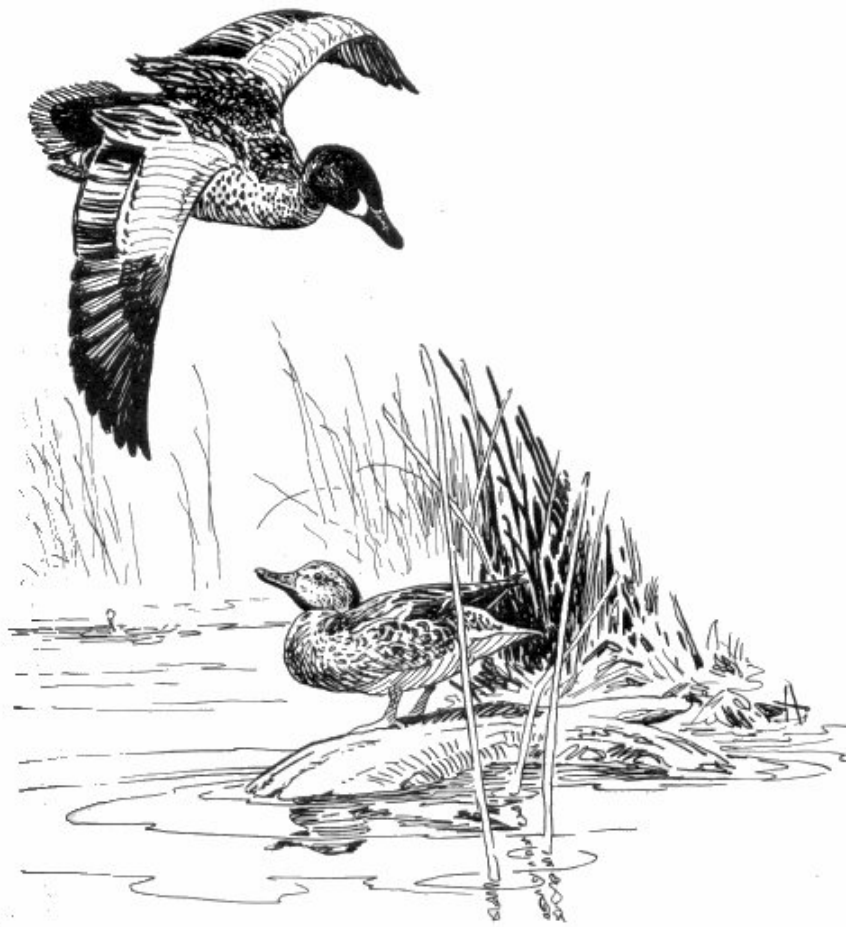


U.S. Fish and Wildlife Service



# Trends in Duck Breeding Populations, 1955-2010

*July 2, 2010*



# TRENDS IN DUCK BREEDING POPULATIONS, 1955–2010

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Administrative Report–July 2, 2010

This report summarizes information about the status of duck populations and wetland habitats during spring 2010, focusing on areas encompassed by the U.S. Fish and Wildlife (USFWS) and Canadian Wildlife Services' (CWS) Waterfowl Breeding Population and Habitat Survey. We do not include information from surveys conducted by state or provincial agencies. In the traditional survey area, which includes strata 1–18, 20–50, and 75–77 (Figure 1), the total duck population estimate (excluding scoters [*Melanitta* spp.], eiders [*Somateria* spp. and *Polysticta stelleri*], long-tailed ducks [*Clangula hyemalis*], mergansers [*Mergus* spp. and *Lophodytes cucullatus*], and wood ducks [*Aix sponsa*]) was  $40.9 \pm 0.7$  [SE] million birds. This estimate was similar to last year's estimate of  $42.0 \pm 0.7$  million birds and was 21% above the long-term average<sup>a</sup> (1955–2009; Table 1). Estimated mallard (*Anas platyrhynchos*) abundance was  $8.4 \pm 0.3$  million birds, which was similar to the 2009 estimate of  $8.5 \pm 0.2$  million birds and 12% above the long-term average (Table 2). Estimated abundance of gadwall (*A. strepera*;  $3.0 \pm 0.2$  million) was similar to the 2009 estimate and 67% above the long-term average (Table 3). Estimated abundance of American wigeon (*A. americana*;  $2.4 \pm 0.1$  million) was similar to 2009 and the long-term average (Table 4). The estimated abundance of green-winged teal (*A. crecca*) was  $3.5 \pm 0.2$  million, which was similar to the 2009 estimate and 78% above their long-term average of  $1.9 \pm 0.2$  million (Table 5). The estimate of blue-winged teal abundance (*A. discors*) was  $6.3 \pm 0.4$  million, which was 14% below the 2009 estimate and 36% above their long-term average of  $4.7 \pm 0.4$  million (Table 6). The estimate for northern pintails (*A. acuta*;  $3.5 \pm 0.2$  million) was similar to the 2009 estimate, and 13% below the long-term average of  $4.0 \pm 0.4$  million (Table 7). Estimates of northern shovelers (*A. clypeata*;  $4.1 \pm 0.2$  million) and redheads (*Aythya americana*;  $1.1 \pm 0.1$  million) were similar to their 2009 estimates and were 76% and 63% above their long-term averages of  $2.3 \pm 0.02$  million and  $0.7 \pm 0.01$  million, respectively (Tables 8 and 9). The canvasback estimate (*A. valisineria*;  $0.6 \pm 0.05$  million) was similar the 2009 estimate and to the long-term average (Table 10). The scaup estimate (*A. affinis* and *A. marila* combined;  $4.2 \pm 0.2$  million) was similar to that of 2009 and 16% below the long-term average of  $5.1 \pm 0.05$  million (Table 11).

Habitat conditions during the 2010 Waterfowl Breeding Population and Habitat Survey were characterized by average to below-average moisture and a mild winter and early spring across the entire traditional (including the northern locations) and eastern survey areas. The total pond estimate

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<sup>a</sup>Populations are considered to have changed from the previous year or long-term average if the observed significance value associated with change is  $\leq 0.10$ . Actual p-values are presented in tables.

(Prairie Canada and U.S. combined) was  $6.7 \pm 0.2$  million (Table 12, Figure 2). This was similar to the 2009 estimate and 34% above the long-term average of  $5.0 \pm 0.03$  million ponds.

Conditions across the Canadian prairies were similar to 2009. Portions of southern Alberta, Saskatchewan and Manitoba improved but a large area along the Alberta and Saskatchewan border remained dry, and moisture levels in portions of Manitoba declined from last year. The 2010 estimate of ponds in Prairie Canada was  $3.7 \pm 0.2$  million. This was similar to last year's estimate ( $3.6 \pm 0.1$  million) and to the 1955–2009 average ( $3.4 \pm 0.03$  million). Residual water remains in the Parklands and these were classified as fair to good. Most of the Prairie–Parkland region of Canada received abundant to historically high levels of precipitation during and after the survey which, while possibly flooding some nests, will produce excellent brood-rearing habitat for successful nesters and lessen the summer drawdown, leading to beneficial wetland conditions next spring.

Wetland numbers and conditions remained fair to good in the eastern U.S. prairies, but habitat conditions declined through the western Dakotas and Montana. The 2010 pond estimate for the north-central U.S. was  $2.9 \pm 0.1$  million, which was similar to last year's estimate ( $2.9 \pm 0.1$  million) and 87% above the long-term average ( $1.6 \pm 0.02$  million). Fall and winter precipitation in the eastern Dakotas generally improved good habitat conditions already present. However, wetlands in the western Dakotas and Montana were not recharged, resulting in a deterioration of conditions from 2009, at the time the survey was conducted.

In the bush regions of the traditional survey area (Alaska, Yukon, Northwest Territories, northern Manitoba, northern Saskatchewan, and western Ontario), spring breakup was early. Unlike in 2009, the majority of habitats were ice-free for arriving waterfowl. Habitat of most of the bush region, with the exception of Alaska and the Northwest Territories, was classified as fair due to below-average moisture, but the early spring should benefit waterfowl across the entire area.

The boreal forest and Canadian Maritimes of the eastern survey area experienced an early spring as well. Much of southern Quebec and Ontario were classified as poor to fair due to dry conditions, with the exception of an area of adequate moisture in west-central Ontario. More northern boreal forest locations benefited from near-normal precipitation and early ice-free conditions. Although winter precipitation from southwestern Ontario along the St. Lawrence River Valley and into Maine was below average, waterfowl habitat was classified as good to excellent, as in 2009. The James and Hudson Bay Lowlands of Ontario (strata 57–59) were not surveyed in 2010, but reports indicated an early spring in these locations as well.

In 2005, the USFWS and CWS began to integrate two previously independent waterfowl surveys conducted in eastern North America into a single composite estimate using hierarchical models. Consequently, total indicated bird definitions for American black ducks were modified to provide a common index across surveys, and adjustments were made to the geographic stratification of the eastern survey area. Additional refinements to analytical methods are incorporated in the estimates presented in this report. For these reasons, population estimates presented in this report for the eastern survey area (strata 51–72) are not directly comparable with estimates presented in reports issued prior to 2006. Specifically, composite estimates are presented for only a portion of the eastern survey area and include data from strata 51, 52, 63, 64, 66, 67, 68, and 70. Further, we present population estimates for strata 71 and 72 based on CWS data only. These 10 strata were chosen for presentation because at least one survey (i.e., either the CWS or USFWS survey) was conducted for each of these strata for the full period of record of the eastern survey (1990–2010). In cases where the USFWS has traditionally not recorded observations to the species level, composite estimates are provided only for multiple-species groupings (i.e., scoters, mergansers, goldeneyes, or scaup). Analytical methods applied to eastern survey area data and results will be presented in greater detail in the 2010 Waterfowl Status Report. We anticipate additional refinements to composite estimates for the eastern survey area in the coming years as the USFWS and CWS work toward a final integrated survey design and analytical approach. Population estimates for mergansers in the eastern survey area were 386.4 thousand which was 15%

below the 2009 estimate, and 14% below the long-term average of 450.8 thousand (Table 13, Figure 6, Appendix B). American black duck estimates in the eastern survey area were similar to the 2009 estimate and 7% below the long-term average of 478.9 thousand (Table 13, Figure 6, Appendix B). Mallards, green-winged teal, American wigeon, scaup, ring-necked duck, goldeneye, bufflehead, and scoters surveyed in the eastern survey area were similar to last year and to their 1990–2009 averages (Table 13, Figures 6–7, Appendix B).

