

Montana's Colonial-nesting Waterbird Survey

Final Report



Prepared for the U.S. Fish and Wildlife Service, American Bird Conservancy, and Montana Bird Conservation Partnership

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This report details the final summary of the Western Colonial Waterbird Monitoring and Inventory (WCWS) program in Montana. Montana Fish, Wildlife and Parks and Montana Audubon partnered with the U.S. Fish and Wildlife Service (USFWS) and American Bird Conservancy on this west-wide colonial-nesting waterbird program. In 2009-2010, we focused survey efforts on colonial-nesting waterbirds that were Montana Species of Concern. In 2010, we added Double-crested Cormorants to our priority list. In 2011, we focused almost exclusively on Great Blue Herons and 13 wetland sites that had large and diverse waterbird colonies. Other colonial-nesting waterbird species were recorded incidentally.

Waterbird conservation planning requires coordinated range-wide inventory and monitoring programs (Kushlan et al. 2002). In Montana, eleven colonial-nesting waterbird species are identified as high priority species for conservation action or monitoring (Casey 2000; Montana Natural Heritage Program and Montana Fish, Wildlife and Parks 2009). The wetland habitats on which these birds depend are classified as a Tier 1 habitat, or habitat in greatest need of conservation (Montana Fish, Wildlife and Parks 2005). Determining priority areas for maintaining wildlife diversity, and especially diverse assemblages of Species of Concern, is one of the primary conservation needs for wetland habitats. However, waterbirds will often move breeding colonies as wetland conditions change making localized surveys of limited value without regional comparisons. Thus, participation in a region-wide colonial-nesting waterbird inventory may provide critical information for conservation of Montana's waterbirds.

Montana Audubon has been collecting information on bird populations in wetlands and other habitats as part of their Important Bird Area program. Biologists at the National Wildlife Refuges and some of the Wildlife Management Areas in the state have fairly comprehensive local data on wetland birds. There have also been several regional surveys for waterbirds over the previous 10 years (e.g., Casey 2004; Puchniak and Stewart 2007). Much of this information is stored in the Montana Natural Heritage database. Involvement with the USFWS coordinated west-wide surveys were undertaken to complement the existing information on waterbirds in Montana.

Methods

We selected wetlands to survey based on previously recorded breeding by our target species in the Montana natural Heritage Program database, local knowledge, or perceived site potential. Staff from national Wildlife Refuges, Montana Fish, Wildlife and Parks, Tribal lands, and the Bureau of Land Management, along with local volunteers, participated in the program. Montana Audubon hired two staff to coordinate with participating biologists and volunteers, obtain necessary permits, conduct surveys, enter data, and assist with summaries and reporting.

We followed USFWS protocols for colony counts (http://www.fws.gov/mountain-prairie/species/birds/western_colonial/index.html). Whenever possible, nests were counted to estimate of the number of breeding birds. When nests could not be counted, we estimated the number of individual breeding birds through fly-out or flush counts. Data were entered in to the WCWS database developed by USFWS.

Results

We surveyed 150, 133, and 138 wetland sites in 2009, 2010, and 2011, respectively. Sites with more than one species or large numbers of colonial-nesting waterbirds (i.e., key sites) were surveyed in most years (Table 1). More dispersed sites were surveyed once during the

three year survey window (Appendix 1). Descriptions of occupied sites are forthcoming in the USFWS Colonial-nesting Waterbird Atlas being prepared by USFWS.

Median colony size ranged from 7 – 1200 over the 3 year period, depending on species (Table 2). Detailed species accounts are provided in Appendix 2. In general, birds were in relatively small colonies (median <20 pairs), with the exception of American White Pelicans and the gull species. Differences in total breeding pair estimates among years are likely an artifact of sampling and not necessarily representative of yearly population fluctuations. The considerably lower counts of American White Pelicans at Canyon Ferry WMA in 2011 compared with 2010 or 2009 (~60% decrease) may be related to a localized weather event as there appeared to be adequate habitat available to support a larger colony.

