Wildlife Division
Research and Management Report
1983-84

A Report to Glenn H. Manuel, Commissioner
These studies are financed in part through Federal Aid in Wildlife Restoration Funds under Project 62-R (Migratory Bird); 67-R (Big Game); and 69-R (small Game-Furbearer). Non-game and Endangered Species Project is funded in part by the Endangered Species Conservation Act E-1-5 (Eagle) and E-1-6 (Peregrin Falcon).
FOREWORD

I am very pleased to provide the 1983 Wildlife Report for you. The report represents a new approach toward the presentation of information derived from the various wildlife studies conducted by the Department. It contains much of the information previously presented in the Big Game and Migratory Bird leaflets, as well as information on a variety of other species such as upland game, furbearers, the wild turkey, non-game, and endangered species.

As has been well reported for the past year, financial problems constrain the Department’s operations in many areas, from law enforcement operations (which put the teeth in the management strategies), and wildlife management (which implements the species management plans) to Research (which continually generates the necessary information by which to make the management decisions). We must make every effort to use the available monies most effectively and to generate a stronger funding base. The approval of a “non-game check-off” on Maine’s State Income Tax Forms represents an expanded financial base; likewise the new state duck stamp program is expected to generate substantial new funding for the Department’s wildlife research and management operations.

Whether we like it or not, Maine has several very complex wildlife management problems. These include an ever-increasing demand upon our various resources by the sporting and recreational public; changing habitat conditions due to forest practices, human developments and natural succession of vegetation species; and inter-species relationships involving many species. The effective documentation and evaluation of these factors is essential to the management process. The information contained herein is a summary of the principal factors used to assess these wildlife resources. The narratives and tables are intended to help the reader to more fully understand the status of these resources and the impact of the various uses placed on them.

Your interest and participation in our wildlife management programs is appreciated and encouraged.

Glenn H. Manuel
Commissioner
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ENDANGERED SPECIES AND
NONGAME WILDLIFE

Maine has officially joined the ranks of those states actively managing all wildlife, not just those species that are hunted or fished. This came to pass on July 1, 1984, when the Maine Department of Inland Fisheries and Wildlife hired a director for its new Endangered and Nongame Wildlife Project. The project is made possible by a "Nongame Check-off" on Maine’s State Income Tax Forms. The check-off asks for voluntary contributions to the State’s new Endangered and Nongame Wildlife Trust Fund. Contributions can also be made directly to the Fund through the Department or State Treasurer. All proceeds are dedicated to the management and research of nongame species in Maine.

In 1984, the first year of this effort, more than 24,000 contributions were made, totaling more than $110,000. These funds are currently being spent on the restoration and management of bald eagles, peregrine falcons, least terns, and island nesting seabirds — some of Maine’s most rare and unique wildlife. A citizen’s Steering Committee is guiding the program, and much more work is anticipated for the near future.

Steering Committee members are: Jane Arbuckle of the Maine Audubon Society; Dr. Malcolm Hunter, and Dr. Ray Owen of The University of Maine at Orono’s Wildlife Department; Peter Vickery of Richmond; Dave Platt, the environmental writer for the Bangor Daily News; Frank Wood of Springvale; and Dave Allen, Executive Director of the Sportsman’s Alliance of Maine, Augusta.

In the past, Departmental Fish and Wildlife Programs were funded almost entirely through fees paid by hunters and fishermen. As a result, nongame species were of the lowest priority and little effort was made to monitor them. Money raised through the tax check-off will be used to study and protect the more than 400 species of birds, mammals, reptiles, amphibians, and fish that make up Maine’s nongame wildlife.
An example of the type of work done by the Nongame Project is the attempt to restore the peregrine falcon as a nesting bird in Maine in 1984. These falcons, known for their high speed flying and their aerial acrobatics, were part of Maine's native bird life until the 1960's. The eastern race of this species, which accounted for all birds east of the Mississippi including Maine, lost its ability to reproduce due to heavy contamination with pesticides.

Now, for the first time in nearly 30 years, potentially nesting peregrine falcons are again in the wild in Maine. Nineteen young chicks were successfully raised in artificial nests at three mountain-top sites this past summer and released to fend for themselves. The chicks are from a captive breeding and hatching program and are products of cross-breeding of various peregrine subspecies from throughout the world. Additional releases are planned for Maine in the next three years. If all goes well the project's goal of re-establishing ten breeding pairs in Maine should be reached.

Maine's new *Endangered Species and Nongame Trust Fund* is making this possible. For more information on the Nongame Wildlife Project and how your contributions can be put to work contact:

The Endangered and Nongame Wildlife Project  
Maine Department of Inland Fisheries and Wildlife  
P.O. Box 1298  
Bangor, Maine 04401-1298
BIG GAME

WHITE-TAILED DEER

The 1983 Deer Season

Maine broke with its long-standing tradition of either-sex deer hunting in 1983, when hunters were restricted to taking only antlered bucks in roughly one-quarter of the State during the regular firearm season. The ban on hunting of does and fawns was imposed in two separate sections of the Southern Zone in an effort to bolster deer populations which
had declined in recent years. To accommodate the harvest restrictions, the Southern Zone was divided into three hunting districts; the Western District, the Eastern District, and the Central District (Figure BG1). Dur-

Figure BG1. Maine deer hunting zones, 1983.
ing the regular firearm season in the Western and Eastern Districts, hunters were restricted to taking deer with antlers 3” or greater in length. Deer of either sex were legal quarry in the Central District and throughout the Northern Zone.

During the regular firearm season for deer, hunters were given 25 days of hunting opportunity (October 29 to November 26) in the Northern Zone and 19 days in the Southern Zone (November 5-26). As in all deer hunting seasons since 1977, the opening Saturday of the firearm season for deer was restricted to Maine residents only. Deer of either sex could be taken anywhere in the State during the special archery season, which extended from October 1-28 in the Northern Zone and from October 1 to November 4 in the Southern Zone.

Prior to 1983, the Department’s authority to regulate the deer harvest was restricted to adjusting season length within a predetermined 5-week framework established by the Legislature, with deer of either sex mandated as legal quarry. Under these conditions, the only way the harvest of antlerless deer could be reduced was to dramatically shorten the length of the season. This method proved to be ineffective during the 1980-82 seasons when, in the western mountains, the firearm season for deer was reduced from 19 to 13 days with no consequent reduction in the deer kill.

In order to more effectively regulate deer harvests, the Department sought and received authority from the Maine Legislature to restrict the harvest of antlerless deer in any part of the State where needed. This authority was granted for the 1983, 1984, and 1985 seasons. Because this authority was only for a three year period, it was decided that a ban on antlerless deer hunting in 1983, in problem areas, would promote the most rapid herd recovery other than complete closure. Although many sportsmen favored a bucks-only restriction for the entire Southern Zone, or even statewide, it was decided to apply the buck law to only those counties where the herd was actively declining and/or where the winter range could support a substantial increase in deer numbers.

