U.S. Fish & Wildlife Service

Trends in Duck Breeding Populations 1955–2013

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Administrative Report—July 12, 2013

This report summarizes information about the status of duck populations and wetland habitats during spring 2013, focusing on areas encompassed by the U.S. Fish & Wildlife (USFWS) and Canadian Wildlife Services' (CWS) Waterfowl Breeding Population and Habitat Survey (WBPHS). This report does 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 45.6 ± 0.7 [SE] million birds (Figure 3, Appendix A). This represents a 6% decrease over last year's estimate of 48.6 ± 0.8 million, and is 33% higher than the long-term average[a] (1955–2012; Table 1). Estimated mallard (*Anas platyrhynchos*) abundance was 10.4 ± 0.4 million, which was similar to the 2012 estimate, and 36% above the long-term average of 7.6 ± 0.04 million (Table 2). Estimated abundance of gadwall (*A. strepera*; 3.3 ± 0.2 million) was similar to the 2012 estimate and 80% above the long-term average (1.9 ± 0.02 million; Table 3). The estimate for American wigeon (*A. americana*; 2.6 ± 0.2 million) was 23% above the 2012 estimate of 2.1 ± 0.1 million and similar to the long-term average of 2.6 ± 0.02 million (Table 4). The estimated abundance of green-winged teal (*A. crecca*) was 3.1 ± 0.2 million, which was similar to the 2012 estimate and 51% above the long-term average (2.0 ± 0.02 million; Table 5). The estimate for blue-winged teal (*A. discors*; 7.7 ± 0.4 million) was 16% below the 2012 estimate and 60% above the long-term average of 4.8 ± 0.04 million (Table 6). Estimates of northern shoveler (*A. clypeata*; 4.8 ± 0.2 million) and northern pintails (*A. acuta*; 3.3 ± 0.2 million) were similar to their 2012 estimates and were 96% above and 17% below their long-term averages of 2.4 ± 0.02 million (Table 7) and 4.0 ± 0.04 million (Table 8), respectively. The estimated abundance for redheads (*Aythya americana*; 1.2 ± 0.09 million) and canvasbacks (*Aythya valisineria*; 0.8 ± 0.06 million) were similar to their 2012 estimates and were 76% and 37% above their long-term averages of 0.7 ± 0.01 million (Table 9) and 0.6 ± 0.01 million (Table 10), respectively. Estimated abundance of scaup (*A. affinis* and *A. marila* combined; 4.2 ± 0.3 million) was 20% below the 2012 estimate and 17% below the long-term average of 5.0 ± 0.05 million (Table 11).

Despite a delayed spring over most of the survey area, habitat conditions during the 2013 Waterfowl Breeding Population and Habitat Survey were improved or similar to last year in many areas due to average to above-average annual precipitation, with the exception being southeastern Canada, south-central Alberta along the Montana border, the northeast U.S., and portions of Montana and the Dakotas (Figure 4 and 5). The total pond estimate (Prairie Canada and U.S. combined) was 6.9 ± 0.2 million which was 24% above the 2012 estimate of 5.5 ± 0.2 million and 35% above the long-term average of 5.1 ± 0.03 million (Table 12, Figure 2).

Spring was much delayed across the traditional survey area. The majority of the Canadian prairies had average to below-average winter temperatures and above-average precipitation; however, a poor frost

[a]Populations are considered to have changed from the previous year or long-term average if the observed significance value associated with change is ≤ 0.10. Actual P-values are presented in tables.

seal resulted in little runoff to recharge wetlands. Extreme southern Saskatchewan and southern Manitoba received abundant spring rainfall but most of this moisture came too late for the majority of waterfowl breeding this year. The 2013 estimate of ponds in Prairie Canada was 4.6 ± 0.2 million. This estimate was 17% above the 2012 estimate (3.9 ± 0.1 million) and 32% above the 1961–2012 average (3.5 ± 0.03 million). Habitat conditions in the Parklands improved from 2012, and the western boreal forest received average annual precipitation. Most of the Canadian portion of the traditional survey area was rated as good or excellent this year, in contrast to the dry conditions last year across northern Saskatchewan and Alberta.

Much of the U.S. prairies had average winter precipitation and received record-breaking snowfall in April. Despite the moisture habitats in this region were generally rated fair to poor, which was unchanged from 2012. The 2013 pond estimate for the northcentral U.S. was 2.3 ± 0.1 million which was 41% above the 2012 estimate (1.7 ± 0.1 million) and 42% above the 1974-2012 average (1.7 ± 0.02 million). Most of the increase in pond numbers resulted from 10 days of rain in May during the survey, and post-survey reconnaissance revealed numerous wetlands, with many unoccupied by waterfowl.

In 2005, the USFWS and CWS began to integrate data from 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 (*Anas rubripes*) 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; Table 13) are not directly comparable with estimates presented in reports issued prior to 2006. Specifically, estimates are presented for only a portion of the eastern survey area and include data from strata 51, 52, 63, 64, 66–68, and 70–72. 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 (1990–2013). 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., mergansers and goldeneyes [*Bucephala clangula* and *B. islandica*]). The CWS and USFWS agreed to use the hierarchical modeling approach for all species in the east. Currently, the models perform well for the six most common species. In previous years, we used design-based estimates and an overall mean across the two surveys, weighted by their precision, to derive integrated annual population indices for the less common American wigeon, scaup, bufflehead, and scoters until the hierarchical models could adequately accommodate the data for these species. These estimates have been discontinued because of concerns about (1) the appropriateness of weighting estimates from these surveys by precision, and (2) whether estimates for some species should be integrated given the data quality and coverage in the eastern survey. Nonetheless, the USFWS will continue to explore methods for deriving integrated estimates for some of the less common species in the eastern survey area. Analytical methods applied to eastern survey area data and results will be presented in greater detail in the 2013 Waterfowl Status Report.

Estimated abundance of American black ducks in the eastern survey area was 0.6 ± 0.04 million which was similar to last year and the 1990–2012 average. The estimated abundance of mallards was 0.5 ± 0.2 million, which was similar to the 2012 estimate, and 25% above the 1990–2012 average. Abundance estimates of ring-necked ducks (0.6 ± 0.1 million) and goldeneyes (0.5 ± 0.1 million) were 24% and 17% above 2012 estimates and 25% and 10% above the long-term averages, respectively. Abundance estimates for green-winged teal and mergansers were similar to last year's estimates and their 1990–2012 averages (Table 13, Figure 6, Appendix B).

Winter and spring temperatures in the eastern survey area were closer to normal than in the traditional survey area. Portions of northern Quebec experienced above-average winter temperatures. Most of the eastern survey area had average annual precipitation but southern Ontario and western Quebec experienced near record low winter precipitation, with improvement to the north and east into the Maritimes. Abundant late-spring rains dominated much of eastern Canada, which may have inhibited waterfowl production. Habitat conditions ranged from fair in Maine and the southern Maritimes to good in Newfoundland and Labrador.

Survey coverage and estimation methods for 2013

Immediately preceding the survey a material failure of the exhaust system on USFWS Kodiak planes developed that could have compromised air-crew safety. The decision was made not to utilize these aircraft, which are typically operated in more northern survey strata, and conduct the survey with other USFWS

fleet aircraft. Three strata in the traditional survey area and most of the eastern survey area were not flown. In the traditional survey area, population estimates were imputed from the historical time series, while the hierarchical modeling framework used to integrate CWS and USFWS data in the eastern survey area can produce population estimates provided at least one survey is conducted within a stratum.

