Monitoring Waterfowl Hunting at
Freezout Lake WMA
3 October – 22 November 2009
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Introduction.

The fall of 2009 was my eleventh year of formal monitoring of waterfowl and hunter activities at Freezout Lake Wildlife Management Area (WMA), Montana. It was the eighth year that available resources allowed for my hire as a seasonal employee. A number of tasks were specified to achieve the waterfowl and hunter monitoring:

- Monitor and describe the presence of swans at Freezout Lake WMA.
- Monitor and describe the harvest of swans at Freezout Lake WMA.
- Provide information to swan hunters to attempt to reduce inadvertent take of Trumpeter Swans.
- Assist hunters at parking areas with information on hunting and nonhunting matters.
- Monitor and describe the presence and harvest of ducks and light and dark geese.
- Monitor and describe the presence and efforts of waterfowl hunters at Freezout Lake.
- Other activities pertaining to waterfowl biology as time permitted. These include reading of neckband codes.
- Conduct surveillance for Highly Pathogenic Avian Influenza (AI).

These tasks were conducted from 3 October through 22 November 2009, and are reported below.

Weather factors, Fall 2009.

Weather factors affect waterfowl migration and movements. A recording of temperature and storm events provides a context to understand wildlife observations. The graph below charts the maximum and minimum temperatures observed at Great Falls, Montana, for the study period. Significant storm and wind events are superimposed on the graph.

This year, 2009, saw water levels higher than in a number of recent years. This fall, near normal water levels were found in all ponds. The Main Lake had near to slightly above normal water. Priest Butte Lake water levels were about normal, and North Priest Lake was slightly below full levels.

Weather conditions the fall of 2009 were rather disruptive in the first part of the waterfowl season. After the opening of waterfowl season a strong cold airmass moved in and brought snow and an abnormal cold snap. The lake fully froze. The warm recovery brought near record high temperatures within a week. A month of mild weather followed until a slight cold push on 11 November froze the ponds for several days. The last half of the period had windy conditions. Speaking of wind, on 31 October the Area was swept by 100 mile per hour winds. Large plumes of spray were lifted from the lake and ponds. A trailer was separated from its truck and disintegrated in the ditch by Priest Butte.