Harvest Distribution

During 1983, hunters killed and registered 23,799 white-tails, 100 of which were taken by archers. Compared to 1982, when all parts of the State were open to either-sex hunting, the 1983 statewide deer kill declined by 5,035 (17.5%) deer. Deer registrations dropped 64.0% below the 1982 harvest level in the Eastern District, and 73.0% in the Western District (Table BG1). Surprisingly, in addition to the elimination of doe and fawn kills in these bucks-only districts, the harvest of antlered bucks also declined about one-third. The drop in the antlered buck harvest was likely due to reduced hunting pressure in these districts, poor hunting weather, and hunting caution due to the law which
Table BG1. Weekly deer registrations by 1983 hunting zone and hunter residence, 1982 and 1983.

<table>
<thead>
<tr>
<th>Zone and Periods</th>
<th>Deer Registrations by:</th>
<th>Total</th>
<th>Percent of Registrations</th>
<th>Percent of Registrations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Residents</td>
<td>Nonresidents</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Northern Zone</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Opening</td>
<td>407</td>
<td>605</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1st Week</td>
<td>937</td>
<td>943</td>
<td>621</td>
<td>686</td>
</tr>
<tr>
<td>2nd Week</td>
<td>744</td>
<td>764</td>
<td>819</td>
<td>889</td>
</tr>
<tr>
<td>3rd Week</td>
<td>1,042</td>
<td>1,004</td>
<td>1,052</td>
<td>1,292</td>
</tr>
<tr>
<td>4th Week</td>
<td>838</td>
<td>1,033</td>
<td>409</td>
<td>602</td>
</tr>
<tr>
<td>Archery, Muzzle-</td>
<td>12</td>
<td>5</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>loader &amp; Unknown</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Season Total</td>
<td>3,980</td>
<td>4,354</td>
<td>2,911</td>
<td>3,482</td>
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<tr>
<td><strong>Southern Zone Central District</strong></td>
<td>2,435</td>
<td>1,419</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Special Opening</td>
<td>3,771</td>
<td>4,112</td>
<td>1,531</td>
<td>1,389</td>
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<tr>
<td>1st Week</td>
<td>2,602</td>
<td>2,873</td>
<td>634</td>
<td>778</td>
</tr>
<tr>
<td>2nd Week</td>
<td>3,120</td>
<td>2,829</td>
<td>373</td>
<td>334</td>
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<tr>
<td>Archery, Muzzle-</td>
<td>81</td>
<td>50</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>loader &amp; Unknown</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Season Total</td>
<td>12,009</td>
<td>11,283</td>
<td>2,551</td>
<td>2,513</td>
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<tr>
<td><strong>Southern Zone Western District</strong></td>
<td>1,027</td>
<td>104</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Special Opening</td>
<td>1,323</td>
<td>418</td>
<td>350</td>
<td>81</td>
</tr>
<tr>
<td>1st Week</td>
<td>1,181</td>
<td>346</td>
<td>261</td>
<td>97</td>
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<tr>
<td>2nd Week</td>
<td>1,172</td>
<td>348</td>
<td>89</td>
<td>43</td>
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<td>Archery, Muzzle-</td>
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<td>24</td>
<td>5</td>
<td>4</td>
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<tr>
<td>loader &amp; Unknown</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Season Total</td>
<td>4,730</td>
<td>1,240</td>
<td>705</td>
<td>225</td>
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<td><strong>Southern Zone Eastern District</strong></td>
<td>293</td>
<td>60</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Special Opening</td>
<td>610</td>
<td>233</td>
<td>165</td>
<td>33</td>
</tr>
<tr>
<td>1st Week</td>
<td>387</td>
<td>160</td>
<td>58</td>
<td>22</td>
</tr>
<tr>
<td>2nd Week</td>
<td>407</td>
<td>180</td>
<td>23</td>
<td>8</td>
</tr>
<tr>
<td>Archery, Muzzle-</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>loader &amp; Unknown</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Season Total</td>
<td>1,701</td>
<td>639</td>
<td>247</td>
<td>63</td>
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<tr>
<td><strong>Southern Zone All Districts</strong></td>
<td>3,755</td>
<td>1,583</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Special Opening</td>
<td>5,704</td>
<td>4,763</td>
<td>2,046</td>
<td>1,503</td>
</tr>
<tr>
<td>1st Week</td>
<td>4,170</td>
<td>3,379</td>
<td>953</td>
<td>897</td>
</tr>
<tr>
<td>2nd Week</td>
<td>4,699</td>
<td>3,357</td>
<td>485</td>
<td>385</td>
</tr>
<tr>
<td>Archery, Muzzle-</td>
<td>112</td>
<td>80</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td>loader &amp; Unknown</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Season Total</td>
<td>18,400</td>
<td>13,162</td>
<td>3,503</td>
<td>2,801</td>
</tr>
<tr>
<td><strong>STATEWIDE TOTALS</strong></td>
<td>22,420</td>
<td>17,516</td>
<td>6,414</td>
<td>6,283</td>
</tr>
</tbody>
</table>

1One day, the Saturday preceding the opening of the regular season, reserved for residents only.
2Muzzleloader season applies to 1982 only.
3Western and Eastern Districts of Southern Zone restricted to antlered bucks only during 1983.
4This week was closed to deer hunting in about 1/2 of this district during 1982.
required that antlers be seen before the trigger was pulled.

In the Central District of the Southern Zone (open to either-sex hunting) 13,796 deer were registered. Despite concerns of a possible over-harvest in this area by hunters from the Eastern and Western Districts, the deer kill in this District actually declined 5.2%. Although there was an influx of both resident and nonresident hunters into this District, the harvest and hunter success were low due to poor hunting conditions. In the Southern Zone, every traditionally high kill day but one was rainy and/or windy with above-average temperatures. This included opening Saturday (November 5), opening Monday (November 7), Veterans' Day (November 11), Saturday November 12, and Thanksgiving weekend (November 24-26). The harvest in the Central District was light for that herd, and was nearly identical to the 1979 harvest (13,795 deer) which took place under similarly poor hunting conditions.

The Northern Zone was the only zone where the deer kill was higher than 1982. The harvest of 7,836 deer was the second highest harvest in 10 years (it was exceeded during 1980 when 8,150 white-tails were taken). Relative to 1982 harvest levels (6,891 deer), the 1983 kill increased by 945 (13.5%) deer. Favorable hunting conditions, slightly increased hunting pressure, and improved deer survival and fawn production following the mild winter of 1983, probably contributed to the increase.

