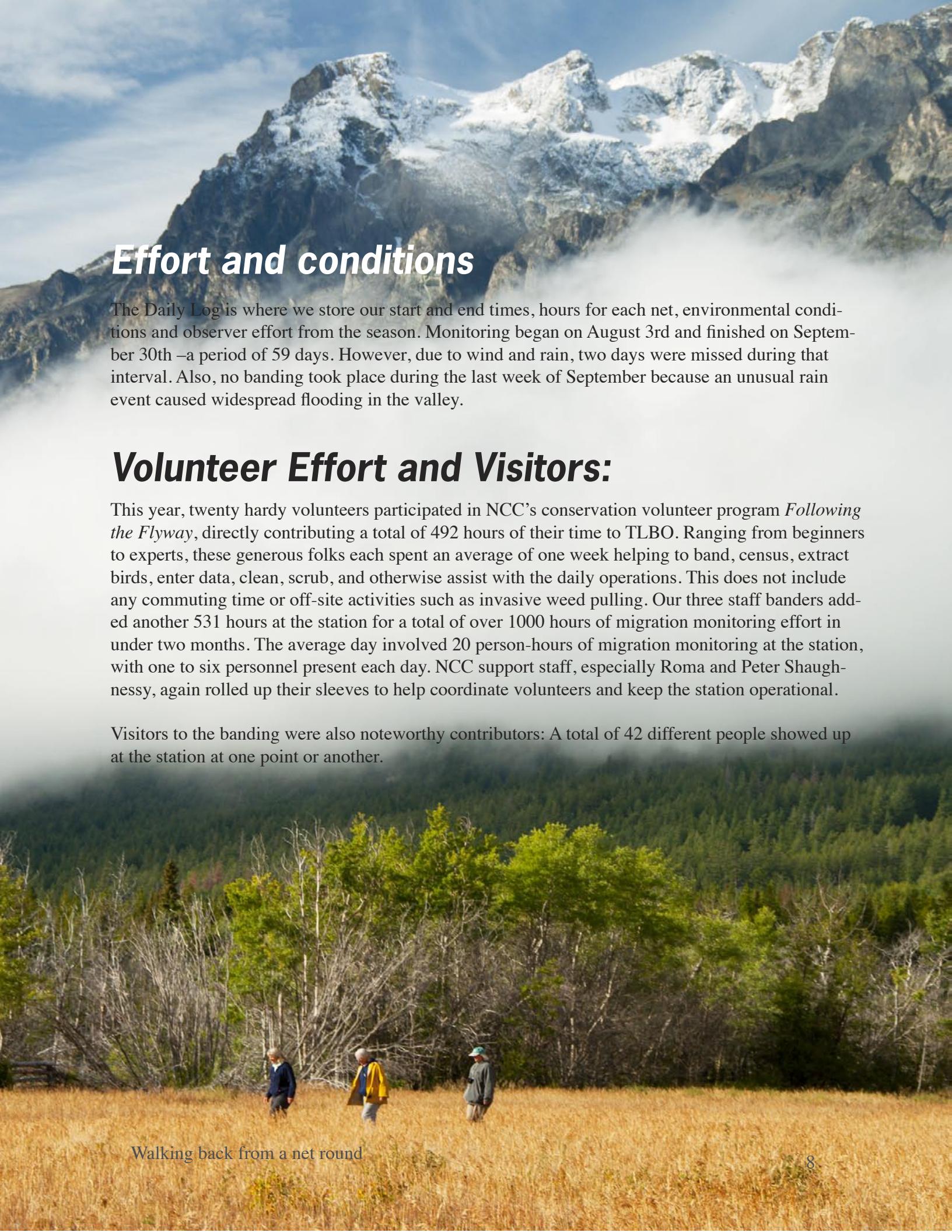
Incidental observations are also recorded—namely birds that are sighted during regular operations exclusive from banding or census. A daily running tally is compiled by people hanging around the station, walking around and while on net rounds.

Each day, totals from banding, recaptures, census and incidental observations are compiled and subjectively tallied to come up with a number for each species. The result is a “**Daily Estimated Total**,” or ET, which is a daily assessment of how many individuals of each species were counted in the areas covered by observers during the morning’s operations. We aim to rule out double-counting of birds.



A close-up, profile view of a hawk's head and upper body. The bird has dark brown and tan mottled feathers. Its large, dark brown eye is prominent. Below the eye, there is a patch of yellow feathers, which are likely leg bands. The beak is dark and hooked. The background is a solid, muted green.

RESULTS



Effort and conditions

The Daily Log is where we store our start and end times, hours for each net, environmental conditions and observer effort from the season. Monitoring began on August 3rd and finished on September 30th –a period of 59 days. However, due to wind and rain, two days were missed during that interval. Also, no banding took place during the last week of September because an unusual rain event caused widespread flooding in the valley.

Volunteer Effort and Visitors:

This year, twenty hardy volunteers participated in NCC's conservation volunteer program *Following the Flyway*, directly contributing a total of 492 hours of their time to TLBO. Ranging from beginners to experts, these generous folks each spent an average of one week helping to band, census, extract birds, enter data, clean, scrub, and otherwise assist with the daily operations. This does not include any commuting time or off-site activities such as invasive weed pulling. Our three staff banders added another 531 hours at the station for a total of over 1000 hours of migration monitoring effort in under two months. The average day involved 20 person-hours of migration monitoring at the station, with one to six personnel present each day. NCC support staff, especially Roma and Peter Shaughnessy, again rolled up their sleeves to help coordinate volunteers and keep the station operational.

Visitors to the banding were also noteworthy contributors: A total of 42 different people showed up at the station at one point or another.



Walking back from a net round

Bander statistics:

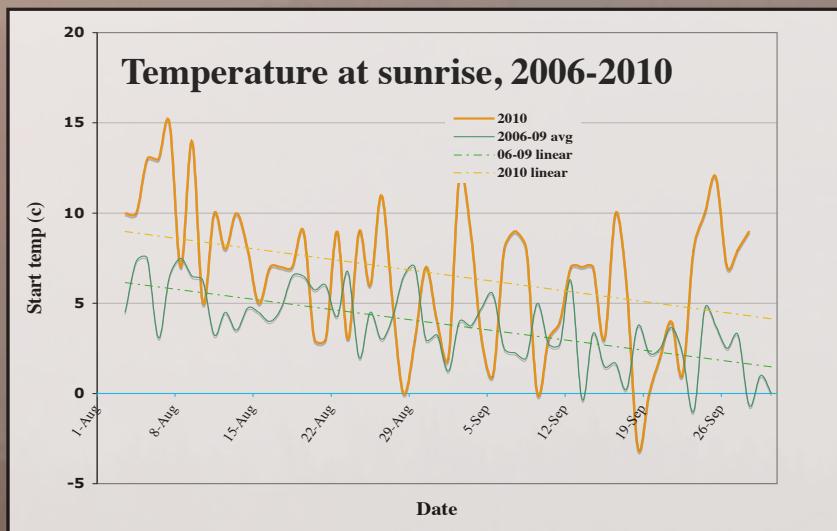
Bander	Status	Banded	Percent of total	Recaps
Chris Chutter	bander	456	25	92
Avery Bartels	bander	346	19	43
Steve Ogle	bander	852	47	146
Barry Lancaster	volunteer	101	6	12
Amelie Rousseau	volunteer	59	3	10
Rick Schortinghuis	volunteer	4	0.2	0

Environmental conditions:

This season was again fairly warm overall, with an average daily start temperature (recorded at dawn most days) of 6.6 Celsius, compared to 6.9 C in 2009. It was about 3 degrees warmer than the 2006-09 average. The average closing temperature was 19.3 C, slightly lower than in 2009.