The data in this report were contributed by the following individuals:

**Alaska, Yukon Territory, and Old Crow Flats (Strata 1–12)**

Air E. Mallek and D. Groves

**Northern Alberta, Northeastern British Columbia, and Northwest Territories (Strata 13–18, 20, and 77)**

Air F. Roetker and C. Spiegel

**Northern Saskatchewan and Northern Manitoba (Strata 21–25)**

Air W. Rhodes and S. Folsom<sup>d</sup>

**Southern and Central Alberta (Strata 26–29, 75, and 76)**

Air J. Bredy and D. Fronczak

Ground J. Leafloor<sup>a</sup>, S. Leach<sup>d</sup>, G. Raven<sup>a</sup>, N. Clements<sup>d</sup>, M. Watmough<sup>a</sup>, J. Caswell<sup>b</sup>,  
M. Burak<sup>a</sup>, and A. Sorensen<sup>a</sup>

**Southern Saskatchewan (Strata 30–33)**

Air P. Thorpe and P. Devers

Ground K. Dufour<sup>a</sup>, K. Warner<sup>a</sup>, D. Johns<sup>a</sup>, N. Tchir<sup>a</sup>, D. Routhier<sup>a</sup>, D. Nieman<sup>c</sup>, P. Nieman<sup>c</sup>,  
P. Bergen<sup>c</sup>, and J. Traylor<sup>c</sup>

**Southern Manitoba (Strata 34–40)**

Air B. Lubinski and D. Benning<sup>e</sup>

Ground M. Schuster<sup>a</sup>, G. Ball<sup>b</sup>, F. Baldwin<sup>b</sup>, N. Astleford<sup>a</sup>, D. Walker<sup>a</sup>, J. Ingram<sup>a</sup>, J. Black<sup>a</sup>,  
M. Gillespie<sup>c</sup>, and R. Buss<sup>a</sup>

**Montana and Western Dakotas (Strata 41–44)**

Air T. Liddick and M. Rabe<sup>b</sup>

Ground K. Fleming and J. Klimstra

**Eastern Dakotas (Strata 45–49)**

Air J. Solberg and P. Fasbender

Ground P. Garrettson, K. Kruse, D. Collins, and J. White

**Western Ontario and Central Quebec (Strata 50, 69–70)**

Air J. Wortham and G. Boomer

Helicopter P. Padding, C. Dwyer, and S. Gibbs

**Central and Eastern Ontario (Strata 51, 54)**

Air K. Fox and T. Lewis

**Southern Ontario and Southern Quebec (Strata 52–53, 55–56, and 68)**

Air K. Bollinger and C. Ferguson<sup>e</sup>

**Maine and Maritimes (Strata 62–67)**

Air J. Bidwell and R. Spangler<sup>f</sup>

**Canadian Wildlife Service helicopter plot survey**

Quebec D. Bordage<sup>a</sup>, C. Lepage<sup>a</sup>, C. Marcotte<sup>a</sup>, and S. Orichefsky<sup>a</sup>

Ontario S. Meyer<sup>a</sup>, D. McNicol<sup>a</sup>, K. Ross<sup>d</sup>, and C. Friis<sup>a</sup>

New Brunswick &

Nova Scotia R. Hicks<sup>a</sup> and B. Pollard<sup>a</sup>

Labrador &

Newfoundland S. Gilliland<sup>a</sup>, P. Ryan<sup>a</sup>, R. Hicks<sup>a</sup>, S. Duffy<sup>a</sup>, and J. Foster Ryan<sup>b</sup>

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<sup>a</sup>Canadian Wildlife Service

<sup>b</sup>State, Provincial or Tribal Conservation Agency

<sup>c</sup>Ducks Unlimited Canada

<sup>d</sup>Other Organization

<sup>e</sup>U.S. Fish and Wildlife Service Retired

<sup>f</sup>U.S. Forest Service

All others—U.S. Fish and Wildlife Service

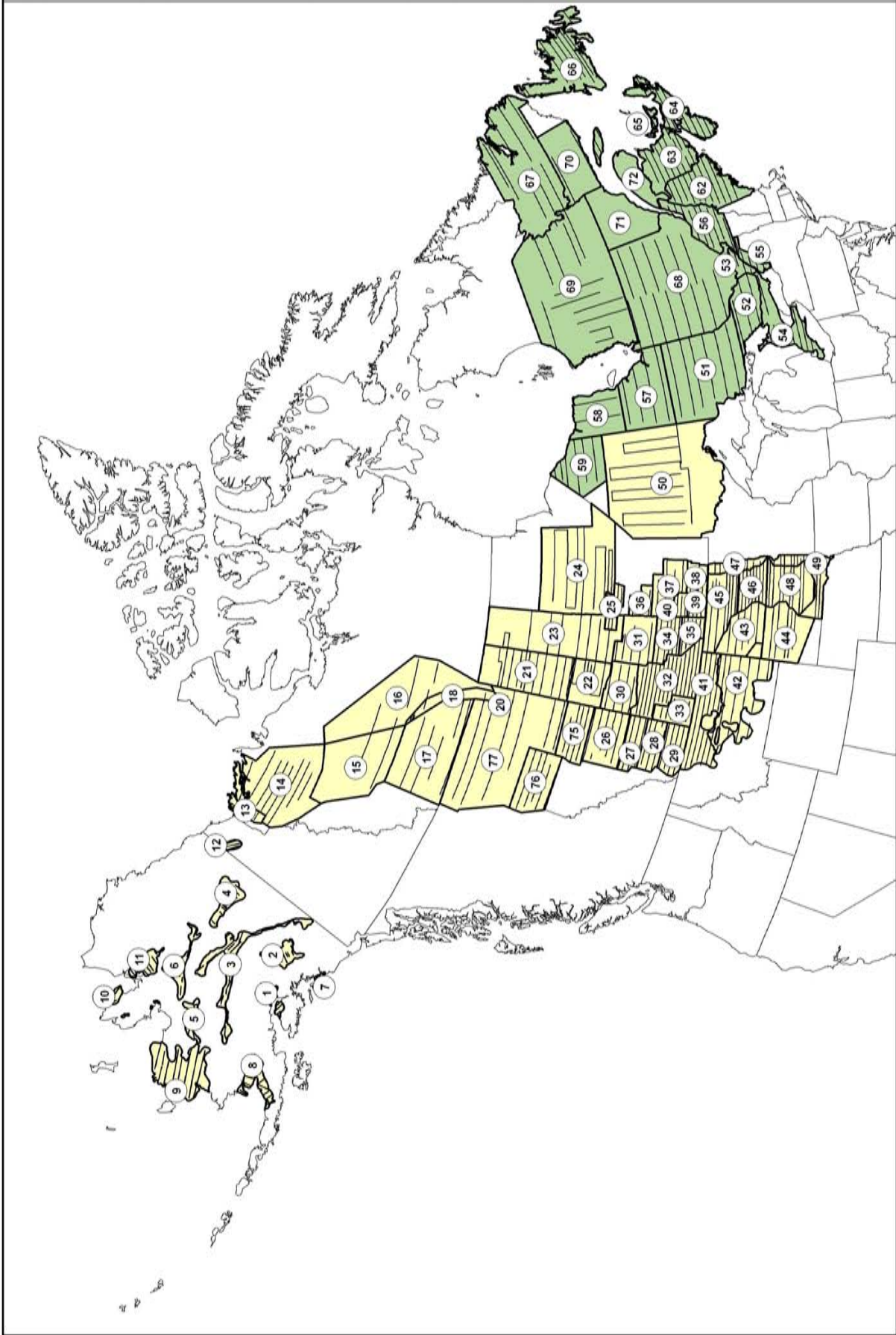


Figure 1: Strata and transects of the Waterfowl Breeding Population and Habitat Survey (yellow = traditional survey area, green = eastern survey area).

Table 1: Total duck<sup>a</sup> breeding population estimates (in thousands) for regions in the traditional survey area.

Region	2010	2009	Change from 2009		LTA <sup>b</sup>	Change from LTA		
			%	<i>P</i>		%	<i>P</i>	
Alaska – Yukon								
Territory – Old Crow Flats	5,556	4,345	+28	<0.001	3,654	+52	<0.001	
C. & N. Alberta – N.E. British								
Columbia – NWT	8,717	6,934	+26	<0.001	7,090	+23	<0.001	
N. Saskatchewan								
–N. Manitoba –W. Ontario	2,149	3,813	-44	<0.001	3,533	-39	<0.001	
S. Alberta	2,641	3,288	-20	<0.001	4,269	-38	<0.001	
S. Saskatchewan	6,839	8,053	-15	0.004	7,507	-9	0.010	
S. Manitoba	1,104	1,371	-20	0.007	1,536	-28	<0.001	
Montana & Western Dakotas	1,977	2,468	-20	0.008	1,626	+22	0.004	
Eastern Dakotas	11,910	11,733	+2	0.777	4,465	+167	<0.001	
Total	40,893	42,005	-3	0.268	33,680	+21	<0.001	

<sup>a</sup> Includes 10 species in Appendix A plus American black duck, ring-necked duck, goldeneyes, bufflehead, and ruddy duck; excludes eiders, long-tailed duck, scoters, mergansers, and wood duck.

<sup>b</sup> Long-term average, 1955–2009.

Table 2: Mallard breeding population estimates (in thousands) for regions in the traditional survey area.

Region	2010	2009	Change from 2009		LTA <sup>a</sup>	Change from LTA		
			%	<i>P</i>		%	<i>P</i>	
Alaska – Yukon								
Territory – Old Crow Flats	606	503	+20	0.140	370	+64	<0.001	
C. & N. Alberta – N.E. British								
Columbia – NWT	1,423	1,080	+32	0.032	1,072	+33	0.007	
N. Saskatchewan								
–N. Manitoba –W. Ontario	801	930	-14	0.388	1,138	-30	0.004	
S. Alberta	598	754	-21	0.013	1,080	-45	<0.001	
S. Saskatchewan	1,699	1,867	-9	0.292	2,062	-18	0.001	
S. Manitoba	351	417	-16	0.124	382	-8	0.339	
Montana & Western Dakotas	533	444	+20	0.172	500	+7	0.525	
Eastern Dakotas	2,420	2,517	-4	0.678	925	+162	<0.001	
Total	8,430	8,512	-1	0.827	7,529	+12	0.002	

<sup>a</sup> Long-term average, 1955–2009.



Table 3: Gadwall breeding population estimates (in thousands) for regions in the traditional survey area.