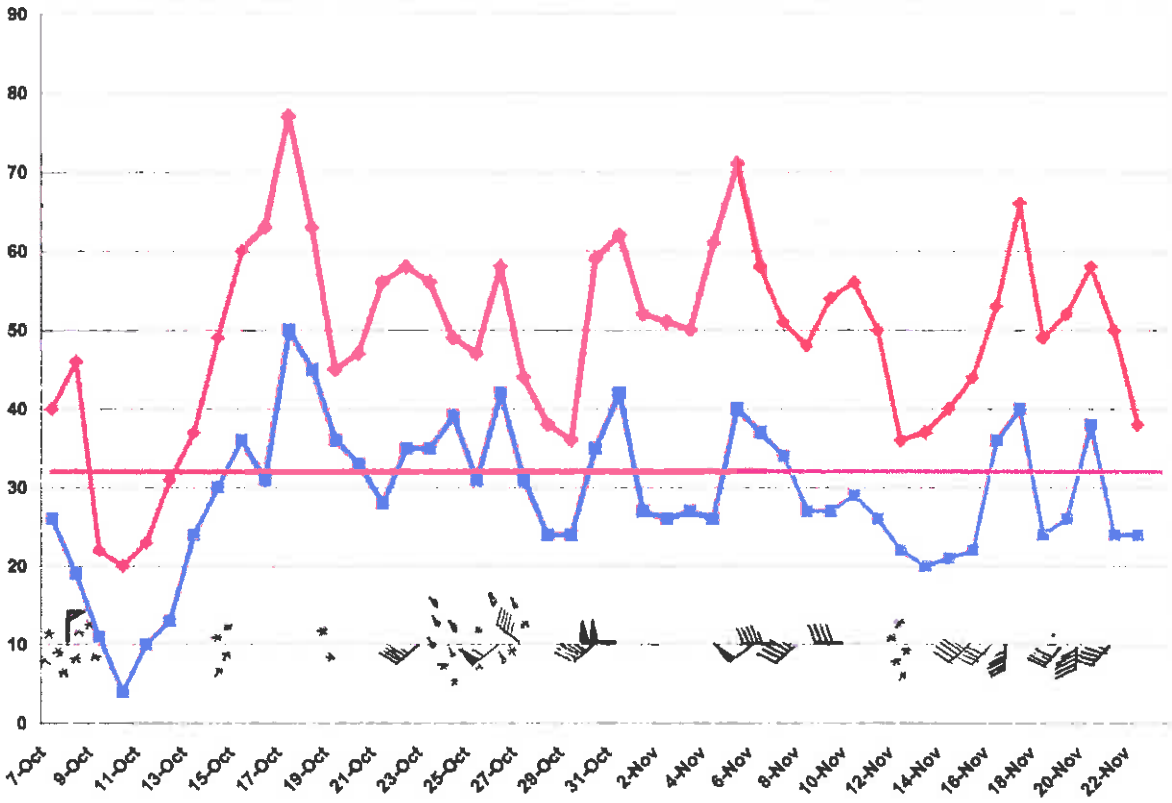

Figure 1. Weather conditions 7 October through 22 November 2009. Maximum temperatures are presented in red, daily minimum temperatures are in blue. Significant weather events are depicted as are wind events greater than 40 miles per hour. Data were obtained from the National Weather Service, Great Falls MT and reflect values at Great Falls International Airport (except for the wind event on31 October).

The waterfowl migration at Freezout Lake WMA, Fall 2009

The Swan Migration: The swan migration this fall, contrary to 2008, was long and with large numbers of Tundra Swans moving through, perhaps a record setter. It began fairly early and showed at least four maximums. The first peak of nonbreeds and failed breeders was 21 October. Subsequent peaks as the families flowed in were noted on 3, 14, and 19 November. The biggest peak, was on 14 November with 5,600 birds. The good water levels found swans in most of the ponds and main lake, though, surprisingly, there was little use of Pond 1, a traditional favorite, by the swans. Pond 4 got heavy use in the first part of the migration. Birds then used Pond 3, with the south

end getting good use; to the delight of motorists going by on the highway. The later part of the migration saw the swans moving into the north part of the Main Lake.

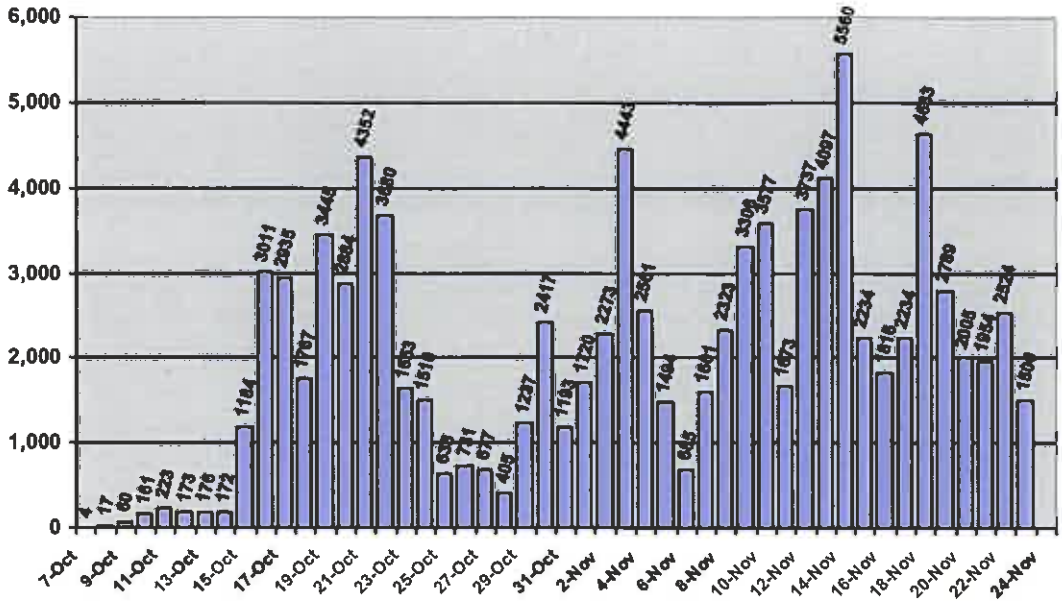

Figure 2. Chart of the daily counts of Tundra Swans at Freezout Lake WMA, 4 October – 22 November 2009. An estimate from a knowledgeable hunter on 23 November is also included.

Figure 3. No clouds, no wind, no hunters. A nice flock of swans ignore my presence and relax in the south end of Pond 4 on 21 October.

The locations of the swans on the Area were specified in the daily census process. This allowed identification of the favored feeding and roosting areas and an estimation of the magnitude of the foraging. Numbers in black are this year's (2009) counts and numbers from 2008 are presented on the map in red.