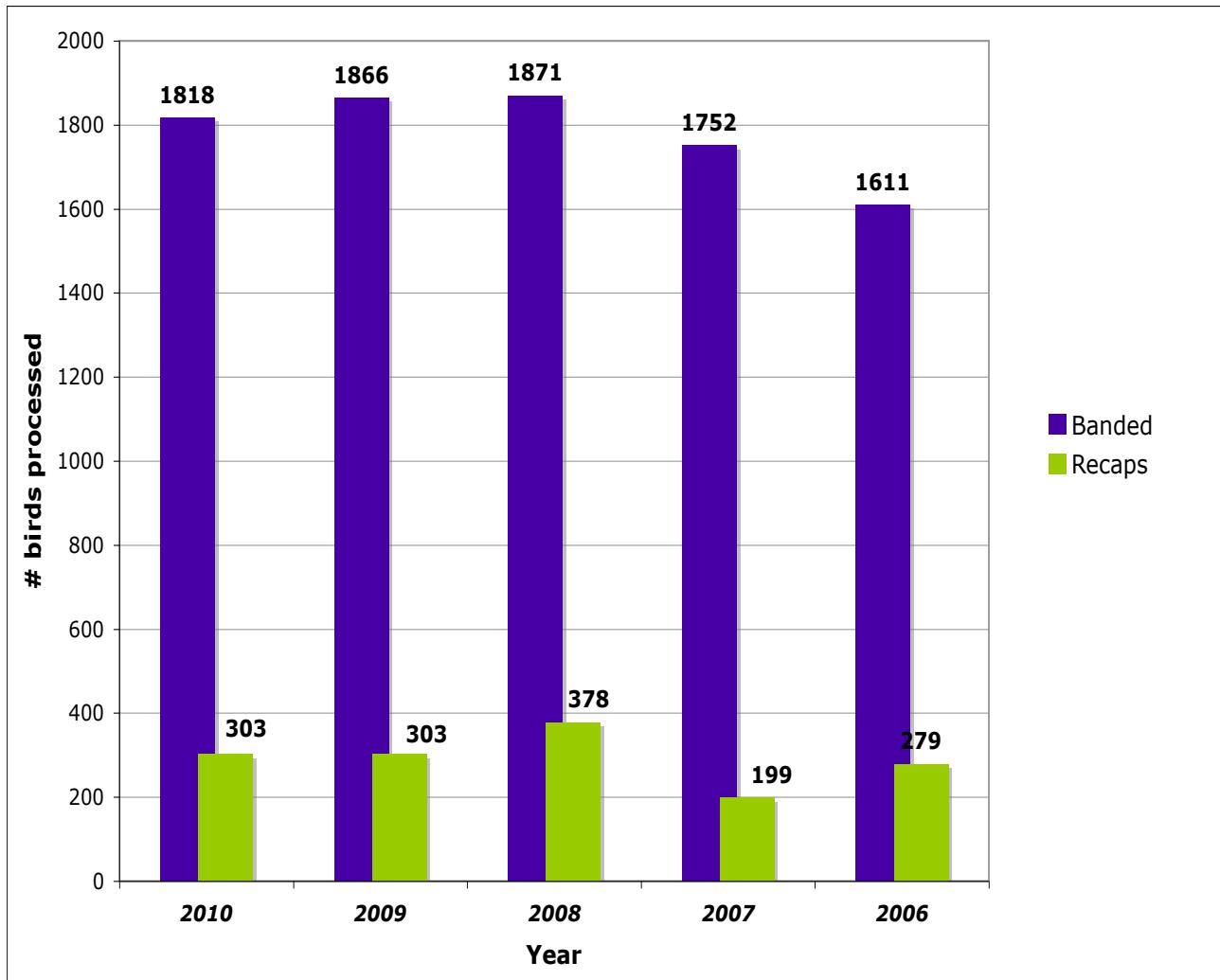
Certainly, the “Flood of 2010” was the main weather event of the year, which happened at the tail end of an already wet September, when around 200mm of rain fell upon parts of the Chilcotin in less than 48 hours. This caused a record flood, mainly in Bella Coola where Steve the bander was visiting for one night, but ended up being stranded for more than a week. The Homathko River by the station spilled its banks to nearly as far as the banding station several hundred metres away, and the net lanes and fields became lakes for the better part of a week. This caused us to shut down banding about a week earlier than usual.

The flood was almost enough drama to make us forget that forest fires yet again blocked access to the Chilcotin during August and put the Tatlayoko Valley on evacuation alert.



Banding results:

Number of birds banded and recaptured in each year



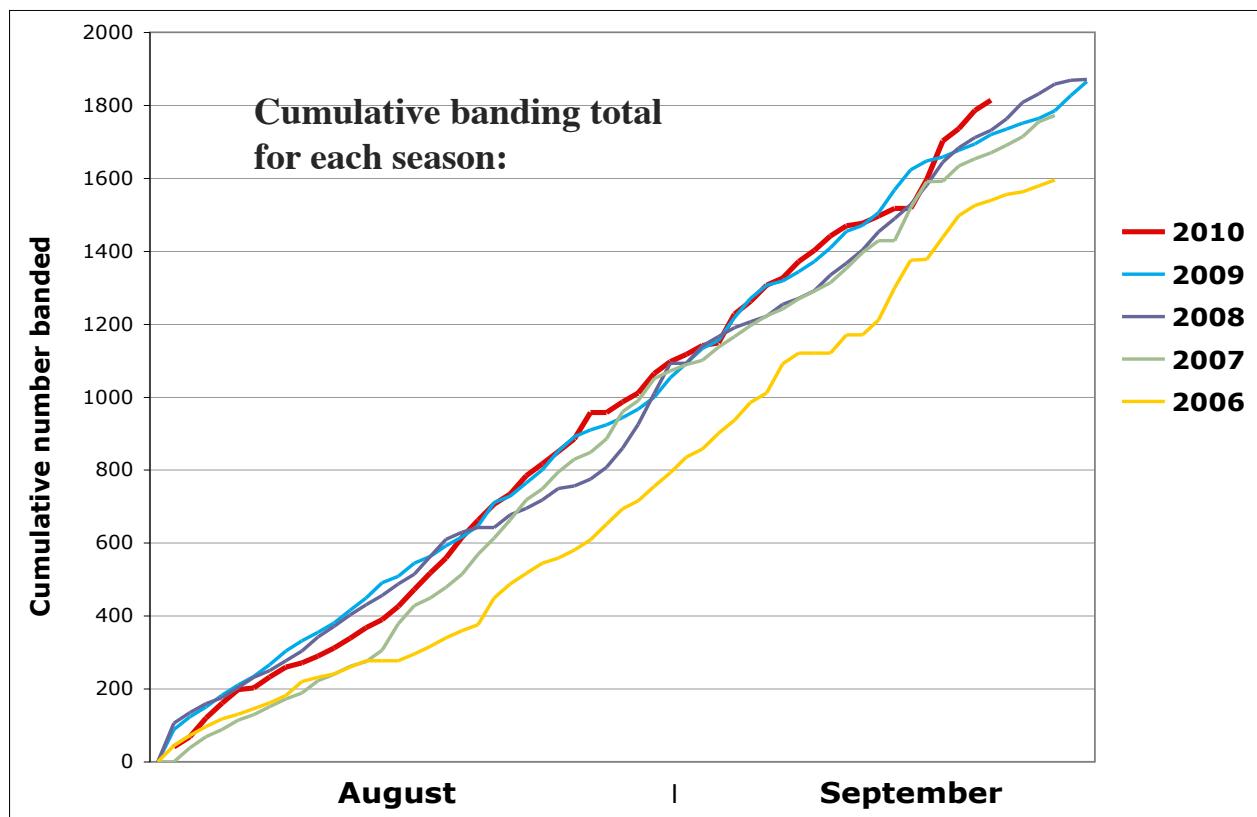
TLBO has now banded 8918 birds after five seasons. Though we were on track for a record season in 2010 with a huge flood of birds during the third week of September, the real flood shut us down early. The overall tally of 1818 birds banded and 303 recaptured was our third highest season.

