## 2004 PRAIRIE WATERFOWL STATUS REPORT



A Briefing Document
F.D. Caswell and M.H. Schuster

Canadian Wildlife Service
Prairie and Northern Region Winnipeg

## INTRODUCTION

May pond estimates in the prairie provinces of western Canada of 2.513 million represented a $29 \%$ decrease from 2003. Pond numbers were $27 \%$ below the 10 -year average, and $15 \%$ below the long-term average. This was in spite of a spring blizzard that saw significant amounts of snow fall on the southern part of the survey area on May 12-13.

The mallard population estimate in southern prairie Canada decreased in 2004 to a value $20 \%$ below that of 2003 ( 2.603 million). The estimate is below the 10 -year ( $-20 \%$ ) and long-term averages (-27\%). For prairie Canada as a whole mallard numbers in 2004 were below those for 2003 (-13\%), and remain below the 10 -year average ( $-21 \%$ ), and long-term average ( $-26 \%$ ).

Northern pintail numbers decreased in the southern strata but increased in the northern strata in 2004. Overall in prairie Canada there was a decrease when compared to $2003(-40 \%)$. Estimates remained below the 10 -year average ( $-25 \%$ ) and the long-term averages (-65\%).

Estimates for total ducks in prairie Canada decreased in 2004 compared to 2003 ($16 \%$ ), as well as the 10 -year average ( $-11 \%$ ) and the long-term average ( $-20 \%$ ).

Prairie Canada duck regulations are based on the Prairie Canada Mallard Harvest Strategy (PCMHS). The 2004 breeding population of 4.5 million estimated in the North American pothole region is still above the range requiring a traditional framework. Prairie Canada mallard harvest rate reductions were well in excess of the percentage required by the PCMHS.

There was a decrease in the North American harvest of mallards in 2003. The continental population estimate decreased in 2004 when compared to 2003.

All jurisdictions are encouraged to continue to work towards improved populations through the various NAWMP initiatives.


## SUMMARY OF RESULTS

1. Spring habitat conditions, as measured by the number of MAY PONDS, decreased in 2004 in Prairie Canada. There were $29 \%$ less May ponds in 2004 compared to 2003. There were $27 \%$ less May ponds in 2004 compared to the 10 -year average, and $15 \%$ more compared to the long-term average (Table 1; Figure 1).

In southern Manitoba the 20043 May pond estimate of 541 thousand was $10 \%$ more than that recorded for 2003 , but $14 \%$ less than the 10 -year average and $9 \%$ less than the long-term average. In southern Saskatchewan, the 2004 May pond estimate of 1.5 million was $32 \%$ below that recorded for $2003,30 \%$ less than the 10 -year average, and $15 \%$ less than the long-term average. Water conditions were worse in southern Alberta in the spring of 2004 with 511 thousand ponds estimated. This represents an $43 \%$ decrease compared to 2003, a $27 \%$ decrease compared to the 10 -year average, and a $15 \%$ decrease compared to the longterm average.
2. The 2004 TOTAL DUCK population decreased by $36 \%$ in southern Prairie Canada, but did not change ( $0 \%$ ) in northern Prairie Canada compared to 2003 (Table 1; Figures 2 and 3). Total duck numbers are $30 \%$ lower than the 10 -year average in southern Prairie Canada. In northern Prairie Canada, the population is $3 \%$ higher than the 10 -year average. Total duck numbers were $35 \%$ lower and $12 \%$ less than the longterm average in southern and northern Prairie Canada, respectively.

In 2004, for northern and southern Prairie Canada combined, total duck numbers were $16 \%$ less than in 2003, $11 \%$ less than the $10-$ year average, and $20 \%$ less than the longterm average.
3. The MALLARD population estimate in southern Prairie Canada in 2004 was $20 \%$ less than in 2003, $20 \%$ less than the 10 -year average, and $27 \%$ less than the long term average (Table 1; Figure 1 and 4). The mallard population estimate in northern Prairie Canada in 2004 increased slightly ( $+1 \%$ ) from 2003, but remained below the 10 -year average ( $-22 \%$ ), and long-term average (-25\%) (Table 1; Figure 4).

For Prairie Canada as a whole the 2004 mallard population estimate was $13 \%$ less than $2003,21 \%$ lower than the 10 -year average, and $26 \%$ less than the long-term average (Table 1).
4. NORTHERN PINTAIL numbers decreased in southern Prairie Canada in 2004 (Table 2; Figure 5) compared to 2003 ( $-47 \%$ ). The numbers also remain below the 10 -year average ( $-32 \%$ ), and the long-term average (-68\%). In northern Prairie Canada the northern pintail numbers increased in 2004 compared to 2003 ( $+16 \%$ ). They were above the 10 -year average ( $+15 \%$ ), but remained below and the long-term average (-52\%).

For northern and southern Prairie Canada combined the population estimate in 2004 was $40 \%$ less than in $2003,25 \%$ less than the 10 -year average, and $65 \%$ less than the long-term average (Table 2).
5. The SCAUP population in southern prairie Canada in 2004 was $28 \%$ lower than that of $2003,51 \%$ lower than the 10 -year average, and $63 \%$ lower than the long-term average (Table 2). In northern Prairie Canada the numbers increased compared to $2003(+5 \%)$, as well as the 10 -year average ( $+6 \%$ ), but remained below the long-term average (-31\%) (Table 2; Figure 6).