In the traditional survey area, estimates were imputed using locally-weighted linear regression (loess) for the three missing strata (Stratum 1, Kenai-Susitna; Stratum 6, Koyukuk River; and Stratum 50, Western Ontario Mixed Forest). This method has been previously employed to impute missing values in the survey time series. For each species, the loess smoothing procedure was fit to estimated duck densities from 1974–2012 in Strata 1 and 6, and from 1985–2012 in Stratum 50. We chose 1974 as the start date, because the survey took on its current design and protocols that year, following a survey review (Bowden 1973); 1985 was used for Stratum 50, because the stratum was not surveyed from 1974–1984.

The smoothing parameter values for the loess fit for each species and missing strata were determined by the following procedure. For crew areas that contained missing strata (Strata 1–11 for the two Alaskan strata and Strata 21–25,50 for Western Ontario), we determined the smoothing parameter that minimized the predicted mean squared error by sequentially dropping each year from the time series (including 2013 when available) and predicting the missing year's density from the resulting loess function, and selecting the smoothing parameter that gave the lowest mean squared prediction error for each stratum in the crew area. Smoothing parameters were averaged across strata within crew area to fit the loess prediction functions for Strata 1, 6, and 50.

The 2013 estimated density and its standard error were imputed from each loess fit, and an overall estimate of the standard error was calculated by summing the prediction variance and the average sampling variance for the time series. The imputed density estimate and variance were then substituted into the regular formulae used to compute the breeding population and its standard error. If there were fewer than two records of a species in the stratum over the past five years, we assumed the species was not present in the stratum.

In the eastern survey area, USFWS fleet aircraft were not available in time to complete fixed-wing surveys in any strata except Maine (stratum 62); however, the CWS successfully completed their surveys. Therefore, we were able to estimate waterfowl population sizes for the 10 eastern strata covered in this report (51, 52, 63, 64, 66, 67, 68, 70, 71, and 72) based on the CWS data for 2013. Although the hierarchical modeling approach can provide population estimates for a stratum based solely on either the CWS or USFWS survey, the two surveys provide different information and estimates based on the combined data provide broader inferences. Further, estimates could not be derived for portions of the survey not covered by the CWS, including northern Quebec (stratum 69), southern Quebec (stratum 56), Prince Edward Island (stratum 65), and southern Ontario (strata 52-54).

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

Alaska, Yukon Territory, and Old Crow Flats (Strata 2–5, 7–12)

Air E. Mallek and D. Groves

Air F. Roetker and M. Koneff (stratum 12)

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

Air F. Roetker and M. Koneff

Air J. Bredy and D. Fronczak (strata 17[partial], 18[partial], 20, and 77)

Northern Saskatchewan and Northern Manitoba (Strata 21–25)

Air W. Rhodes and B. Lubinski

Air F. Roetker and M. Koneff (stratum 24)

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

Air J. Bredy and J. Hitchcock

Ground G. Raven[a], M. Gillespie[c], J. Caswell[b], K. Zimmer[a], M. Ives[d], and M. Chupik[d]

Southern Saskatchewan (Strata 30–33)

Air P. Thorpe and S. Chandler

Ground J.-M. DeVink[a], K. Dufour[a], K. Warner[a], P. Bergen[c], S. Leach[a], T. Knackstedt[a], and S. Heap[a]

Southern Manitoba (Strata 34–40)

Air S. Yates and J. Bidwell[e]

Air P. Thorpe and S. Chandler (stratum 36)

Ground M. Schuster[a], J. Ingram[a], R. Bazin[a], J. Leafloor[a], D. Walker[c], M. Ross[a], G. Ball[c], and R. Buss[c]

Montana and Western Dakotas (Strata 41–44)

Air R. Spangler and J. Klimstra

Ground P. Garrettson and B. West

Eastern Dakotas (Strata 45–49)

Air T. Liddick and D. Fronczak

Ground K. Kruse, J. Hoskins, T. Quesenberry[b], and J. Sands[b]

Maine and Maritimes (Stratum 62)

Air M. Koneff and S. Yates

Canadian Wildlife Service helicopter plot survey

Quebec	D. Bordage[a], C. Lepage[a], C. Marcotte[a], and S. Orichefsky[a]
Ontario	S. Meyer[a], C. Sharp[a], and S. Badzinski[a]
New Brunswick & Nova Scotia	R. Hicks[a] and B. Pollard[a]
Newfoundland & Labrador	S. Gilliland[a], P. Ryan[a], R. Wells[a], A. Hicks[a], R. Hicks[a], and B. Pollard[a]

[a]Canadian Wildlife Service
[b]State, Provincial or Tribal Conservation Agency
[c]Ducks Unlimited Canada
[d]Other Organization
[e]U.S. Fish & Wildlife Service Retired
All others—U.S. Fish & Wildlife Service

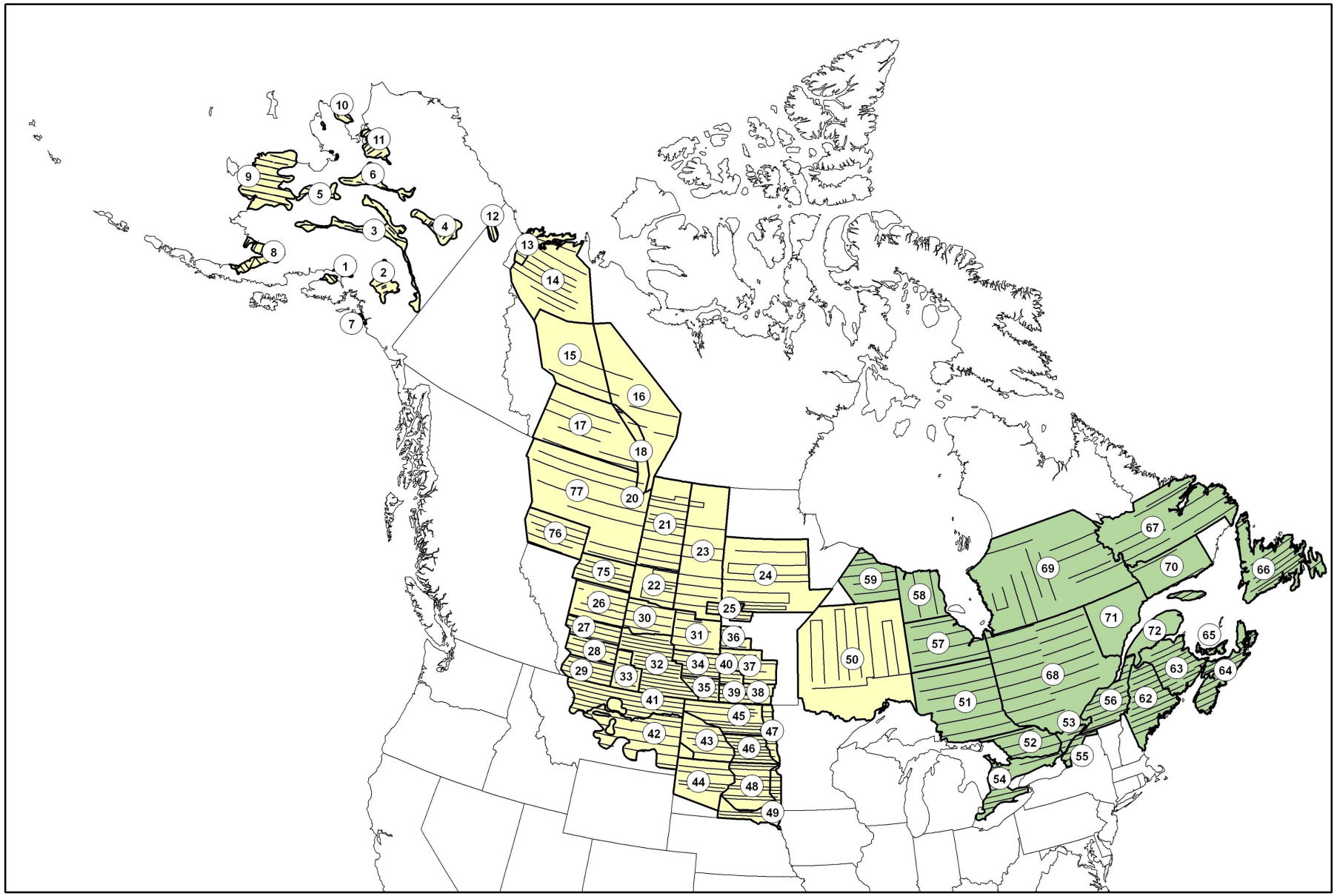

Figure 1. Strata and transects of the Waterfowl Breeding Population and Habitat Survey (yellow = traditional survey area, green = eastern survey area).