Things were slow and steady for the first couple of weeks but increased later in August. With few truly quiet days the banding totals chugged along with a daily average higher than previous seasons (36 birds/day), culminating with two big days on September 20th and 21st, the latter being our highest daily total ever. From a migration perspective, September 23rd was arguably the most memorable day in TLBO history—see text below.

Our **big mornings** occurred on the following dates:

Date	Banded	Recaptured
August 22 nd	57	8
August 26 th	50	6
August 30 th	72	15
September 3 rd	54	8
September 8 th	81	1
September 20 th	79	2
September 21 st	106*	6
September 23 rd	50	3
<i>Daily average:</i>	36	6

*record high



Top ten species banded in 2010:

Rank	Species	Number banded 2010	Number banded 2009	Number banded -all years-
1	LINCOLN'S SPARROW	227	241	1151
2	WARBLING VIREO	203	162	734
3	COMMON YELLOWTHROAT	175	113	675
4	SWAINSON'S THRUSH	148	141	609
5	SONG SPARROW	141	101	686
6	RUBY-CROWNED KINGLET	130	123	609
7	WHITE-CROWNED SPARROW	100	23	303
8	ORANGE-CROWNED WARBLER	69	126	566
9	YELLOW WARBLER	69	104	393
10	WILSON'S WARBLER	62	92	350

55

This year we banded 55 species—one less than 2009 and 2008, but higher than the 2007 and 2006 totals of 54

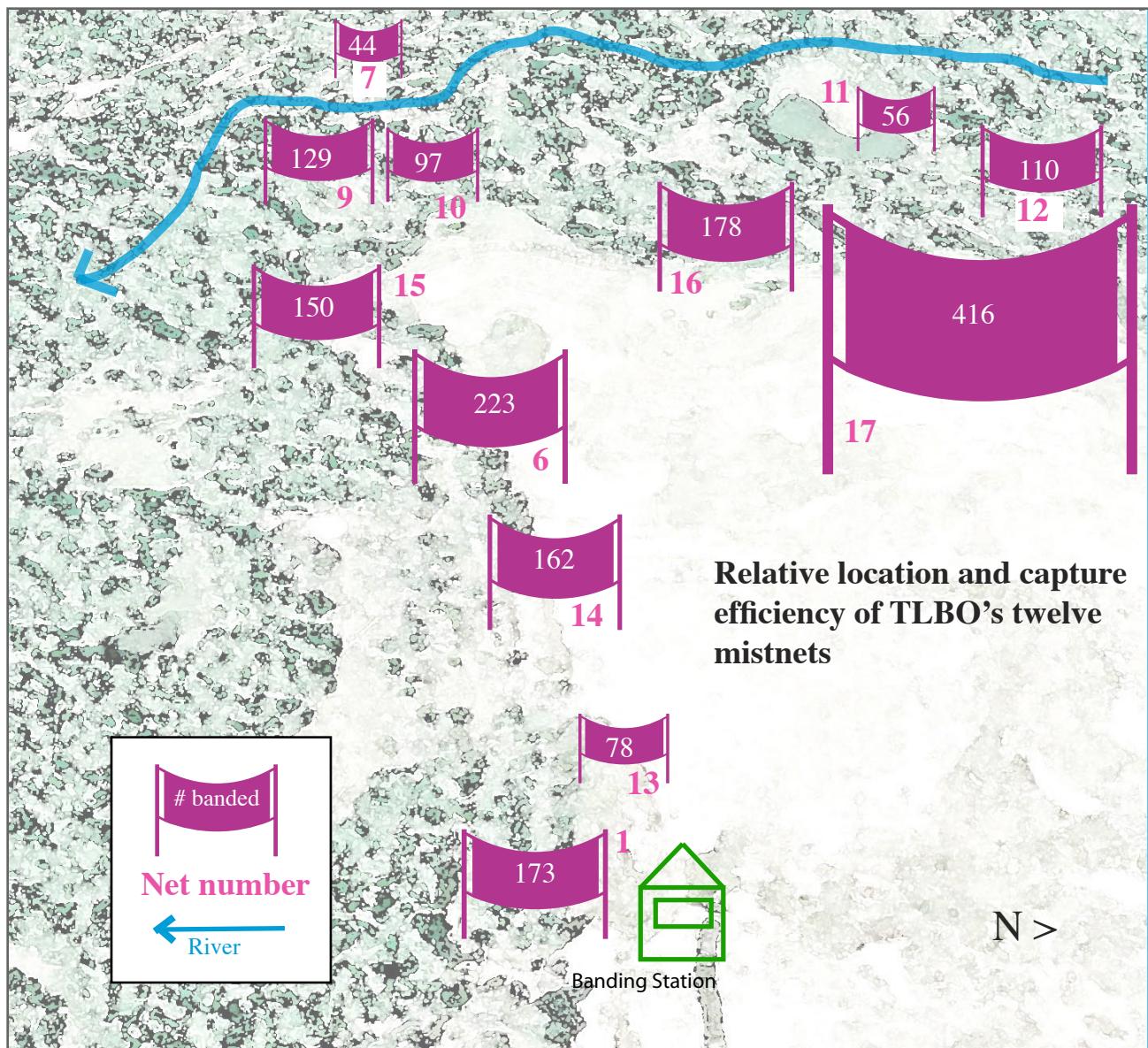
This season Lincoln's Sparrows topped the chart yet again as the most commonly banded species and remain the overall number one at TLBO. One-in-eight birds we band are this supposedly elusive species. Warbling Vireos also put in a good showing and Common Yellowthroats were the third most frequently banded species. Swainson's Thrush and Northern Waterthrush were both caught in record numbers this year, though only slightly more than previous totals. White-crowned Sparrows, on the other hand, invaded the valley in September and tripled the previous annual banding average. Golden-crowned Sparrows and Lazuli Buntings were also markedly abundant in the nets this year.

Although still ranking in our top ten, only 69 Orange-crowned Warblers were caught, making this a record low season for this species. All species of flycatchers made a relatively poor showing compared with 2009 but showed average totals. There were few other stand-outs in terms of abundance.