For northern and southern Prairie Canada combined the estimate for 2004 was $1 \%$ less than that for $2003,8 \%$ less than the 10 -year average, and $38 \%$ lower than the long-term average.
6. Numbers of CANVASBACK in southern Prairie Canada in 2004 were below the previous year (-21\%) (Table2; Figure 7) lower than the 10 -year average ( $-29 \%$ ), and lower than the long-term average ( $-21 \%$ ). Estimates of canvasback in northern Prairie Canada (Table 2; Figure 7) increased in 2004 compared to 2003 ( $+24 \%$ ), and the $10-$ year average ( $+8 \%$ ), but and remained above the long-term average (-30\%).

For northern and southern Prairie Canada combined (Table 2) the 2004 estimate was $8 \%$ less than in $2003,18 \%$ less than the $10-$ year average, and $6 \%$ less than the longterm average.
7. The continental MALLARD POPULATION ESTIMATE for 2004 is 7.425 million, $7 \%$ less than the estimate for 2003 (Table 3).
8. MALLARD HARVESTS decreased in Canada and increased in the United States in 2003 compared to 2002 (Tables 5 to 7; Figures 8 tol09).

The harvest of mallards in Prairie Canada in 2003 was $66 \%$ less than when compared to the mean harvest of the 1980-84 period of stabilized regulations. The 1994-2003 average represents a $60 \%$ decrease in harvest compared to the 1980-84 average (Table 4). Harvest for all of Canada in 2003 was $60 \%$ less when compared to the 198084 mean, and the 1993-2002 mean showed a $52 \%$ decrease in harvest compared to the 1980-84 mean.

The harvest of mallards in the United States in 2003 was $14 \%$ more than the 1980-84 average. The 1994-2003 mean showed a $17 \%$ increase in harvest compared to the 1980-84 mean harvest (Table 4).

The harvest of Mallards in North America in 2003 was $3 \%$ less than the 1980-84 average, and the 1994-2003 average represents a $1 \%$ increase in harvest compared to the 1980-84 mean (Table 4).
9. MALLARD HARVEST RATES, expressed as harvests divided by the fall flight estimate multiplied by 100 , decreased in Canada and the United States (Tables 3 to 5; Figures 8 to10).

The mallard harvest rate in Prairie Canada in 2003 was $2.6 \%$, representing a $70 \%$ decline from that of the 1980-84 average. A 69\% decline from the mean of the 1980-84 period of stabilized regulations is represented by the 1994-03 average (Table 5). For all of Canada, the mallard harvest rate in 2002 was $5.0 \%$, representing a $65 \%$ decline from that of the 1980-84 mean. The 1994-03 mean showed a $63 \%$ decline from the $1980-$ 84 mean.

The mallard harvest rate in the United States in 2003 was $48 \%$, representing a $1 \%$
decrease from that of the 1980-84 average, and an $7 \%$ decline from the mean of the 1980-84 period when compared to the 199403 mean (Table 5).

The mallard harvest rate in North America in 2003 was $53 \%$, representing a $16 \%$ decline compared to the 1980-84 mean. The 1994-03 mean of $50 \%$ represents a $20 \%$ decline compared to the mean of the 198084 period of stabilized regulations (Table 5).
10. Migratory game bird PERMIT SALES for residents were similar in 2003 (Table 6) in Manitoba ( $0 \%$ ), and Saskatchewan $(+1 \%)$, and Alberta ( $+3 \%$ ). Sales of nonresident permits, primarily U.S. in origin,
were higher in 2003 compared to 2002 in Manitoba ( $+5 \%$ ), Saskatchewan ( $+14 \%$ ) and Alberta ( $+6 \%$ ). For all of prairie Canada, this represents an $1 \%$ increase in resident permit sales, and a $10 \%$ increase in nonresident permit sales. These sales of permits indicate a continued general decline since peak sales in the mid-1970's (Figure 11).

## 11. The WEIGHTED MALLARD

 POPULATION ESTIMATES for the Prairie Pothole Region in 2004 are higher than 75\% of the NAWMP goal (Figure 12). The PMHS dictates an adherence to traditional (liberal) mallard seasons.
## APPENDIX A

Tables \& Figures

Table 1. A comparison of May mallard breeding populations, May total duck breeding populations and May pond counts for prairie Canada: 2004 versus 2003, 1994-2003 and 1955-2003. (numbers in thousands)