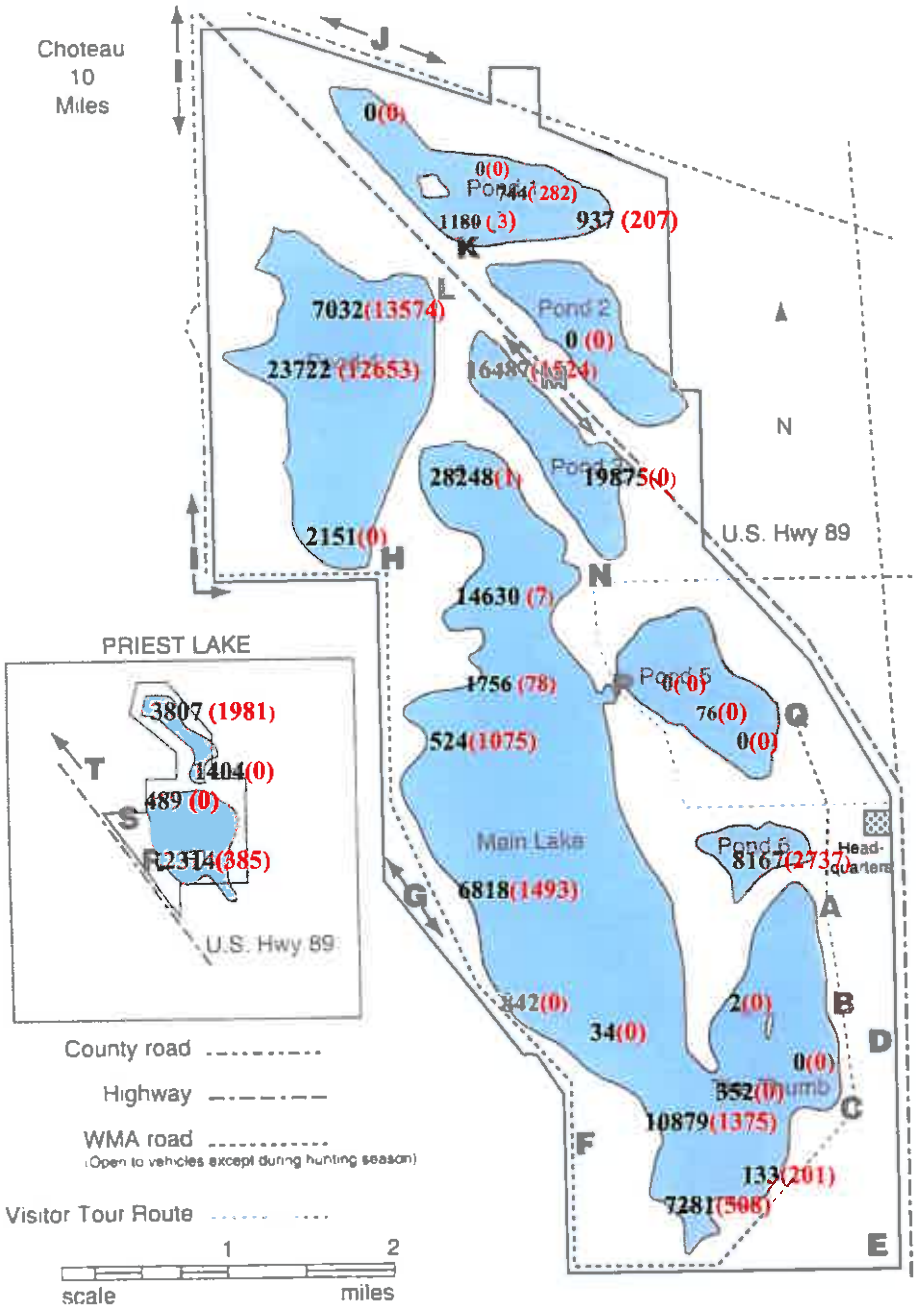

Figure 4. Numbers of swans counted on Freezout Lake WMA by location. The black numbers are the sums of swans counted 4 October through 22 November 2009. Red are the totals from 2008. 2008 was a poor swan year.

The total number of **swan-days** at Freezout this fall was **161,453**. Compare this number to the summary of my censuses found in the table.

Table 1, Swan-days, Fall Migration

2008:	38,223
2007:	76,529
2006:	37,901
2005:	80,059
2004:	40,379
2003:	36,544
2002:	31,120*

* Includes about one week of hypothetical numbers when I was not present due to personal travel.

This fall was the biggest I have recorded by a **factor of 2**. How many swans stopped at Freezout this fall? To come up with this estimate I used two methods. First I totaled each of the increases from the earlier "trof". This yielded **21,433** individuals. The second method involved estimating the average number of days an average bird stayed at Freezout. This yielded four periods as the swans moved through rapidly (26 Oct – 14 November) or staged their migration at a more leisurely pace (7 October – 25 October, and 15 November – 22 November). This approach yielded a total of **22,107** swans. To put this year's number into perspective, compare this year's 22,000 birds with the estimates from prior years in the following table.