Table 1. Total duck[a] breeding population estimates (in thousands) for regions in the traditional survey area.

			Change from 2012			Change from LTA	
Region	2013	2012	%	*P*	LTA[b]	%	*P*
Alaska–Yukon Territory–Old Crow Flats	3,296	4,455	-26	<0.001	3,703	-11	0.022
C. & N. Alberta–N.E. British Columbia–NWT	8,323	8,799	-5	0.358	7,148	+16	0.001
N. Saskatchewan–N. Manitoba–W. Ontario	3,441	2,754	+25	0.048	3,477	-1	0.900
S. Alberta	4,471	4,845	-8	0.163	4,253	+5	0.219
S. Saskatchewan	12,258	11,318	+8	0.066	7,616	+61	<0.001
S. Manitoba	1,575	1,538	+2	0.764	1,529	+3	0.570
Montana & Western Dakotas	1,599	2,467	-35	<0.001	1,673	-4	0.525
Eastern Dakotas	10,643	12,400	-14	0.003	4,869	+119	<0.001
Total	45,607	48,575	-6	0.007	34,266	+33	<0.001

[a] Includes 10 species in Appendix A plus American black duck, ring-necked duck, goldeneyes, bufflehead, and ruddy duck (*Oxyura jamaicensis*); excludes eiders, long-tailed duck, scoters, mergansers, and wood duck.
[b] Long-term average, 1955–2012.

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

			Change from 2012			Change from LTA	
Region	2013	2012	%	*P*	LTA[a]	%	*P*
Alaska–Yukon Territory–Old Crow Flats	338	506	−33	0.009	377	−10	0.314
C. & N. Alberta–N.E. British Columbia–NWT	1,020	1,547	−34	0.001	1,085	−6	0.517
N. Saskatchewan–N. Manitoba–W. Ontario	1,427	1,039	+37	0.188	1,125	+27	0.212
S. Alberta	1,141	1,261	−9	0.307	1,072	+6	0.386
S. Saskatchewan	2,576	2,502	+3	0.704	2,064	+25	<0.001
S. Manitoba	448	401	+12	0.396	384	+17	0.049
Montana & Western Dakotas	794	793	0	0.992	511	+55	0.003
Eastern Dakotas	2,627	2,554	+3	0.743	1,007	+161	<0.001
Total	10,372	10,602	−2	0.636	7,626	+36	<0.001

[a] Long-term average, 1955–2012.

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

			Change from 2012			Change from LTA	
Region	2013	2012	%	*P*	LTA[a]	%	*P*
Alaska–Yukon Territory–Old Crow Flats	2	1	+159	0.374	2	−15	0.771
C. & N. Alberta–N.E. British Columbia–NWT	33	56	−40	0.106	51	−34	0.021
N. Saskatchewan–N. Manitoba–W. Ontario	13	31	−59	0.038	26	−52	0.021
S. Alberta	340	378	−10	0.583	317	+7	0.640
S. Saskatchewan	1,300	1,144	+14	0.316	621	+109	<0.001
S. Manitoba	133	113	+18	0.542	72	+85	0.002
Montana & Western Dakotas	217	254	−14	0.511	207	+5	0.780
Eastern Dakotas	1,314	1,609	−18	0.194	567	+132	<0.001
Total	3,351	3,586	−7	0.423	1,864	+80	<0.001

[a] Long-term average, 1955–2012.

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

			Change from 2012			Change from LTA	
Region	2013	2012	%	*P*	LTA[a]	%	*P*
Alaska–Yukon Territory–Old Crow Flats	577	686	−16	0.162	553	+4	0.636
C. & N. Alberta–N.E. British Columbia–NWT	1,100	680	+62	0.023	887	+24	0.142
N. Saskatchewan–N. Manitoba–W. Ontario	230	130	+77	0.069	236	−3	0.896
S. Alberta	197	234	−16	0.434	282	−30	0.004
S. Saskatchewan	369	243	+52	0.012	407	−9	0.317
S. Manitoba	10	5	+101	0.025	55	−82	<0.001
Montana & Western Dakotas	43	85	−49	0.037	111	−61	<0.001
Eastern Dakotas	117	81	+44	0.311	55	+114	0.050
Total	2,644	2,145	+23	0.025	2,587	+2	0.736

[a] Long-term average, 1955–2012.

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

			Change from 2012			Change from LTA	
Region	2013	2012	%	*P*	LTA[a]	%	*P*
Alaska–Yukon Territory–Old Crow Flats	452	705	−36	0.003	404	+12	0.336
C. & N. Alberta–N.E. British Columbia–NWT	1,229	1,567	−22	0.117	803	+53	0.001
N. Saskatchewan–N. Manitoba–W. Ontario	358	136	+164	<0.001	202	+77	0.001
S. Alberta	195	274	−29	0.158	198	−1	0.935
S. Saskatchewan	575	497	+16	0.395	261	+121	<0.001
S. Manitoba	60	157	−62	0.001	53	+13	0.568
Montana & Western Dakotas	23	19	+18	0.766	42	−46	0.038
Eastern Dakotas	161	117	+38	0.507	54	+200	0.082
Total	3,053	3,471	−12	0.123	2,017	+51	<0.001

[a] Long-term average, 1955–2012.

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

			Change from 2012			Change from LTA	
Region	2013	2012	%	*P*	LTA[a]	%	*P*
Alaska–Yukon Territory–Old Crow Flats	0	0	0	1.000	1	−100	<0.001
C. & N. Alberta–N.E. British Columbia–NWT	386	147	+163	0.002	270	+43	0.120
N. Saskatchewan–N. Manitoba–W. Ontario	40	51	−22	0.720	242	−84	<0.001
S. Alberta	752	596	+26	0.205	607	+24	0.107
S. Saskatchewan	2,759	2,608	+6	0.632	1,332	+107	<0.001
S. Manitoba	345	327	+5	0.813	374	−8	0.603
Montana & Western Dakotas	226	661	−66	0.001	284	−21	0.127
Eastern Dakotas	3,225	4,853	−34	<0.001	1,728	+87	<0.001
Total	7,732	9,242	−16	0.007	4,839	+60	<0.001

[a] Long-term average, 1955–2012.

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

			Change from 2012			Change from LTA	
Region	2013	2012	%	*P*	LTA[a]	%	*P*
Alaska–Yukon Territory–Old Crow Flats	226	377	−40	0.005	290	−22	0.034
C. & N. Alberta–N.E. British Columbia–NWT	348	275	+27	0.434	220	+59	0.042
N. Saskatchewan–N. Manitoba–W. Ontario	35	11	+218	0.076	40	−11	0.724
S. Alberta	853	915	−7	0.662	404	+111	<0.001
S. Saskatchewan	1,706	1,858	−8	0.424	733	+133	<0.001
S. Manitoba	149	138	+8	0.725	110	+36	0.036
Montana & Western Dakotas	170	341	−50	0.103	163	+4	0.844
Eastern Dakotas	1,263	1,104	+14	0.317	468	+170	<0.001
Total	4,751	5,018	−5	0.412	2,429	+96	<0.001

[a] Long-term average, 1955–2012.