The 1983 deer harvest declined from 1982 levels in 13 of Maine's 16 counties, 10 of which comprised the bucks-only hunting districts (Table BG2). Notable harvest increases occurred in Aroostook (+ 13.4%) and

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**Table BG2. Deer registration summary by counties, 1982 and 1983.**

<table>
<thead>
<tr>
<th>County</th>
<th>Deer Registrations</th>
<th>Percent Change</th>
<th>Sq. Mile Deer Habitat</th>
<th>Harvest Per Sq. Mile</th>
<th>Rank in Harvest Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Androscoggin¹</td>
<td>629</td>
<td>367</td>
<td>-41.6</td>
<td>256</td>
<td>1.43</td>
</tr>
<tr>
<td>Aroostook</td>
<td>3,378</td>
<td>3,830</td>
<td>+13.4</td>
<td>6,117</td>
<td>0.63</td>
</tr>
<tr>
<td>Cumberland¹</td>
<td>974</td>
<td>264</td>
<td>-72.8</td>
<td>479</td>
<td>0.55</td>
</tr>
<tr>
<td>Franklin¹</td>
<td>1,055</td>
<td>608</td>
<td>-42.4</td>
<td>1,609</td>
<td>0.38</td>
</tr>
<tr>
<td>Hancock¹</td>
<td>1,303</td>
<td>647</td>
<td>-50.3</td>
<td>1,437</td>
<td>0.45</td>
</tr>
<tr>
<td>Kennebec</td>
<td>1,776</td>
<td>1,504</td>
<td>-15.3</td>
<td>580</td>
<td>2.59</td>
</tr>
<tr>
<td>Knox</td>
<td>673</td>
<td>619</td>
<td>-8.0</td>
<td>274</td>
<td>2.26</td>
</tr>
<tr>
<td>Lincoln</td>
<td>888</td>
<td>903</td>
<td>+1.7</td>
<td>384</td>
<td>2.35</td>
</tr>
<tr>
<td>Oxford¹</td>
<td>1,500</td>
<td>432</td>
<td>-71.2</td>
<td>1,917</td>
<td>0.23</td>
</tr>
<tr>
<td>Penobscot¹</td>
<td>4,524</td>
<td>4,513</td>
<td>-0.3</td>
<td>3,021</td>
<td>1.49</td>
</tr>
<tr>
<td>Piscataquis</td>
<td>2,576</td>
<td>2,729</td>
<td>+5.9</td>
<td>3,843</td>
<td>0.71</td>
</tr>
<tr>
<td>Sagadahoc¹</td>
<td>509</td>
<td>428</td>
<td>-15.9</td>
<td>195</td>
<td>2.19</td>
</tr>
<tr>
<td>Somerset¹</td>
<td>3,609</td>
<td>3,439</td>
<td>-4.7</td>
<td>3,733</td>
<td>0.92</td>
</tr>
<tr>
<td>Waldo</td>
<td>2,326</td>
<td>2,100</td>
<td>-9.7</td>
<td>613</td>
<td>3.43</td>
</tr>
<tr>
<td>Washington¹</td>
<td>1,487</td>
<td>1,075</td>
<td>-27.7</td>
<td>2,418</td>
<td>0.44</td>
</tr>
<tr>
<td>York¹</td>
<td>1,627</td>
<td>341</td>
<td>-79.0</td>
<td>743</td>
<td>0.46</td>
</tr>
<tr>
<td>Statewide</td>
<td>28,834</td>
<td>23,799</td>
<td>-17.5</td>
<td>27,619</td>
<td>0.86</td>
</tr>
</tbody>
</table>

¹All or part of indicated counties was restricted to an antlered buck only harvest during 1983.
Piscataquis (+5.9%) Counties. The kill also increased marginally in Lincoln County (+1.7%) which was the only county within the Central District that had an increased deer kill in 1983. Harvest density per square mile, as in recent past years, was highest in Waldo County (3.43 deer per sq. mi.), followed by Kennebec (2.59), Lincoln (2.35), Knox (2.26), and Sagadahoc (2.19 deer per sq. mi.) Counties.

All towns within these counties were open to either-sex hunting during 1983, with the exception of 3 towns in Sagadahoc County. As noted among harvest comparisons at the county level, the greatest declines in the harvest occurred in Wildlife Management Units (WMU) which were in the bucks-only hunting districts (Figure BG2 and Table BG3).
Wildlife Management Unit | Deer Registrations | Percent Change | Sq. Mile Deer Habitat | Harvest Per Day Per 1,000 Sq. Mi. | 1983 Kill Per Sq. Mi.
--- | --- | --- | --- | --- | ---
1 | 1,884 | 2,036 | + 8.1 | 1,767 | 43 | 46 | 1.15
2 | 3,287 | 3,916 | + 19.1 | 8,689 | 15 | 18 | 0.45
3 | 1,725 | 1,360 | - 21.1 | 3,645 | 29 | 15 | 0.37
4 | 8,998 | 7,445 | - 17.3 | 5,044 | 96 | 67 | 1.48
5 | 2,091 | 2,115 | + 1.1 | 2,633 | 41 | 36 | 0.80
6 | 1,889 | 700 | - 62.9 | 2,207 | 45 | 17 | 0.32
7 | 4,841 | 4,428 | - 8.5 | 1,649 | 156 | 141 | 2.69
8 | 4,119 | 1,799 | - 56.3 | 1,985 | 109 | 48 | 0.91
Statewide | 28,834 | 23,799 | - 17.5 | 27,619 | 50 | 36 | 0.86

Maine’s eight WMU’s are areas which represent distinct differences in winter severity, topography, predominant land uses, human population density, deer habitat quality and deer population levels. Analysis of the deer kill by WMU provides insight into deer population levels and fluctuations in each of these distinct ecological regions of the State. Deer management goals and harvest objectives are established for each WMU at 5-year intervals as part of the Department’s deer management plan.

**Hunter Participation and Success**

A decade-long trend of increasing big game hunting license sales was interrupted in 1983, as total sales dropped by 13,457, or 5.7% (Table BG4). The largest decreases were evident among adult resident license buyers (down 11,708 or 6.6%) and among junior resident licenses (down 1,543 or 6.8%). It is suspected that the greatest declines occurred in counties restricted to bucks-only hunting.

In addition to reduced big game hunting license sales, hunter success was less than in 1982. The annual hunter survey indicated that only 88.5% of those purchasing big game hunting licenses actually hunted deer. Therefore, roughly 196,238 resident and nonresident deer hunters were afield in Maine during 1983. They collectively hunted 1.45 million
days and 12% were successful (Table BG5). This low success rate was due in part to the bucks-only restriction (success in bucks-only districts averaged 6.5%). Proportionately more nonresidents (20.2%) than residents (10.6%) were successful. Nonresidents appeared to have concentrated their efforts in areas where either-sex deer hunting was permitted, thereby maintaining higher success. Past records show that nonresidents traditionally have enjoyed higher success than residents.

The 4,558 resident and 456 nonresident archers bagged 100 deer in 1983. This translates to a success rate of 2% and is consistent with records from past years.