Net success:

We've shown before that the exact placement of a mist-net is very important when it comes to the "catchability" of that net. In 2006 when we added net 17 beside net 12 we started bringing over 30% more birds into the banding station, yet net twelve still resides at number eight in the net rankings despite being directly adjacent to the hugely successful net 17. This is one of the reasons why we keep the nets in the exact locations every year and try to minimize any changes in the habitat over time.

Net 17 caught 416 birds in 2010—nearly a quarter of our overall catch. It's located in a perfect set of low alders between the river and big field. Nets 7 and 11, on the other hand, do not sit in an ideal "micro-corridor" for bird movements, and are dismal in comparison. However, they do attract some interesting birds such as wrens and hawks.



Census:

Census allows us to count many species not caught in the nets, such as those birds that stay high in the canopy, out in fields, in the water, or up in the air. This season, we only banded 49 Yellow-rumped Warblers but censused nearly a thousand, while Pine Siskins were 100 times more likely to be recorded on census than in the nets. These and other species were often recorded in even higher numbers from incidental sightings (“obs”), which are incorporated into Estimated Totals.

Waxwings and finches were two groups less commonly censused this year than in 2009. Siskins, both species of crossbills and Purple Finches were all detected three to six times more frequently in 2009. Forty-two Rufous Hummingbirds were censused in 2009 but only three noted this season. These trends are similar for banding and ETs between seasons. As for increases, as with banding totals White-crowned Sparrows were three times more abundant this year than last (175 vs. 61 censused).

117 species were recorded on census this year—up six from last season. The average number per day was 29 species (vs. 26 in 2009), with a high of 44 on August 6th. This tops the TLBO daily record of 43 species censused on 23 August, 2007.

Top ten species censused in 2010:

Species	Rank	Total number detected	% days detected	Rank in 2009
Yellow-rumped Warbler	1	919	93	2
Pine Siskin	2	579	93	1
American Crow	3	552	70	9
Mallard	4	502	86	6
American Wigeon	5	394	40	10
Cedar Waxwing	6	375	67	3
Black-capped Chickadee	7	271	88	8
American Robin	8	267	82	4
Ruby-crowned Kinglet	9	202	51	14
Song Sparrow	10	202	93	11

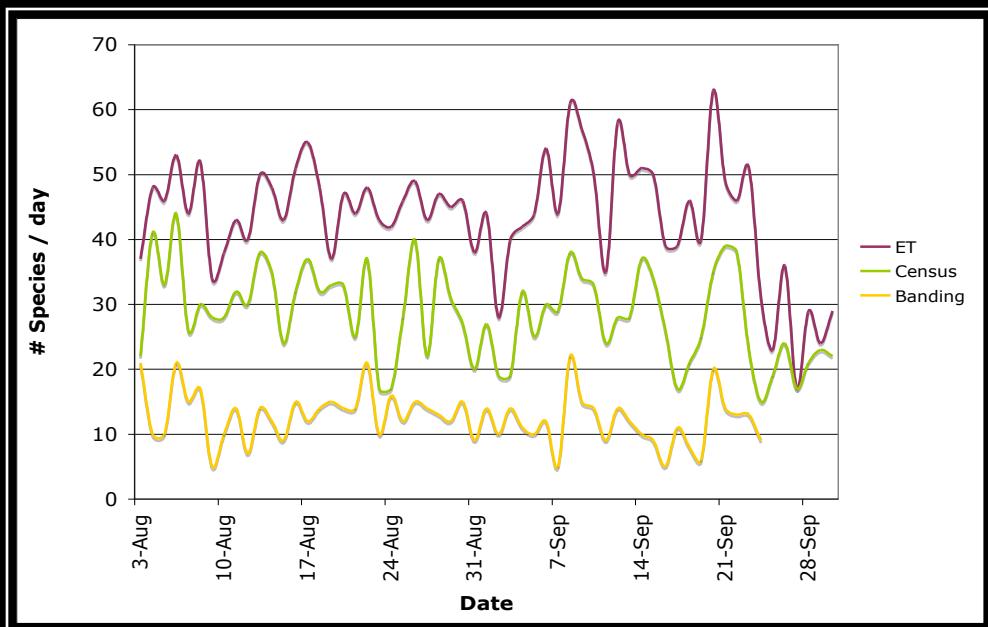


Species Diversity:

We normally summarize species diversity using estimated total (ET) data, incorporating banding, census and incidental observations. Contrary to the normal trend, diversity did not decrease as the season progressed, except at the tail end when banding and observer effort were diminished. Mid-September not only brought our big numbers but also the highest species diversity of the season.

Eleven (!) new species were added to the TLBO census area list this year: Surf Scoter, Redhead, Eurasian Wigeon, Northern Pygmy-Owl, Lewis' Woodpecker, American Three-toed Woodpecker, Vaux's Swift, Yellow-bellied Flycatcher, Say's Phoebe, Western Bluebird and Indigo Bunting. For more information, see the *Highlight Sightings* section, below.

Species diversity patterns from banding, census and daily totals:



Magnolia Warbler (4th ever)



Golden-crowned Sparrow



Eurasian Wigeon (A. Bartels)



Indigo Bunting

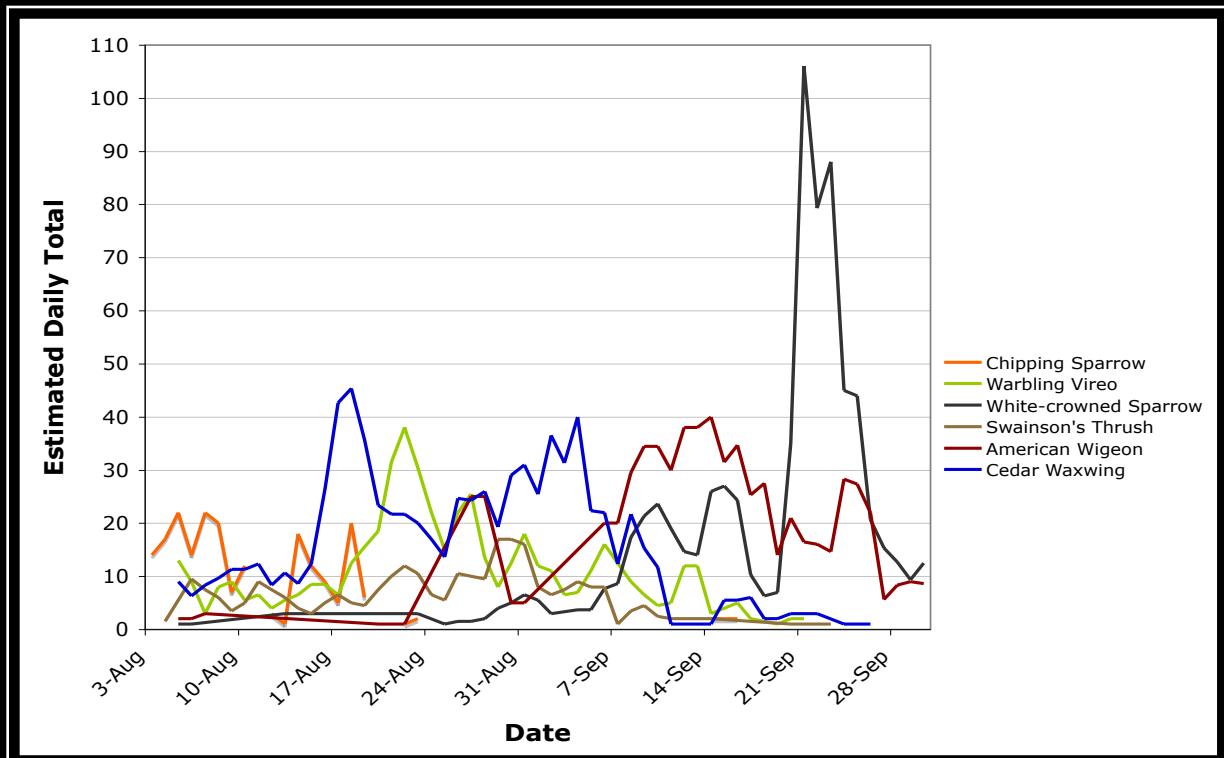
Chronology:

It is always interesting to observe the turnover of species as the season progresses. By late September it's easy to forget how many American Redstarts were chirping early in the season, because they and other species have long gone. The chart below shows the pattern of abundance over time for some different species than we normally use to display the chronology of the season.



