From:	Pope, Von
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Cc:	Smith, Michelle; Sokolowski, Rosana
Subject:	2013 Goose nesting report, nest meeting Oct 1.
Date:	Friday, July 26, 2013 2:10:10 PM
Attachments:	Goose Nesting summary 2013.pdf

Dear Rocky Reach Wildlife Forum Members,

Attached is a copy of the 2013 Canada Goose nest monitoring report for Rocky Reach Reservoir, as required by the Rocky Reach Wildlife Habitat Management Plan.

I would also like to let you know that the 2013 weed work is proceeding as planned.

Our next Rocky Reach Wildlife Forum meeting is scheduled for October 1, 2013 here at Chelan PUD from 9am – noon. We will have the biological control contractor (Dale Whaley with the WSU Extension) at the meeting to talk about biological controls.

Please contact me if you have any questions,

Sincerely,

Von

Von Pope

Wildlife Programs Manager

Chelan County PUD

(509) 661-4625

Goose Nesting along Rock Island and Rocky Reach Reservoirs in 2013

Kelly Cordell-Stine and Von R. Pope

Public Utility District No. 1 of Chelan County

P.O. Box 1231

Wenatchee, WA 98807-1231

June 2013

Introduction

The Chelan County PUD monitors Great Basin Canada goose (*Branta canadensis* ssp. *moffittii*) nests each spring along Rock Island Reservoir on the Columbia River in compliance with Federal Energy Regulatory (FERC) requirements. Monitoring along Rocky Reach Reservoir was initiated as mitigation for a proposed pool rise which was never implemented. Monitoring Canada goose nesting along Rocky Reach continues as requested by the Rocky Reach Wildlife Forum under the new license. Monitoring began on Rock Island in 1975 as part of a proposed pool rise that was approved by the FERC. Monitoring along Rocky Reach began in 1982. Nests initiated both on natural substrates and in man-made structures are monitored to determine nesting success. Chelan PUD provides and or maintains the man-made nesting structures for Canada geese along both reservoirs.

This annual report summarizes goose nesting along Rock Island and Rocky Reach reservoirs for the 2013 nesting season. This report also compares the 2013 goose nesting season with previous seasons.

Study Area

Present

The project area is located along the Columbia River in North-central Washington State. The surveys take place along the Rock Island and Rocky Reach reservoirs from river miles 453.6 to 490.1. Chelan and Douglas counties border the west and east sides of the reservoirs, respectively. Steep cobble and dirt banks comprise much of the reservoir shoreline. Shrub steppe vegetation, fruit orchards, parks, residential, and industrial areas occupy areas up-slope from the riparian edge of the river. Geese prefer to nest on small islands in the reservoirs, blending in with the rocks and low vegetation. The small islands are highly preferred over the shoreline for nesting, because they offer increased protection from predators and good visibility of the surroundings. When threatened, the geese can escape to the safety of the water, where few predators can attack them.

The vegetative cover of the islands is characterized by the shrub steppe habitat that covers most of central Washington. Shrub steppe vegetation is dominated by big sagebrush (*Artemisia tridentata*), rabbitbrush (*Chrysothamnus* spp.), and bluebunch wheatgrass (*Pseudoroegneria spicata*).

Chelan PUD provides man-made nest structures (nest tubs) along Rock Island and Rocky Reach reservoirs for Canada goose nesting. The Exhibit S for Rock Island Dam commits Chelan PUD to maintain a minimum of 11 nest structures along Rock Island Reservoir. In 1989, Chelan PUD erected 15 nest structures along Rocky Reach Reservoir to off-set expected losses from a proposed 3-foot pool rise. Washington Department of Fish and Wildlife (WDFW) erected several goose nest structures along Rocky Reach Reservoir in the early 1980's, of which Chelan PUD currently monitors.

Historically

During the winter of 1996-97, the portion of the Columbia River between Rock Island Dam and Winesap (Oklahoma Gulch) was opened to Canada goose hunting. Prior to that winter, goose hunting had been closed within 1/4 mile of that portion of the Columbia River. The liberalized goose hunting boundaries were, in part, a response to public requests to reduce goose numbers observed at parks and golf courses in the Wenatchee area. The Increased fall and winter goose hunting along the Columbia River in the

Wenatchee area likely harvests a large proportion of resident geese. This may result in less nesting geese along the reservoirs the following spring.