<table>
<thead>
<tr>
<th>Year</th>
<th>License Sales</th>
<th>Estimated Deer Hunters</th>
<th>Total Deer Harvest</th>
<th>Percent Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>1979</td>
<td>231,054</td>
<td>187,686</td>
<td>26,821</td>
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<td>1980</td>
<td>233,305</td>
<td>195,699</td>
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<td>1981</td>
<td>235,272</td>
<td>210,643</td>
<td>32,167</td>
<td>15.3</td>
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<td>1982</td>
<td>235,195</td>
<td>203,619</td>
<td>28,834</td>
<td>14.2</td>
</tr>
<tr>
<td>1983</td>
<td>221,738</td>
<td>196,238</td>
<td>23,799</td>
<td>12.1</td>
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</table>

Residence of Successful Deer Hunters

Maine’s residents registered 73.6% (17,516) of the total deer harvest. Relative to recent seasons, the 6,283 deer harvested by nonresidents in 1983 represents an increase of 4.3% in the proportion of the total nonresident harvest. Compared to 1982, the residents’ take declined by 4,904 (21.9%) deer while that for nonresidents declined by only 131 (2.0%) deer. As indicated in Table BG6, nonresidents contributed most to the total harvest in the Northern Zone and the Central District of the Southern Zone, where deer of either sex were legal in 1983. Interestingly, that category of residents called “other residents” in Table BG6 registered a larger proportion of the Northern Zone and Central District deer harvests during 1983 than previously. These are Maine residents who travelled to hunt in a zone which is different from the zone in which they reside. Although the Northern Zone and the Central District of the Southern Zone have always attracted a certain amount of hunting pressure from transient resident hunters, the buck law apparently caused an above-average number of hunters to shift their hunting to zones or districts where more liberal either-sex seasons were in effect.

Sex and Age Composition of the Harvest

Statewide, hunters registered 12,342 adult bucks, 7,445 adult does, 2,026 male fawns, and 1,868 female fawns (Table BG7). Sex and age were not recorded for 118 deer registered. Aging errors occur at registration
Table BG6. Deer registration by residence of successful hunter, 1983.

<table>
<thead>
<tr>
<th>Zone and County</th>
<th>County Residents</th>
<th>Other Residents</th>
<th>Non-County Residents</th>
<th>Total</th>
<th>Percent of Registrations by:</th>
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<td>County Residents</td>
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stations, and primarily involve registering fawns as adults. Therefore, actual composition of the 1983 deer harvest would include more fawns, and proportionately fewer adults, than indicated (Table BG7). The sex ratio (145 adult males:100 adult females) for adult deer taken in the Northern Zone in 1983 was slightly lower than in the three previous years. This is not cause for concern because the harvest still favored
bucks appreciably. The sex ratio for adult deer was similar to the past three seasons.

Adult bucks normally outnumber adult does in Maine’s either-sex deer harvests. Light pressure and poor hunting conditions tend to produce higher buck harvests. Conversely, tracking snows and heavy pressure can result in a harvest with a higher proportion of does and fawns.

Table BG7. Registered deer sex and age composition by counties within hunting zones, 1983.

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<th>Adults F</th>
<th>Fawns M</th>
<th>Fawns F</th>
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14
The harvest composition of the bucks-only districts does not reveal how many deer were “saved” by this restrictive season compared to an either-sex hunt (Table BG7). However, compared to the 1978-82 harvest composition in these Districts, an estimated 5,258 deer were not harvested, including approximately 859 adult bucks, 2,395 adult does, 1,050 buck fawns and 954 doe fawns.

1984 Deer Season Regulations

This will be the second of 3 years in which MDIF&W has the legislat-ed authority to manipulate the harvest of antlerless deer. The strategy for the 1984 deer season is to:
1. Continue reduction in adult doe and fawn harvests in Eastern and Western Districts of the Southern Zone through the use of the bucks-only restriction.
2. Maintain the deer herd at 1983 levels in the Central District of the Southern Zone by harvesting not over 14,000 deer.
3. Maintain the Northern Zone herd at 1983 levels by harvesting 6,000 to 8,000 deer.
4. Prevent over-harvesting Central District and Northern Zone herds by restricting hunter movement from bucks-only areas.

The 1984 deer hunting seasons resulting from this strategy should alleviate many of the problems apparent during the 1983 season.

A statewide uniform deer season in 1984 has been established in an effort to reduce hunter movement between zones (Figure BG3). The regular firearm season will be 4 weeks in length, from October 27 through November 24 in all zones and districts. Deer of either sex may be taken in the Northern Zone during the entire season. The Eastern and Western Districts of the Southern Zone will again be restricted to bucks with antlers 3” or longer. In the Central District of the Southern Zone, hunters will be restricted to bucks-only during the first three weeks (October 27-November 17), but they may harvest deer of either sex during the final week (November 19-24). We anticipate that this will limit the harvest of antlerless deer in that district and protect against an over-harvest should high hunter densities and/or tracking snow materialize. The special archery season will begin October 1 and end October 26 statewide. Deer of either sex will be legal quarry for archers in all zones during the special archery season.

Future Deer Management

Current efforts to increase deer numbers in parts of the State, and maintain present deer populations elsewhere, have been hampered by an inability to control hunting pressure and hunter movement. Long-term management of deer populations in each of the State’s Wildlife
Management Units will be achievable only when the harvest of antlerless deer can be adjusted to counteract annual variations in total mortality (hunting and natural losses) and the recruitment of fawns into the herd.

The poacher is a thief. Help us catch him.
Harvest adjustments cannot be successfully accomplished over large areas with unlimited either-sex hunting because there is little control of hunting pressure, and variations in hunting weather cannot be predicted. In fact, deer harvests during either-sex hunts of the last decade have shown considerable variability in the number of does taken because of the combined effects of hunter density and hunting conditions. In many WMU’s, harvests of does during some years (combined with other doe mortality) was higher than could be replaced by subsequent fawn crops.

At the other extreme, bucks-only restrictions cannot be continued indefinitely. The time will arrive when herds in Eastern and Western Districts will have increased to the maximum which the habitat will support or can be tolerated by the populace. Failure to maintain the herd slightly below the carrying capacity of the habitat, by harvesting surplus antlerless deer, will result in a loss of the excess population to winter mortality and predation. Inadequate harvests are a waste of hunting opportunity and a threat to future deer production.

The middle ground between an either-sex hunt and a bucks-only season is a season that controls hunting pressure, but at the same time ensures an adequate harvest of antlerless deer. This can best be accomplished with a permit system. A typical permit system allows all hunters to hunt antlered bucks, but only those hunters possessing a permit may harvest does or fawns. Separation of hunting pressure on antlered vs antlerless deer provides flexibility in achieving the proper level of harvest for the herd in any given management unit.