Lincoln Creek Ranch House (NCC headquarters)

Seasonal abundance of some common species:



Recaptures:

There were 303 recaptures of 21 species this season. Out of the 1818 birds banded, 185 individuals were recaptured one or more times, plus an additional 27 recaps of birds banded in previous years, gives a total of 212 individuals recapped this season. Most (75%) birds were recaptured only once but others came back repeatedly to give us our grand total of 303 recaps processed. One breeding female Common Yellowthroat was recaptured six times this year and was originally banded in 2007. Song Sparrows and White-crowned Sparrows in particular were likely to be recaptured two or more times (36% and 50% of individuals).

Half of all Black-capped Chickadees and nearly two-thirds of Hairy Woodpeckers banded this year were captured again at some point. Despite being resident species, only three of eleven chickadees were recapped from previous years and there were no inter-annual woodpecker returns. No Downy Woodpeckers were recaptured this season. Common Yellowthroats and Song Sparrows—two species that breed on site and stay around for most of the banding season—were also recaptured frequently, while other common species including American Redstarts and White-crowned Sparrows appeared less likely to be recaptured. This could be due to their propensity to move through in migratory waves, or perhaps in the case of the redstarts, they just don't hang around long enough for us to recapture them.

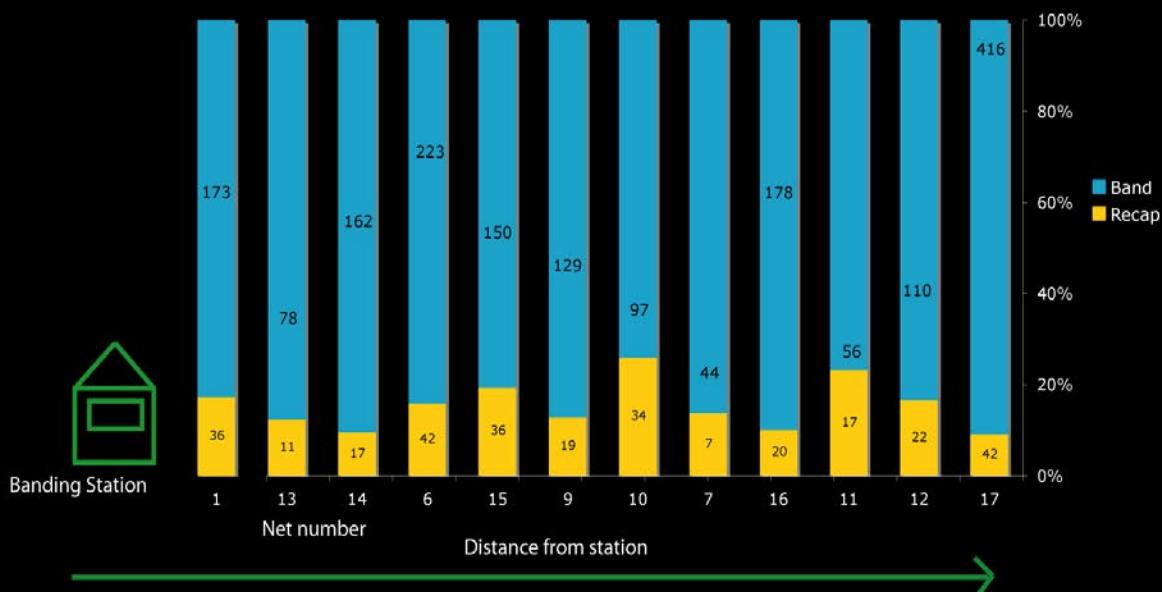
Top ten most commonly recaptured species:

Species	Total recaptured	Individuals recaptured	Individuals banded pre-2010	Number banded	Percentage recaptured*
SONG SPARROW	71	44	2	141	30
COMMON YELLOWTHROAT	64	42	7	175	20
LINCOLN'S SPARROW	32	24	0	227	11
WARBLING VIREO	25	18	0	203	9
SWAINSON'S THRUSH	23	19	5	148	9
BLACK-CAPPED CHICKADEE	17	11	3	17	47
NORTHERN WATERTHRUSH	11	9	2	59	12
WHITE-CROWNED SPARROW	9	5	0	100	5
HAIRY WOODPECKER	8	5	0	8	63
AMERICAN REDSTART	7	6	1	56	7

*Same-year odds of individuals being recaptured

Recapture ratios of mist nets

This graph shows the relative number of **recaptures** to **banded** for each net, from the closest to the station to the farthest. It also includes the actual number of recaptures and banded for each net. We might expect that the nets closest to the station would have the highest ratios of recaptured birds but this is not the case. Although the ratios do not decrease as expected (with distance from release), birds are certainly being recaptured with a higher frequency in certain nets.



Interannual Recaps:

Twenty-seven birds of eleven species were recaptured from previous years. By definition, these are all adults. It would be safe to assume that most of these “returns” are breeding individuals that have survived at least one journey to and from the wintering grounds.

Black-capped Chickadees, Common Yellowthroats, and Swainson Thrushes seem to be the most numerous inter-annual recaptures each year and, not coincidentally, breed on site in abundance. Although we band many, there are relatively few Warbling Vireos and Lincoln’s Sparrows showing up as returns, and correspondingly we do not capture many in breeding condition.

Two-thirds (18 of 27) of returns consisted of birds banded last year, while the remainder are examples of individuals that put on more serious mileage. This includes one Swainson’s Thrush that was banded as a young bird in 2006 and returned almost every year to breed, migrating upwards of 80,000 km’s during its lifetime so far (see chart on next page). We assume that all migrants are making movements of various distances but recapturing birds between years allows us to verify and witness (indirectly) this astonishing phenomenon of long-distance site fidelity.

Because of its remote location, some of us banders and volunteers feel that Tatlayoko Lake requires a lot of travel to visit each year. Let’s put that into perspective from a bird’s point of view. The table on the next page shows a five-year synopsis for each of the 27 returns captured at TLBO this year. Our oldest-known bird is a Black-capped Chickadee captured as an adult in 2006, meaning it was hatched in 2005 or earlier, thus aging it at a minimum of five years. Being a chickadee, it probably hasn’t migrated much during that time. Our oldest Swainson’s Thrush on the other hand, (4 years and a couple of months old; banded as young or “hatch year” in 2007) has traveled on no less than eight one-way journeys to and from its wintering grounds.