Continued development of properties along the Columbia River in the Wenatchee area has introduced hunting closures along the Douglas County side of Rock Island Reservoir between Highway bridges 2 and 28. As the area continues to grow, further restrictions on waterfowl hunting may be imposed, potentially reducing the effect of hunting on local goose populations. With considerable development along the Chelan County shoreline, waterfowl hunting opportunities are very limited along this stretch of Rock Island Reservoir.

Methods

Man-made Nests

Chelan PUD maintains and monitors man-made elevated goose nesting structures (nest tubs) along Rock Island (n = 13) and Rocky Reach reservoirs (n=21). Three of the tubs along Rocky Reach Reservoir were in disrepair and need to be re-constructed or moved to different sites due to land ownership changes. These actions were not complete as of the end of nesting season in 2013; leaving 18 tubs available for geese throughout the nesting season in 2013.

The nest tubs consist of either: pre-fabricated fiberglass tubs or tire tubs on elevated platforms. The pre-fabricated fiberglass tubs are mounted on metal poles with concrete footings and situated on small islands along the reservoirs. Tire tubs are constructed by using old vehicle tires and bolting them to a triangular-shaped platform elevated by metal legs. Some of the metal support legs are encased in PVC pipe to further deter mammalian predators from climbing into the structures. Additionally, rock rings or driftwood "blinds" are assembled from materials on-site and provide enhanced bowls for geese to nest in but are not counted as man-made elevated nest platforms, as these are only on-site enhancements to natural nest sites. Prior to nesting season, field crews prepared the nest tubs with fresh straw as a nesting substrate. Necessary repairs or modifications to the structures are also done during the pre-season preparations.

Geese prefer to nest in close proximity to water and where they can readily escape from potential dangers. Geese practice site fidelity, i.e., they nest in the same locations year after year. Many of these well-used natural ground nests are marked with flagging or numbers on nearby rocks (for identification purposes) from past years. Domestic goose nests were removed from the data set prior to analysis.

Surveys

In 2013, goose nest monitoring along Rock Island and Rocky Reach reservoirs began on 27 March and 28 March, respectively.

Chelan PUD biologists conducted surveys along each reservoir three to four times during the 2013 nesting season, depending on the duration of nesting activity. Generally, each nest was visited an average of 3 times per season—one visit during nest initiation, incubation, and following hatch. During our surveys, we determined the location and number of nests encountered, number of eggs laid, and the fate of each nest attempt (including causes of predation and other unsuccessful nesting attempts). Nests

were documented if they had at least one egg in them. Successful nests were those from which at least one egg hatched and at least one gosling left the nest.

Results and Discussion

Along Rock Island Reservoir, Canada geese initiated 83 nests. All nests were monitored to determine fate. No nests were initiated by domestic geese along Rock Island Reservoir in 2013. A total of 424 eggs were laid in the 83 nests. Sixty-four nests (77%) were successful in producing goslings. The eggs had a hatch rate of 75%, with 319 eggs hatching. Seven nests containing 37 eggs were attempted in 13 available goose tubs maintained by Chelan PUD. Six of those nests were successful in producing goslings (n = 31). By comparison, 58 of 76 (76%) natural nests along the reservoir fledged goslings. Of the 387 eggs laid in natural nests, 288 (74%) hatched. The average clutch size for all goose nests in 2013 (calculated from successful nests only) was 5.27 eggs/nest. The average number of goslings fledged per nest (calculated from successful nests only) was 4.77 goslings/nest.

Along Rocky Reach Reservoir, geese attempted 60 nests. A total of 49 nests (82%) were successful. A total of 344 eggs were laid in the 69 nests. The eggs had a hatch rate of 75%, with 257 goslings fledged. Seventeen nests containing 113 eggs were attempted in 18 available goose tubs provided by Chelan PUD. Twelve of those nests (71%) were successful in producing goslings (n = 69). Five nests in goose tubs were unsuccessful. Two of the nests were destroyed by avian predators, 2 additional nests were abandoned for unknown reasons. In 1 other nest tub, eggs were laid and incubated through most of the season, but was later found to have contained infertile eggs. By comparison, of 43 natural nests along the reservoir, 37 (86%) fledged goslings. Of the 231 eggs laid in natural nests, 188 (81%) fledged from the nests. The average clutch size was 5.61 eggs/nest. The average number of goslings fledged per nest (calculated from successful nests only) was 5.04 goslings/nest.