Region	2010	2009	Change from 2009		LTA <sup>a</sup>	Change from LTA	
			%	<i>P</i>		%	<i>P</i>
Alaska – Yukon							
Territory – Old Crow Flats	3	2	+45	0.679	2	+49	0.554
C. & N. Alberta – N.E. British							
Columbia – NWT	51	67	-24	0.547	51	0	0.991
N. Saskatchewan							
–N. Manitoba –W. Ontario	14	9	+63	0.307	26	-46	0.003
S. Alberta	323	401	-19	0.322	316	+2	0.845
S. Saskatchewan	913	1,044	-13	0.403	599	+53	0.001
S. Manitoba	102	118	-14	0.532	70	+45	0.061
Montana & Western Dakotas	392	319	+23	0.383	198	+98	0.007
Eastern Dakotas	1,178	1,094	+8	0.490	525	+125	<0.001
Total	2,977	3,054	-3	0.740	1,787	+67	<0.001

<sup>a</sup> Long-term average, 1955–2009.

Table 4: American wigeon breeding population estimates (in thousands) for regions in the traditional survey area.

Region	2010	2009	Change from 2009		LTA <sup>a</sup>	Change from LTA	
			%	<i>P</i>		%	<i>P</i>
Alaska – Yukon							
Territory – Old Crow Flats	1,053	805	+31	0.034	540	+95	<0.001
C. & N. Alberta – N.E. British							
Columbia – NWT	597	793	-25	0.110	901	-34	<0.001
N. Saskatchewan							
–N. Manitoba –W. Ontario	73	147	-50	0.030	243	-70	<0.001
S. Alberta	124	133	-6	0.740	287	-57	<0.001
S. Saskatchewan	193	237	-19	0.264	416	-54	<0.001
S. Manitoba	11	9	+26	0.565	58	-81	<0.001
Montana & Western Dakotas	166	216	-23	0.226	110	+51	0.034
Eastern Dakotas	206	128	+61	0.073	51	+308	<0.001
Total	2,425	2,469	-2	0.816	2,607	-7	0.174

<sup>a</sup> Long-term average, 1955–2009.

Table 5: Green-winged teal breeding population estimates (in thousands) for regions in the traditional survey area.

Region	2010	2009	Change from 2009		LTA <sup>a</sup>	Change from LTA	
			%	<i>P</i>		%	<i>P</i>
Alaska – Yukon							
Territory – Old Crow Flats	954	658	+45	0.009	385	+148	<0.001
C. & N. Alberta – N.E. British							
Columbia – NWT	1,464	1,225	+19	0.290	769	+90	<0.001
N. Saskatchewan							
–N. Manitoba –W. Ontario	105	399	-74	<0.001	206	-49	<0.001
S. Alberta	130	175	-26	0.248	197	-34	0.022
S. Saskatchewan	398	648	-39	0.050	251	+59	0.016
S. Manitoba	48	48	+1	0.975	51	-6	0.721
Montana & Western Dakotas	39	175	-78	<0.001	42	-8	0.703
Eastern Dakotas	337	115	+193	0.009	46	+625	<0.001
Total	3,476	3,444	+1	0.915	1,948	+78	<0.001

<sup>a</sup> Long-term average, 1955–2009.

Table 6: Blue-winged teal breeding population estimates (in thousands) for regions in the traditional survey area.

Region	2010	2009	Change from 2009		LTA <sup>a</sup>	Change from LTA	
			%	<i>P</i>		%	<i>P</i>
Alaska – Yukon							
Territory – Old Crow Flats	4	0	--	--	1	+169	0.544
C. & N. Alberta – N.E. British							
Columbia – NWT	279	248	+12	0.713	275	+2	0.933
N. Saskatchewan							
–N. Manitoba –W. Ontario	5	116	-96	0.001	253	-98	<0.001
S. Alberta	294	480	-39	0.005	616	-52	<0.001
S. Saskatchewan	1,363	1,740	-22	0.157	1,287	+6	0.616
S. Manitoba	212	303	-30	0.114	377	-44	<0.001
Montana & Western Dakotas	308	345	-11	0.671	266	+16	0.482
Eastern Dakotas	3,865	4,152	-7	0.531	1,582	+144	<0.001
Total	6,329	7,384	-14	0.056	4,657	+36	<0.001

<sup>a</sup> Long-term average, 1955–2009.

Table 7: Northern pintail breeding population estimates (in thousands) for regions in the traditional survey area.

Region	2010	2009	Change from 2009		LTA <sup>a</sup>	Change from LTA	
			%	<i>P</i>		%	<i>P</i>
Alaska – Yukon							
Territory – Old Crow Flats	1,164	930	+25	0.122	926	+26	0.044
C. & N. Alberta – N.E. British							
Columbia – NWT	338	243	+39	0.220	368	-8	0.672
N. Saskatchewan							
–N. Manitoba –W. Ontario	6	21	-74	0.015	39	-85	<0.001
S. Alberta	242	172	+41	0.133	693	-65	<0.001
S. Saskatchewan	332	444	-25	0.118	1,181	-72	<0.001
S. Manitoba	18	48	-61	0.003	107	-83	<0.001
Montana & Western Dakotas	177	383	-54	0.007	264	-33	0.006
Eastern Dakotas	1,233	984	+25	0.168	463	+166	<0.001
Total	3,509	3,225	+9	0.299	4,041	-13	0.015

<sup>a</sup> Long-term average, 1955–2009.

Table 8: Northern shoveler breeding population estimates (in thousands) for regions in the traditional survey area.

Region	2010	2009	Change from 2009		LTA <sup>a</sup>	Change from LTA	
			%	<i>P</i>		%	<i>P</i>
Alaska – Yukon							
Territory – Old Crow Flats	626	464	+35	0.106	282	+122	<0.001
C. & N. Alberta – N.E. British							
Columbia – NWT	297	293	+1	0.950	219	+36	0.111
N. Saskatchewan							
–N. Manitoba –W. Ontario	4	16	-77	0.030	42	-91	<0.001
S. Alberta	475	527	-10	0.509	385	+23	0.025
S. Saskatchewan	795	894	-11	0.401	698	+14	0.165
S. Manitoba	87	137	-36	0.027	109	-20	0.097
Montana & Western Dakotas	221	408	-46	0.011	154	+43	0.077
Eastern Dakotas	1,553	1,639	-5	0.699	423	+267	<0.001
Total	4,057	4,376	-7	0.287	2,312	+76	<0.001

<sup>a</sup> Long-term average, 1955–2009.

Table 9: Redhead breeding population estimates (in thousands) for regions in the traditional survey area.

Region	2010	2009	Change from 2009		LTA <sup>a</sup>	Change from LTA		
			%	<i>P</i>		%	<i>P</i>	
Alaska – Yukon								
Territory – Old Crow Flats	1	1	+66 <sup>b</sup>	0.679	2	-10	0.885	
C. & N. Alberta – N.E. British								
Columbia – NWT	51	29	+79	0.201	40	+27	0.495	
N. Saskatchewan								
–N. Manitoba –W. Ontario	3	6	-46	0.278	27	-87	<0.001	
S. Alberta	90	135	-33	0.257	122	-26	0.052	
S. Saskatchewan	316	285	+11	0.644	204	+55	0.031	
S. Manitoba	107	69	+56	0.422	72	+49	0.407	
Montana & Western Dakotas	50	33	+54	0.423	10	+416	0.018	
Eastern Dakotas	444	487	-9	0.697	175	+153	<0.001	
Total	1,064	1,044	+2	0.890	652	+63	<0.001	

<sup>a</sup> Long-term average, 1955–2009.

<sup>b</sup> Percent change derived from unrounded population estimates.

Table 10: Canvasback breeding population estimates (in thousands) for regions in the traditional survey area.

Region	2010	2009	Change from 2009		LTA <sup>a</sup>	Change from LTA		
			%	<i>P</i>		%	<i>P</i>	
Alaska – Yukon								
Territory – Old Crow Flats	57	41	+38	0.407	90	-37	0.037	
C. & N. Alberta – N.E. British								
Columbia – NWT	72	88	-19	0.523	75	-5	0.841	
N. Saskatchewan								
–N. Manitoba –W. Ontario	18	49	-63	0.059	54	-66	<0.001	
S. Alberta	39	52	-25	0.394	65	-40	<0.001	
S. Saskatchewan	192	280	-31	0.105	188	+2	0.897	
S. Manitoba	35	48	-28	0.179	56	-38	<0.001	
Montana & Western Dakotas	41	26	+58	0.190	8	+391	0.001	
Eastern Dakotas	131	77	+69	0.120	34	+287	0.001	
Total	585	662	-12	0.316	570	+3	0.775	

<sup>a</sup> Long-term average, 1955–2009.

Table 11: Scaup (greater and lesser combined) breeding population estimates (in thousands) for regions in the traditional survey area.

Region	2010	2009	Change from 2009		LTA <sup>a</sup>	Change from LTA	
			%	<i>P</i>		%	<i>P</i>
Alaska – Yukon							
Territory – Old Crow Flats	947	821	+15	0.269	920	+3	0.769
C. & N. Alberta – N.E. British							
Columbia – NWT	2,378	1,685	+41	0.012	2,541	-6	0.462
N. Saskatchewan							
–N. Manitoba –W. Ontario	208	684	-70	<0.001	575	-64	<0.001
S. Alberta	127	287	-56	0.021	343	-63	<0.001
S. Saskatchewan	246	324	-24	0.362	409	-40	0.001
S. Manitoba	53	70	-25	0.373	130	-60	<0.001
Montana & Western Dakotas	14	34	-58	0.017	51	-72	<0.001
Eastern Dakotas	271	266	+2	0.949	103	+163	0.001
Total	4,244	4,172	+2	0.831	5,073	-16	0.001

<sup>a</sup> Long-term average, 1955–2009.

Table 12: Estimated number (in thousands) of May ponds in portions of Prairie and Parkland Canada and the north-central U.S.

Region	2010	2009	Change from 2009		LTA <sup>a</sup>	Change from LTA		
			%	<i>P</i>		%	<i>P</i>	
Prairie Canada								
S. Alberta	678	687	-1	0.901	740	-8	0.110	
S. Saskatchewan	2,668	2,210	+21	0.056	1,998	+34	0.001	
S. Manitoba	382	671	-43	<0.001	676	-43	<0.001	
Subtotal	3,729	3,568	+5	0.523	3,413	+9	0.124	
North-central U.S.								
Montana & western Dakotas	595	1,034	-42	<0.001	550	+8	0.370	
Eastern Dakotas	2,341	1,832	+28	0.002	1,020	+129	<0.001	
Subtotal	2,936	2,866	+2	0.708	1,571	+87	<0.001	
Total	6,665	6,434	+4	0.462	4,959	+34	<0.001	

<sup>a</sup> Long-term average. Prairie and Parkland Canada, 1961–2009; north-central U.S. and Grand Total, 1974–2009.