| $\begin{gathered} \mathrm{R} \\ \mathrm{E} \\ \mathbf{G} \\ \mathrm{I} \\ \mathrm{O} \\ \mathrm{~N} \end{gathered}$ | MALLARDS |  |  |  |  |  |  |  | TOTALDUCKS |  |  |  |  |  |  |  | MAYPONDS |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 2000 | 2001 | 2002 | 2003 | 2004 | $\begin{gathered} \% \\ \text { \% iff } \\ 03 \end{gathered}$ |  | $\begin{gathered} \% \\ \text { diff } \\ 55-03 \end{gathered}$ | 2000 | 2001 | 2002 | 2003 | 2004 | $\begin{gathered} \% \\ \text { diff } \\ 03 \end{gathered}$ |  | $\begin{gathered} \% \\ \text { diff } \\ 55-03 \end{gathered}$ | 2000 | 2001 | 2002 | 2003 | 2004 | $\begin{gathered} \% \\ \text { diff } \\ 03 \end{gathered}$ | $\begin{gathered} \% \\ \text { diff } \\ 94-03 \end{gathered}$ | $\begin{gathered} \% \\ \text { diff } \\ 55-03 \end{gathered}$ |
| Southern <br> Manitoba | 368 | 446 | 401 | 505 | 393 | -22 | -6 | 5 | 1512.6 | 1809 | 1315 | 1589 | 393 | -75 | -74 | -75 | 466 | 785.76 | 327 | 491 | 541 | 10 | -14 | -9 |
| Southern Saskatchewan | 2267 | 1650 | 1213 | 2111 | 1609 | -24 | -20 | -23 | 7674.2 | 6463 | 3550 | 9299 | 5786 | -38 | -25 | -22 | 1404 | 1535.8 | 635 | 2143 | 1461 | -32 | -30 | -15 |
| Southern Alberta | 833 | 744 | 793 | 627 | 600 | -4 | -28 | -46 | 3489.7 | 2531 | 2375 | 2699 | 2504 | -7 | -22 | -43 | 553 | 425.7 | 477 | 888 | 511 | -43 | -27 | -20 |
| SOUTHERN SUBTOTAL | 3468 | 2839 | 2406 | 3243 | 2603 | -20 | -20 | -27 | 12677 | 10803 | 7240 | 13586 | 8684 | -36 | -30 | -35 | 2423 | 2747 | 1439 | 3522 | 2513 | -29 | -27 | -15 |
| Northern Man \& Sask | 888.3 | 501.17 | 873 | 660 | 753 | 14 | -12 | -19 | 2740 | 2471.3 | 3780.2 | 2913 | 3558 | 22 | 14 | 13 |  |  |  |  |  |  |  |  |
| Northern <br> Albt NWT BC | 1288 | 979.03 | 1182 | 852 | 776 | -9 | -30 | -30 | 7688 | 6185.8 | 7291 | 7356 | 6700 | -9 | -3 | -21 |  |  |  |  |  |  |  |  |
| NORTHERN SUBTOTAL | 2176 | 1480 | 2055 | 1511 | 1530 | 1 | -22 | -25 | 10428 | 8657 | 11071 | 10268 | 10258 | 0 | 3 | -12 |  |  |  |  |  |  |  |  |
| PRAIRIE TOTALS | 5644 | 4320 | 4462 | 4754 | 4133 | -13 | -21 | -26 | 23105 | 19461 | 18311 | 23854 | 20030 | -16 | -11 | -20 |  |  |  |  |  |  |  |  |

Table 2. A comparison of May breeding populations of northern pintail, scaup and canvasback for Prairie Canada: 2004 versus 2003, 1994-2003 and 1955-2003. (numbers in thousands)

| $\begin{gathered} \text { R } \\ \text { E } \\ \text { G } \\ \text { I } \\ \text { O } \\ \text { N } \end{gathered}$ | NORTHERN PINTAIL |  |  |  |  |  |  |  | SCAUP |  |  |  |  |  |  |  | CANVASBACK |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 2000 | 2001 | 2002 | 2003 | 2004 | $\begin{aligned} & \% \\ & \text { diff } \\ & 03 \end{aligned}$ | $\begin{gathered} \% \\ \text { diff } \\ 94-03 \end{gathered}$ | $\begin{gathered} \% \\ \begin{array}{c} \% \\ \text { diff } \\ 55-03 \end{array} \end{gathered}$ | 2000 | 2001 | 2002 | 2003 | 2004 | $\begin{gathered} \% \\ \text { \% iff } \\ 03 \end{gathered}$ | $\begin{gathered} \% \\ \text { diff } \\ 94-03 \end{gathered}$ | $\begin{gathered} \% \\ \text { diff } \\ 55-03 \end{gathered}$ | 2000 | 2001 | 2002 | 2003 | 2004 | $\begin{gathered} \% \\ \text { diff } \\ 03 \end{gathered}$ | $\begin{gathered} \% \\ \text { diff } \\ 94-03 \end{gathered}$ | $\begin{gathered} \% \\ \text { diff } \\ 55-03 \end{gathered}$ |
| Southern Manitoba | 45 | 97 | 32 | 39 | 40 | 1 | -38 | -65 | 60 | 74 | 50 | 49 | 31 | -35 | -64 | -77 | 64 | 56 | 63 | 42 | 70 | 68 | 11 | 26 |
| Southern <br> Saskatchewan | 464 | 680 | 182 | 993 | 474 | -52 | -32 | -62 | 273 | 321 | 150 | 251 | 185 | -26 | -46 | -56 | 232 | 232 | 73 | 195 | 121 | -38 | -45 | -34 |
| Southern Alberta | 189 | 66 | 73 | 252 | 161 | -36 | -28 | -78 | 292 | 202 | 146 | 172 | 124 | -28 | -53 | -66 | 73 | 32 | 14 | 70 | 50 | -28 | -13 | -22 |
| SOUTHERN SUBTOTAL | 697 | 843 | 286 | 1285 | 675 | -47 | -32 | -68 | 625 | 597 | 346 | 472 | 340 | -28 | -51 | -63 | 369 | 320 | 151 | 306 | 241 | -21 | -29 | -21 |
| Northern <br> Man \& Sask | 16 | 10 | 11 | 6 | 10 | 84 | -26 | -74 | 293 | 253 | 373 | 354 | 575 | 62 | 52 | 12 | 37 | 32 | 38 | 13 | 50 | 277 | 19 | -2 |
| Northern Albt NWT BC | 220 | 175 | 187 | 170 | 193 | 14 | 18 | -50 | 1621 | 1476 | 1784 | 1736 | 1624 | -6 | -5 | -39 | 83 | 63 | 121 | 115 | 109 | -5 | 4 | 53 |
| NORTHERN SUBTOTAL | 236 | 185 | 199 | 175 | 204 | 16 | 15 | -52 | 1914 | 1729 | 2158 | 2090 | 2200 | 5 | 6 | -31 | 120 | 94 | 159 | 128 | 159 | 24 | 8 | 30 |
| PRAIRIE TOTALS | 933 | 1028 | 485 | 1460 | 878 | -40 | -25 | -65 | 2539 | 2325 | 2504 | 2562 | 2540 | -1 | -8 | -38 | 489 | 415 | 310 | 435 | 400 | -8 | -18 | -6 |