Unsuccessful Nests

Rock Island Reservoir had a total of 19 failed Canada goose nests along the Reservoir in 2013. Most of these failed nests were located on natural substrates. Only one nest in a man-made structure failed (abandoned for unknown reasons). Of the 19 failed nests, 10 of the nest failures were attributed to abandonment for unknown reasons. These abandoned nests did not exhibit signs of predation, such as broken eggs or adult carcasses in the vicinity. The extended cold, wet spring weather experienced at the height of the nesting season may have contributed to the failure and resulting abandonment of some of the nests. An additional 9 nests failed due to destruction by either mammalian or avian predators.

Rocky Reach Reservoir had 11 instances of failed Canada goose nests in 2013. Of these nests that failed, 6 were located on natural substrates and 5 were located in nest tubs. Eight nests were documented as being destroyed by mammalian or avian predators, 2 nests were abandoned for unknown reasons, and one nest contained eggs that were infertile. Nests along both reservoirs suffered some loss of eggs to avian or mammalian predation and infertile or dead eggs but were able to successfully hatch goslings following the partial loss of eggs.

No Canada goose nest failures or partial losses were attributed to flooding by high water in 2013. Peak flows did not occur until the first week of June. The majority of goose nests along both reservoirs had fledged by early June.

Program Summary

Goose nesting along Rock Island Reservoir has produced an annual average of 354 goslings. During 2013, 319 goslings fledged. The number of nests initiated in 2013 (n = 83) was equal to the long-term average (Table 1) and was also the highest number of nests initiated along the reservoir since 2001. The average clutch size (5.3 eggs) for 2013 was slightly less than the post-reservoir rise average (5.8 eggs), as was the percent of nest success (Table 1). The increase in the number of nests initiated seems to be a result of more nests initiated in the Rock Island Forebay at Rock Island. The islands in the forebay account for a majority of the nests along the Reservoir. From 1990 – 1999, the average number of nests initiated on the islands in the forebay averaged 58.4. From 2000 – 2009, that average dropped to 25.3. The reason for this decline is unknown but may be related to the increased amount of riparian vegetation that now occurs on these islands. Thus far, from 2010 – 2013, the average number of nests initiated is 35. The long-term average (following the pool rise prior to the 1978 nesting season) is 37.1 nests on the islands in the Rock Island forebay.

The percent of successful nests (82%) for 2013 along Rocky Reach Reservoir was above the average success rate from 1983-2013(69%). However, clutch size (5.6 eggs) in 2013 was below the average of 6.1eggs (Table 2). Rocky Reach Reservoir had a higher than average number of fledged goslings in 2013 with 257 fledglings (Table 2).

There has been an increase in mammalian predators such as mink and raccoon on both reservoirs since 2000, when a Washington State voter initiative was passed that greatly restricted furbearer trapping techniques. Common ravens have been observed nesting on cliffs along the reservoirs, and may account for some of the destroyed nests and eggs, especially eggs predated from man-made structures that are difficult for mammalian predators to access.

Porter's Pond Island has had a number of predation events during the last few years. This island is larger than most islands preferred by Canada geese for nesting. The large surface area in combination with many goose nests has, in the past, allowed predators to destroy the majority of nests on the island. During the 2013 season, 3 nests on Porter's Pond Island in the Rock Island Reservoir were destroyed by predators. During 2012, only one nest was destroyed by predators and in 2011, no predation events on Canada goose nests were observed on the island. During 2010, all 4 goose nests on Porter's Pond were destroyed by avian predators. During 2009, American crows destroyed 6 of 7 Canada goose nests there and during the previous nesting season, 7 of 10 nests were destroyed by crows. From 2001 – 2013, Canada geese have initiated an average of 9.0 nests annually on Porter's Pond Island.