Table 2, Estimated Number of Swans Using Freezout to Stage Their Fall Migration

2008:	19,112
2007:	23.620
2006:	10,894
2005:	18,000
2004:	17,000
2003:	15,000
2002:	9,000

This year's estimate of 22,000 is very close to other big years of late. The difference between total numbers and swan-days can be justified due to a slower pace of movement through the Area (due to mild weather conditions, perhaps). These numbers are out of a fairly stable population of Pacific Flyway birds of roughly 100,000.

An estimate of the **vegetation consumed** by swans at Freezout this fall can be calculated using the rationale developed in the 2002 report. A reasonable estimate of eight pounds of wet vegetation per bird per day for the estimate of swan-days, 161,453 would yield something around 646 **tons** (153 tons in 2008). This estimate is presented because the consumption of pond vegetation by migrating waterfowl is likely an important mechanism for removing salts from the Freezout ecosystem.

Again this fall I put in an intensive effort to determine **age ratios**. I counted adults and juveniles separately whenever viewing conditions permitted. Summing all of the days that juveniles were counted yielded 9,722 juveniles out of 85,781 individuals. This yields an age ratio of **11.3 percent**. Compare this with prior years in the table that follows.

Table 3, Age Ratios of Fall Migrating Tundra Swans at Freezout Lake

2008:	5.6 percent
2007:	14.6
2006:	16.5
2005:	17.0
2004:	14.4
2003:	13.4
2002:	15.6

Another aspect of age ratios is to see how they change with time during the migration period. A simple approach to this task is to average the observed age ratios over four-day periods. The result from 2009 is presented in the following graph.

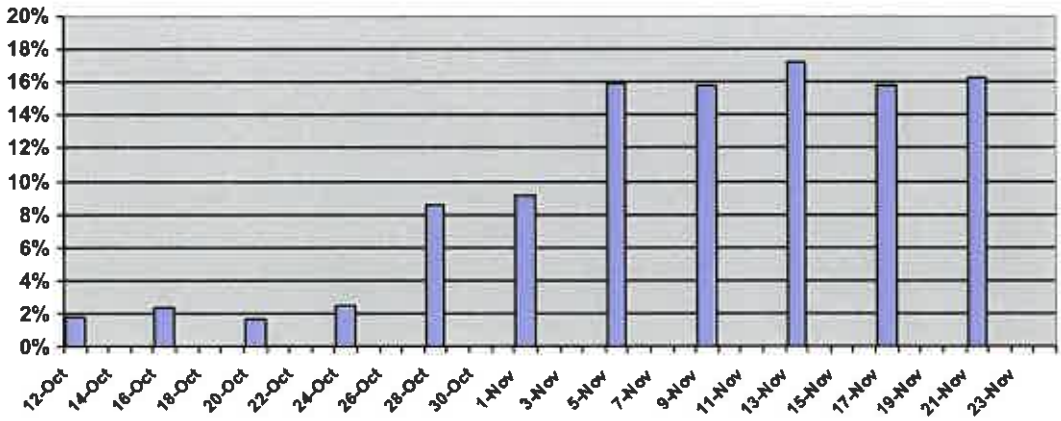

Figure 5. Four-day average age ratios (**Juveniles/Total**) over the migration period. Sample sizes for each period are 622, 4,547, 9,937, 10,167, 2,014, 6,187, 9,162, 7,214, 11,742, 11,175, and 10,645 individuals (not necessarily unique).

The graph shows that age ratios increased in stages as the migration progressed in 2009. This trend has been observed the last eight years (since I began to count adults and juveniles separately). Mostly nonbreeders were present in the first part of the migration. (7 October – 24 October); the age ratio was about two percent. Breeding birds brought their families through in bigger numbers beginning about the 25th of October and the full flow of breeding birds and their families was obvious after 3 November and continued till the end of the migration.. Age ratios in the second stage of the swan migration were higher, averaging about 16 percent. This year it appears the swans had low to modest productivity in Alaska.

Trumpeter Swans at Freezout were, quite common. I heard, saw or had others tell (at least they are looking and listening) of trumpeters about **every day** this fall once the migration got a good start. The strong movement of Trumpeter Swans through Freezout this fall resulted in the inadvertent take of at least six individuals. I checked five and the Manager saw another. I believe one hunter that I witnessed was aware of the species before he shot.

I made no reconnaissance trips to search for Trumpeter Swans along the Rocky Mountain Front this fall.

The White Goose migration: Numbers of white geese (Snow and Ross' Geese) were estimated each day during the study period. The graph below depicts the daily estimates.