Table 3. Percentage of ponds* which have been impacted by agricultural practices on their basins (BAS) and margins (MAR) during the period $1992-2002$. The values in brackets are the number of ponds in the sample (type III to V , streams and artificials)

| A REA | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | BAS MAR | BAS MAR | BAS MAR | BAS MAR | BAS MAR | BAS MAR | BAS MAR | BAS MAR | BAS MAR | BAS MAR | BAS MAR |
| Southwest Manitoba | $\begin{array}{cc} 30.1 \quad 80.4 \\ (1503) \end{array}$ | $\begin{gathered} 15.3 \quad 75.4 \\ (1054) \end{gathered}$ | $\begin{gathered} 26.482 .1 \\ (1859) \end{gathered}$ | $\begin{gathered} 24.582 .7 \\ (2198) \end{gathered}$ | $\begin{gathered} 21.681 .0 \\ (1776) \end{gathered}$ | $\begin{gathered} 18.7 \quad 79.3 \\ (1333) \end{gathered}$ | $\begin{gathered} 39.983 .5 \\ (2017) \end{gathered}$ | $\begin{gathered} 16.276 \\ (1121) \end{gathered}$ | $\begin{gathered} 25.8 \quad 80.8 \\ (1851) \end{gathered}$ | $\begin{gathered} 17.7 \quad 74.2 \\ (961) \end{gathered}$ | $\begin{gathered} 12.278 .4 \\ (1245) \end{gathered}$ |
| Southeast Saskatchewan | $\begin{gathered} 26.680 .1 \\ (1893) \end{gathered}$ | $\begin{gathered} 23.784 .1 \\ (1695) \end{gathered}$ | $\begin{gathered} 25.785 .9 \\ (2276) \end{gathered}$ | $\begin{gathered} 24.185 .9 \\ (2495) \end{gathered}$ | $\begin{gathered} 21.085 .7 \\ (2356) \end{gathered}$ | $\begin{gathered} 17.484 .0 \\ (1385) \end{gathered}$ | $\begin{gathered} 42.587 .6 \\ (2434) \end{gathered}$ | $\begin{gathered} 18.082 .7 \\ (1416) \end{gathered}$ | $\begin{gathered} 25.185 .0 \\ (2285) \end{gathered}$ | $\begin{gathered} 16.982 .3 \\ (906) \end{gathered}$ | $\begin{gathered} 20.178 .4 \\ (1245) \end{gathered}$ |
| Southwest Saskatchewan | $\begin{gathered} 17.174 .5 \\ (1647) \end{gathered}$ | $\begin{gathered} 16.483 .4 \\ (4119) \end{gathered}$ | $\begin{gathered} 20.0 \quad 79.2 \\ (2719) \end{gathered}$ | $\begin{gathered} 20.985 .8 \\ (5069) \end{gathered}$ | $\begin{gathered} 23.282 .9 \\ (4472) \end{gathered}$ | $\begin{gathered} 13.8 \quad 74.0 \\ (1440) \end{gathered}$ | $\begin{gathered} 38.4 \quad 76.7 \\ (2012) \end{gathered}$ | $\begin{gathered} 18.275 .9 \\ (1453) \end{gathered}$ | $\begin{gathered} 15.8 \quad 75.2 \\ (1523) \end{gathered}$ | $\begin{gathered} 11.573 .7 \\ (650) \end{gathered}$ | $\begin{gathered} 15.775 .9 \\ (1359) \end{gathered}$ |
| Southern Alberta | $\begin{gathered} 26.977 .3 \\ (2644) \end{gathered}$ | $\begin{gathered} 24.8 \quad 75.9 \\ (2766) \end{gathered}$ | $\begin{gathered} 22.975 .4 \\ (2368) \end{gathered}$ | $\begin{gathered} 33.6 \quad 78.8 \\ (3170) \end{gathered}$ | $\begin{gathered} 36.680 .4 \\ (3971) \end{gathered}$ | $\begin{gathered} 18.6 \quad 74.7 \\ (2007) \end{gathered}$ | $\begin{array}{cc} 34.5 \quad 78.6 \\ (2652) \end{array}$ | $\begin{gathered} 19.0 \quad 78.8 \\ (2065) \end{gathered}$ | $\begin{gathered} 15.578 .1 \\ (1612) \end{gathered}$ | $\begin{gathered} 19.0 \quad 77.7 \\ (1846) \end{gathered}$ | $\begin{gathered} 15.578 .1 \\ (1582) \end{gathered}$ |
| Prairie Canada | $\begin{array}{cc} 25.4 \quad 78.0 \\ (7450) \end{array}$ | $\begin{array}{cc} 20.080 .5 \\ (7687) \end{array}$ | $\begin{gathered} 23.580 .5 \\ (9634) \end{gathered}$ | $\begin{array}{cc} 25.283 .6 \\ (9222) \end{array}$ | $\begin{array}{cc} 26.8 & 82.4 \\ (12932) \end{array}$ | $\begin{gathered} 17.277 .6 \\ (12575) \end{gathered}$ | $\begin{gathered} 38.781 .6 \\ (6165) \end{gathered}$ | $\begin{gathered} 17.577 .9 \\ (9115) \end{gathered}$ | $\begin{gathered} 21.280 .3 \\ (4828) \end{gathered}$ | $\begin{gathered} 16.3 \quad 77 \\ (7271) \end{gathered}$ | $\begin{gathered} 20.7 \quad 79.7 \\ (6135) \end{gathered}$ |