Cool, wet spring conditions and higher than average snowpack in 2010 and 2011 led to high water levels and record flooding throughout the state by mid-June. Emergent vegetation and islands were submerged. Flooding may have resulted in some changes to colony distribution, e.g., Western Grebe and Forster’s Terns moved their breeding location within Freezout WMA and Franklin’s Gulls apparently split their colony between Manning Lake and Homestead Lake. We also noted later nesting initiation by some birds and a few re-nesting attempts which were likely related to cool, wet conditions and submerged islands. However, we did not detect much colony abandonment.

Table 1. Key wetland sites for focal colonial-nesting waterbirds in Montana based on 2009-2011 surveys.

County	Sites	Focal Species Breeding
Beaverhead	Red Rock Lakes NWR	WFIB, FRGU, DCCO
Broadwater	Canyon Ferry WMA	AWPE, CATE, DCCO
Cascade	Benton Lake NWR	WFIB, FRGU, BCNH
Deer Lodge	Warm Springs WMA	BCNH, GBHE, DCCO
Lake	Ninepipes NWR	CLGR, CATE, FOTE, DCCO
Phillips	Bowdoin NWR	AWPE, WFIB, BLTE, CATE, COTE, FOTE, FRGU, BCNH, DCCO
	Flat Reservoir	DCCO, GBHE, BCNH
	Hoss Reservoir	BCNH
	Wild Horse Reservoir	BLTE, BCNH, DCCO
Roosevelt	Manning Lake	WFIB, FRGU, BCNH
Sheridan	Medicine Lake	AWPE, FOTE, BCNH, DCCO
	Homestead Lake	FOTE, FRGU (WFIB)
Teton	Arod Lakes	AWPE, COTE, DCCO
	Freezout Lake WMA	CLGR, COTE, FOTE, BCNH, DCCO
Valley	Fort Peck Lake	CATE, DCCO

CLGR = Clark’s Grebe

AWPE = American White Pelican

DCCO = Double-crested Cormorant

GBHE = Great Blue Heron

BCHN = Black-crowned Night-heron

WFIB = White-faced Ibis

FRGU = Franklin’s Gull

CATE = Caspian Tern

FOTE = Forster’s Tern

COTE = Common Tern

BLTE = Black Tern

Table 2. Summary of breeding pairs of colonial-nesting waterbirds in Montana in 2009-2011.

Species	2009		2010		2011		Summary 2009-2011		
	Sites with confirmed breeding	Total breeding pairs	Sites with confirmed breeding	Total breeding pairs	Sites with confirmed breeding ^a	Total breeding pairs	Estimated number of breeding pairs in MT	Median colony size (pairs)	Colony size range (pairs)
Species of Concern									
Clark's Grebe	1	n/a ^d	2	5	1	n/a ^d	n/a	n/a	n/a
American White Pelican	4	5,938	4	4866	4	4726	4700 - 6000	785	25 - 2951
Great Blue Heron	53	719	27	333	76	1183	2000 - 2500	10	1 - 62
Black-crowned Night-heron	6	93	6	123	6	220	95 - 240	14	1 - 53
White-faced Ibis	3	115	4	225	3	95	115 - 250	10	3 - 195
Franklin's Gull	4	8,247	4	7945	4	8100	7900 - 8300	1200	16 - 4833
Caspian Tern	3	31	2	12	4	134	70 - 135	11	1 - 51
Forster's Tern	6	66	6	68	4	49	50 - 100	9	2 - 30
Common Tern	2	43	2	23	5	120	<150	10	1 - 49
Black Tern	13	95	8	73	3	38	n/a	7	2 - 20
Target Species									
Double-crested Cormorant ^b	13	.	12	1064	10	834	1000 - 1300	23	2 - 371
Non-target Species^c									
Red-necked Grebe	5	.	3	.	3	.	.	n/a	n/a
Horned Grebe	1	.	0	.	0	.	.	n/a	n/a
Eared Grebe	11	.	7	.	3	.	.	n/a	1 - 550
Western Grebe	2	.	3	.	2	.	.	43	1 - 77
Ring-billed Gull	6	.	6	.	6	.	.	550	25 - 3040
California Gull	4	.	8	.	4	.	.	201	6 - 3366
Ring-billed & California Gull	.	.	3	.	2	.	.	750	375 - 750