Along Rock Island Reservoir, nests in man-made structures were more successful than natural nests, with a success rate of 84% (compared with 77% for the natural nests). Man-made nests along Rocky Reach Reservoir were less successful than natural nests. Of 5 failed nests in man-made structures along Rocky Reach Reservoir, 2 were abandoned for unknown reasons and 1 was found to contain infertile eggs. Two additional nests were destroyed by avian predators. An extended period of unseasonably cold, rainy weather during the height of the nesting period in 2013 may have contributed to nest failures.

Although many apparent "hybrid" geese (Canada x domestic cross) were observed along Rocky Reach Reservoir, none were observed to be nesting. These "hybrid" geese were seen most frequently in an area approximately 2 - 3 miles upstream from Turtle Rock Island. No instances of a nesting domestic goose were documented along Rock Island Reservoir.

Marked Geese

From 2009 - 2013 WDFW banded Canada geese during the molt period, when most geese are flightless. Birds were banded at two locations in the Wenatchee Valley; being Rock Island Golf Course and Wenatchee Confluence State Park or Walla Walla Park. During the 2009 banding effort, adult birds were also marked with a numbered PVC neck collar. Hatch-year birds were marked with leg bands only. During similar efforts in 2010 - 2013, only leg bands were used to mark both adults and juvenile birds. From 2010 – 2013, 157 of 374 (42%) adult geese were re-captures from previous banding efforts (WDFW 2013, unpubl. data) in the Wenatchee area (Rock Island golf course and Walla Walla Park combined).

During Chelan PUD goose nest surveys in 2013, a minimum of 11 (13%) Canada goose nests initiated along Rock Island Reservoir were tended by banded geese. At least one neck-collared goose nested on the large island in the Rock Island dam forebay and several leg banded geese were observed. However, upon our arrival at the island fro nest monitoring, the adult geese flushed, making it impossible to read digits on the neck collar or observe presence of leg bands. Additional collared geese were observed frequently in the vicinity of the Rock Island Golf course (n = 3) and within the Horan Nature Area at Confluence State Park (n = 1). However, it was unknown if these additional collared geese were nesting along the reservoir or simply travelling with family groups, as they were not directly observed incubating a clutch of eggs or tending to a nest. One additional neck-collared goose was observed nesting in an osprey nest at the Cashmere Gun Club along the Wenatchee River. The collar number was not obtained, but it is the second year a neck-collared goose has nested in that same location. At Porter's Pond Island, 6 of the 13 Canada goose nests (46%) were tended to by at least 1 adult with a leg band. Four of those nests (31%) were observed with both adults being leg-banded. Three other nest sites along Rock Island Reservoir were tended to by at least one banded adult Canada goose. No marked Canada geese were observed nesting along Rocky Reach Reservoir in 2013.

Interspecific Nest Competition

Canada geese initiating nests in existing osprey nests were documented on 2 occasions in 2005, 5 times in 2006, 6 times in 2007, 9 times in 2008, 6 times in 2009, 4 times in both 2010 and 2011, 2 times in 2012, and 5 times during 2013. Canada geese begin nesting in mid-March prior to the arrival of osprey around early April in North-central Washington. When displaced from traditional nesting sites, ospreys have the tendency to build new nest structures nearby, frequently atop distribution and transmission line structures. Some structure configurations are not compatible with osprey nests and are at risk for power outages, pole fires, and are hazardous to the osprey. Current osprey nests are maintained so as to ensure the nests and structures are compatible.

In early 2009, Chelan County PUD experimented with covering of osprey nest platforms with a "goose deterrent" to prevent geese from initiating nests. The goose deterrent consists of a large boat buoy covered with a heavy duty tarp and secured to the platform, creating a covered, convex surface that geese cannot nest on. Of the 3 platforms that were covered in early 2009, none were occupied by Canada geese. Covers were removed prior to return of osprey to territories on or around April 1. Following removal of the nest covers, all 3 of nests were occupied by breeding osprey.