* defined as Type 3-5, Streams and Artificial Water Areas

Table 4. Duck production and July pond counts for Prairie Canada: 1992 to 2002.


* numbers in thousands

Table 3. Size of breeding population, fall flight, harvest and harvest rate for mallards in North America.

| YEAR | POPULATION STATUS* |  | MALLARD HARVEST |  |  | HARVEST RATE (harvest/fall flight) X 100 |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Breeding Population | Fall <br> Flight | Prairie Canada | Total Canada | United States | Prairie Canada | Total Canada | United States | North America |
| 1975 | 7727 | 11982 | 1258 | 1744 | 5037 | 10.5\% | 14.6\% | 42.0\% | 56.6\% |
| 1976 | 7934 | 11436 | 1426 | 1952 | 5123 | 12.5\% | 17.1\% | 44.8\% | 61.9\% |
| 1977 | 7397 | 9405 | 1071 | 1565 | 4468 | 11.4\% | 16.6\% | 47.5\% | 64.1\% |
| 1978 | 7425 | 10393 | 1016 | 1529 | 5066 | 9.8\% | 14.7\% | 48.7\% | 63.5\% |
| 1979 | 7883 | 11719 | 1154 | 1613 | 4815 | 9.8\% | 13.8\% | 41.1\% | 54.9\% |
| 1980 | 7707 | 9757 | 1047 | 1534 | 4682 | 10.7\% | 15.7\% | 48.0\% | 63.7\% |
| 1981 | 6410 | 8256 | 793 | 1294 | 4366 | 9.6\% | 15.7\% | 52.9\% | 68.6\% |
| 1982 | 6409 | 9163 | 686 | 1214 | 3937 | 7.5\% | 13.2\% | 43.0\% | 56.2\% |
| 1983 | 6456 | 9764 | 809 | 1329 | 4449 | 8.3\% | 13.6\% | 45.6\% | 59.2\% |
| 1984 | 5415 | 7956 | 605 | 1059 | 3952 | 7.6\% | 13.3\% | 49.7\% | 63.0\% |
| 1985 | 4961 | 8409 | 424 | 909 | 3342 | 5.0\% | 10.8\% | 39.7\% | 50.6\% |
| 1986 | 6124 | 9791 | 447 | 879 | 3400 | 4.6\% | 9.0\% | 34.7\% | 43.7\% |
| 1987 | 5790 | 8481 | 516 | 1041 | 3231 | 6.1\% | 12.3\% | 38.1\% | 50.4\% |
| 1988 | 6369 | 8906 | 221 | 661 | 2006 | 2.5\% | 7.4\% | 22.5\% | 29.9\% |
| 1989 | 5645 | 8103 | 330 | 734 | 2357 | 4.1\% | 9.1\% | 29.1\% | 38.1\% |
| 1990 | 5452 | 8420 | 309 | 730 | 2320 | 3.7\% | 8.7\% | 27.6\% | 36.2\% |
| 1991 | 5445 | 8238 | 252 | 611 | 2375 | 3.1\% | 7.4\% | 28.8\% | 36.2\% |
| 1992 | 5976 | 9358 | 229 | 580 | 2560 | 2.4\% | 6.2\% | 27.4\% | 33.6\% |
| 1993 | 5708 | 8649 | 171 | 523 | 2754 | 2.0\% | 6.0\% | 31.8\% | 37.9\% |
| 1994 | 6980 | 11083 | 253 | 608 | 3121 | 2.3\% | 5.5\% | 28.2\% | 33.6\% |
| 1995 | 8269 | 12167 | 290 | 603 | 4418 | 2.4\% | 5.0\% | 36.3\% | 41.3\% |
| 1996 | 7941 | 12620 | 329 | 641 | 4879 | 2.6\% | 5.1\% | 38.7\% | 43.7\% |
| 1997 | 9940 | 14329 | 392 | 719 | 5412 | 2.7\% | 5.0\% | 37.8\% | 42.8\% |
| 1998 | 9640 | 11750 | 354 | 664 | 5621 | 3.0\% | 5.7\% | 47.8\% | 53.5\% |
| 1999 | 10806 | 13600 | 370 | 633 | 5521 | 2.7\% | 4.7\% | 40.6\% | 45.3\% |
| 2000 | 9470 | 11221 | 323 | 689 | 5696 | 2.9\% | 6.1\% | 50.8\% | 56.9\% |
| 2001 | 8199 | 10514 | 294 | 592 | 5217 | 2.8\% | 5.6\% | 49.6\% | 55.2\% |
| 2002 | 7799 | 10430 | 278 | 547 | 4916 | 2.7\% | 5.2\% | 47.1\% | 52.4\% |
| 2003 | 7950 | 10300 | 266 | 511 | 5019 | 2.6\% | 5.0\% | 48.7\% | 53.7\% |
| 2004 | 7425 |  |  |  |  |  |  |  |  |

numbers in thousands

Table 4. Canadian and United States harvests of mallards in relation to breeding populations and fall flights for the 1980-84 period of stabilized regulations, and 1994-2003
period. Values of breeding populations, fall flights and harvests in 1000's.

