

Goose Nesting along Rock Island and Rocky Reach Reservoirs in 2010



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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. 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 2010 nesting season. This report also compares the 2010 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 509.8. 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. As of the beginning of the 2010 nesting season, there were 12 goose nest tubs along Rock Island Reservoir and 20 tubs along Rocky Reach Reservoir.

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 response to public requests to reduce goose numbers in parks and golf courses. The subspecies of goose that nests in this area is largely non-migratory. 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 bank of Rock Island Reservoir between Highway bridges 2 and 28. As the area continues to grow, further restrictions on waterfowl may be imposed, potentially reducing the effect of hunting on local goose populations. With considerable development on the Chelan County shoreline, waterfowl hunting opportunities are very limited on the Chelan County side of Rock Island Reservoir between the highway bridges as well.

Methods

Man-made Nests

Chelan PUD maintains and monitors man-made goose nesting structures (nest tubs) along Rock Island (n = 12) and Rocky Reach reservoirs (n=20). The nest tubs consist of either: pre-fabricated fiberglass tubs, rock rings, tires placed on natural substrates, or tire tubs on elevated platforms. The pre-fabricated fiberglass tubs are mounted on metal poles 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. Rock rings are assembled from materials on-site and provide bowls for geese to nest in. 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.

Surveys

Chelan PUD nest surveys generally begin in late March. In 2010, the surveys for Rock Island and Rocky Reach reservoirs began on 25 March and 26 March, respectively.

Chelan PUD biologists conducted surveys along each reservoir five to six times during the 2010 nesting season, depending on the duration of nesting activity. Generally, each nest was visited an average of 3 times per season—one visit during initiation, confirmation of 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 62 nests. Fifty-one of those nests (82%) were successful in producing goslings. A total of 334 eggs were laid in the 62 nests. The eggs had a hatch rate of 80%, with 267 eggs hatching. Seven nests containing 50 eggs were attempted in available goose tubs maintained by the Chelan PUD. All of those nests were successful in producing goslings (n = 45). By comparison, 43 of 55 (78%) natural nests along the reservoir fledged goslings. Of the 284 eggs laid in natural nests, 222 (78%) hatched. The average clutch size for all goose nests in 2010 (calculated from successful nests only) was 5.8 eggs/nest.

Along Rocky Reach Reservoir, geese attempted 49 nests. Thirty-three of those nests (67%) were successful. A total of 272 eggs were laid in the 49 nests. The eggs had a hatch rate of 66%, with 180 goslings fledged. Seventeen nests containing 105 eggs were attempted in goose tubs provided by Chelan PUD. Eleven of those nests (65%) were successful in producing goslings (n = 68). Six nests in goose tubs were unsuccessful. In three of the man-made structures, a portion of the nests were destroyed by predators and subsequently abandoned. In the remaining three nests, eggs were laid and incubated but were abandoned for unknown reasons. By comparison, of 32 natural nests along the reservoir, 20 (63%) fledged goslings. Of the 167 eggs laid in natural nests, 112 (67%) hatched. The average clutch size was 6.0 eggs/nest.

Unsuccessful Nests

Rock Island Reservoir had a total of 11 failed nests along the Reservoir in 2010. All of these nests that failed were located on natural substrates. Eight of the nest failures were attributed to either mammalian or avian predators. Three of the nests were abandoned for unknown reasons. The abandoned nests did not exhibit signs of predation, such as broken eggs or adult carcasses in the vicinity.

Rocky Reach Reservoir had 16 instances of failed nests in 2010. Of these nests that failed, 10 were located on natural substrates and 6 were located in nest tubs. Four nests were documented as being destroyed by mammalian or avian predators and six additional nests were partially destroyed by predators and subsequently abandoned. An additional six nests were abandoned for unknown reasons. Additionally, 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.

Program Summary

Goose nesting along Rock Island Reservoir has produced an annual average of 357 goslings. In 2010, 267 goslings fledged. Fewer nests were initiated in 2010 compared to the average. However, average clutch size was equal to the post-reservoir rise average while the percent of nest success was slightly higher than average (Table 1). The decrease in the number of nests initiated seems to be a result of fewer 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 – 2000, the average number of nests initiated on the islands in the forebay averaged 58.4. From 2000 – 2010, that average has dropped to 25.9. The reason for this decline is unknown.

The percent of successful nests (67%) for 2010 along Rocky Reach Reservoir was slightly below average. The average hatch rate from 1983-2010 is 68%. Clutch size at 6.0 for 2010 is slightly below the average of 6.2 (Table 2). Rocky Reach Reservoir had a below average number of fledged goslings (n = 180) and a high rate (33%) of failed nests.

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 many of the destroyed nests and likely some of the eggs predated from man-made structures that are difficult for mammalian predators to access. During the 2010 season, all 4 nests initiated on Porter's Pond Island in the Rock Island Reservoir were destroyed by crows. During 2009, American crows or other avian predators destroyed 6 of 7 Canada goose nests and during the previous nesting season, 7 of 10 nests on Porter's Pond Island were also destroyed by avian predators. From 2000 – 2010, Canada geese have initiated an average of 8.7 nests annually on Porter's Pond Island.

Along Rock Island Reservoir, nests in man-made structures were more successful than natural nests, with all fledging young during 2010. Man-made nests along Rocky Reach Reservoir were slightly less successful than natural nests. Of 6 failed nests in man-made structures along Rocky Reach, three were abandoned for unknown reasons and 3 nests were destroyed by an unknown predator and subsequently abandoned. One instance of a nesting domestic goose was documented along Rock Island Reservoir. The nest contained 12 eggs and was not tended to by the goose, as the eggs were laid and subsequently abandoned. However, many apparent "hybrid" geese (Canada x domestic cross) were observed along Rocky Reach Reservoir, most frequently in an area approximately 2 - 3 miles upstream from Turtle Rock Island.

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, and 4 times in 2010. Canada geese begin nesting prior to the arrival of osprey in North Central Washington. When displaced from traditional nesting sites, ospreys have the tendency to build new nest structures nearby 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 and potential young. 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 platforms to deter geese from initiating nests on the platforms. Of the 3 platforms that were covered, none were occupied by Canada geese. Covers were removed prior to return of osprey to territories. Following removal of the nest covers, all 3 of nests were occupied by breeding osprey. During early 2010, four 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. 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.

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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
<i>*6.1 foot reservoir rise was prior to the 1978 nesting season</i>					
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	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

Post-reservoir rise Avg. 83 5.8 81% 66 357

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
Average:	53	6.2	68%	36	202