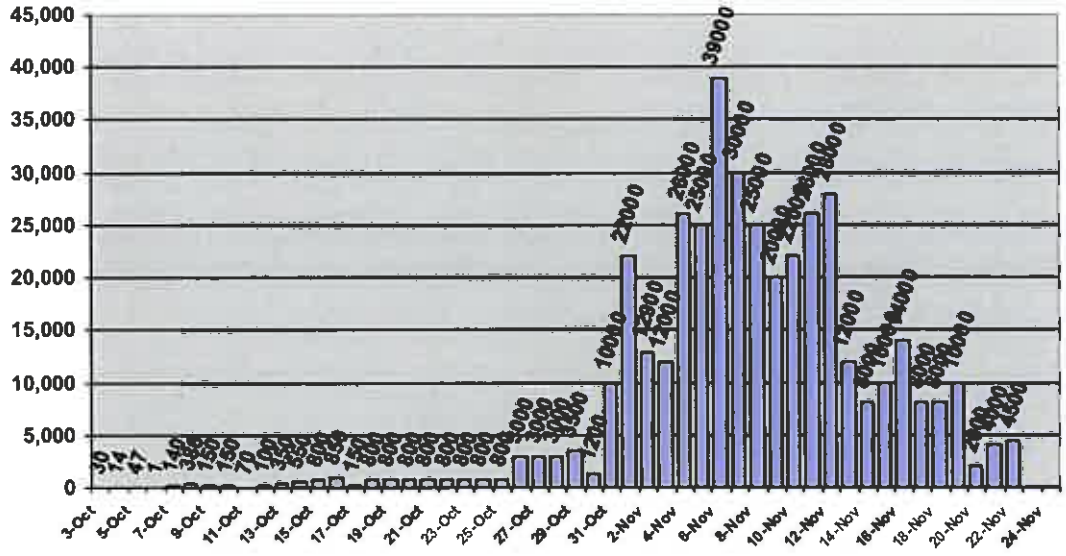

Figure 6. Daily numbers of white geese estimated at or in the near vicinity of Freezout Lake WMA during the fall of 2009.

White geese usually do not begin their migration staging at Freezout until the last few days of October. This year's migration apparently followed the normal time schedule although the migration through Freezout was quite unspectacular. The < 40,000 peak in early November may have been followed by a brief second major push from the north about 27 November (after my departure…as told by local sources).

For the second year in a row the white geese fed in swathed grain on the Area and off limits of the hunters. The birds began to feed outside the closed area about 7 November.

Compare this year's peak of 39,000 with peak numbers of white geese over the past ten years in the following table.

Table 4, Maximum Numbers of White Geese Estimated at Freezout Lake WMA Fall Migrations

2008: 53,000
2007: 70,000
2006: 40,000
2005: 125,000
2004: 35,000
2003: 20,000
2002: 30,000
2001: 40,000
2000: 50,000
1999: 80,000

Dark geese: This fall's migration of Canada Geese through Freezout as of the end of the study period was unremarkable...yet again. I am told some migrants were noted in the last several days of November. But, overall, it was quite unremarkable for dark geese.

Ducks: Duck numbers were good for the youth hunt and for the opening weekend of waterfowl season. However, the early freeze up that came after the opener chased most of the ducks south. Through the remainder of my observation period duck numbers were mostly poor. On some days there were decent numbers of Mallards in the closed area.

Waterfowl hunting at Freezout Lake WMA, Fall 2008.

Hunter counts: The magnitude of waterfowl hunting was again monitored this fall, as in the nine previous seasons, by counting, each morning, the number of hunter vehicles present on the area.

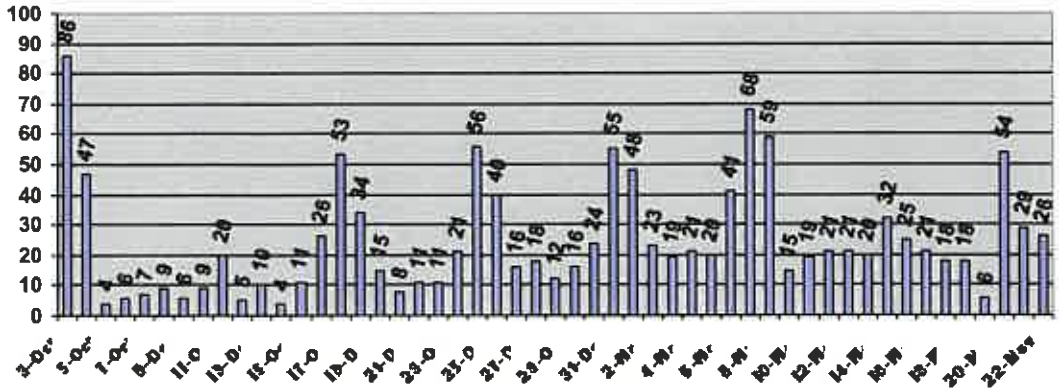

Figure 7. Hunter vehicles counted at Freezout Lake WMA in the fall of 2009, 3 October through 22 November. It is easy to pick out the weekends; hunters start arriving on Fridays, peak on Saturdays and continue strong on Sundays (though are often gone by Sunday afternoons). The large number on 20 November is the opening of the closed area.