The Department’s current authority to alter the sex and age composition of deer harvests ends in 1985. At that time, the Legislature will review the current program and decide on the future of deer management in Maine. The Department hopes for permanent authority to regulate the composition of the harvest, and will likely propose that Maine’s deer herd be more intensively managed through implementation of a permit system.

**BLACK BEAR**

**The 1983 Black Bear Season**

Maine’s 1983 black bear season opened September 1 and closed November 30. It was the State’s second fall-only season under legislation enacted in 1981. The 1412 bears harvested during the 13 week season represented a 15.6% increase from 1982, when 1221 bears were taken.

**Where Were Bears Harvested?**

Bears were harvested in 13 of the State’s 15 counties during 1983 (Figure BG4, Tables BG8 and BG9). The largest number of bears (329)
Table BG8. Black bear registrations for 10 years (1974–1983) by county.¹

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¹There were no bears reported killed in Knox or Sagadahoc counties from 1974–1983.


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¹Totals that do not equal 100.0 are due to rounding error.
were registered in Aroostook County, which yielded 23.3% of the State's harvest, followed by Penobscot County with 310 bears (22.0%). Although Aroostook County's percentage of the harvest has declined since 1980, the number of bear's registered there has remained relatively stable during that period (Tables BG8 and BG9). Penobscot County's 1983 bear harvest represented a 57% increase over 1982, when 197 bears were registered there. Bear registrations in Piscataquis and Somerset counties decreased slightly from 1982 levels, and Washington County's bear harvest increased marginally.

Bears were registered in all 8 Wildlife Management Units (WMU), but WMU's 1-6 produced the bulk of the harvest (Tables BG10 and BG11). WMU 4 accounted for 383 bears, or 27.1% of the State harvest, followed by WMU 1 with 292 bears (20.7%). The 1983 season was the first since 1977 that WMU 4 accounted for the greatest percentage of the annual harvest. WMU 2 led the State from 1972-1982, but dropped to third place.

Table BG10. Black bear registration for 10 years (1974–83) by wildlife management unit.

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*Totals that do not equal 100.0 are due to rounding error.*
in 1983, behind WMU's 4 and 1. The harvest in WMU 2 has fluctuated widely over the last 11 years. Since 1980, the proportion of the State harvest produced in WMU 2 has declined, while the percentage of annual harvests produced in WMU 4 has increased (Table BG11).

**When Were Bears Harvested?**

At first glance, the 1983 bear harvest appears to have occurred at a relatively stable rate (Figure BG5). However, analysis of registration data on a weekly basis revealed 2 periods of increased harvest. High weekly kills occurred in mid-September and early November. The high kill weeks during September reflected the increased success of hunters using bait and dogs to obtain bears during that period, and high weekly kills in November coincided with the opening weeks of deer season.

![Figure BG5. Cummulative and weekly 1983 bear harvest. statewide. Hashed line indicates opening of deer season in the northern deer zone (October 31).](image-url)
Who Harvested Bears?

Maine residents registered 670 bears, or 47.5% of the 1983 harvest. The 742 bears harvested by nonresidents (52.5% of the harvest) were divided among residents of 26 other states and the Province of Quebec (Table BG12). Among nonresidents, hunters from Pennsylvania took the most bears (179), hunters from Massachusetts registered 119 bears, and hunters from New Jersey harvested 107 animals.

Method of take was recorded for only 1025 bears, or 73% of the harvest (Table BG13). Hunters using bait registered 370 bears, 351 bears were taken by deer hunters, and hunters using trained dogs harvested 226 bears. Trappers reported taking an additional 42 bears. Methods used to take the remaining 423 bears harvested in 1983 are unknown.

Table BG12. Black bear registration for 1983 by hunter residence and wildlife management unit.

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<td>0</td>
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<td>0</td>
<td>0</td>
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<td>Total Nonresident</td>
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<td>175</td>
<td>123</td>
<td>153</td>
<td>126</td>
<td>17</td>
<td>2</td>
<td>2</td>
<td>741</td>
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<td>0</td>
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<td>0</td>
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<td>0</td>
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<td>1</td>
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<tr>
<td>TOTAL COMBINED</td>
<td>292</td>
<td>248</td>
<td>199</td>
<td>383</td>
<td>212</td>
<td>69</td>
<td>2</td>
<td>7</td>
<td>1,412</td>
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</table>

22

<table>
<thead>
<tr>
<th>Method</th>
<th>Number of Bears Registered</th>
<th>Males (N)</th>
<th>Females (N)</th>
<th>Unknown Sex (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
</tr>
<tr>
<td>Deer Hunting</td>
<td>351</td>
<td>180 (51.3)</td>
<td>166 (47.3)</td>
<td>5</td>
</tr>
<tr>
<td>Bait Hunting</td>
<td>370</td>
<td>219 (59.2)</td>
<td>150 (40.5)</td>
<td>1</td>
</tr>
<tr>
<td>Hunting with Dogs</td>
<td>226</td>
<td>116 (51.3)</td>
<td>110 (48.7)</td>
<td>0</td>
</tr>
<tr>
<td>Trapping</td>
<td>42</td>
<td>27 (64.3)</td>
<td>15 (35.7)</td>
<td>0</td>
</tr>
<tr>
<td>Unknown</td>
<td>423</td>
<td>243 (57.4)</td>
<td>179 (42.3)</td>
<td>1</td>
</tr>
<tr>
<td>Combined</td>
<td>1,412</td>
<td>785 (55.6)</td>
<td>620 (43.9)</td>
<td>7</td>
</tr>
</tbody>
</table>

1 Number of bears registered.
2 Percent of bears registered by a given method.

Fifty-one bears were tagged by hunters holding archery licenses. However, the total archery kill was probably higher, for an archery license is not required to hunt bears with archery tackle in Maine.

Most successful bait hunters took their bears early in September (Figure BG6). Hunters using dogs tagged most of their bears in late September, while trappers recorded a rather steady take over the 2-month trapping season (September-October). As expected, the lion’s share of November’s bear harvest was produced by deer hunters.

Most of the successful hunters using dogs and bait were nonresidents (Table BG14). A large number of successful residents failed to report methods used to obtain their bears, and all trapped bears were registered by Maine residents.

Table BG14. Residence of successful Maine bear hunters by method of kill, 1983

<table>
<thead>
<tr>
<th>Method</th>
<th>Maine</th>
<th>Nonresident</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deer Hunting</td>
<td>190</td>
<td>161</td>
<td>351</td>
</tr>
<tr>
<td>Bait Hunting</td>
<td>62</td>
<td>308</td>
<td>370</td>
</tr>
<tr>
<td>Hunting with Dogs</td>
<td>79</td>
<td>147</td>
<td>226</td>
</tr>
<tr>
<td>Trapping</td>
<td>42</td>
<td>0</td>
<td>42</td>
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<tr>
<td>Unknown</td>
<td>297</td>
<td>126</td>
<td>423</td>
</tr>
<tr>
<td>Combined</td>
<td>670</td>
<td>742</td>
<td>1,412</td>
</tr>
</tbody>
</table>

1 Number of hunters registering bears.

Which Bears Were Harvested?