^aRed Rock Lake NWR did not conduct colony counts in 2011^bDouble-crested Cormorants were not a target species in 2009; therefore total breeding pair estimates are not provided.^cData was collected opportunistically for these species. Estimates of total breeding pairs are not reported as many colonies were not surveyed.^dClark's and Western Grebes were nesting together ; observers could not determine the proportion of CLGR:WEGR

Survey methods employed varied by species, nesting substrate, and local conditions (Appendix 2). We typically used aerial or perimeter counts for tree-nesting species, including most Great Blue Herons colonies and the tree-nesting colony of Double-crested Cormorants at Ninepipe NWR. With large colonies in trees we found two observers comparing independent nest counts improved accuracy. We primarily used within colony nest counts to estimate the number of marsh nesting birds; although occasionally we counted individuals instead of nests because of difficulties accessing a colony. Franklin's Gulls were the most difficult due to the dense nature of the rushes in which the nesting usually occurs and the vulnerability of the nests to disturbance or destruction by the survey crew. We found adult flush counts, ideally from a boat in the water, were the best method for estimating Franklin's Gull nests. This method also allowed the observer to record observations of birds nesting with the gulls, such as White-Faced Ibis and Black-crowned Night-heron.

Discussion

We believe we located and surveyed all active colonies of American White Pelican, Franklin's Gull, and White-faced Ibis in all survey years (except counts were not conducted at Red Rock Lake NWR in 2011), although the accuracy of Franklin's Gull counts remains a challenge. Our estimates for Black-crowned Night-heron, Double-crested Cormorant, Common Tern, and possibly Forster's Tern are also probably relatively complete. Black Terns nest in small colonies distributed in wetland complexes across the landscape; it is likely we missed some colonies of this species, especially in 2011. Great Blue Heron colonies are dispersed primarily along river drainages in Montana. We covered a large portion of the river drainages with potential heron habitat but we certainly may have missed some colonies. We were able to document breeding by Caspian Terns at Ninepipe NWR and Fort Peck Lake in 2011; in both areas they were nesting in large Ring-billed and California gull colonies and we may have missed them in previous survey years. It is likely that experience gained by observers over the three year survey allowed us to find some of the more cryptic breeding birds in 2011.

We surveyed for all focal species at all sites and estimated number of breeding birds whenever encountered. Therefore, lack of a documented breeding attempt for our focal species means we have reasonable confidence that a focal species was not breeding at a given sites and can be treated as negative data in data analysis. This does not pertain to non-target species, as some breeding attempts may have gone undocumented by observers. Data records for non-target species need to be treated as presence only.

Future Directions

We have identified three strategies to address future information needs. First, birds that nest in loose colonies or occupy dispersed wetlands in low numbers across the state were not as well-surveyed by our methods (e.g., Black Terns). A systematic approach to monitoring marsh-nesting birds, colonial and noncolonial, would enhance our understanding of the status, distribution, and population size of some waterbirds across the state. The pending USFWS marshbird monitoring strategy may provide this framework for this need.

Secondly, waterbird breeding numbers appear to fluctuate, sometimes widely, among years at a given site (e.g., American White Pelicans). Thus, a colonial-nesting waterbird monitoring program for select species would provide long-term trend and other information for differentiating yearly fluctuations from significant population shifts. We propose a volunteer-based program, supplemented by agency biologists (especially refuges) and additional minimal paid field support, to monitor main sites across the state on a yearly basis with the intent to conduct a more comprehensive survey to assess changes in distribution at 3 - 5 year intervals. Monitoring at our 15 key sites should

provide a reasonable estimate of breeding numbers for American White Pelicans, Black-crowned Night-herons, White-faced Ibis, Franklin's Gull, Caspian Tern, and possibly Common and Forster's terns. To include Double-crested Cormorants, which are receiving attention in some western states because of potential conflicts with fishery interests, we recommend adding Pablo NWR, Frenchmen Reservoir and Lee Metcalf NWR to the monitoring strategy.

Lastly, Great Blue Herons nest in dispersed colonies, often along river corridors, and are best monitored by aerial surveys. We recommend conducting a statewide aerial survey for herons at 3 – 5 year intervals in conjunction with the more comprehensive waterbird monitoring described above. These surveys can be combined with Bald Eagle or other riparian-based surveys.

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