Can my yearly counts of hunter vehicles be used to detect trends in hunter use of Freezout Lake? This is a difficult proposition. The periods that I have sampled have varied in length from year to year. The weather has shut off hunting prematurely in some years and extended it in others. I have tried to use the hunter vehicle counts in a couple of ways in previous seasons. One possible attempt would be to look at the average number of vehicles per day. The graph below makes an attempt to compare one year to another. It looks at the period of the waterfowl seasons after the waterfowl opener, usually beginning about mid October and going through the end of the surveys.

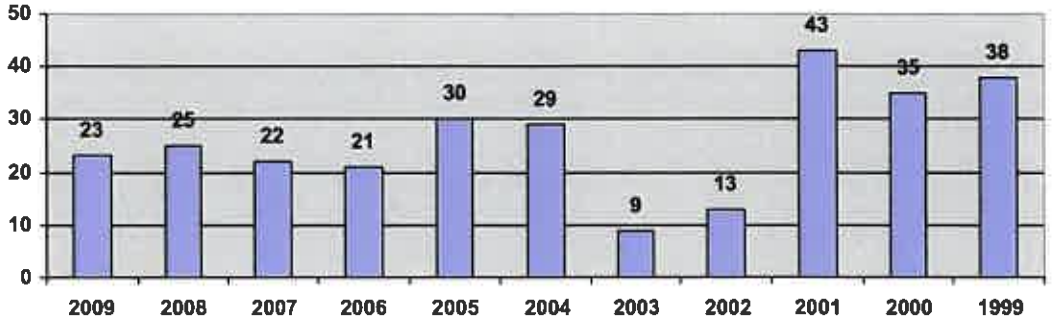

Figure 8. The average number of hunter vehicles per day, 1999 to 2009.

Perhaps looking at the peak counts of hunter vehicles might reveal a trend or at least reinforce what is displayed above. The graph that follows displays the value of the highest day's count of hunter vehicles 2009 – 1999.

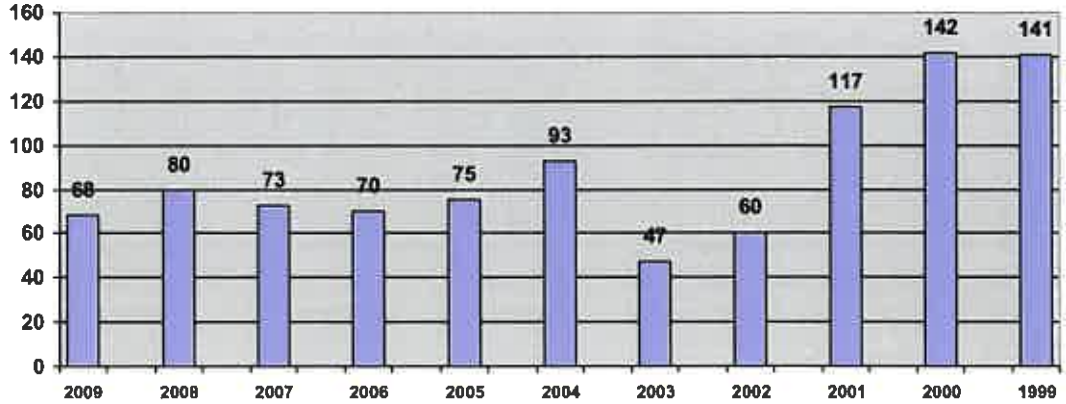

Figure 9. Graph of the values of each year's maximum one-day count of hunter vehicles during the waterfowl seasons 2009 – 1999. Opening day counts are excluded so as to reflect the "hard core" waterfowl hunters.

Looking at the two charts, there is rather good agreement between the two sets of numbers. They reflect an apparent modest decline in waterfowl hunting at Freezout Lake WMA from the start of the decade with perhaps some minor recovery in the past few years, though 2009 reflects a decline in hunters.

Interaction with hunters.

During my daily visits to the Area I interacted with many of the waterfowl hunters. My interactions were confined to the parking areas. I would check hunters' bags, sampled hunter killed birds for Avian Influenza, helped with the completion of swan bill length cards and discussed hunting strategies and goose and swan natural history. Additionally, I discussed with swan hunters the importance of trying to avoid taking Trumpeter Swans and how vocalizations can be used to distinguish between the two species.

The Waterfowl Harvest.

As in prior years my emphasis in gathering harvest data was concentrated on the swan harvest

The Swan Harvest. Swan hunting in 2009 was very good for the hunters. Just about any swan hunter that wanted a bird was able to get one due to the long duration with good numbers of swans present. Using hunter contacts, bill card collections and vehicle counts, I estimate that the harvest was at least **350 swans bagged** at Freezout Lake in 2009. This includes the six Trumpeter Swans that I am aware of.