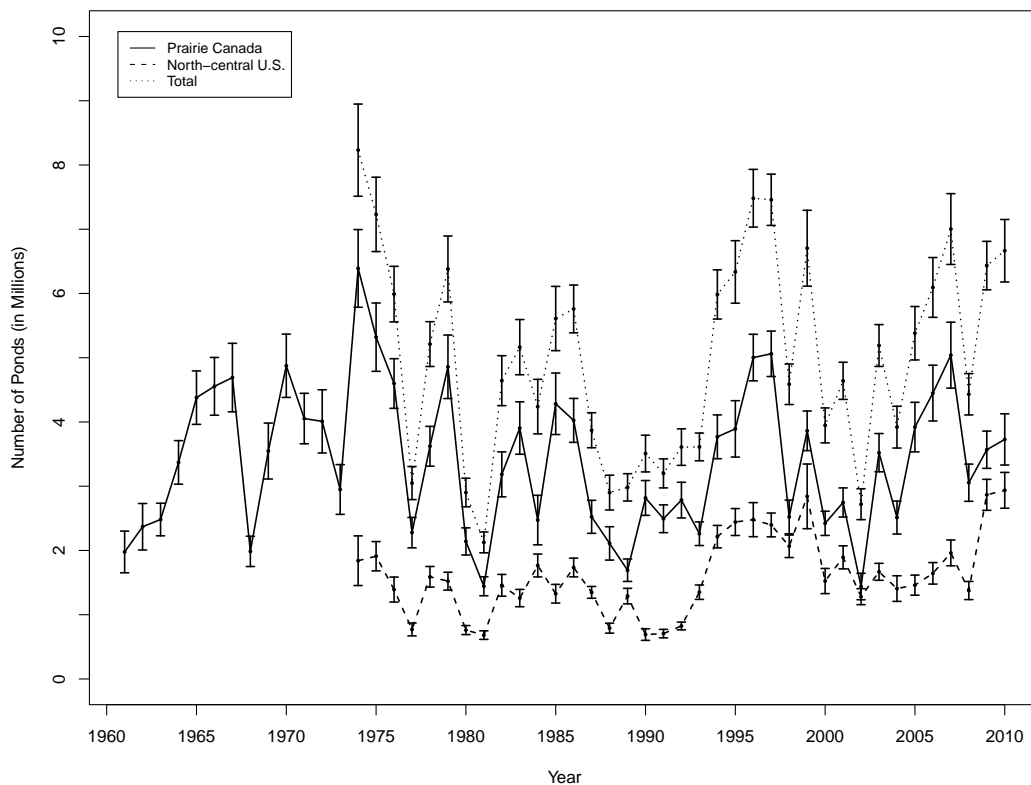


Figure 2: Number of ponds in May and 90% confidence intervals in Prairie Canada and the north-central U.S.

Table 13: Duck breeding population estimates<sup>a</sup> (in thousands) for the 10 most abundant species in the eastern survey area.

Species	2010	2009	% Change from 2009	Average <sup>b</sup>	% Change from average
Mergansers (common, red-breasted, and hooded)	386	457	-15 <sup>c</sup>	451	-14 <sup>c</sup>
Mallard	403	488	-17	424	-5
American black duck	444	466	-5	479	-7 <sup>c</sup>
American wigeon	7	12	-39	19	-61
Green-winged teal	256	274	-6	241	+6
Scaup (greater and lesser)	51	54	-5	44	+17
Ring-necked duck	567	542	+5	515	+10
Goldeneyes (common and Barrow's)	395	400	-1	417	-5
Bufflehead	25	27	-6	25	+2
Scoters (black, white-winged, and surf)	75	101	-26	83	-10

<sup>a</sup> Estimates for mallard, American black duck, green-winged teal, mergansers, goldeneye, and ring-necked duck from Bayesian hierarchical analysis using FWS and CWS data from strata 51, 52, 63, 64, 66–68, 70–72. All others were computed as the variance-weighted means of FWS and CWS estimates for strata 51, 52, 63, 64, 66–68, 70–72.

<sup>b</sup> Average for 1990–2009.

<sup>c</sup> Indicates significant change. Significance determined by non-overlap of Bayesian credibility intervals or confidence intervals.

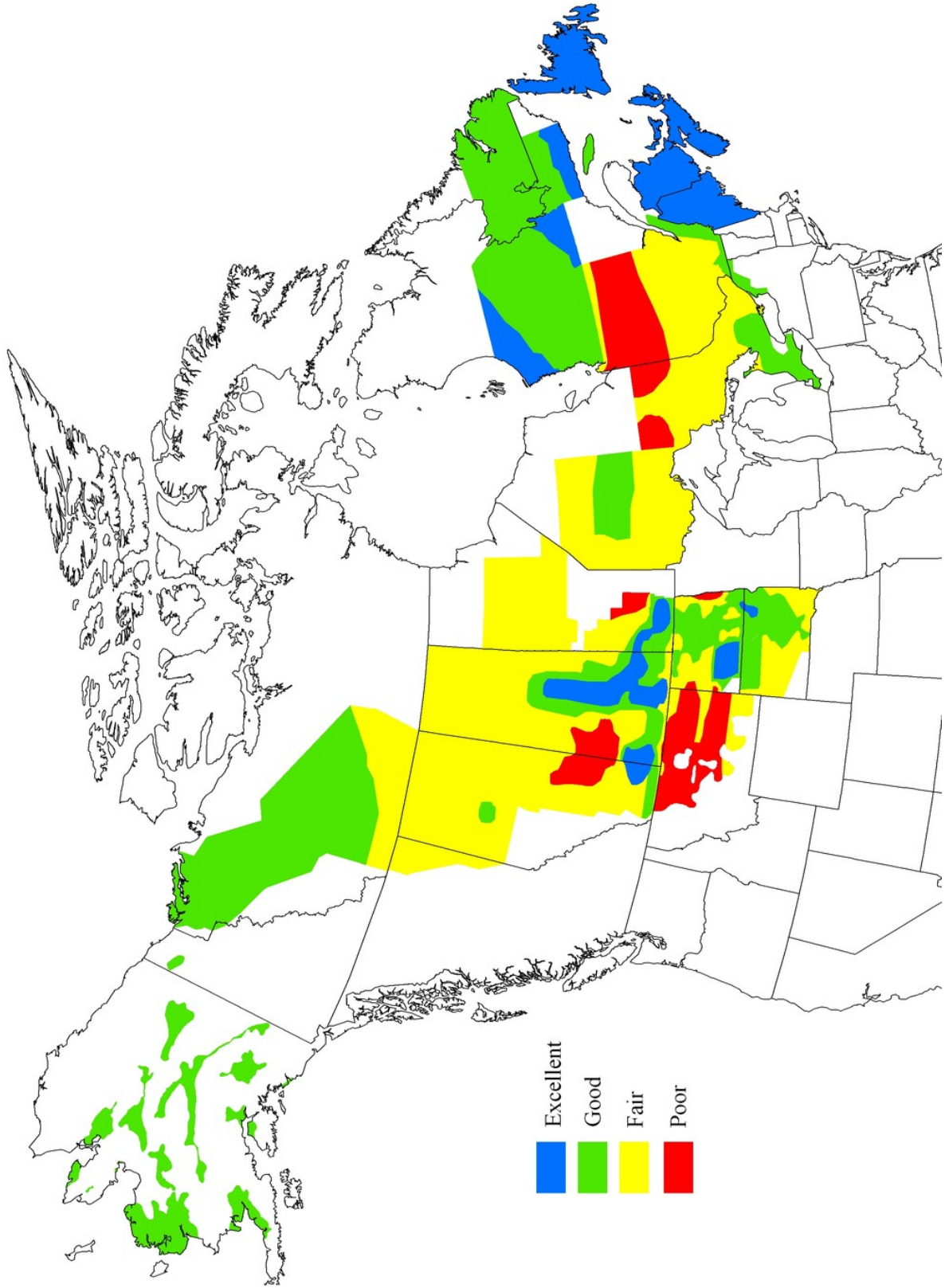


Figure 3: Breeding waterfowl habitat conditions during the 2010 Waterfowl Breeding Population and Habitat Survey, as judged by U.S. Fish and Wildlife Service Flyway Biologists.



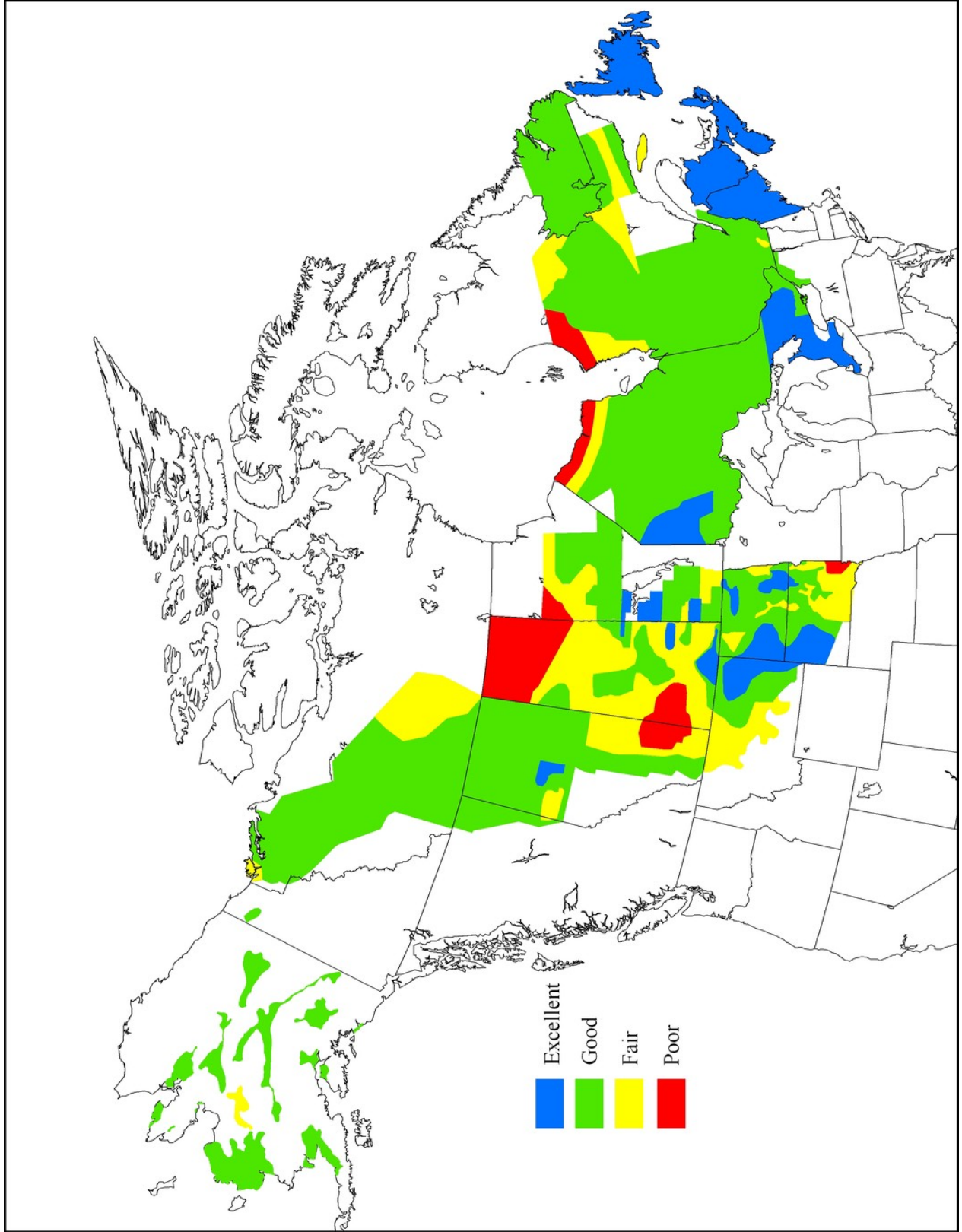


Figure 4: Breeding waterfowl habitat conditions during the 2009 Waterfowl Breeding Population and Habitat Survey, as judged by U.S. Fish and Wildlife Service Flyway Biologists.