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

			Change from 2012			Change from LTA	
Region	2013	2012	%	*P*	LTA[a]	%	*P*
Alaska–Yukon Territory–Old Crow Flats	995	1,176	−15	0.338	931	+7	0.658
C. & N. Alberta–N.E. British Columbia–NWT	235	79	+199	<0.001	358	−34	0.003
N. Saskatchewan–N. Manitoba–W. Ontario	10	16	−40	0.444	37	−74	<0.001
S. Alberta	368	357	+3	0.868	679	−46	<0.001
S. Saskatchewan	825	605	+36	0.022	1,156	−29	<0.001
S. Manitoba	36	22	+61	0.176	103	−65	<0.001
Montana & Western Dakotas	88	244	−64	<0.001	263	−66	<0.001
Eastern Dakotas	779	974	−20	0.163	503	+55	0.001
Total	3,335	3,473	−4	0.608	4,029	−17	<0.001

[a] Long-term average, 1955–2012.

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

			Change from 2012			Change from LTA	
Region	2013	2012	%	*P*	LTA[a]	%	*P*
Alaska–Yukon Territory–Old Crow Flats	1	0	+100	0.037	2	−32	0.390
C. & N. Alberta–N.E. British Columbia–NWT	22	16	+35	0.454	40	−44	0.009
N. Saskatchewan–N. Manitoba–W. Ontario	5	19	−76	0.015	26	−82	<0.001
S. Alberta	204	183	+11	0.681	124	+65	0.029
S. Saskatchewan	437	383	+14	0.458	213	+105	<0.001
S. Manitoba	71	99	−28	0.261	73	−3	0.892
Montana & Western Dakotas	7	20	−64	0.170	11	−34	0.327
Eastern Dakotas	455	549	−17	0.331	194	+134	<0.001
Total	1,202	1,270	−5	0.614	682	+76	<0.001

[a] Long-term average, 1955–2012.

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

			Change from 2012			Change from LTA	
Region	2013	2012	%	*P*	LTA[a]	%	*P*
Alaska–Yukon Territory–Old Crow Flats	35	35	−1	0.976	87	−60	<0.001
C. & N. Alberta–N.E. British Columbia–NWT	92	93	0	0.995	75	+23	0.514
N. Saskatchewan–N. Manitoba–W. Ontario	30	27	+12	0.819	52	−42	0.069
S. Alberta	54	146	−63	0.002	65	−17	0.221
S. Saskatchewan	381	313	+22	0.288	193	+97	<0.001
S. Manitoba	62	52	+18	0.472	56	+11	0.545
Montana & Western Dakotas	13	10	+29	0.630	9	+48	0.264
Eastern Dakotas	119	84	+42	0.228	38	+212	<0.001
Total	787	760	+4	0.763	576	+37	<0.001

[a] Long-term average, 1955–2012.

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

			Change from 2012			Change from LTA	
Region	2013	2012	%	*P*	LTA[a]	%	*P*
Alaska–Yukon Territory–Old Crow Flats	548	849	−36	0.003	918	−40	<0.001
C. & N. Alberta–N.E. British Columbia–NWT	2,343	2,839	−17	0.143	2,536	−8	0.390
N. Saskatchewan–N. Manitoba–W. Ontario	315	338	−7	0.773	561	−44	<0.001
S. Alberta	150	294	−49	0.003	337	−55	<0.001
S. Saskatchewan	475	521	−9	0.660	407	+17	0.309
S. Manitoba	38	102	−63	0.075	128	−70	<0.001
Montana & Western Dakotas	14	18	−23	0.405	50	−73	<0.001
Eastern Dakotas	282	277	+2	0.943	111	+154	0.002
Total	4,166	5,239	−20	0.006	5,048	−17	0.001

[a] Long-term average, 1955–2012.

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

			Change from 2012			Change from LTA	
Region	2013	2012	%	*P*	LTA[a]	%	*P*
Prairie & Parkland Canada							
S. Alberta	1,127	807	+40	0.001	747	+51	<0.001
S. Saskatchewan	2,846	2,678	+6	0.426	2,046	+39	<0.001
S. Manitoba	578	401	+44	<0.001	664	−13	0.013
Subtotal	4,551	3,885	+17	0.005	3,457	+32	<0.001
Northcentral U.S.							
Montana & western Dakotas	383	428	−11	0.170	559	−32	<0.001
Eastern Dakotas	1,958	1,231	+59	<0.001	1,092	+79	<0.001
Subtotal	2,341	1,659	+41	<0.001	1,651	+42	<0.001
Total	6,892	5,544	+24	<0.001	5,099	+35	<0.001

[a] Long-term average. Prairie and Parkland Canada, 1961–2012; northcentral U.S. and Total, 1974–2012.

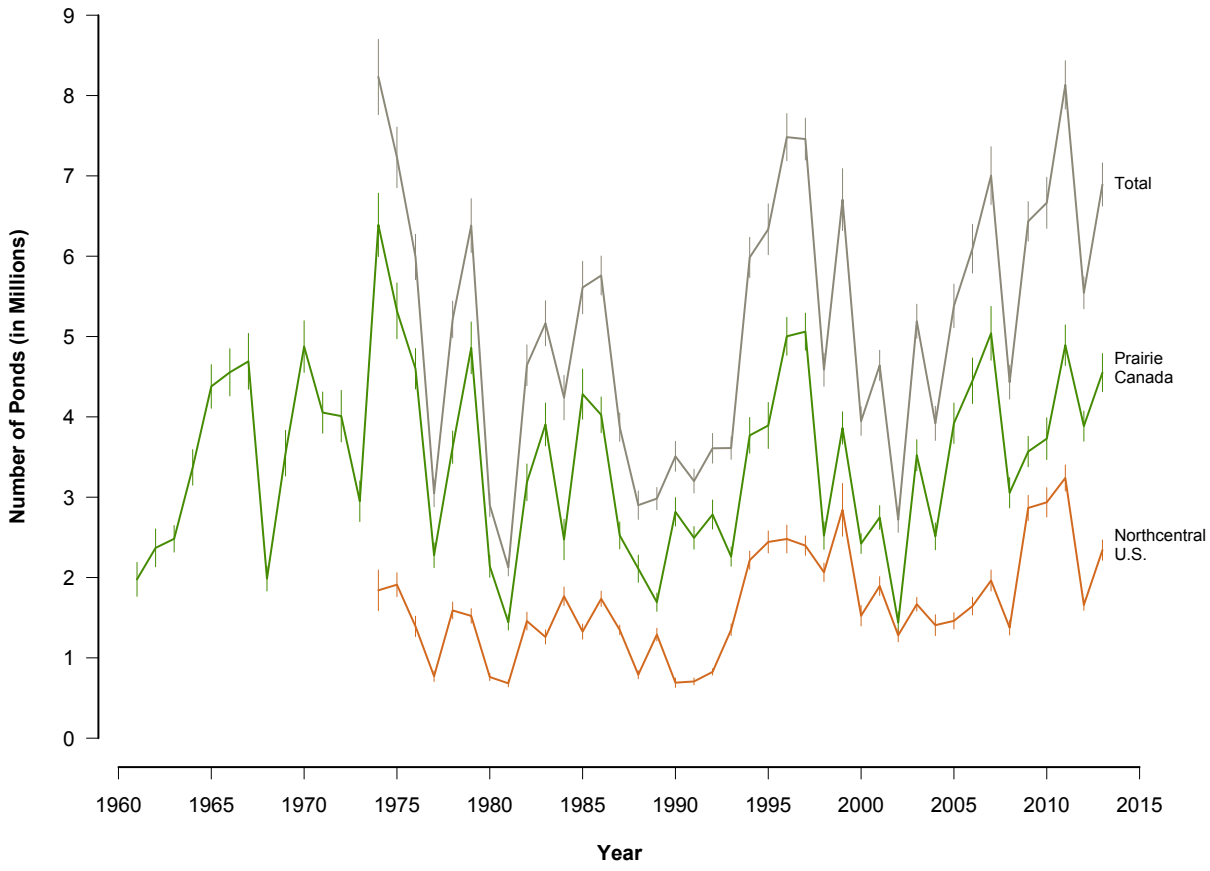

Figure 2. Number of ponds in May and 90% confidence intervals in Prairie Canada, the northcentral U.S., and total ponds.