The 1983 harvest included 785 males (55.6%), 620 females (43.8%) and 7 bears of unrecorded sex (Table BG13). Although males were predominant in the total harvest, nearly 50% of the bears taken by deer hunters, or hunters using dogs, were females (Table BG13).
Figure BG6. Weekly harvest of bear in 1983 by method of take.
Premolar teeth submitted by successful bear hunters permitted 1213 bears, or 86% of the harvest, to be aged by cementum annuli counts (Table BG15). This sample indicated that 9% of the harvest (125 bears) were the offspring of cubs. However, hunters registered 278 bears (19.7% of the harvest) as cubs. The slow growth of bears in Maine, and wide variation in size between individual bears of all ages, makes accurate age determination of bears in the field very difficult. Since most hunters judge a bear’s age by its size, many 1 and 2-year-old bears are registered as cubs. Tooth replacement patterns are the only sure way to distinguish cubs of the year from older bears in the field. Accurate aging of all older bears is accomplished only through microscopic examination of teeth in a laboratory.

### Current Black Bear Research Efforts

Bear study personnel are continuing to monitor the status of bears in Maine by intensively studying live bears in 2 areas of the State, and by examining records of hunting harvests, extra-legal mortality, and bear damage complaints. These methods were explained in the 1982 Big Game Project Report.

One task of the study has been to develop a revised estimate of the size of Maine’s bear population. In recent months, research data collected since 1981 were analyzed, resulting in a statewide population esti-
mate of 18,000 bears. This estimate is considerably larger than the estimate of 6,000-9,000 bears developed during the 1970’s. The difference may be partly due to a real increase in bear numbers over the last decade. However, the current population estimate is based on a larger quantity of information than was available in the 1970’s. Earlier estimates were probably conservative because of the limited data and the desire to avoid an overharvest of the bear population.

Recent increases in bear damage and nuisance complaints suggest a need to reduce bear densities in some parts of Maine. To help reduce damage complaints and provide optimal use of the bear resource, a SHORT-TERM harvest goal of 2,000-2,500 bears is recommended. An increase in hunting season length is suggested to accomplish this goal.

**Prospects for the 1984 Bear Season**

Maine’s 1984 black bear season will again run from September 1 to November 30. Analysis of harvest and research data, warden reports, and bear damage reports indicate an abundant supply of bears is available for hunters this fall. A good harvest is expected, but the size of 1984’s bear harvest will depend on several factors, including the availability and distribution of fall foods, and the number and distribution of bear hunters.
Future Management of Black Bears in Maine

Future management recommendations for Maine’s black bears will be guided by the Department’s long-range plan for the species, which was developed in 1975. This plan’s goal is to maintain the abundance, distribution, and use of the State’s bear resource at levels experienced between 1970-74. Both research efforts and harvest monitoring are expected to continue. In the face of changes in bear densities, bear habitat, and hunting pressure, up-to-date information on the population’s status is necessary for knowledgeable bear management decisions.

More precise control over hunting pressure will be required in the future. Until now, management of the bear harvest consisted of hunting season adjustments and restrictions on methods of taking bears. These are “broad brush” methods of controlling harvests, and have tended to discriminate against some methods of bear hunting in Maine. A permit system, requiring hunters to obtain a separate permit prior to hunting bears, is recommended to open the door for more precise management in the State. After the number of hunters pursuing bears and the success rates of different hunting methods are known, hunting pressure could be adjusted to obtain desired harvest levels over various portions of Maine’s bear range.

MOOSE

The 1983 Moose Season

The 1983 moose season extended from September 19 through September 24 in the portion of Maine north of the Canadian Pacific Railroad (CPR) tracks. Hunting was limited to 1,000 permit holders (900 residents, 100 nonresidents) and their designated subpermittees. Permittees were selected by public lottery. To distribute hunting pressure, each hunter was assigned to one of 6 zones (Figure BG7). Although hunter distribution has been improved by the use of hunting zones, hunters still tend to concentrate in areas with good access and high moose densities.

Seven hundred and forty-five moose were harvested in 1983. Hunter success ranged from 57% in the northwest zone to 95% in the south central zone, with success rates of 65%, 66%, 78% and 92% being recorded in the southeast, northeast, central and southwest zones respectively.

The success of hunters was lower in 1983 than in previous years, due primarily to annual differences in the timing of the rut relative to the moose hunting season. In 1980, most mature bulls appeared to be in full rut, while few bulls showed signs of rut during the 1983 season. In addition, weather conditions were extremely warm during the first few days
of the 1983 season, and moose were believed to have remained in heavy cover to escape the heat. Because moose were less active, hunters saw fewer animals than in previous years. Hunters reported sighting an average of 1.1 moose/10 hours of hunting time in 1983, compared to 1.7 moose/10 hours of hunting in the 2 previous seasons. As a result of poor hunting conditions early in the week, and a lack of rutting activity throughout the 1 week season, 1983’s moose harvest was more evenly distributed throughout the season than in past years.

The timing of 1983’s moose season relative to the rut also affected the sex and age composition of moose observed by hunters. Mature bulls, the sex and age class preferred by most hunters, were less active and therefore less vulnerable to harvest than in previous years. Hunters reported sighting 97 bulls for every 100 cows they saw in 1983, compared to 120 bulls:100 cows in 1982 and 133 bulls:100 cows in 1980. In spite of this, there was only a slight increase in the percentage of cows among adults and yearlings in the harvest (30% compared to 28% in 1982). More hunters shot yearlings than in 1982 (21% compared to 12%) but the number of calves harvested remained low (4%). Variation in age composition of the harvest between zones did not appear to be related to hunter success (Table BG16).

Hunters’ reports of animals they chose not to shoot indicate that selection by hunters plays a very important role in determining the composition of the kill. Hunters were still reluctant to shoot cows and calves during 1983 when fewer animals (particularly bulls) were sighted (Table BG17). However, a tendency for hunters to be less selective in zones where they saw fewer moose was noted (Table BG18).

Figure BG7. The quality of moose permits issued, and the number of moose registered (in parentheses) during 1983 for each moose hunting zone in Maine.
Table BG16. Sex and age composition of the 1983 moose harvest, by zone.