At minimum (say it is from a wintering population in southern Mexico- the northern part of this species’ wintering range), this one bird has tallied approximately 32,000km during its lifetime. At most (if wintering in Bolivia), this 30 gram migrant has flown 80,000km during its lifetime travels. Since we do not know where “our” TLBO birds spend their winters or even their flight paths for

that matter, we’ve derived an approximate middle ground between the northern and southern extremes of each species’ wintering range.

Western
Tanager

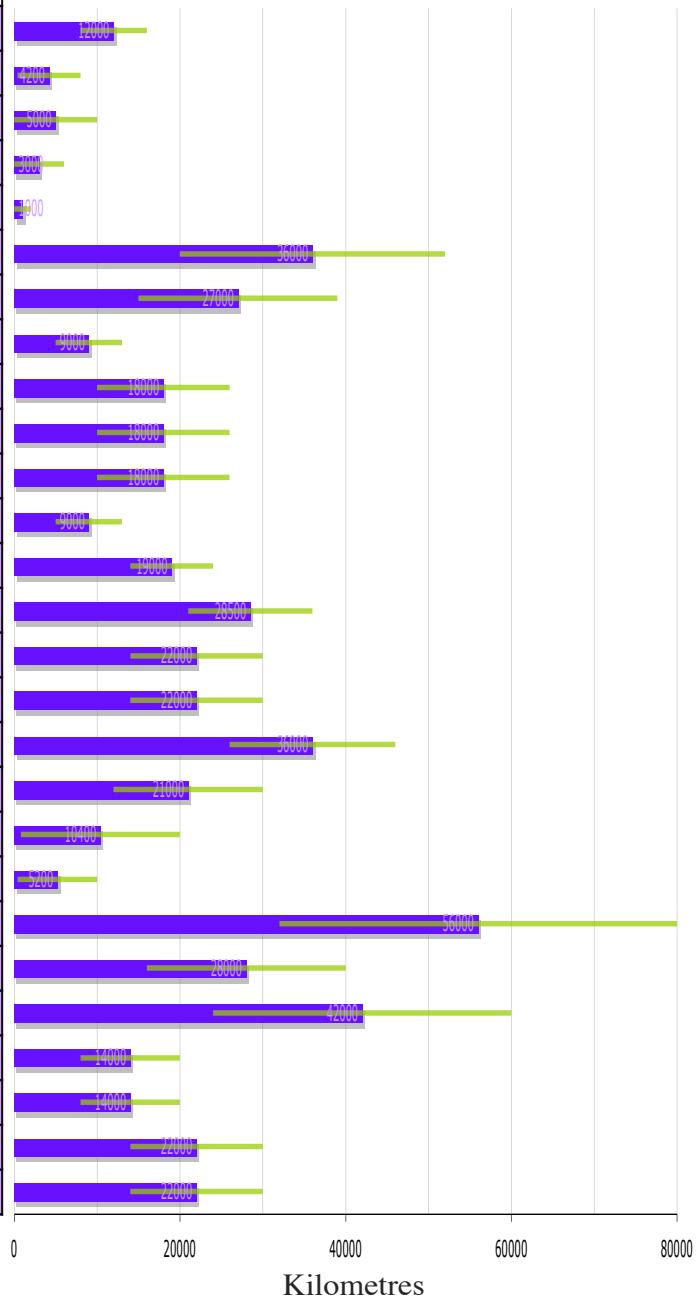


List of 2010 interannual recaptures:

The following table/chart combo shows our 27 returns and their history with TLBO. The graph at right illustrates the distance traveled by each of our returns based on their minimum age, assuming they are wintering in an average geographic location. The purple line is the estimated lifetime distance each bird has traveled to and from TLBO, while the green line indicates how far they might have traveled if wintering at either extreme of their non-breeding range.

Band	Species	Sex	2006	2007	2008	2009	2010
2480-56237	AMERICAN REDSTART	M				HY	AHY
942-92170	AMERICAN ROBIN	M				AHY	AHY
2440-45032	BLACK-CAPPED CHICKADEE	U	AHY	AHY	AHY		AHY
2490-30412	BLACK-CAPPED CHICKADEE	U			AHY		AHY
2490-40225	BLACK-CAPPED CHICKADEE	U				HY	AHY
2440-45695	COMMON YELLOWTHROAT	M		AHY	AHY	AHY	AHY
2440-45723	COMMON YELLOWTHROAT	F		HY		AHY	AHY
2490-29002	COMMON YELLOWTHROAT	M				HY	AHY
2490-29051	COMMON YELLOWTHROAT	M				AHY	AHY
2490-29103	COMMON YELLOWTHROAT	F				AHY	AHY
2490-40101	COMMON YELLOWTHROAT	F				AHY	AHY
2490-40153	COMMON YELLOWTHROAT	M				HY	AHY
1691-88926	MACGILLIVRAY'S WARBLER	F				AHY	AHY
1911-39914	MACGILLIVRAY'S WARBLER	F			AHY		AHY
1691-88902	NORTHERN WATERTHRUSH	U				AHY	AHY
1691-88981	NORTHERN WATERTHRUSH	F				AHY	AHY
1691-88865	RED-EYED VIREO	F				AHY	AHY
1191-39713	SAVANNAH SPARROW	U		HY		AHY	AHY
2241-37236	SONG SPARROW	M	HY				AHY
2261-26112	SONG SPARROW	F				AHY	AHY
2241-37220	SWAINSON'S THRUSH	U	HY	AHY	AHY		AHY
2241-37540	SWAINSON'S THRUSH	U		HY			AHY
2261-26058	SWAINSON'S THRUSH	U				AHY	AHY
2261-26075	SWAINSON'S THRUSH	U				HY	AHY
2261-26155	SWAINSON'S THRUSH	U				HY	AHY
2490-40215	YELLOW WARBLER	F				AHY	AHY
2490-40217	YELLOW WARBLER	F				AHY	AHY

Approximate minimum lifetime distance each bird has traveled to/from TLBO:



Highlight sightings:

2010 was a season of discovery. Indeed, we added eleven new species to our five-year list, making it 179 species recorded in the census area. That wasn't all though. Several big days of migration were as much of a highlight as any rare bird. Here's what turned our heads this season:

(new to the station in *italics*)

Species	Banded?	Details
<i>Say's Phoebe</i>	no	Single bird observed on 13 August (census)
<i>Yellow-bellied Flycatcher</i>	yes	One identified by banding measurements, 19 August
<i>Indigo Bunting</i>	yes	One vagrant banded on 24 August makes this the most out-of-range bird ever banded at TLBO
<i>Lewis' Woodpecker</i>	no	One bird sighted on the big fir snag on 29 August
<i>American Three-toed Woodpecker</i>	no	One bird hanging around in mid-September
<i>Western Bluebird</i>	no	One family group (3) sighted on 12 September
<i>Northern Pygmy-Owl</i>	no	Single birds heard on 15, 21, and 29 September
<i>Redhead</i>	no	One bird sighted on census, 23 September
<i>Vaux's Swift</i>	no	Three birds flying over during a big migration push, 23 September
<i>Surf Scoter</i>	no	One bird on the lake on 27 September
<i>Eurasian Wigeon</i>	no	One bird on the flooded field, 28 September
Brown-headed Cowbird	yes	First ever banded on 26 August
Magnolia Warbler	yes	One banded on 26 August
Gyrfalcon	no	One bird flying very high over on 7 September
White-throated Sparrow	yes	Five banded this season
Lapland Longspur	no	2 birds flying over on 20 September, single on the 21st
Greater White-fronted Goose	no	Single bird loafing by rivermouth on 30 September
Event		Details
106 banded	-	23 WC Sparrows, 32 Lincoln's and 25 Ruby-crowned Kinglets help make 21 September TLBO's biggest banding day ever!
63 species ET	-	20 September is the highest ever daily species total, topping 18 Aug. 2007 by one bird; crazy late date
Huge Migration	-	1125 YR Warblers ET'd and 1000 other birds of 50 species making mass exodus south over river corridor; biggest migration day ever
The flood	-	25-30 September, the biggest flood in recorded history hits the Tatlayoko Valley, restricting us to mainly a few censuses
Frog spp.	-	Northern Pacific Tree Frog, Western Toad and Spotted Frog sighted in census area (first TLBO amphibians ever)