Table 13. Duck breeding population estimates[a] (in thousands) for 6 most abundant species in the eastern survey area.

Species	2013	2012	% Change from 2012	Average[b]	% Change from Average
Mallard	500	405	+22	394	+25[c]
American black duck	622	602	+3	621	0
Green-winged teal	292	260	+12	258	+12
Ring-necked duck	630	506	+24[c]	501	+25[c]
Goldeneyes (common and Barrow's)	472	402	+17[c]	428	+10[c]
Mergansers (common, red-breasted, and hooded)	465	420	+11	435	+7

[a] Estimates for mallard, American black duck, green-winged teal, and ring-necked duck from Bayesian hierarchical analysis using USFWS and CWS data from strata 51, 52, 63, 64, 66–68, 70–72.

[b] Average for 1990–2012.

[c] Indicates Significant Change. Significance ($P \leq 0.10$) determined by non-overlap of Bayesian credibility intervals.

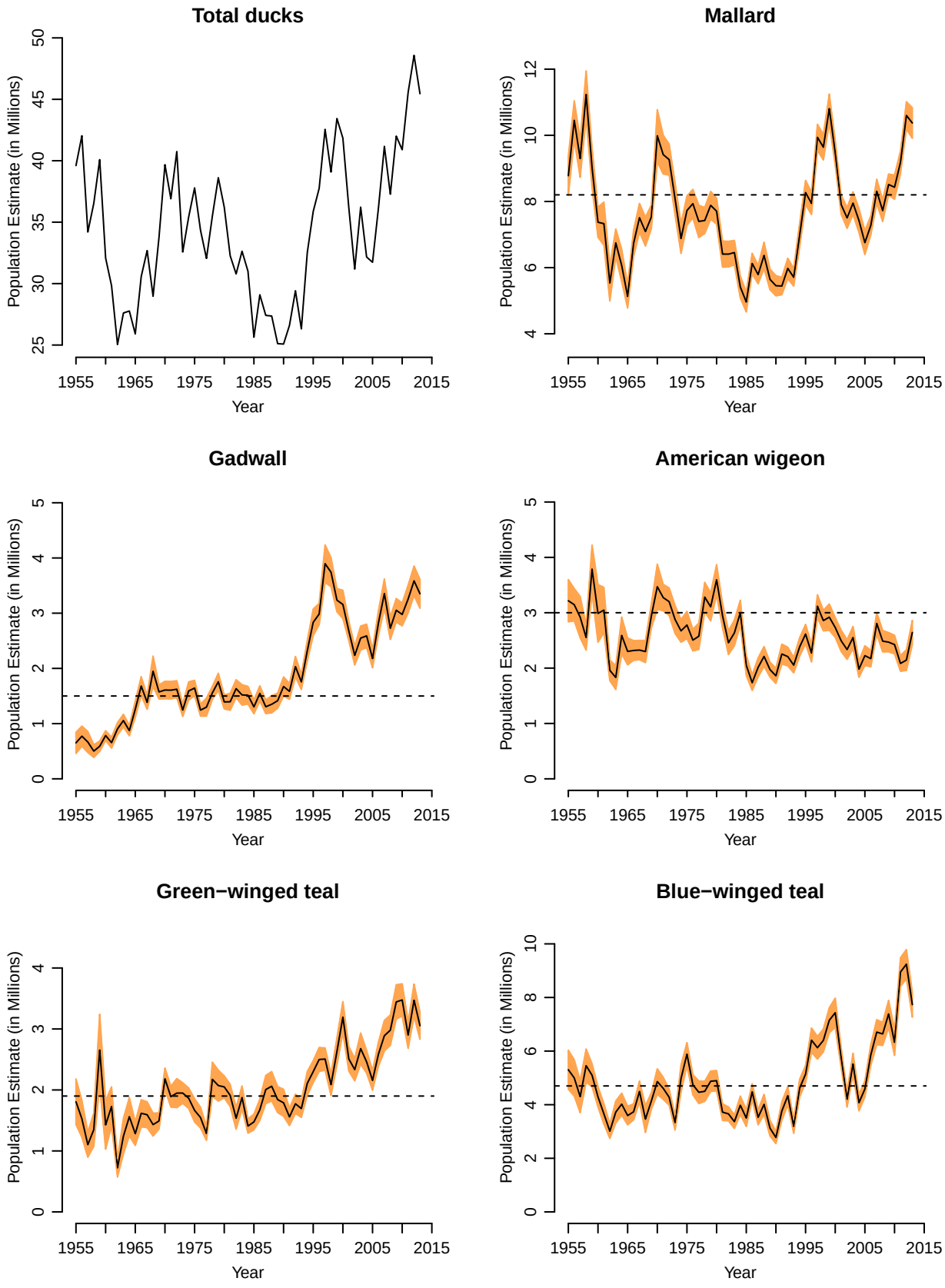

Figure 3. Breeding population estimates, 95% confidence intervals, and North American Waterfowl Management Plan population goal (dashed line) for selected species in the traditional survey area (strata 1–18, 20–50, 75–77).