<table>
<thead>
<tr>
<th>Zone</th>
<th>Total Kill</th>
<th>Percent</th>
<th>Percent Yearling</th>
<th>Percent Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
<td>Male</td>
</tr>
<tr>
<td>Northwest</td>
<td>57</td>
<td>3.8</td>
<td>15.1</td>
<td>9.4</td>
</tr>
<tr>
<td>Northeast</td>
<td>166</td>
<td>6.1</td>
<td>12.8</td>
<td>6.1</td>
</tr>
<tr>
<td>Central</td>
<td>248</td>
<td>4.2</td>
<td>10.5</td>
<td>10.5</td>
</tr>
<tr>
<td>Southeast</td>
<td>85</td>
<td>3.5</td>
<td>15.3</td>
<td>9.4</td>
</tr>
<tr>
<td>South Central</td>
<td>104</td>
<td>4.0</td>
<td>10.9</td>
<td>5.0</td>
</tr>
<tr>
<td>Southwest</td>
<td>83</td>
<td>3.7</td>
<td>12.2</td>
<td>11.0</td>
</tr>
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<td>Unknown</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>745</td>
<td>4.4</td>
<td>12.2</td>
<td>8.6</td>
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</table>

Table BG17. Reasons hunters chose not to shoot moose, by the sex and age of those moose.

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<tr>
<th>Reason Didn't Shoot</th>
<th>Won't Shoot Calf</th>
<th>Won't Shoot Cow</th>
<th>Won't Shoot Bull</th>
<th>Waiting Too Small</th>
<th>Waiting Too Trophy</th>
<th>Poor Shot</th>
<th>Can't Handle Meat</th>
<th>Other</th>
<th>Total</th>
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<tr>
<td>Calf</td>
<td>93(57.8)</td>
<td>1(0.6)</td>
<td>0(0.0)</td>
<td>35(21.7)</td>
<td>15(9.3)</td>
<td>8(5.0)</td>
<td>7(4.3)</td>
<td>2(1.2)</td>
<td>161</td>
</tr>
<tr>
<td>Small Cow</td>
<td>10(27.8)</td>
<td>0(0.0)</td>
<td>0(0.0)</td>
<td>21(58.3)</td>
<td>2(5.6)</td>
<td>1(2.8)</td>
<td>0(0.0)</td>
<td>2(5.6)</td>
<td>36</td>
</tr>
<tr>
<td>Large Cow</td>
<td>2(40.0)</td>
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<td>0(0.0)</td>
<td>0(0.0)</td>
<td>0(0.0)</td>
<td>2(40.0)</td>
<td>0(0.0)</td>
<td>0(1.0)</td>
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<td>All Cows</td>
<td>166(49.4)</td>
<td>18(5.4)</td>
<td>35(10.4)</td>
<td>50(14.9)</td>
<td>27(8.0)</td>
<td>24(7.1)</td>
<td>16(4.8)</td>
<td>336</td>
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</tr>
<tr>
<td>Small Bull</td>
<td>-</td>
<td>0(0.0)</td>
<td>14(42.4)</td>
<td>11(33.3)</td>
<td>2(6.1)</td>
<td>3(9.1)</td>
<td>1(0.3)</td>
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<td></td>
</tr>
<tr>
<td>Large Bull</td>
<td>-</td>
<td>0(0.0)</td>
<td>1(7.1)</td>
<td>0(0.0)</td>
<td>5(35.7)</td>
<td>5(35.7)</td>
<td>3(21.4)</td>
<td>14</td>
<td></td>
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<tr>
<td>All Bulls</td>
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<td>10(0.9)</td>
<td>21(18.8)</td>
<td>19(17.0)</td>
<td>38(33.9)</td>
<td>22(19.6)</td>
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<td>Unknown</td>
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<td>-</td>
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<td>0(0.0)</td>
<td>8(44.4)</td>
<td>1(5.6)</td>
<td>9(50.0)</td>
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<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>93(14.8)</td>
<td>167(26.6)</td>
<td>18(2.9)</td>
<td>91(14.5)</td>
<td>84(13.4)</td>
<td>81(12.9)</td>
<td>54(8.6)</td>
<td>38(6.1)</td>
<td>627</td>
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</tbody>
</table>

Table BG18. Success, selectivity, and hours hunted as reported by moose hunters, by zone, for the 1983 season.

<table>
<thead>
<tr>
<th></th>
<th>North-west</th>
<th>North-east</th>
<th>Central</th>
<th>South-west</th>
<th>South-east</th>
<th>Unk.</th>
<th>All</th>
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<tr>
<td>Percent success</td>
<td>62.7</td>
<td>74.8</td>
<td>77.2</td>
<td>81.9</td>
<td>97.2</td>
<td>90.4</td>
<td>100</td>
</tr>
<tr>
<td>Percent of respondants who passed up at least 1 moose</td>
<td>32.8</td>
<td>29.2</td>
<td>47.2</td>
<td>28.0</td>
<td>57.8</td>
<td>51.0</td>
<td>0</td>
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<tr>
<td>Moose passed up/hunter</td>
<td>All hunters</td>
<td>.68</td>
<td>.54</td>
<td>1.93</td>
<td>0.67</td>
<td>1.49</td>
<td>2.00</td>
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<tr>
<td></td>
<td>Selective hunters¹</td>
<td>2.11</td>
<td>1.86</td>
<td>2.60</td>
<td>2.43</td>
<td>3.92</td>
<td>2.56</td>
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<tr>
<td>Number of moose seen/10 hours hunted</td>
<td>0.68</td>
<td>0.66</td>
<td>1.25</td>
<td>0.71</td>
<td>2.00</td>
<td>2.35</td>
<td>1.04</td>
</tr>
<tr>
<td>Mean hours hunted by:</td>
<td>All hunters</td>
<td>32.4</td>
<td>33.1</td>
<td>27.8</td>
<td>33.3</td>
<td>18.8</td>
<td>20.9</td>
</tr>
<tr>
<td></td>
<td>Successful hunters</td>
<td>23.3</td>
<td>26.8</td>
<td>22.2</td>
<td>28.5</td>
<td>18.2</td>
<td>20.4</td>
</tr>
<tr>
<td></td>
<td>Unsuccessful hunters</td>
<td>49.8</td>
<td>51.5</td>
<td>46.8</td>
<td>54.9</td>
<td>20.5²</td>
<td>25.4³</td>
</tr>
</tbody>
</table>

¹Hunters who passed up at least one moose.
²N = 2
³N = 5
Prospects for 1984 Season

The most common comment received from hunters was that the 1983 season was held too early and the weather was too warm. Therefore, the 1984 season will be held from October 8 to October 13. Hunting zone boundaries and permit allocation will be the same as in 1983. The change in season dates is expected to affect hunter success and the composition of the kill.

Timing of the moose hunt relative to the rut has a substantial impact on the number and type of moose hunters see. An early October season will almost certainly be after the peak of the rut for most bulls. However, younger bulls tend to enter the rut later than prime animals and may still be active in October. A season held after the rut tends to increase the number of cows and young bulls in the harvest compared to a season held during the rut. However, in Maine, the composition of the kill is apparently determined by hunter choice as much as by moose behavior and the composition of the herd. If hunters are as selective in 1984 as they have been in the past, season timing is expected to have little impact on the sex ratio of the kill.