| N. A. | Stabilized Regulations | Post Stabilized Regulations |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\begin{gathered} 1994-03 \\ \text { MEAN } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NUMBERS | 1980-1984 MEAN | 1994 | \%DIF* | 1995 | \%DIF* | 1996 | \%DIF* | 1997 | \%DIF* | 1998 | \%DIF* | 1999 | \%DIF* | 2000 | \%DIF* | 2001 | \%DIF* | 2002 | \%DIF* | 2003 | \%DIF* |  |
| Breeding <br> Population | 6479 | 6980 | 7.7\% | 8269 | 27.6\% | 7941 | 22.6\% | 9940 | 53.4\% | 9640 | 48.8\% | 10806 | 66.8\% | 9470 | 46.2\% | 8199 | 26.5\% | 7799 | 20.4\% | 7950 | 22.7\% | 8699 |
| Fall <br> Flight | 8979 | 6980 | -22.3\% | 8269 | -7.9\% | 7941 | -11.6\% | 9940 | 10.7\% | 11750 | 30.9\% | 13600 | 51.5\% | 11221 | 25.0\% | 10514 | 17.1\% | 10430 | 16.2\% | 10300 | 14.7\% | 10095 |
| CANADA | Stabilized Regulations | abilized | egulations |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1994-03 |
| HARVEST | 1980-1984 MEAN | 1994 | \%DIF* | 1995 | \%DIF* | 1996 | \%DIF* | 1997 | \%DIF* | 1998 | \%DIF* | 1999 | \%DIF* | 2000 | \%DIF* | 2001 | \%DIF* | 2002 | \%DIF* | 2003 | \%DIF* | MEAN |
| Prairie | 788 | 253 | -67.9\% | 290 | -63.2\% | 329 | -58.2\% | 392 | -50.3\% | 354 | -55.1\% | 370 | -53.0\% | 323 | -59.0\% | 294 | -59.0\% | 278 | -59.0\% | 266 | -66.3\% | 315 |
| TOTAL | 1286 | 608 | -52.7\% | 603 | -53.1\% | 641 | -50.2\% | 719 | -44.1\% | 664 | -48.4\% | 633 | -50.8\% | 687 | -46.6\% | 592 | -46.6\% | 547 | -46.6\% | 511 | -60.2\% | 620 |
| U.S. | Stabilized Regulations | abilized | egulations |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1994-03 |
| HARVEST | 1980-1984 MEAN | 1994 | \%DIF* | 1995 | \%DIF* | 1996 | \%DIF* | 1997 | \%DIF* | 1998 | \%DIF* | 1999 | \%DIF* | 2000 | \%DIF* | 2001 | \%DIF* | 2002 | \%DIF* | 2003 | \%DIF* | MEAN |
| Atlantic | 415 | 329 | -20.8\% | 424 | 2.1\% | 408 | -1.7\% | 479 | 15.4\% | 446 | 7.4\% | 438 | 5.5\% | 499 | 20.9\% | 467 | 20.9\% | 555 | 20.9\% | 427 | 2.9\% | 447 |
| Mississippi | 2001 | 1525 | -23.8\% | 2347 | 17.3\% | 2494 | 24.6\% | 2852 | 42.5\% | 2763 | 38.1\% | 3061 | 53.0\% | 3041 | 51.6\% | 2768 | 51.6\% | 2423 | 51.6\% | 2571 | 28.5\% | 2585 |
| Central | 754 | 511 | -32.2\% | 694 | -8.0\% | 764 | 1.3\% | 886 | 17.5\% | 953 | 26.4\% | 878 | 16.4\% | 1113 | 42.3\% | 1151 | 42.3\% | 1003 | 42.3\% | 842 | 11.7\% | 880 |
| Pacific | 1079 | 757 | -29.9\% | 960 | -11.0\% | 1213 | 12.4\% | 1195 | 10.7\% | 1459 | 35.2\% | 1144 | 6.0\% | 1025 | -2.3\% | 997 | $-2.3 \%$ | 915 | -2.3\% | 1053 | -2.4\% | 1072 |
| TOTAL | 4277 | 3122 | -27.0\% | 4425 | 3.5\% | 4879 | 14.1\% | 5412 | 26.5\% | 5621 | 31.4\% | 5521 | 29.1\% | 5662 | 32.4\% | 5384 | 25.9\% | 4896 | 14.5\% | 4894 | 14.4\% | 4982 |
| N.A. | Stabilized Regulations | abilized | egulations |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1994-03 |
| HARVEST | 1980-1984 MEAN | 1994 | \%DIF* | 1995 | \%DIF* | 1996 | \%DIF* | 1997 | \%DIF* | 1998 | \%DIF* | 1999 | \%DIF* | 2000 | \%DIF* | 2001 | \%DIF* | 2002 | \%DIF* | 2003 | \%DIF* | MEAN |
| TOTAL | 5563 | 3730 | -32.9\% | 5028 | -9.6\% | 5520 | -0.8\% | 6131 | 10.2\% | 6285 | 13.0\% | 6154 | 10.6\% | 6349 | 14.1\% | 5975.4 | 7.4\% | 5442.5 | -2.2\% | 5405.87 | -2.8\% | 5602 |