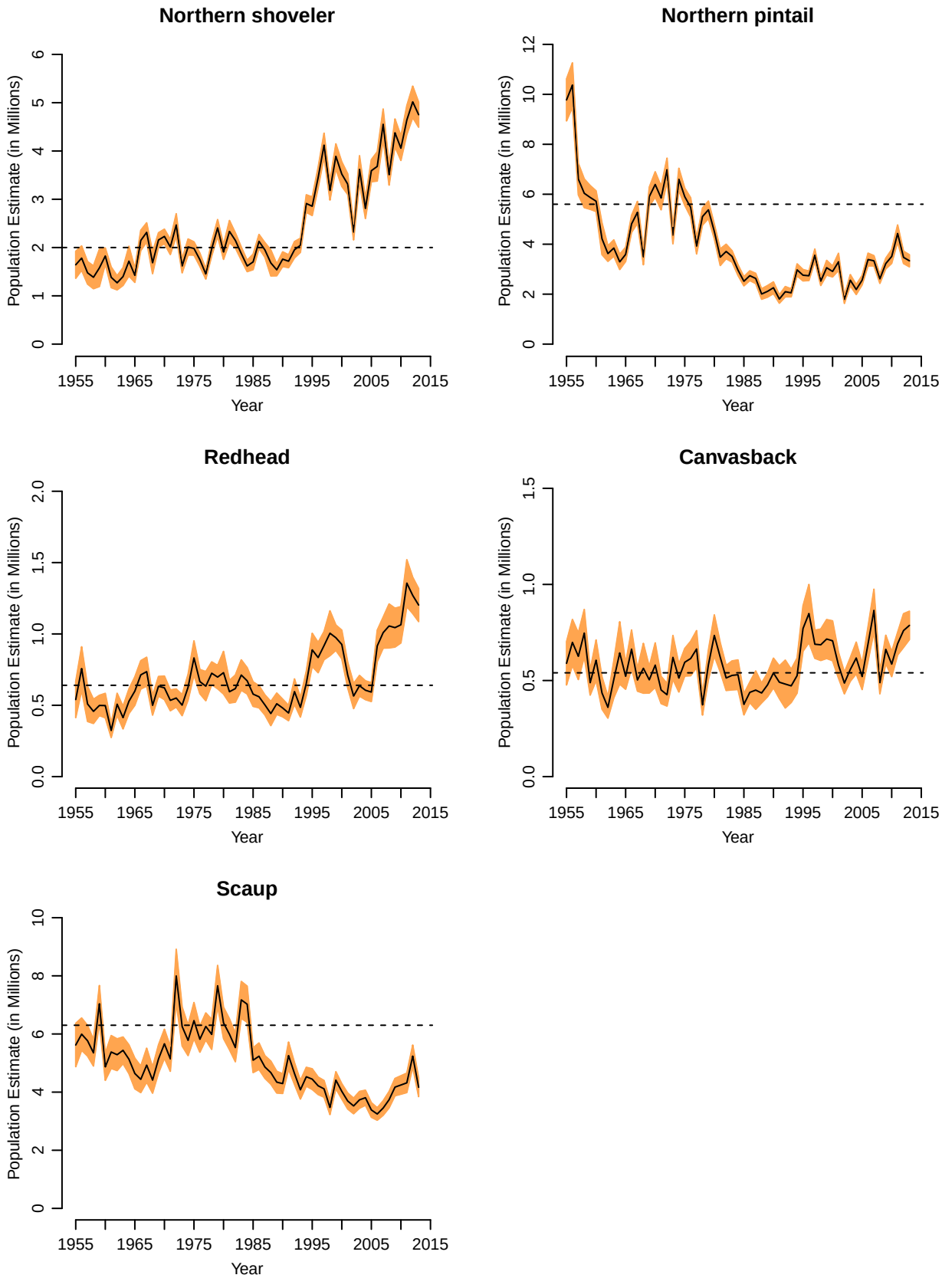

Figure 3. Continued.

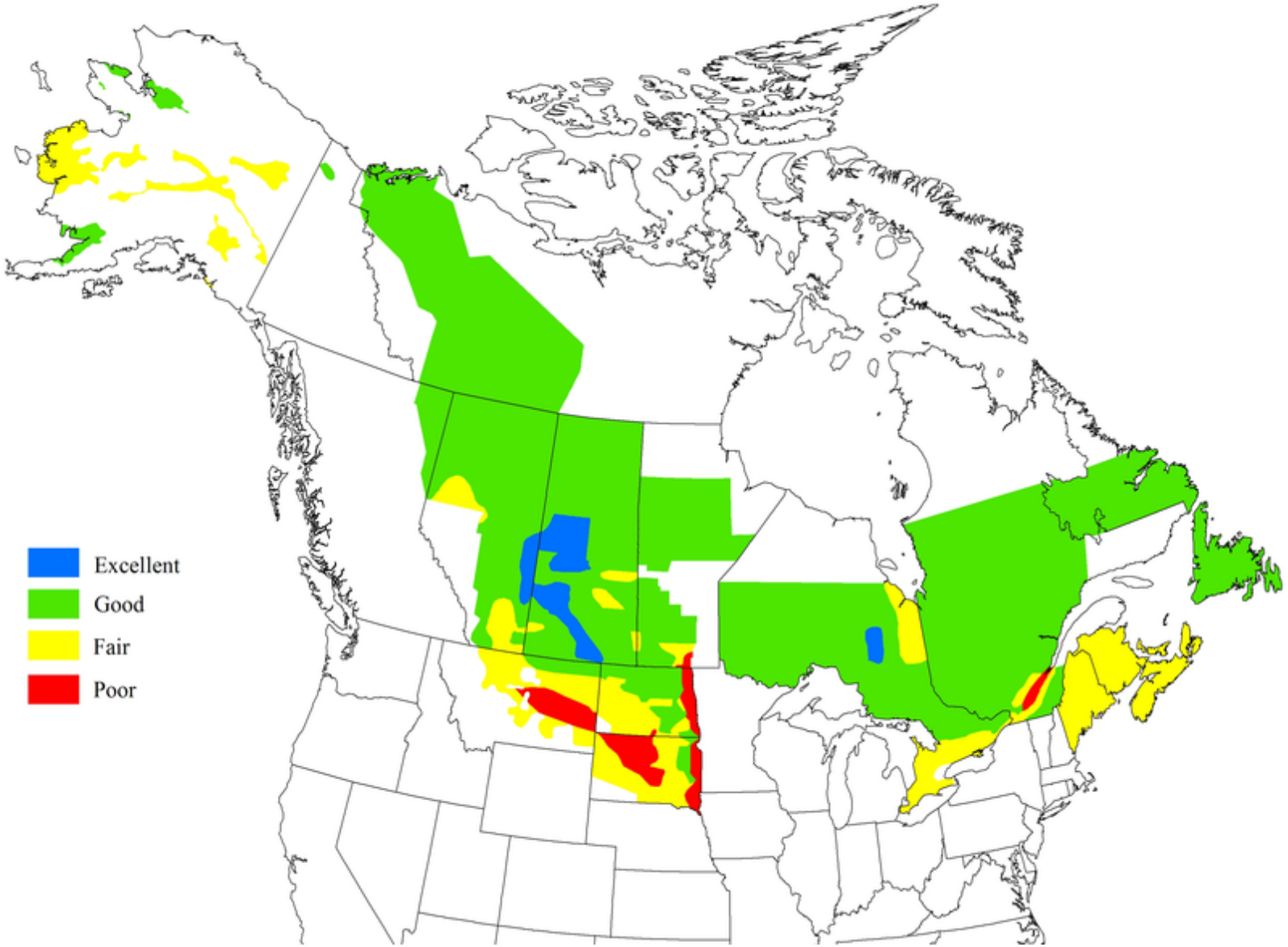

Figure 4. Breeding waterfowl habitat conditions during the 2013 Waterfowl Breeding Population and Habitat Survey, as judged by U.S. Fish and Wildlife Service and Canadian Wildlife Service biologists.