During early 2010 and 2011, 4 nests were covered to deter Canada geese from nesting in managed osprey nests. Following removal of the covers, osprey returned to each of these sites. In 2012, 5 nest covers were deployed. The covers prevented goose initiation in 4 osprey nests, but one goose was able to initiate a nest at the Goodwin Bridge site following removal of the cover, displacing the osprey from the nest platform. During 2013, 5 nest covers were deployed, and all were successful in preventing geese from initiating in PUD- managed platforms. However, 2 additional PUD-managed osprey platforms that lacked goose deterrents were occupied by geese in 2013 and 3 other osprey nests on man-made or natural substrates not managed by Chelan PUD were overtaken by geese. To avoid future potential conflict between nesting Canada geese and osprey, Chelan PUD may manage nests on a case-by-case basis to avoid displaced osprey and reduce risks to system reliability.

Acknowledgements

This project is conducted by the Public Utility District No. 1 of Chelan County in part to fulfill dam license requirements for Rock Island and Rocky Reach. Eric Degman and Deann Wallace prepared nesting tubs for the season and conducted nest surveys along the reservoirs.

Literature Cited

Washington Department of Fish and Wildlife (WDFW). 2013. Western Goose Round-up, 2013 unpublished data.

Table 1. Canada goose nesting along Rock Island Reservoir.

Year	# of initiated nests	Avg. clutch size	% successful nests	# successful nests	# Goslings fledged
1975	38	5.8	64%	24	139
1976	48	5.4	79%	38	205
1977	46	5.5	72%	33	172
6.1 foot reservoir rise was prior to the 1978 nesting season					
1978	41	5.9	88%	36	188
1979	38	5.5	89%	34	184
1980	41	5.5	90%	37	179
1981	48	5.5	73%	35	199
1982	51	5.5	88%	45	245
1983	67	6.0	78%	52	257
1984	67	6.3	81%	54	306
1985	62	5.7	77%	48	267
1986	72	5.8	76%	55	305
1987	90	6.1	83%	75	417
1988	102	5.9	80%	82	416
1989	99	5.8	77%	76	407
1990	110	5.9	79%	85	432
1991	134	5.9	84%	105	569
1992	150	5.7	82%	117	627
1993	143	5.6	79%	110	577
1994	146	5.6	84%	122	635
1996	178	5.3	76%	136	707
1997	110	5.9	80%	88	457
1998	81	5.9	84%	68	377
1999	79	5.9	84%	66	379
2000	77	5.8	81%	62	340
2001	84	5.7	75%	63	346
2002	75	5.4	77%	58	297
2003	73	5.9	79%	58	328
2004	63	5.7	89%	56	309
2005	66	5.8	76%	50	286
2006	63	6.1	79%	50	264
2007	65	5.9	86%	56	315
2008	63	6.9	81%	51	292
2009	63	5.8	68%	43	240
2010	62	5.8	82%	51	267
2011	78	5.6	87%	68	351
2012	82	5.3	73%	63	317
2013	83	5.3	77%	64	319
Post-reservoir rise Avg.	**83**	**5.8**	**81%**	**66**	**354**

Table 2. Canada goose nesting along Rocky Reach Reservoir.

Year	# of initiated nests	Avg. clutch size	% successful nests	# successful nests	# Goslings fledged
1983	44	6.2	48%	21	110
1984	33	7.3	39%	13	76
1985	30	6.0	40%	12	66
1986	35	5.6	60%	21	118
1987	47	6.4	66%	31	183
1988	52	6.4	62%	32	190
1989	58	6.0	62%	36	225
1990	61	6.8	54%	32	191
1991	73	6.4	58%	39	225
1992	80	6.7	59%	47	268
1993	67	6.4	63%	40	256
1994	58	6.1	67%	39	214
1995	75	6.3	69%	52	284
1996	75	6.1	69%	52	280
1997	60	6.2	75%	45	261
1998	47	6.0	77%	36	203
1999	39	6.1	79%	31	182
2000	52	5.9	67%	35	195
2001	47	6.3	85%	40	225
2002	45	6.0	84%	38	215
2003	53	6.4	77%	41	238
2004	58	6.2	69%	40	229
2005	54	5.2	89%	48	247
2006	57	6.0	79%	41	222
2007	45	6.2	96%	43	244
2008	45	6.9	80%	36	204
2009	44	5.1	61%	27	126
2010	49	6.0	67%	33	180
2011	59	5.5	75%	44	214
2012	69	5.7	74%	51	280
2013	60	5.6	82%	49	257
Average:	**54**	**6.1**	**69%**	**37**	**207**