Table 5. Canadian and United States harvest rates of mallards in relation to breeding populations for the 1980-84 period of stabilized regulations, and 1994-2003 period. Breeding population and fall flight values in 1000's.

| N.A. | Stabilized Regulations | Post Stabilized Regulations |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\begin{aligned} & 1994-03 \\ & \text { MEAN } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Numbers | 1980-1984 Mean | 1994 | \%DIF* | 1995 | \%DIF* | 1996 | \%DIF* | 1997 | \%DIF* | 1998 | \%DIF* | 1999 | \%DIF* | 2000 | \%DIF* | 2001 | \%DIF* | 2002 | \%DIF* | 2003 | \%DIF* |  |
| Breeding Population | 6479 | 6980 | 7.7\% | 8269 | 27.6\% | 7941 | 22.6\% | 9940 | 53.4\% | 9640 | 48.8\% | 10806 | 66.8\% | 9470 | 46.2\% | 8199 | 26.5\% | 7799 | 20.4\% | 7950 | 22.7\% | 8699 |
| Fall Flight | 8979 | 11083 | 23.4\% | 12167 | 35.5\% | 12620 | 40.5\% | 14329 | 59.6\% | 11750 | 30.9\% | 13600 | 51.5\% | 11221 | 25.0\% | 10514 | 17.1\% | 10430 | 16.2\% | 10300 | 14.7\% | 11801 |
| CANADA | Stabilized Regulations | abilized R | egulations |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1994-03 |
| HARVEST <br> RATE \# | 1980-1984 Mean | 1994 | \%DIF* | 1995 | \%DIF* | 1996 | \%DIF* | 1997 | \%DIF* | 1998 | \%DIF* | 1999 | \%DIF* | 2000 | \%DIF* | 2001 | \%DIF* | 2002 | \%DIF* | 2003 | \%DIF* | MEAN |
| Prairie | 8.7 | 2.3 | -73.8\% | 2.4 | -72.6\% | 2.6 | -70.0\% | 2.7 | -68.6\% | 3.0 | -65.4\% | 2.7 | -68.7\% | 2.9 | -66.9\% | 2.8 | -67.8\% | 2.7 | -69.4\% | 2.6 | -70.3\% | 2.7 |
| TOTAL | 14.3 | 5.5 | -61.6\% | 5.0 | -65.3\% | 5.1 | -64.5\% | 5.0 | -64.9\% | 5.7 | -60.5\% | 4.7 | -67.5\% | 6.1 | -57.0\% | 5.6 | -60.6\% | 5.2 | -63.4\% | 5.0 | -65.3\% | 5.3 |
| U.S. | Stabilized Regulations | abilized R | egulations |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1994-03 |
| HARVEST <br> RATE \# | 1980-1984 Mean | 1994 | \%DIF* | 1995 | \%DIF* | 1996 | \% DIF* | 1997 | \%DIF* | 1998 | \%DIF* | 1999 | \%DIF* | 2000 | \%DIF* | 2001 | \%DIF* | 2002 | \%DIF* | 2003 | \%DIF* | MEAN |
| Atlantic | 4.6 | 3.7 | -20.0\% | 3.9 | -14.4\% | 3.5 | -23.2\% | 3.1 | -33.5\% | 4.2 | -7.7\% | 3.0 | -35.6\% | 3.6 | -22.0\% | 4.1 | -11.6\% | 4.1 | -10.9\% | 4.1 | -9.8\% | 3.7 |
| Misssissippi | 22.3 | 22.5 | 0.9\% | 23.4 | 5.1\% | 21.9 | -1.8\% | 21.4 | -4.2\% | 25.9 | 16.1\% | 18.4 | -17.4\% | 22.3 | 0.1\% | 24.5 | 9.7\% | 24.7 | 10.6\% | 25.0 | 12.0\% | 23.0 |
| Central | 8.5 | 6.9 | -18.4\% | 7.3 | -13.8\% | 7.6 | -10.6\% | 6.1 | -27.5\% | 9.5 | 12.0\% | 9.7 | 14.4\% | 11.7 | 38.7\% | 8.0 | -5.2\% | 8.1 | -4.5\% | 8.2 | -3.2\% | 8.3 |
| Pacific | 12.1 | 10.9 | -9.2\% | 9.8 | -18.5\% | 11.6 | -4.1\% | 8.0 | -33.8\% | 8.7 | -27.6\% | 7.1 | -40.8\% | 8.6 | -28.2\% | 10.0 | -16.9\% | 10.1 | -16.2\% | 10.2 | -15.1\% | 9.5 |
| TOTAL | 47.8 | 44.0 | -7.9\% | 44.5 | -6.9\% | 44.5 | -6.8\% | 38.5 | -19.4\% | 48.2 | 0.8\% | 38.2 | -20.1\% | 46.3 | -3.2\% | 46.6 | -2.6\% | 46.9 | -1.8\% | 47.5 | -0.6\% | 44.5 |
| N.A. | Stabilized Regulations | abilized R | egulations |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1994-03 |
| HARVEST RATE \# | 1980-1984 Mean | 1994 | \%DIF* | 1995 | \%DIF* | 1996 | \% DIF $^{*}$ | 1997 | \%DIF* | 1998 | \%DIF* | 1999 | \%DIF* | 2000 | \%DIF* | 2001 | \%DIF* | 2002 | \%DIF* | 2003 | \%DIF* | MEAN |
| total | 62.1 | 49.5 | -20.3\% | 49.4 | -20.4\% | 49.6 | -20.1\% | 43.5 | -29.9\% | 53.8 | -13.3\% | 42.8 | -31.0\% | 52.4 | -15.6\% | 52.2 | -16.0\% | 52.2 | -16.0\% | 52.5 | -15.5\% | 49.8 |