THE BIG DAYS



Although the weather during September was notably dismal, we didn't anticipate it to ramp up the way it did around September 24th, in the form of a huge low pressure system moving into the Chilcotin area. It is probably safe to assume that the preceding mass movement of birds from 20-23 September was due to this system. Most migration waves occur ahead of frontal systems but this one was exceptional. On September 23rd, one observer stood for five hours doing nothing but counting flyovers while a steady stream of birds moved south along the river corridor from dawn until around 11am. We didn't catch many birds that day because they were not stopping to forage, but rather moving through at or just above the canopy level. The majority of them were Yellow-rumped Warblers, but juncos, siskins, White-crowned Sparrows and Ruby-crowned Kinglets also pushed through. Identification was difficult but Phil Ranson managed to pick out a few goodies such as Vaux's Swifts and flocks of Varied Thrushes passing overhead.

The first wave began several days earlier though, when on September 20th we banded 79 birds and tallied 63 species overall. This was followed by a record day of 106 banded birds of mostly sparrows and kinglets. When a lull occurred on the 22nd we figured we'd seen enough until the 23rd when the skies opened up with birds ahead of the storm.



INJURIES AND FATALITIES

We are always trying to minimize the impact we have upon the birds we are monitoring. Our goal is to have zero incidents but with predators and random incidents it's a tough objective. Last year only three birds died out of 2169 brought back to the banding station, for a mortality rate of 0.1%, down from 0.6% in the previous years. This season we jumped back up to ten fatalities (0.5%), four of which were predators (two hawks, one weasel and one probable bear). Other causes were mostly unknown but likely related to net trammel collisions or net tension due to wind. Twelve instances of other injuries such as wing strain or leg damage were recorded.

OTHER NOTES

Hummingbirds

One Rufous Hummingbird was banded this year by Barry Lancaster (who is licensed to process these birds). A young male was banded on August 4th with number: Y97500. The number of hummingbirds captured and released when we don't have a licensed bander present is integrated into the daily totals. This year we caught and released less than ten hummingbirds—all Rufous.

Blog statistics

Our blog, www.tatlayokobirds.wordpress.com, received nearly 100 hits per day throughout the season and topped out with 210 visits on September 27th. In total, our 2010 antics were followed around 6,000 distinct times. We kept it updated daily with anecdotes, daily totals, photos, and of course, the infamous bird ID quizzes.

New hardware!

This year Peter Shaughnessy installed a solar system that now gives us the opportunity to have lights inside the station, to charge radios and the laptop, and to generally be high tech. Donations for the unit came from Patrick Olenick, Andrew and Gail Harcombe, Roma and Peter Shaughnessy and Steve Ogle. A discount was provided by Integrated Power Systems (Kelowna, BC).

Half-way through the season Peter also installed two other add-ons for the station: 1) portals for releasing birds while the station windows are closed and 2) an external weather station that is wired into the banding lab and powered by the solar unit. Once we get the bugs worked out and some software we can automatically log the local weather continuously throughout the season.

Notes from the field

This section contains some thoughts and suggestions from the bander-in-charge after five years of monitoring at TLBO:

Coastal corridor?

Although the general thought when we first started TLBO was that birds are following the Homathko River as a corridor through the mountains, I am skeptical whether or not this is the case. For one thing, the river runs southwest to the coast, where several of our common breeding birds such as Lazuli Bunting, American Redstart and Northern Waterthrush are absent. Another hint that a different strategy might be at play is the common sight (or sounds at night) of migrants flying north over the station, in the wrong direction of fall migration. I suspect that many migrants 'hop-scotch' their way southeast, exploring valleys until they reach uninterrupted pathways to the south or even east. Let's not forget that ancestral flyways for a lot of these birds are up and down eastern North America. Either way, it's a mystery that we've yet to solve.

Wintering grounds?

When coming up with our migration dystane charts it occurred to me that we might not have to guess where our breeding birds are wintering. Stable isotope analysis is a tool that helps distinguish where (in this case latitudinally) the feathers of certain species were grown. By reviewing our most common inter-annual recaptures, the best species for this somewhat costly research method would be Swainson's Thrush, Common Yellowthroat and whatever other long-distance migrants appear with old bands. We should establish a method to detect older band returns at the moment of processing.

Alder vs. Willow

While we're collecting feathers, we might sample our "Traill's" (Alder and Willow) Flycatchers since we have both of these species breeding close by. This could help with calibrating our morphometric formula for determining exactly which species we have in the hand.

Sex curiosity

Many of the bird flocks we encounter seem to sort themselves out by age and sex. For example, when processing a single net full of Yellow-rumped Warblers on a particular day, we may find that the majority of them are young females. Other times it seems like more of a random mix. It would be great to look into this further.

TLBO SPECIES LIST



Golden-crowned Kinglet

Species	2010		2006-2009	
	Avg. daily ET	Total banded	Avg. daily ET	Avg. banded
Common Loon	<1	0	<1	0
Pied-billed Grebe	<1	0	<1	0
Horned Grebe	<1	0	<1	0
Red-necked Grebe	<1	0	<1	0
Great Blue Heron	<1	0	<1	0
American Bittern	0	0	<1	0
Tundra Swan	0	0	<1	0
Greater White-fronted Goose	<1	0	5	0
Canada Goose	3	0	14	0
Surf Scoter	<1	0	0	0
American Wigeon	8	0	4	0
Eurasian Wigeon	<1	0	0	0
Mallard	11	0	7	0
Blue-winged Teal	0	0	<1	0
Cinnamon Teal	0	0	<1	0
Northern Shoveler	<1	0	<1	0
Northern Pintail	1	0	<1	0
Gadwall	<1	0	<1	0
Redhead	<1	0	0	0
American Green-winged Teal	2	0	<1	0
Ring-necked Duck	3	0	1	0
Greater Scaup	0	0	<1	0
Lesser Scaup	<1	0	<1	0
Wood Duck	<1	0	<1	0
Bufflehead	<1	0	<1	0
Common Goldeneye	<1	0	0	0
Barrow's Goldeneye	0	0	<1	0
Hooded Merganser	<1	0	<1	0
Common Merganser	<1	0	1	0
Red-breasted Merganser	0	0	<1	0
Osprey	<1	0	1	0
Bald Eagle	<1	0	<1	0
Golden Eagle	0	0	0	0
Northern Harrier	<1	0	<1	<1
Cooper's Hawk	<1	0	<1	0
Sharp-shinned Hawk	1	5	<1	4
Northern Goshawk	<1	0	<1	0
Red-tailed Hawk	<1	0	<1	0
American Kestrel	2	0	1	0