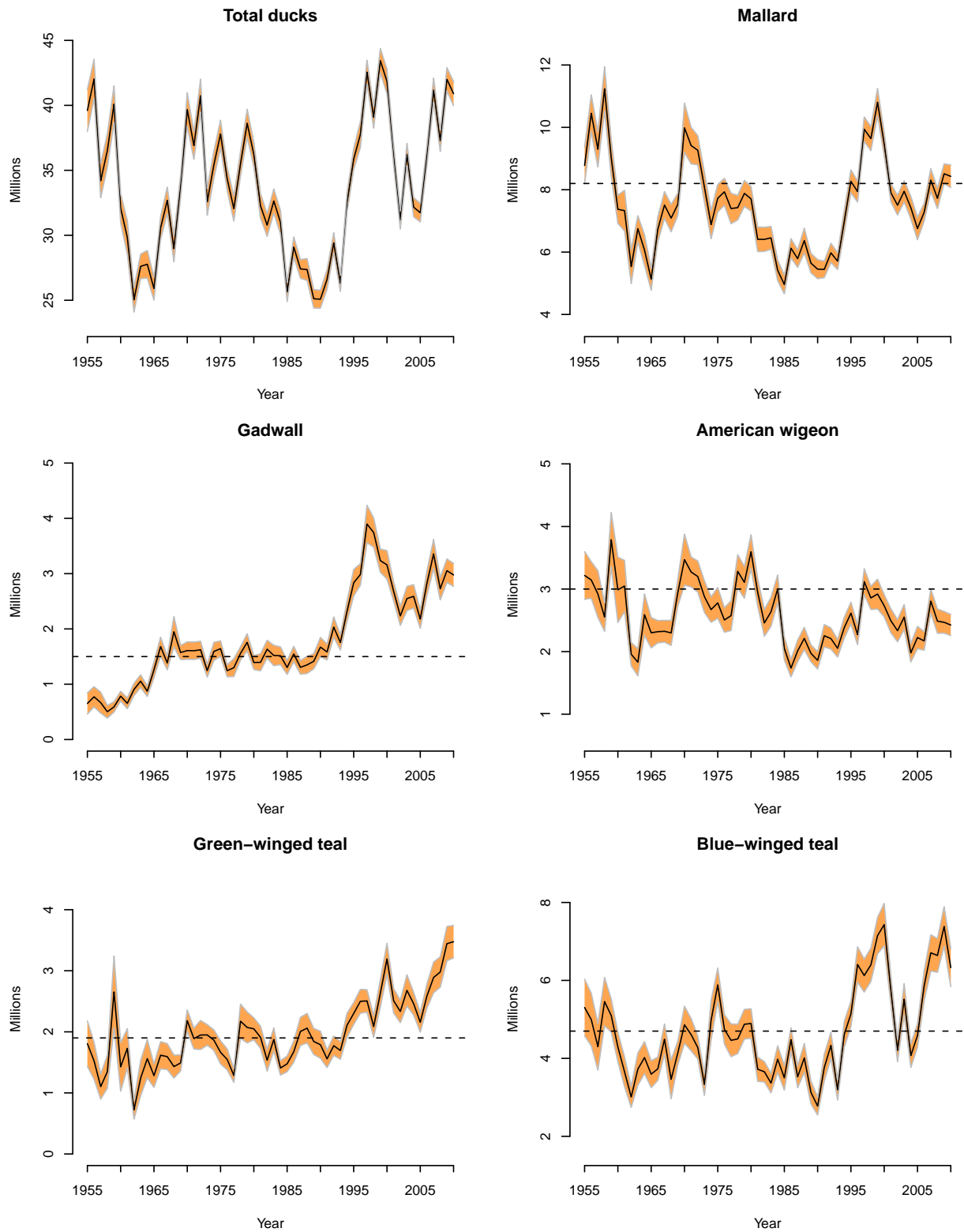


Figure 5: Breeding population estimates, 95% confidence intervals, and North American Waterfowl Management Plan population goal (dashed line) for selected species in the traditional survey area (strata 1–18, 20–50, 75–77).

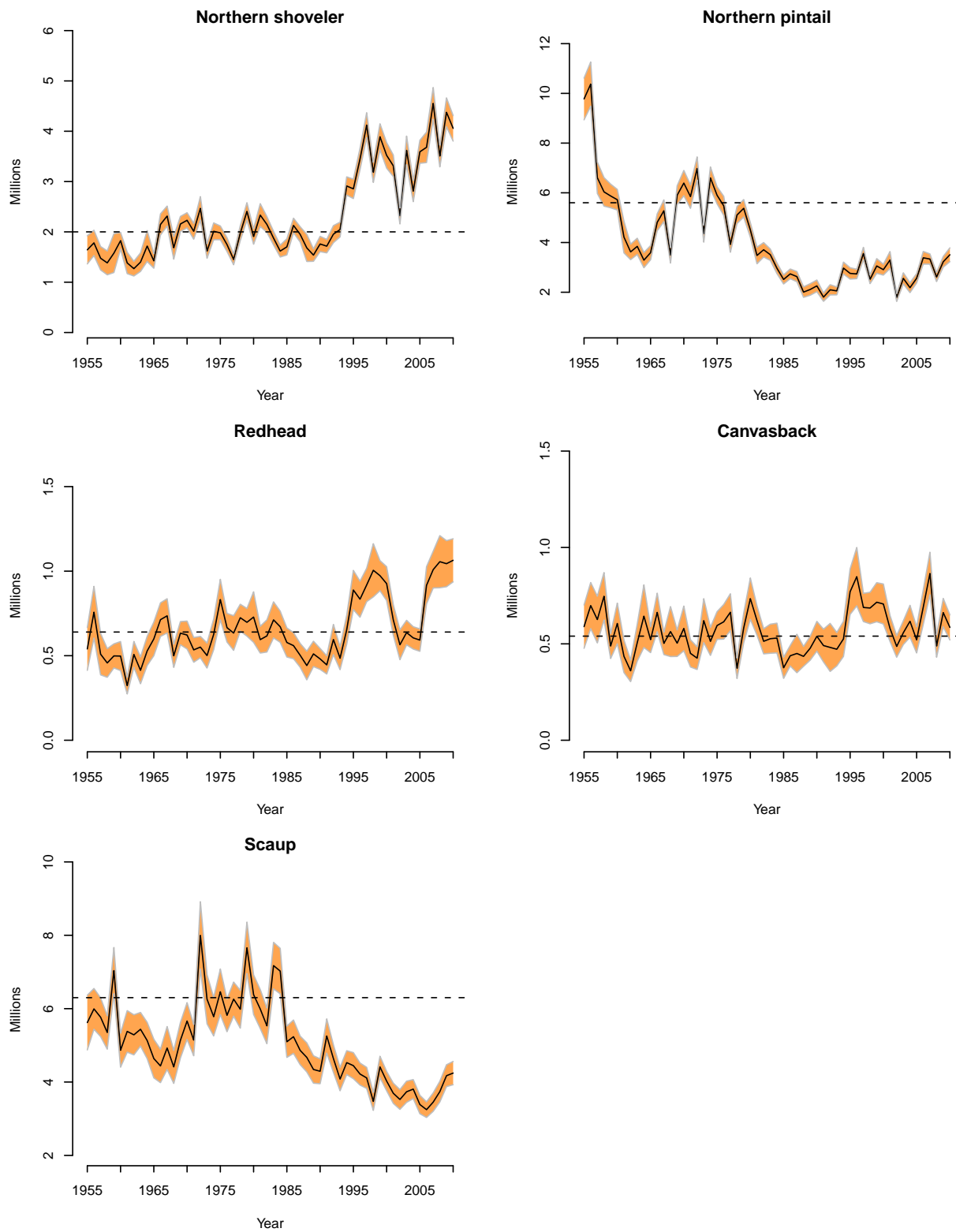


Figure 5: Continued.