Table 6. Migratory Game Bird Hunting Permit sales in Prairie Canada: 1994-2003.

| PROVINCE (TYPE) | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 03 vs 02 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| MANITOBA |  |  |  |  |  |  |  |  |  |  |  |
| Resident | 14389 | 14725 | 14534 | 13149 | 12147 | 11051 | 10338 | 10475 | 9570 | 9576 | 0 |
| Alien | 4449 | 4905 | 5168 | 5769 | 6298 | 6382 | 5436 | 4563 | 5262 | 5548 | 5 |
| TOTAL | 18838 | 19630 | 19702 | 18918 | 18445 | 17433 | 15774 | 15038 | 14832 | 15124 | 2 |
| SASKATCHEWAN |  |  |  |  |  |  |  |  |  |  |  |
| Resident | 16177 | 15862 | 14656 | 13379 | 14185 | 11930 | 11775 | 10136 | 8917 | 8982 | 1 |
| Alien | 4077 | 4748 | 5819 | 6730 | 7637 | 9234 | 10098 | 8242 | 8041 | 9173 | 14 |
| TOTAL | 20254 | 20610 | 20475 | 20109 | 21822 | 21164 | 21873 | 18378 | 16958 | 18155 | 7 |
| ALBERTA |  |  |  |  |  |  |  |  |  |  |  |
| Resident | 24687 | 24199 | 25373 | 24471 | 19541 | 18211 | 18212 | 16321 | 14324 | 14688 | 3 |
| Alien | 1524 | 1546 | 1926 | 2376 | 2697 | 2824 | 3512 | 3206 | 3490 | 3684 | 6 |
| TOTAL | 26211 | 25745 | 27299 | 26847 | 22238 | 21035 | 21724 | 19527 | 17814 | 18372 | 3 |
| PRAIRIE CANADA |  |  |  |  |  |  |  |  |  |  |  |
| Resident | 55253 | 54786 | 54563 | 50999 | 45873 | 41192 | 40325 | 36932 | 32811 | 33246 | 1 |
| Alien | 10050 | 11199 | 12913 | 14875 | 16632 | 18440 | 19046 | 16011 | 16793 | 18405 | 10 |
| TOTAL | 65303 | 65985 | 67476 | 65874 | 62505 | 59632 | 59371 | 52943 | 49604 | 51651 | 4 |

* From Canadian Wildlife Service record of sales to April, 2004.





Figure 4. Estimates of Mallards Numbers in Southern and Northern Prairie Canada, 1969-2004.



Figure 6. Estimates of Scaup Numbers in Southern and Northern Prairie Canada, 1969-2003.




Figure 8. Mallard Harvest Rate Index in Canada and United States, 1969-2003.
Index is Calculated as Harvest/Fall Flight $\times 100$



Figure 10. Mallard Harvest and Harvest Rate Index for the Period 1994-2003 Expressed as Percent Difference from the Average of the 1980-84 Period of Stabilized Regulations.


Figure 11. Sales of Migratory Bird Permits in Prairie Canada, 1968-2004.

## APPENDIX B

Precipitation Maps and Palmer Drought Index (PDI) and PDI Change Maps courtesy of Prairie Farm Rehabilitation Administration.

## Current Precipitation Compared to Historical Distribution



## www.agr.gc.ca/pfra/drought

Prepared by Agriculture and Agri-Food Canada (PFRA) using data from the Timely Climate Monitoring Network and the many federal and provincial agencies and volunteers that support it.

## Accumulated Precipitation

September 1, 2003 to July 15, 2004 (A.M.)


- Extent of Agricultural Land
www.agr.gc.ca/pfra/drought
Prepared by Agriculture and Agri-Food Canada (PFRA) using data from the Timely Climate Monitoring Network and the many federal and provincial agencies and volunteers that support it


## Percent of Average Precipitation



- Extent of Agricultural Land
www.agr.gc.ca/pfra/drought
Prepared by Agriculture and Agri-Food Canada (PFRA) using data from the Timely Climate Monitoring Network and the many federal and provincial agencies and volunteers that support it.


## On-Farm Surface Water Supplies



## Past 7 Days Accumulated Precipitation



- Extent of Agricultural Land
www.agr.gc.ca/pfra/drought
Prepared by Agriculture and Agri-Food Canada (PFRA) using data from the Timely Climate
Monitoring Network and the many federal and provincial agencies and volunteers that support it.


## Palmer Drought Index Change

(from May, 2004 to June, 2004)


## Palmer Drought Index -- June 2004

6.1 Wet
4.0
3.0
2.0
2.0
1.0

Near Normal
-1.0
$-2.0$
-3.0
$-4.0$
$-5.0$
-7.2 Dry
Extent of Agricultural Land