Species	2010		2006-2009	
	Avg. daily ET	Total banded	Avg. daily ET	Avg. banded
Merlin	<1	0	<1	0
Peregrine Falcon	0	0	<1	0
Gyrfalcon	<1	0	0	0
Ruffed Grouse	2	0	2	0
Dusky Grouse	<1	0	<1	0
Sora	<1	0	<1	0
Virginia Rail	<1	0	<1	0
American Coot	<1	0	0	0
Killdeer	<1	0	<1	0
Sandhill Crane	0	0	<1	0
Greater Yellowlegs	<1	0	<1	0
Lesser Yellowlegs	0	0	<1	0
Solitary Sandpiper	0	0	<1	0
Least Sandpiper	<1	0	<1	0
Spotted Sandpiper	<1	0	1	0
Wilson's Snipe	<1	0	<1	0
Red-necked Phalarope	0	0	0	0
Wilson's Phalarope	0	0	<1	0
Bonaparte's Gull	0	0	<1	0
Mew Gull	0	0	<1	0
Herring Gull	<1	0	<1	0
California Gull	<1	0	<1	0
Ring-billed Gull	<1	0	<1	0
Common Tern	0	0	<1	0
Black Tern	0	0	0	0
Mourning Dove	0	0	<1	0
Great Horned Owl	0	0	<1	0
Barred Owl	0	0	0	0
Northern Pygmy-Owl	<1	0	0	0
Northern Saw-whet Owl	0	0	<1	0
Common Nighthawk	0	0	<1	0
Black Swift	<1	0	<1	0
Vaux's Swift	<1	0	0	0
Calliope Hummingbird	0	0	<1	0
Rufous Hummingbird	<1	1	<1	0
Belted Kingfisher	1	0	1	<1
Red-naped Sapsucker	<1	2	<1	3
Red-breasted Sapsucker	<1	0	<1	<1
Downy Woodpecker	1	6	2	6

Species	2010		2006-2009	
	Avg. daily ET	Total banded	Avg. daily ET	Avg. banded
Hairy Woodpecker	3	8	2	7
Black-backed Woodpecker	<1	0	<1	0
Three-toed Woodpecker	<1	0	0	0
Pileated Woodpecker	<1	0	<1	0
Red-shafted Flicker	3	0	3	4
Lewis' Woodpecker	<1	0	0	0
Eastern Kingbird	0	0	0	0
Say's Phoebe	<1	0	6	0
Olive-sided Flycatcher	<1	0	<1	1
Western Wood-pewee	<1	2	<1	3
Alder Flycatcher	<1	10	<1	9
Willow Flycatcher	<1	11	<1	8
Traill's (Alder or Willow) Flycatcher	0	0	<1	11
Least Flycatcher	<1	3	<1	5
Hammond's Flycatcher	<1	10	<1	10
Dusky Flycatcher	1	15	1	13
Pacific-slope Flycatcher	<1	5	<1	4
Yellow-bellied Flycatcher	<1	1	0	0
Northern Shrike	0	0	<1	0
Cassin's Vireo	<1	1	<1	3
Warbling Vireo	8	203	6	133
Red-eyed Vireo	1	9	1	11
Gray Jay	<1	0	<1	0
Steller's Jay	<1	0	<1	<1
Clark's Nutcracker	4	0	4	0
American Crow	26	0	20	0
Common Raven	1	0	2	0
Horned Lark	<1	0	2	0
Tree Swallow	<1	0	<1	0
Violet-green Swallow	<1	0	2	0
North. Rough-winged Swallow	<1	0	<1	0
Bank Swallow	<1	0	<1	0
Cliff Swallow	<1	0	<1	0
Barn Swallow	1	0	1	0
Black-capped Chickadee	10	17	11	32
Mountain Chickadee	1	2	2	5
Chestnut-backed Chickadee	0	0	<1	0
Boreal Chickadee	<1	0	<1	2
Red-breasted Nuthatch	3	2	3	10

Species	2010		2006-2009	
	Avg. daily ET	Total banded	Avg. daily ET	Avg. banded
Brown Creeper	<1	0	<1	3
Pacific Wren	<1	1	<1	2
Marsh Wren	<1	2	<1	1
Golden-crowned Kinglet	1	9	1	7
Ruby-crowned Kinglet	12	130	8	120
Western Bluebird	<1	0	0	0
Mountain Bluebird	4	0	<1	0
Townsend's Solitaire	<1	0	<1	<1
Swainson's Thrush	5	148	5	90
Hermit Thrush	<1	10	<1	16
Veery	0	0	0	<1
American Robin	11	13	14	14
Varied Thrush	<1	3	<1	2
American Pipit	9	0	4	0
Gray Catbird	0	0	<1	<1
Cedar Waxwing	13	15	13	17
Bohemian Waxwing	<1	0	<1	0
European Starling	1	0	2	0
Tennessee Warbler	0	0	<1	<1
Orange-crowned Warbler	3	69	5	124
Nashville Warbler	0	0	<1	1
Yellow Warbler	5	69	4	81
Yellow-rumped Warbler	57	49	34	143
Townsend's Warbler	<1	2	<1	5
Blackpoll Warbler	0	0	<1	<1
Magnolia Warbler	<1	1	<1	<1
Chestnut-sided Warbler	0	0	<1	0
Black and White Warbler	0	0	0	<1
American Redstart	2	56	3	51
Northern Waterthrush	3	59	2	45
MacGillivray's Warbler	2	41	2	43
Common Yellowthroat	9	175	8	125
Wilson's Warbler	2	62	2	72
Western Tanager	1	7	1	6
Spotted Towhee	1	1	<1	2
Chipping Sparrow	4	7	4	3
Vesper Sparrow	2	4	<1	3
Savannah Sparrow	5	15	5	20
Fox Sparrow	<1	2	<1	6

Species	2010		2006-2009	
	Avg. daily ET	Total banded	Avg. daily ET	Avg. banded
Song Sparrow	10	141	11	136
Lincoln's Sparrow	9	227	10	231
Swamp Sparrow	0	0	<1	<1
White-throated Sparrow	<1	5	<1	<1
White-crowned Sparrow	12	100	2	25
Golden-crowned Sparrow	<1	14	<1	2
Oregon Junco	6	26	7	42
Bullock's Oriole	0	0	<1	0
Western Meadowlark	1	0	1	0
Yellow-headed Blackbird	0	0	<1	0
Red-winged Blackbird	7	7	3	2
Brewer's Blackbird	<1	0	2	0
Rusty Blackbird	0	0	<1	0
Brown-headed Cowbird	<1	1	<1	0
Pine Grosbeak	0	0	<1	0
Lapland Longspur	<1	0	0	0
Lazuli Bunting	<1	20	<1	5
Indigo Bunting	<1	1	0	0
Purple Finch	<1	7	<1	4
Cassin's Finch	<1	0	<1	0
Red Crossbill	1	0	3	<1
White-winged Crossbill	<1	0	3	<1
Pine Siskin	20	6	26	15
Evening Grosbeak	<1	0	2	0