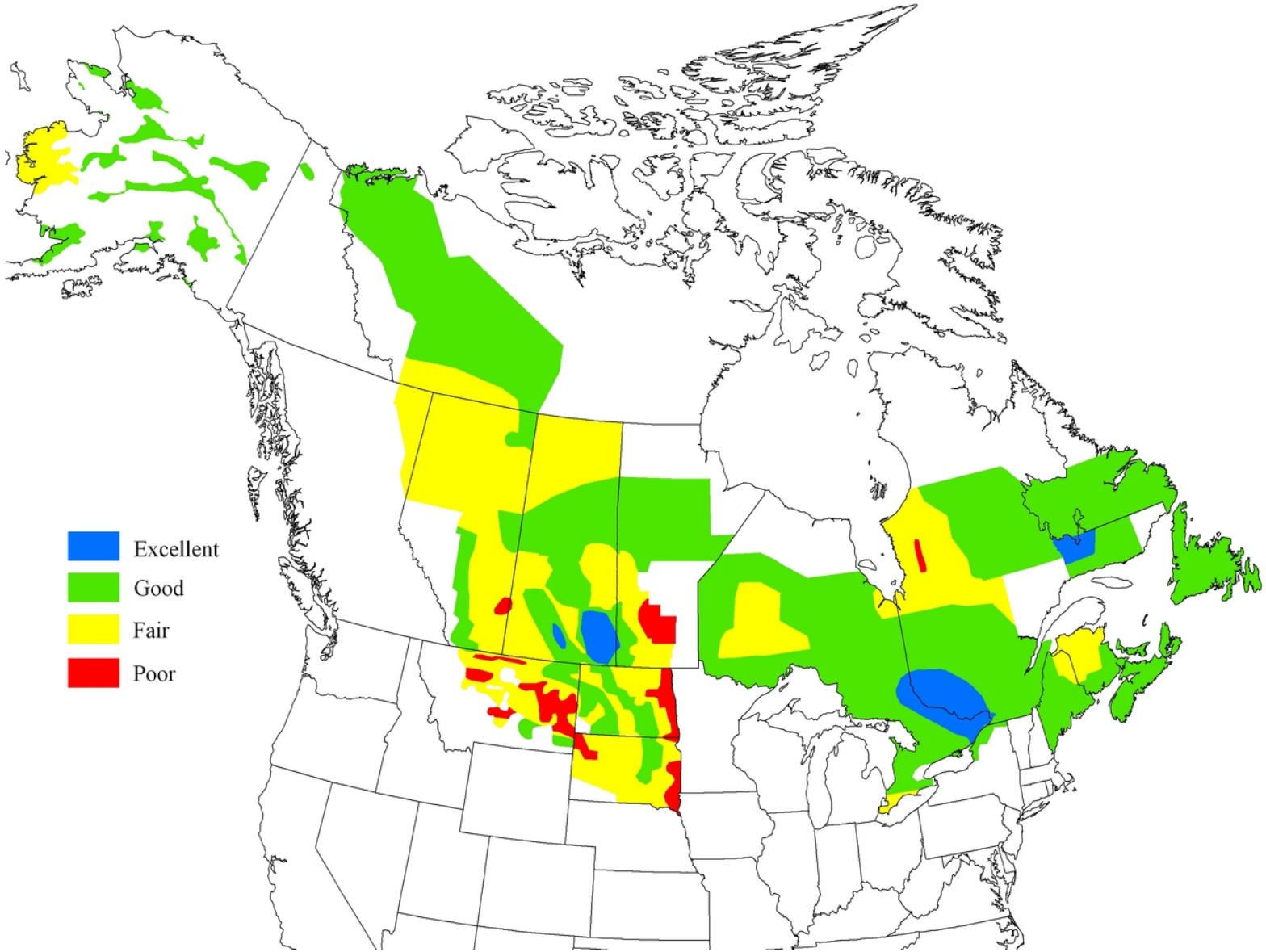

Figure 5. Breeding waterfowl habitat conditions during the 2012 Waterfowl Breeding Population and Habitat Survey, as judged by U.S. Fish and Wildlife Service Pilot Biologists.

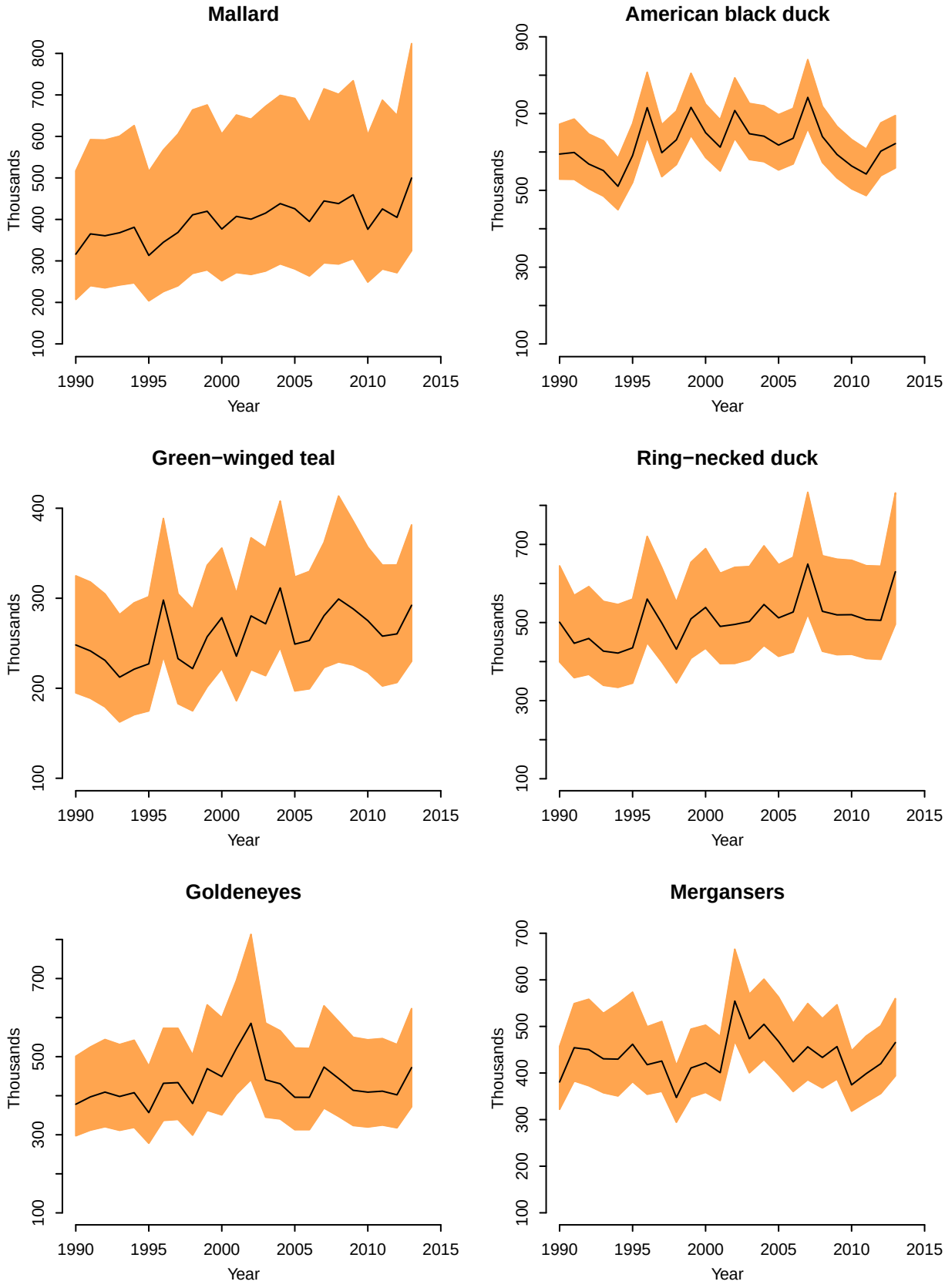

Figure 6. Breeding population estimates and 90% credibility intervals for selected species in the eastern survey area (strata 51, 52, 63, 64, 66–68, 70–72).

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).

	Mallard		Gadwall		American wigeon		Green-winged teal		Blue-winged teal	
Year	$\widehat{N}$	$\widehat{SE}$	$\widehat{N}$	$\widehat{SE}$	$\widehat{N}$	$\widehat{SE}$	$\widehat{N}$	$\widehat{SE}$	$\widehat{N}$	$\widehat{SE}$
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
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

Appendix A. Continued.

	Mallard		Gadwall		American wigeon		Green-winged teal		Blue-winged teal	
Year	$\widehat{N}$	$\widehat{SE}$	$\widehat{N}$	$\widehat{SE}$	$\widehat{N}$	$\widehat{SE}$	$\widehat{N}$	$\widehat{SE}$	$\widehat{N}$	$\widehat{SE}$
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
2011	9,182.6	267.8	3,256.9	196.9	2,084.0	110.1	2,900.1	170.7	8,948.5	418.2
2012	10,601.5	324.0	3,585.6	208.7	2,145.0	145.6	3,471.2	207.9	9,242.3	425.1
2013	10,371.9	360.6	3,351.4	204.5	2,644.3	169.2	3,053.4	173.7	7,731.7	363.2

Appendix A. Continued.