2009 was such a good swan hunting year that there were a number of highlights and interesting events noted as I monitored the harvest.

Perhaps the most notable was a swan hunter **89 years old**. He was present with his son who had come in from California for the event. The pair got a late afternoon start on the Pond 4 dike. The son carried his father on his back part of the way. The elder hunter bagged a juvenile swan late in the day.

There were a number of swan hunters that were women this fall. Most were successful.

Figure 10. One can almost imagine the dialog out on the dike…"you shoot it, you carry it back". She did.

On 31 October I noted a hunter wading out in the middle of Pond 4. He and his dog were trying to retrieve a downed swan. He spent considerable time and effort going for the bird in the deep mud. The dog helped, and I pondered whether to call rescue resources. In the end the hunter (present with his wife and two sons) retrieved the bird and made it back to dry land (only fell down once). He later told me one of his sons had had a sheep permit and he was in good shape having hunted with the boy (successfully) for a number of days.

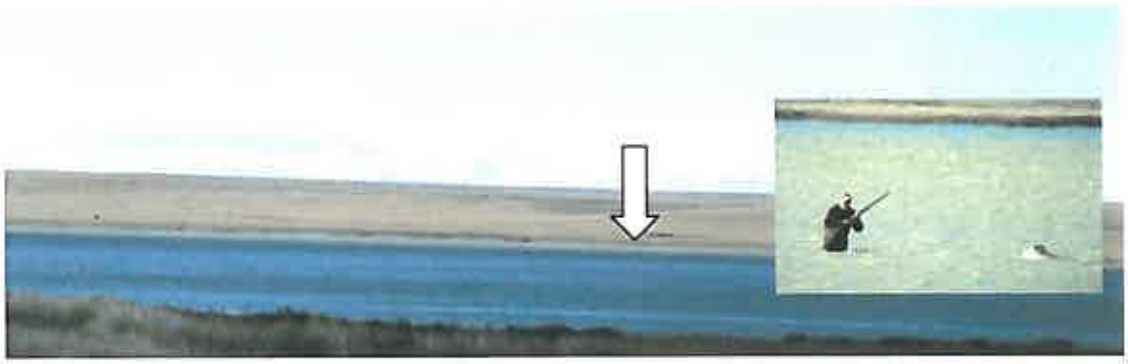

Figure 11. Swan hunter in the middle of Pond 4 wading to retrieve his swan. I feared for his safety.

Here are some photos taken of some other successful swan hunters.

Figure 12. This pair (left) took their birds from the south end of Pond 4.

Figure 13. (right) This young man (with his uncle) made several trips from Missoula and exercised great patience in a successful effort to take a collared Tundra Swan.

Figure 14. (left) This is a physically handicapped swan hunter who took this **Trumpeter Swan** near the "Middle" parking lot. I arrived to find the hunter's wife out in the grass trying to retrieve the crippled 25+ pound bird (with encouragement from her husband). I assisted with the retrieve (the dog did not).

The White Goose Harvest. For the second year, white goose hunting was rather frustrating for Freezout hunters. During the period when most of white geese were on the Area they mostly fed in the area closed to hunting. Most of the hunting was done along the fences that demark the closed area and, with a few exceptions, were not very successful. Again this year a small number (perhaps two parties this year) of hard core field hunters put out decoy spreads in the fields in areas away from the Area. They did very poorly this year. The party from California (repeat visitors) was extremely disappointed this year after spending several weeks of frustrating decoy hunting (the birds remained inaccessible in the closed area). White goose hunters improved their success once the white geese had consumed available grain in the closed area and went to more classical nearby fields. I would estimate that all hunters at/near Freezout took no more than about 100 white geese this year.

Figure 15. This young man (the author's son, Brian) was an exception to the poor success. He hunted in fields (employing stealth) two days in the middle of November. He bagged a six-bird limit one day (having stalked to within 15 yards of feeding geese). The next day he sought only "trophy" geese and took this limit (five "blues" and one with a collar), pass shooting in the right place on the Fairfield Bench.

Dark goose harvest. There was, again, only limited dark geese hunting this season. Only a couple of dark goose decoy spreads were noted and most shots at dark geese were incidental to white goose and swan hunting. The small numbers of migrants also limited the hunting potential for the Canadas/Cackling Geese.

The Duck Harvest. Again, after opening day and early freeze up, duckhunting success was low this year. Many of the hunters again expressed frustration as to the low number of ducks being seen. We did have a fair number of Canvasbacks present at some times this season; the one bird Canvasback limit was appreciated by the duck hunters.