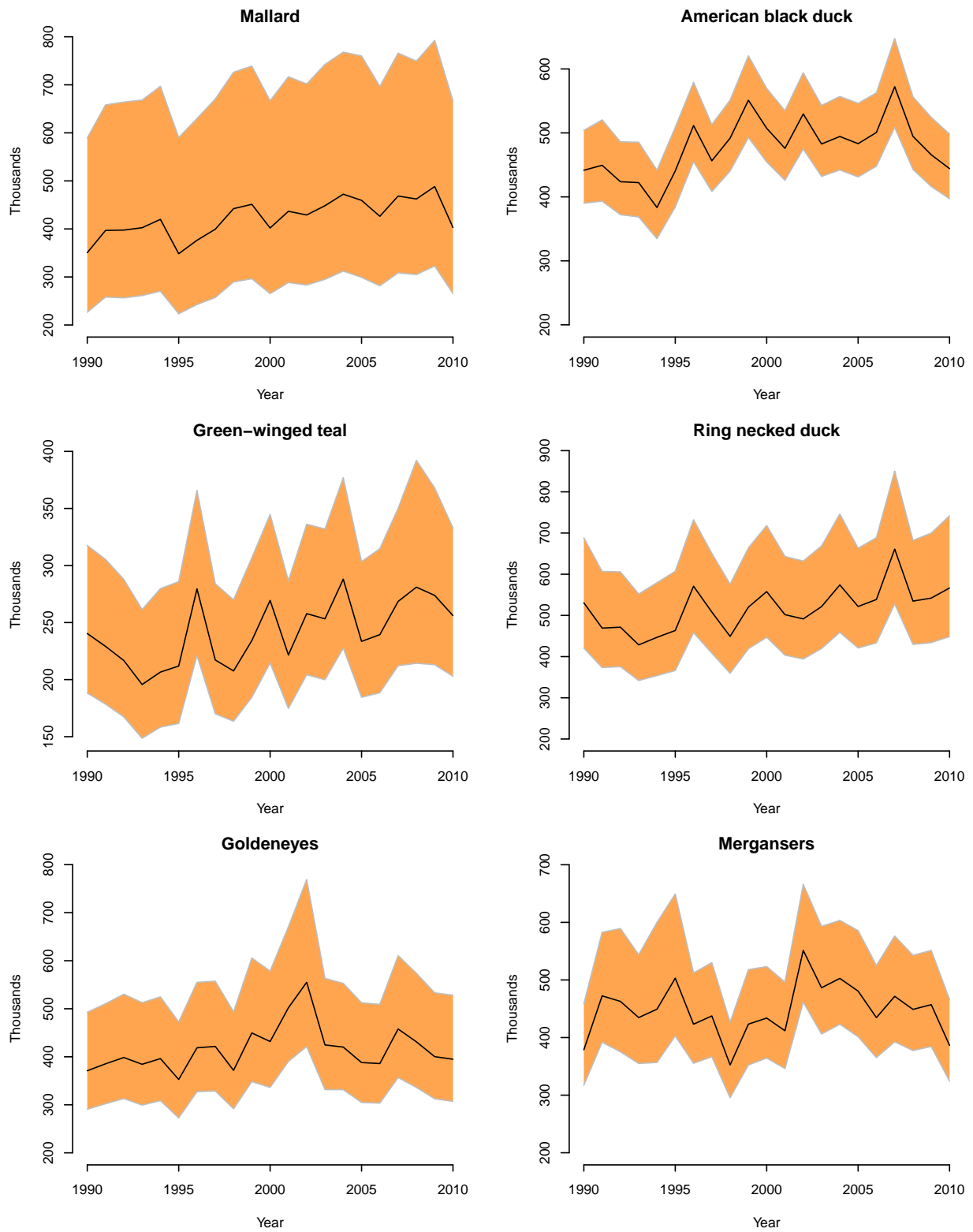


Figure 6: Breeding population estimates (from Bayesian hierarchical models) and 90% credibility intervals for selected species in the eastern survey area (strata 51, 52, 63, 64, 66–68, 70–72).

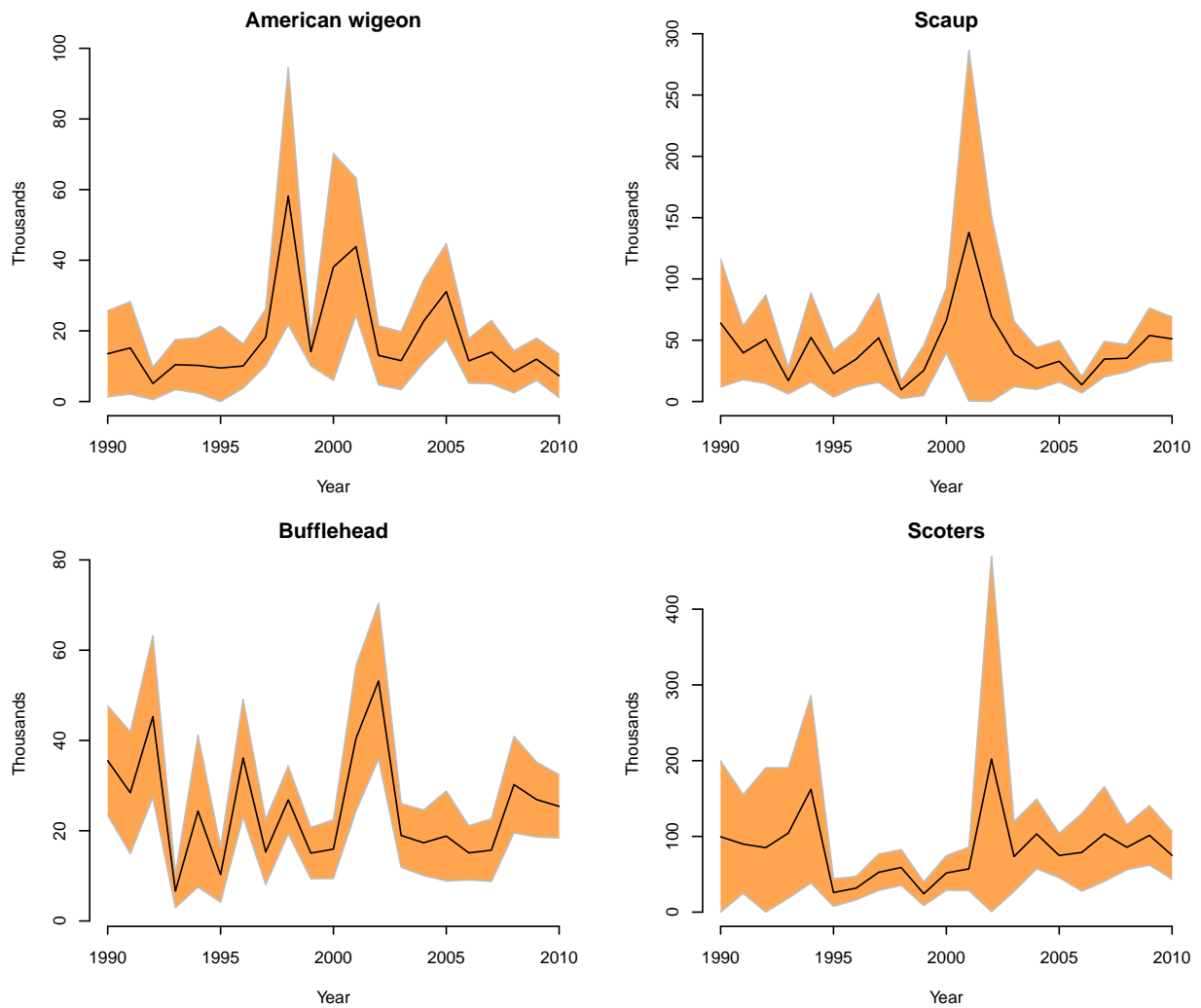


Figure 7: Breeding population estimates (variance-weighted means) and 90% confidence intervals for selected species in the eastern survey area (strata 51, 52, 63, 64, 66–68, 70–72).

Appendix A: Breeding population estimates and standard errors (in thousands) for 10 species of ducks from the traditional survey area (strata 1–18, 20–50, 75–77).

Year	Mallard		Gadwall		American wigeon		Green-winged teal		Blue-winged teal	
	$\hat{N}$	$\widehat{SE}$	$\hat{N}$	$\widehat{SE}$	$\hat{N}$	$\widehat{SE}$	$\hat{N}$	$\widehat{SE}$	$\hat{N}$	$\widehat{SE}$
1955	8,777.3	457.1	651.5	149.5	3,216.8	297.8	1,807.2	291.5	5,305.2	567.6
1956	10,452.7	461.8	772.6	142.4	3,145.0	227.8	1,525.3	236.2	4,997.6	527.6
1957	9,296.9	443.5	666.8	148.2	2,919.8	291.5	1,102.9	161.2	4,299.5	467.3
1958	11,234.2	555.6	502.0	89.6	2,551.7	177.9	1,347.4	212.2	5,456.6	483.7
1959	9,024.3	466.6	590.0	72.7	3,787.7	339.2	2,653.4	459.3	5,099.3	332.7
1960	7,371.7	354.1	784.1	68.4	2,987.6	407.0	1,426.9	311.0	4,293.0	294.3
1961	7,330.0	510.5	654.8	77.5	3,048.3	319.9	1,729.3	251.5	3,655.3	298.7
1962	5,535.9	426.9	905.1	87.0	1,958.7	145.4	722.9	117.6	3,011.1	209.8
1963	6,748.8	326.8	1,055.3	89.5	1,830.8	169.9	1,242.3	226.9	3,723.6	323.0
1964	6,063.9	385.3	873.4	73.7	2,589.6	259.7	1,561.3	244.7	4,020.6	320.4
1965	5,131.7	274.8	1,260.3	114.8	2,301.1	189.4	1,282.0	151.0	3,594.5	270.4
1966	6,731.9	311.4	1,680.4	132.4	2,318.4	139.2	1,617.3	173.6	3,733.2	233.6
1967	7,509.5	338.2	1,384.6	97.8	2,325.5	136.2	1,593.7	165.7	4,491.5	305.7
1968	7,089.2	340.8	1,949.0	213.9	2,298.6	156.1	1,430.9	146.6	3,462.5	389.1
1969	7,531.6	280.2	1,573.4	100.2	2,941.4	168.6	1,491.0	103.5	4,138.6	239.5
1970	9,985.9	617.2	1,608.1	123.5	3,469.9	318.5	2,182.5	137.7	4,861.8	372.3
1971	9,416.4	459.5	1,605.6	123.0	3,272.9	186.2	1,889.3	132.9	4,610.2	322.8
1972	9,265.5	363.9	1,622.9	120.1	3,200.1	194.1	1,948.2	185.8	4,278.5	230.5
1973	8,079.2	377.5	1,245.6	90.3	2,877.9	197.4	1,949.2	131.9	3,332.5	220.3
1974	6,880.2	351.8	1,592.4	128.2	2,672.0	159.3	1,864.5	131.2	4,976.2	394.6
1975	7,726.9	344.1	1,643.9	109.0	2,778.3	192.0	1,664.8	148.1	5,885.4	337.4
1976	7,933.6	337.4	1,244.8	85.7	2,505.2	152.7	1,547.5	134.0	4,744.7	294.5
1977	7,397.1	381.8	1,299.0	126.4	2,575.1	185.9	1,285.8	87.9	4,462.8	328.4
1978	7,425.0	307.0	1,558.0	92.2	3,282.4	208.0	2,174.2	219.1	4,498.6	293.3
1979	7,883.4	327.0	1,757.9	121.0	3,106.5	198.2	2,071.7	198.5	4,875.9	297.6
1980	7,706.5	307.2	1,392.9	98.8	3,595.5	213.2	2,049.9	140.7	4,895.1	295.6
1981	6,409.7	308.4	1,395.4	120.0	2,946.0	173.0	1,910.5	141.7	3,720.6	242.1
1982	6,408.5	302.2	1,633.8	126.2	2,458.7	167.3	1,535.7	140.2	3,657.6	203.7
1983	6,456.0	286.9	1,519.2	144.3	2,636.2	181.4	1,875.0	148.0	3,366.5	197.2
1984	5,415.3	258.4	1,515.0	125.0	3,002.2	174.2	1,408.2	91.5	3,979.3	267.6
1985	4,960.9	234.7	1,303.0	98.2	2,050.7	143.7	1,475.4	100.3	3,502.4	246.3
1986	6,124.2	241.6	1,547.1	107.5	1,736.5	109.9	1,674.9	136.1	4,478.8	237.1
1987	5,789.8	217.9	1,305.6	97.1	2,012.5	134.3	2,006.2	180.4	3,528.7	220.2
1988	6,369.3	310.3	1,349.9	121.1	2,211.1	139.1	2,060.8	188.3	4,011.1	290.4
1989	5,645.4	244.1	1,414.6	106.6	1,972.9	106.0	1,841.7	166.4	3,125.3	229.8