	Northern shoveler		Northern pintail		Redhead		Canvasback		Scaup	
Year	$\widehat{N}$	$\widehat{SE}$	$\widehat{N}$	$\widehat{SE}$	$\widehat{N}$	$\widehat{SE}$	$\widehat{N}$	$\widehat{SE}$	$\widehat{N}$	$\widehat{SE}$
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
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

Appendix A. Continued.

	Northern shoveler		Northern pintail		Redhead		Canvasback		Scaup	
Year	$\widehat{N}$	$\widehat{SE}$	$\widehat{N}$	$\widehat{SE}$	$\widehat{N}$	$\widehat{SE}$	$\widehat{N}$	$\widehat{SE}$	$\widehat{N}$	$\widehat{SE}$
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
2011	4,641.0	232.8	4,428.6	267.9	1,356.1	128.3	691.6	46.0	4,319.3	261.1
2012	5,017.6	254.2	3,473.1	192.4	1,269.9	99.2	759.9	68.5	5,238.6	296.8
2013	4,751.0	202.3	3,335.0	188.4	1,202.2	90.5	787.0	57.6	4,165.7	250.8

Appendix B. Breeding population estimates and 90% credible intervals (in thousands) for the 6 most abundant species of ducks in the eastern survey area, 1990–2013[a].

	Mallard		American black duck		Green-winged teal		Ring-necked duck		Goldeneyes[b]		Mergansers[c]	
Year	$\hat{N}$	90% CI	$\hat{N}$	90% CI	$\hat{N}$	90% CI	$\hat{N}$	90% CI	$\hat{N}$	90% CI	$\hat{N}$	90% CI
1990	316.2	(207.2, 516.8)	594.6	(529.2, 672.4)	248.1	(194.9, 324.9)	500.8	(399.4, 645.1)	378.1	(297.4, 500.8)	380.8	(322.1, 456.9)
1991	365.1	(240.5, 592.2)	598.7	(528.7, 685.8)	241.5	(188.9, 318.0)	446.8	(358.8, 569.5)	397.0	(311.8, 524.6)	454.3	(383.0, 549.0)
1992	360.6	(235.1, 591.4)	568.6	(504.2, 646.6)	231.0	(179.3, 304.7)	459.2	(367.3, 592.0)	409.2	(320.6, 543.9)	450.4	(372.7, 558.4)
1993	367.9	(242.0, 600.5)	551.6	(485.2, 629.2)	212.3	(162.5, 281.9)	426.8	(339.3, 554.2)	398.0	(311.3, 531.0)	430.5	(357.7, 528.0)
1994	381.1	(247.1, 626.2)	510.6	(449.5, 584.0)	221.2	(170.6, 294.9)	421.8	(334.0, 546.2)	407.8	(318.9, 542.0)	429.8	(350.8, 549.1)
1995	313.2	(203.7, 515.2)	590.9	(520.6, 673.7)	227.1	(174.8, 301.7)	435.2	(344.9, 559.9)	356.6	(278.2, 475.6)	461.8	(381.4, 573.6)
1996	345.0	(226.1, 567.3)	715.5	(637.7, 807.7)	298.0	(235.4, 388.7)	560.2	(448.6, 720.7)	431.7	(336.6, 572.6)	417.9	(354.4, 499.3)
1997	368.7	(240.2, 605.5)	598.1	(535.7, 671.1)	232.9	(182.9, 304.9)	498.8	(399.4, 640.3)	433.5	(339.2, 572.5)	425.7	(360.7, 510.6)
1998	411.0	(269.9, 663.9)	631.6	(567.2, 706.5)	221.8	(174.9, 288.0)	431.7	(345.3, 552.3)	380.0	(299.0, 504.3)	347.5	(294.3, 416.0)
1999	419.7	(278.3, 675.8)	716.2	(643.0, 805.0)	257.3	(201.6, 336.6)	509.5	(408.6, 654.2)	469.3	(362.7, 632.6)	410.8	(348.1, 494.2)
2000	376.8	(252.0, 605.7)	650.3	(585.8, 724.5)	278.4	(221.9, 355.8)	538.8	(434.2, 689.4)	449.0	(350.8, 599.8)	421.8	(358.5, 502.7)
2001	407.3	(272.0, 651.6)	612.5	(550.3, 684.0)	235.6	(186.0, 305.3)	490.0	(394.8, 626.1)	520.6	(403.7, 695.0)	400.8	(340.9, 478.5)
2002	400.5	(267.4, 641.4)	708.0	(635.6, 793.2)	280.4	(220.7, 367.2)	495.2	(395.3, 641.4)	585.4	(441.3, 813.2)	554.5	(468.9, 665.8)
2003	415.2	(275.6, 672.4)	647.5	(580.4, 726.5)	271.6	(214.0, 356.1)	502.7	(405.4, 643.4)	440.7	(345.0, 585.9)	473.6	(400.5, 569.3)
2004	438.1	(292.9, 699.0)	641.1	(574.7, 720.1)	311.5	(245.2, 408.0)	546.2	(441.2, 696.4)	430.5	(340.4, 566.2)	504.6	(428.9, 601.5)
2005	425.7	(280.7, 691.5)	617.9	(553.0, 697.2)	249.0	(197.0, 323.6)	511.9	(413.4, 648.3)	396.0	(313.0, 522.2)	467.6	(396.4, 562.8)
2006	394.9	(263.6, 633.6)	635.7	(568.9, 713.5)	253.1	(199.4, 329.8)	526.9	(424.5, 667.1)	395.8	(313.0, 521.1)	424.0	(360.3, 506.7)
2007	444.5	(295.3, 714.6)	742.3	(661.2, 840.7)	280.6	(223.0, 361.9)	649.8	(521.5, 833.4)	473.3	(368.4, 630.2)	456.3	(385.6, 549.1)
2008	438.1	(292.5, 701.5)	640.1	(572.9, 718.9)	299.2	(229.2, 413.6)	528.7	(426.5, 671.0)	444.2	(347.0, 590.0)	433.4	(367.9, 517.0)
2009	459.4	(305.4, 734.3)	593.5	(532.5, 666.6)	288.2	(225.8, 385.6)	519.6	(417.6, 662.2)	413.8	(323.7, 549.5)	456.8	(387.1, 546.5)
2010	376.1	(248.9, 603.5)	563.6	(504.1, 632.5)	275.1	(217.6, 356.7)	520.1	(418.7, 659.4)	409.1	(319.8, 543.2)	374.6	(318.1, 447.6)
2011	425.3	(280.5, 687.4)	542.5	(486.4, 607.7)	257.9	(202.5, 336.8)	507.3	(407.9, 645.5)	411.6	(324.8, 546.3)	398.7	(337.4, 479.3)
2012	404.9	(271.6, 650.5)	602.0	(538.2, 675.7)	260.4	(206.4, 337.0)	505.6	(405.7, 644.2)	402.2	(317.8, 531.1)	420.1	(356.1, 501.3)
2013	499.8	(324.7, 823.8)	621.8	(558.3, 694.9)	292.2	(230.0, 381.5)	630.0	(495.7, 831.9)	472.0	(371.7, 623.1)	465.4	(393.9, 559.8)

[a] Estimates for mallards, American black ducks, green-winged teal, ring-necked duck, goldeneyes, and mergansers from Bayesian hierarchical analysis using USFWS and CWS data from strata 51, 52, 63, 64, 66–68, 70–72.

[b] Common and Barrow's.

[c] Common, red-breasted, and hooded.

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