Crippling losses. The 2009 season again was rather high for the number of crippled and unretreaved hunter-killed birds on the Area, particularly Tundra Swans. One hunter was observed to hit 15 swans before bringing down a bird that was retrievable. The hunters also continue to take an uncomfortable number of "sky-busting" shots.

Collar Reading:

Flocks of white geese and swans were scanned for neckbands and the codes were read. Markers were found on Snow Geese and Ross' Geese. Collars on White geese continue to be few as waterfowl biologists have answered many of the questions pertaining to goose migration, survival, etc. There are still no current programs to collar white geese in North America.

Table 5, White Goose Collars Recorded in Montana, Fall 2009
Fall 2008 numbers are in (parenthesis)

Color/Population	Unique Codes	Total Records
Black/Western Canadian Arctic	16 (11)	23 (18)
Blue/North Slope, Alaska	0 (0)	0 (0)
Red/Wrangel Island, Russia	0 (0)	0 (0)
Yellow/Central Canadian Arctic	0 (3)	0 (8)
Yellow/Greater Snow Goose!	1 (0)	3 (0)
Quebec Blue/ Ross' Goose, Central Canadian Arctic	10 (9)	10 (10)
Yellow/ Ross' Goose, Western Hudson's Bay	0 (0)	0 (0)
	27 (20)	36 (28)

A yellow collar with four characters was seen three times. This is the first time such a neck band was observed in Montana. It was on a **Greater Snow Goose**. Inquiries were made regarding this bird. It was deployed on Ellesmere Island (83N, 79W), northwest of Greenland in 2007.

Tundra Swans continue to present good numbers of collars. USGS, Alaska, deployed about 350 blue collars in the summer of 2006, another 300 in the summer of 2007, about 400 more in 2008 and another 400 in 2009 associated with its Avian Influenza work. I once again gave the resighting of Tundra Swan collars a high priority in my visits to the Area this fall. I recorded 36 (18 in 2008) collared swans this fall, 68 (21 in 2008) records. The records have been sent to the appropriate researcher in Anchorage (Dr. Craig Ely, USGS).

Below is a gallery of collared swans representative of the various breeding areas that passed through Freezout Lake this fall. As noted above one collared swan (three last year) was taken by a hunter.

Figure 16. Blue K354. This bird was marked on the Yukon Delta of western Alaska. It was at Freezout on 2 November 2009.

Figure 17. Blue 705. Received its collar in northwestern Alaska's Kotzebue Sound. This collar is put on upside down, one of only a few. This photo was taken on 21 October 2009.

Figure 18. Black collar TJ4 was deployed this past spring at Stillwater National Wildlife Refuge, Nevada. This napping bird was found at Freezout Lake on 10 November 2009.

Figure 19. Black UT3. This marked swan was at Freezout on 11 October 2009. I received its collar in northern Utah in the spring of 2008. UT3 was seen here in the fall of 2008 and spent more than a week on Pond 1 this past spring.

Figure 20. No collar, but if you look closely an antenna from an implanted satellite transmitter can be seen. This may be YK4, a radio bird that was found at Freezout last spring. These special birds can be found if the bird is on ice and its leg band seen.

Avian Influenza Sampling, 2008

The effort to sample hunter-killed birds as a part of the national effort to detect the highly pathogenic Avian Influenza, H5N1 was done at Freezout as part of FWP state wide program. Again this year at least one technician was at Freezout Lake WMA each weekend. I was one of those technicians hired on in a part-time status to sample "big white birds", swans and geese. I had a quota of 100 samples which I exceeded. The Montana Fish, Wildlife and Parks team met its statewide quota with a big input of samples from Freezout. So far no samples have tested positive for the highly pathogenic H5N1 in North America.

Figure 21. Enjoying obtaining a cloacal sample on a hunter-killed Tundra Swan.

Nongame.

Several interesting wildlife species were found at Freezout this fall.

Two Bewick's Swans **Figure 22** (right) (the Asian subspecies of Tundra Swan) were found this fall, 1 and 10 November. This is the 10 November bird. I usually see some of these birds in the spring. These were the first I have seen in the fall (though I would guess they are present...the viewing less favorable in the fall). This bird came from Asia, a potential source of Avian Influenza.

A Thayer's Gull was found at Freezout on 29 October 2009, **Figure 23**, left. This first winter individual is a first of its kind found on the Area. It was present 28 and 29 October.

A Virginia Rail presented itself at Pond 1 on 29 September, **Figure 24**, right. I find this species at Freezout about one every four years. This bird was here rather late.

I visited with a muskrat trapper on 4 November at Pond3. He had taken more than 30 of the rodents in a couple of days, **Figure 25**, left. In our discussion he indicated he might get $2 for each pelt. He certainly did not pay his expenses…though he did have an enjoyable time