## Appendix A: Continued.

Year	Mallard		Gadwall		American wigeon		Green-winged teal		Blue-winged teal	
	$\hat{N}$	$\widehat{SE}$	$\hat{N}$	$\widehat{SE}$	$\hat{N}$	$\widehat{SE}$	$\hat{N}$	$\widehat{SE}$	$\hat{N}$	$\widehat{SE}$
1990	5,452.4	238.6	1,672.1	135.8	1,860.1	108.3	1,789.5	172.7	2,776.4	178.7
1991	5,444.6	205.6	1,583.7	111.8	2,254.0	139.5	1,557.8	111.3	3,763.7	270.8
1992	5,976.1	241.0	2,032.8	143.4	2,208.4	131.9	1,773.1	123.7	4,333.1	263.2
1993	5,708.3	208.9	1,755.2	107.9	2,053.0	109.3	1,694.5	112.7	3,192.9	205.6
1994	6,980.1	282.8	2,318.3	145.2	2,382.2	130.3	2,108.4	152.2	4,616.2	259.2
1995	8,269.4	287.5	2,835.7	187.5	2,614.5	136.3	2,300.6	140.3	5,140.0	253.3
1996	7,941.3	262.9	2,984.0	152.5	2,271.7	125.4	2,499.5	153.4	6,407.4	353.9
1997	9,939.7	308.5	3,897.2	264.9	3,117.6	161.6	2,506.6	142.5	6,124.3	330.7
1998	9,640.4	301.6	3,742.2	205.6	2,857.7	145.3	2,087.3	138.9	6,398.8	332.3
1999	10,805.7	344.5	3,235.5	163.8	2,920.1	185.5	2,631.0	174.6	7,149.5	364.5
2000	9,470.2	290.2	3,158.4	200.7	2,733.1	138.8	3,193.5	200.1	7,431.4	425.0
2001	7,904.0	226.9	2,679.2	136.1	2,493.5	149.6	2,508.7	156.4	5,757.0	288.8
2002	7,503.7	246.5	2,235.4	135.4	2,334.4	137.9	2,333.5	143.8	4,206.5	227.9
2003	7,949.7	267.3	2,549.0	169.9	2,551.4	156.9	2,678.5	199.7	5,518.2	312.7
2004	7,425.3	282.0	2,589.6	165.6	1,981.3	114.9	2,460.8	145.2	4,073.0	238.0
2005	6,755.3	280.8	2,179.1	131.0	2,225.1	139.2	2,156.9	125.8	4,585.5	236.3
2006	7,276.5	223.7	2,824.7	174.2	2,171.2	115.7	2,587.2	155.3	5,859.6	303.5
2007	8,307.3	285.8	3,355.9	206.2	2,806.8	152.0	2,890.3	196.1	6,707.6	362.2
2008	7,723.8	256.8	2,727.7	158.9	2,486.6	151.3	2,979.7	194.4	6,640.1	337.3
2009	8,512.4	248.3	3,053.5	166.3	2,468.6	135.4	3,443.6	219.9	7,383.8	396.8
2010	8,430.1	284.9	2,976.7	161.6	2,424.6	131.5	3,475.9	207.2	6,328.5	382.6

## Appendix A: Continued.

Year	Northern shoveler		Northern pintail		Redhead		Canvasback		Scaup	
	$\hat{N}$	$\widehat{SE}$	$\hat{N}$	$\widehat{SE}$	$\hat{N}$	$\widehat{SE}$	$\hat{N}$	$\widehat{SE}$	$\hat{N}$	$\widehat{SE}$
1955	1,642.8	218.7	9,775.1	656.1	539.9	98.9	589.3	87.8	5,620.1	582.1
1956	1,781.4	196.4	10,372.8	694.4	757.3	119.3	698.5	93.3	5,994.1	434.0
1957	1,476.1	181.8	6,606.9	493.4	509.1	95.7	626.1	94.7	5,766.9	411.7
1958	1,383.8	185.1	6,037.9	447.9	457.1	66.2	746.8	96.1	5,350.4	355.1
1959	1,577.6	301.1	5,872.7	371.6	498.8	55.5	488.7	50.6	7,037.6	492.3
1960	1,824.5	130.1	5,722.2	323.2	497.8	67.0	605.7	82.4	4,868.6	362.5
1961	1,383.0	166.5	4,218.2	496.2	323.3	38.8	435.3	65.7	5,380.0	442.2
1962	1,269.0	113.9	3,623.5	243.1	507.5	60.0	360.2	43.8	5,286.1	426.4
1963	1,398.4	143.8	3,846.0	255.6	413.4	61.9	506.2	74.9	5,438.4	357.9
1964	1,718.3	240.3	3,291.2	239.4	528.1	67.3	643.6	126.9	5,131.8	386.1
1965	1,423.7	114.1	3,591.9	221.9	599.3	77.7	522.1	52.8	4,640.0	411.2
1966	2,147.0	163.9	4,811.9	265.6	713.1	77.6	663.1	78.0	4,439.2	356.2
1967	2,314.7	154.6	5,277.7	341.9	735.7	79.0	502.6	45.4	4,927.7	456.1
1968	1,684.5	176.8	3,489.4	244.6	499.4	53.6	563.7	101.3	4,412.7	351.8
1969	2,156.8	117.2	5,903.9	296.2	633.2	53.6	503.5	53.7	5,139.8	378.5
1970	2,230.4	117.4	6,392.0	396.7	622.3	64.3	580.1	90.4	5,662.5	391.4
1971	2,011.4	122.7	5,847.2	368.1	534.4	57.0	450.7	55.2	5,143.3	333.8
1972	2,466.5	182.8	6,979.0	364.5	550.9	49.4	425.9	46.0	7,997.0	718.0
1973	1,619.0	112.2	4,356.2	267.0	500.8	57.7	620.5	89.1	6,257.4	523.1
1974	2,011.3	129.9	6,598.2	345.8	626.3	70.8	512.8	56.8	5,780.5	409.8
1975	1,980.8	106.7	5,900.4	267.3	831.9	93.5	595.1	56.1	6,460.0	486.0
1976	1,748.1	106.9	5,475.6	299.2	665.9	66.3	614.4	70.1	5,818.7	348.7
1977	1,451.8	82.1	3,926.1	246.8	634.0	79.9	664.0	74.9	6,260.2	362.8
1978	1,975.3	115.6	5,108.2	267.8	724.6	62.2	373.2	41.5	5,984.4	403.0
1979	2,406.5	135.6	5,376.1	274.4	697.5	63.8	582.0	59.8	7,657.9	548.6
1980	1,908.2	119.9	4,508.1	228.6	728.4	116.7	734.6	83.8	6,381.7	421.2
1981	2,333.6	177.4	3,479.5	260.5	594.9	62.0	620.8	59.1	5,990.9	414.2
1982	2,147.6	121.7	3,708.8	226.6	616.9	74.2	513.3	50.9	5,532.0	380.9
1983	1,875.7	105.3	3,510.6	178.1	711.9	83.3	526.6	58.9	7,173.8	494.9
1984	1,618.2	91.9	2,964.8	166.8	671.3	72.0	530.1	60.1	7,024.3	484.7
1985	1,702.1	125.7	2,515.5	143.0	578.2	67.1	375.9	42.9	5,098.0	333.1
1986	2,128.2	112.0	2,739.7	152.1	559.6	60.5	438.3	41.5	5,235.3	355.5
1987	1,950.2	118.4	2,628.3	159.4	502.4	54.9	450.1	77.9	4,862.7	303.8
1988	1,680.9	210.4	2,005.5	164.0	441.9	66.2	435.0	40.2	4,671.4	309.5
1989	1,538.3	95.9	2,111.9	181.3	510.7	58.5	477.4	48.4	4,342.1	291.3
1990	1,759.3	118.6	2,256.6	183.3	480.9	48.2	539.3	60.3	4,293.1	264.9



## Appendix A: Continued.

Year	Northern Shoveler		Northern Pintail		Redhead		Canvasback		Scaup	
	$\hat{N}$	$\widehat{SE}$	$\hat{N}$	$\widehat{SE}$	$\hat{N}$	$\widehat{SE}$	$\hat{N}$	$\widehat{SE}$	$\hat{N}$	$\widehat{SE}$
1991	1,716.2	104.6	1,803.4	131.3	445.6	42.1	491.2	66.4	5,254.9	364.9
1992	1,954.4	132.1	2,098.1	161.0	595.6	69.7	481.5	97.3	4,639.2	291.9
1993	2,046.5	114.3	2,053.4	124.2	485.4	53.1	472.1	67.6	4,080.1	249.4
1994	2,912.0	141.4	2,972.3	188.0	653.5	66.7	525.6	71.1	4,529.0	253.6
1995	2,854.9	150.3	2,757.9	177.6	888.5	90.6	770.6	92.2	4,446.4	277.6
1996	3,449.0	165.7	2,735.9	147.5	834.2	83.1	848.5	118.3	4,217.4	234.5
1997	4,120.4	194.0	3,558.0	194.2	918.3	77.2	688.8	57.2	4,112.3	224.2
1998	3,183.2	156.5	2,520.6	136.8	1,005.1	122.9	685.9	63.8	3,471.9	191.2
1999	3,889.5	202.1	3,057.9	230.5	973.4	69.5	716.0	79.1	4,411.7	227.9
2000	3,520.7	197.9	2,907.6	170.5	926.3	78.1	706.8	81.0	4,026.3	205.3
2001	3,313.5	166.8	3,296.0	266.6	712.0	70.2	579.8	52.7	3,694.0	214.9
2002	2,318.2	125.6	1,789.7	125.2	564.8	69.0	486.6	43.8	3,524.1	210.3
2003	3,619.6	221.4	2,558.2	174.8	636.8	56.6	557.6	48.0	3,734.4	225.5
2004	2,810.4	163.9	2,184.6	155.2	605.3	51.5	617.2	64.6	3,807.2	202.3
2005	3,591.5	178.6	2,560.5	146.8	592.3	51.7	520.6	52.9	3,386.9	196.4
2006	3,680.2	236.5	3,386.4	198.7	916.3	86.1	691.0	69.6	3,246.7	166.9
2007	4,552.8	247.5	3,335.3	160.4	1,009.0	84.7	864.9	86.2	3,452.2	195.3
2008	3,507.8	168.4	2,612.8	143.0	1,056.0	120.4	488.7	45.4	3,738.3	220.1
2009	4,376.3	224.1	3,225.0	166.9	1,044.1	106.3	662.1	57.4	4,172.1	232.3
2010	4,057.4	198.4	3,508.6	216.4	1,064.2	99.5	585.2	50.8	4,244.4	247.9

Appendix B: Breeding population estimates and 90% confidence intervals or credibility intervals (CIs; in thousands) for the 10 most abundant species of ducks in the eastern survey area, 1990–2010<sup>a</sup>.

Year	Mergansers <sup>b</sup>			Mallard			American black duck			American wigeon			Green-winged teal		
	$\hat{N}$	90% CI	$\hat{N}$	90% CI	$\hat{N}$	90% CI	$\hat{N}$	90% CI	$\hat{N}$	90% CI	$\hat{N}$	90% CI	$\hat{N}$	90% CI	
1990	378.7	(317.3, 458.5)	350.6	(226.5, 589.4)	441.6	(390.1, 503.9)	13.5	(1.4, 25.7)	240.4	(188.3, 317.5)					
1991	472.4	(391.9, 582.7)	396.9	(258.1, 658.2)	449.4	(393.3, 520.4)	15.2	(2.1, 28.3)	229.1	(178.5, 305.3)					
1992	462.8	(375.3, 589.3)	397.6	(256.5, 664.1)	423.7	(372.2, 486.1)	5.1	(0.5, 9.7)	216.7	(167.3, 287.8)					
1993	434.7	(354.9, 543.9)	402.5	(261.3, 668.3)	422.3	(368.6, 485.4)	10.4	(3.4, 17.5)	195.7	(148.6, 261.4)					
1994	449.2	(356.7, 599.8)	419.9	(270.4, 696.9)	383.4	(334.8, 441.7)	10.2	(2.4, 18.1)	206.6	(158.4, 279.7)					
1995	503.1	(402.8, 649.3)	348.4	(223.4, 590.3)	440.6	(384.2, 508.8)	9.5	(0.0, 21.4)	211.9	(161.6, 285.8)					
1996	423.2	(355.4, 512.2)	376.3	(242.5, 629.7)	511.5	(455.1, 579.1)	10.0	(3.8, 16.3)	279.5	(221.1, 365.8)					
1997	437.5	(366.6, 530.1)	399.4	(257.3, 670.5)	456.4	(408.5, 513.0)	18.2	(10.2, 26.2)	217.2	(170.1, 284.0)					
1998	352.5	(295.5, 426.5)	442.2	(289.5, 726.2)	491.8	(440.4, 551.3)	58.1	(21.8, 94.5)	207.6	(163.5, 269.9)					
1999	423.3	(352.3, 517.9)	451.2	(296.3, 739.0)	551.1	(492.7, 620.5)	14.1	(10.1, 18.1)	234.2	(184.5, 306.7)					
2000	433.8	(364.5, 523.2)	401.9	(265.2, 666.8)	507.2	(454.6, 569.5)	38.1	(6.0, 70.2)	269.4	(214.6, 344.7)					
2001	411.8	(346.1, 496.2)	436.7	(288.4, 716.8)	475.9	(425.9, 534.7)	43.9	(24.5, 63.3)	221.6	(174.8, 286.6)					
2002	551.3	(461.5, 666.0)	429.1	(283.2, 701.7)	529.6	(474.9, 594.1)	13.1	(4.7, 21.4)	257.8	(204.3, 336.1)					
2003	486.4	(406.2, 593.0)	448.3	(295.0, 742.5)	482.7	(432.0, 542.9)	11.6	(3.4, 19.8)	253.3	(199.9, 332.0)					
2004	502.7	(423.1, 603.4)	472.3	(312.2, 768.1)	494.4	(442.1, 557.0)	22.8	(11.0, 34.5)	288.0	(227.6, 376.9)					
2005	480.6	(401.5, 585.6)	459.5	(299.2, 760.0)	483.2	(431.3, 546.2)	31.1	(17.6, 44.7)	233.5	(184.5, 303.4)					
2006	434.6	(365.2, 525.0)	426.3	(281.6, 696.6)	500.7	(448.0, 562.6)	11.5	(5.2, 17.8)	239.4	(188.5, 314.7)					
2007	471.6	(392.6, 576.3)	468.5	(308.5, 766.0)	572.2	(508.8, 647.6)	14.0	(5.0, 23.0)	268.5	(212.2, 350.1)					
2008	448.9	(377.5, 542.8)	462.3	(305.0, 749.3)	494.6	(442.9, 556.3)	8.4	(2.5, 14.4)	281.0	(214.3, 392.1)					
2009	457.1	(384.4, 551.3)	488.2	(322.8, 792.6)	465.8	(416.2, 524.3)	12.0	(6.0, 18.0)	273.8	(213.1, 367.9)					
2010	386.4	(324.4, 465.9)	402.9	(265.5, 666.4)	444.2	(397.1, 498.2)	7.3	(1.1, 13.4)	256.1	(202.9, 332.8)					

<sup>a</sup> Estimates for mallards, American black ducks, green-winged teal, ring-necked duck, goldeneyes, and mergansers from Bayesian hierarchical analysis using FWS and CWS data from strata 51, 52, 63, 64, 66–68, 70–72. All others were computed as variance-weighted means of FWS and CWS estimates for strata 51, 52, 63, 64, 66–68, 70–72.

<sup>b</sup> Common, red-breasted, and hooded.

Appendix B: Continued

Year	Scaup <sup>c</sup>			Ring-necked duck			Goldeneyes <sup>d</sup>			Bufflehead			Scoters <sup>e</sup>		
	$\hat{N}$	90% CI	$\hat{N}$	90% CI	$\hat{N}$	90% CI	$\hat{N}$	90% CI	$\hat{N}$	90% CI	$\hat{N}$	90% CI	$\hat{N}$	90% CI	$\hat{N}$
1990	64.0	(12.0, 116.0)	530.7	(420.8, 688.5)	370.9	(290.7, 492.7)	35.5	(23.4, 47.6)	99.5	(0.1, 199.5)					
1991	39.7	(17.8, 61.5)	469.2	(373.5, 606.7)	385.4	(302.2, 510.4)	28.4	(14.9, 41.9)	89.8	(24.7, 154.9)					
1992	50.7	(14.7, 86.8)	471.4	(375.6, 605.7)	398.5	(313.0, 530.4)	45.3	(27.3, 63.2)	85.2	(0.1, 190.7)					
1993	16.9	(6.2, 27.7)	428.5	(342.0, 552.0)	384.4	(299.4, 512.6)	6.6	(3.0, 10.3)	104.4	(18.3, 190.5)					
1994	52.3	(16.0, 88.5)	446.8	(353.9, 579.3)	396.2	(308.8, 524.7)	24.3	(7.5, 41.2)	162.2	(38.6, 285.9)					
1995	22.8	(3.6, 42.1)	463.4	(366.2, 607.1)	352.8	(272.8, 472.5)	10.3	(4.2, 16.4)	25.9	(7.8, 44.1)					
1996	34.5	(12.0, 57.0)	570.9	(458.1, 732.3)	418.7	(327.4, 555.0)	36.1	(23.1, 49.1)	31.6	(16.2, 47.0)					
1997	51.9	(15.7, 88.1)	508.2	(408.4, 650.6)	421.6	(328.9, 557.4)	15.3	(8.1, 22.5)	52.6	(28.7, 76.5)					
1998	9.6	(2.3, 16.8)	449.1	(359.6, 575.8)	371.8	(291.7, 493.7)	26.8	(19.3, 34.3)	58.9	(35.3, 82.6)					
1999	25.4	(5.0, 45.8)	520.1	(419.1, 663.9)	449.6	(348.3, 605.7)	15.0	(9.3, 20.7)	24.2	(8.7, 39.7)					
2000	65.9	(39.6, 92.2)	557.8	(446.9, 718.2)	431.8	(336.2, 578.5)	15.9	(9.4, 22.4)	51.7	(28.9, 74.4)					
2001	137.9	(0.3, 286.3)	501.8	(403.6, 643.1)	502.1	(390.4, 670.7)	40.4	(24.4, 56.5)	57.1	(28.5, 85.7)					
2002	69.2	(0.3, 151.3)	491.5	(394.2, 632.0)	555.1	(421.4, 769.1)	53.2	(35.9, 70.4)	202.1	(0.6, 469.6)					
2003	38.8	(12.1, 65.4)	521.4	(419.6, 668.5)	424.7	(331.7, 563.3)	18.9	(11.9, 26.0)	73.4	(27.3, 119.5)					
2004	27.0	(9.9, 44.1)	574.0	(459.0, 746.2)	420.2	(331.5, 552.8)	17.3	(10.1, 24.6)	103.3	(57.3, 149.2)					
2005	32.8	(16.0, 49.7)	521.7	(421.0, 663.0)	388.0	(305.0, 512.4)	18.8	(8.9, 28.8)	74.8	(45.6, 104.1)					
2006	13.6	(7.0, 20.2)	538.6	(433.3, 688.8)	385.9	(303.5, 509.2)	15.1	(9.1, 21.1)	78.8	(27.6, 130.1)					
2007	34.6	(20.1, 49.1)	661.0	(528.1, 850.4)	457.9	(356.7, 610.6)	15.7	(8.8, 22.6)	103.2	(40.7, 165.7)					
2008	35.3	(24.2, 46.4)	534.7	(429.7, 682.0)	431.1	(336.2, 573.8)	30.2	(19.5, 40.9)	85.6	(56.0, 115.2)					
2009	53.9	(31.5, 76.3)	542.1	(433.9, 699.8)	400.3	(312.5, 533.2)	26.9	(18.6, 35.2)	101.4	(62.2, 140.7)					
2010	51.1	(33.4, 68.8)	566.6	(448.7, 741.9)	394.9	(307.2, 528.2)	25.4	(18.4, 32.4)	74.9	(43.5, 106.4)					

<sup>c</sup> Greater and lesser.

<sup>d</sup> Common and Barrow's.

<sup>e</sup> Black, white-winged, and surf.