Hunter success, however, is expected to be lower in 1984 than experienced during the 1980 and 1982 seasons, and may also be lower than in 1983. Moose are still abundant but are likely to be harder to find in October than they are in September.

Current Moose Research in Maine

During the past 3 winters, a census of moose in northern Maine was completed. A moose population of 18,000 animals was estimated for the
area north of the CPR tracks. Estimates for Wildlife Management Units 1 and 2 were 3,300 and 12,000 moose respectively, compared to 2,800 and 15,200 moose estimated in these areas in 1978. Because of the extensive nature of the census and great local variation in moose densities in Maine, these changes are not considered to be significant.

**Future Management of Moose in Maine**

Current forestry practices are creating good to excellent moose habitat in the State. The continued existence of high quality moose range in Maine, and associated high moose densities, will be largely dependent on forest management practices. While the Fish and Wildlife Department has little or no control over forest management practices, those changes that affect the forest's carrying capacity for moose must be understood.

While the current moose hunting season is the most liberal permitted by law, it is rather conservative by biological standards. Hunting opportunity could be increased by opening more of Maine to hunting, and/or by increasing the number of hunter permits. However, the Legislation authorizing moose hunting in Maine will have to be changed before more liberalized seasons and district boundaries can be established.

**WILD TURKEY**

**Status of Wild Turkey in Maine**

The wild turkey is a native of the New World, and at one time its range extended from Mexico to southern Ontario and Maine. Turkeys were found throughout the U. S. except the Pacific Coast, the Northwest, and the northern plains. In Maine, wild turkeys were limited to southern and coastal portions of the State, primarily York, Cumberland, and Oxford Counties. By the late 1800's, the wild turkey had been extirpated from most of the Northeast and probably much earlier from Maine. The decline was attributed to many different factors including changes in land use practices and over-hunting.

In recent years, numerous attempts have been made to reintroduce turkeys to Maine. The Penobscot County Conservation Association (PCCA) released game farm turkeys at several different sites within a 10 mile radius of Bangor between 1966 and 1971. The Windham Rod and Gun Club also attempted to stock game farm turkeys and wild-trapped turkeys (descendants of game farm stock) in southern portions of the State.

A report evaluating the PCCA stocking effort indicated that their releases were unsuccessful and that the lack of success was primarily due to poor adaptability of game farm stock. The report further suggest-
ed that other factors such as climate, food resources, and limited expanses of undisturbed blocks of land, may also have contributed to the lack of success.

During the winter of 1977, 19 wild turkeys from Vermont were released by the Maine Department of Inland Fisheries and Wildlife (MDIFW) at Mt. Agamenticus in York County, Maine. An additional 22 birds were released in York County during the winter of 1978. These transplants have been successful and the wild turkey population in York County has expanded to an estimated 500 birds. In 1982, 33 birds captured in York County were released in Waldo County. This transplant effort also appears to have been successful.

This past winter (1983-84), Regional Biologist Phil Bozenhard captured 17 turkeys in York County and released them in Sedgewick and Long Island. Several of these birds were fitted with radio transmitters by Bill Harvey, a graduate student from the University of Maine at Orono, to monitor their movements and survival.

### Current and Future Wild Turkey Research and Management Efforts

Currently we are seeking funding to intensify research and management efforts. The primary research emphasis in the next few years will be to obtain better estimates of the number of wild turkeys in Maine and to determine their distribution in the State. We also hope to increase our knowledge of the reproductive success of wild turkeys in Maine. The overall goal is to establish a limited spring gobbler season in Maine by 1986.

Management efforts are being directed toward establishing wild turkeys in areas that appear to have good turkey habitat. Phil Bozenhard is coordinating these efforts and members of the Maine Chapter of the National Wild Turkey Federation are cooperating by providing volunteer help and technical assistance.

Individuals interested in learning more about wild turkeys and turkey hunting in Maine, or who want to become involved in wild turkey reestablishment efforts, are encouraged to contact:

Maine State Chapter
National Wild Turkey Federation, Inc.
South Windham, Maine 04082
Maine’s upland furbearers include coyote, fox (both red and gray), bobcat, Canada lynx, fisher, marten, raccoon, weasels (ermine and long-tailed weasel), and skunk. Except for Canada lynx, all of these species may be trapped in the State, and most are hunted. Canada lynx is protected and cannot be taken by trapping or hunting. Descriptions of 1983 trapping and hunting season dates, and weather conditions during the period, are presented below. Recent harvest trends for bobcat, coyote, fisher, marten, raccoon, and fox follow.

**Trapping Seasons and Conditions**

In the northern zone (north of the Canadian Pacific Railroad), Maine’s 1983 trapping season started October 20 and ended December 4; trapping above the ground or snow was not permitted after November 30. A wide variety of weather conditions occurred during this period. October’s weather started out with warm days and cool nights. The first rains came the 24th of the month. November was one of the wettest months on record with cold temperatures as low as 10°F, starting on the 13th. Snow fell on the 17th of November; up to 8 inches was record-
ed on the 21st. November ended with rain and freezing rain, and the first four days of December were mild, resulting in muddy or icy conditions. In short, land trapping conditions in the northern zone during 1983 were the poorest in many years.

In the southern zone, the trapping season started October 28 and ended December 4, with trapping above ground or snow restricted after November 30. Conditions for trapping in this zone were even wetter than in northern Maine, but most of the zone did not have snow during the season. However, there were a few nights that the ground froze in the middle of November. Overall, while trapping conditions in southern Maine were not as bad as those in northern Maine, it was not a good year to land trap in the State.

**Hunting Seasons and Conditions**

Coyote, fox, bobcat, raccoon and skunk are the Maine furbearers that may be taken by hunters. There is no closed hunting season for coyotes. In addition, a restricted season for night hunting coyotes was held during the months of January and February, 1984. The fox hunting season started the same day as trapping season in each zone and ended on February 15, 1984. Bobcat hunting began on December 1 and ended February 29, 1984. The raccoon hunting season ran statewide from October 28 to December 4; night hunting was permitted. Conditions for raccoon hunting were average last fall. There is no open season of any kind for Canada lynx in the State.

Unlike trapping, weather conditions only affect hunters on the days they hunt. After a fall with very few pleasant days, the winter period was much different from north to south. In the north, December was another wet month with temperatures about 1° cooler than average. January in northern Maine was 3° to 5° colder and drier than normal, with snow on the ground throughout the month. February temperatures were above average with near normal amounts of precipitation that included snow, rain, and freezing rains.

The weather in southern Maine during January and February was different from the north in the usual ways. Persistent snow cover did not arrive until late January, but remained through the end of February. Bobcat hunters were hindered by too much snow in the north and western mountains, and by bare ground or nontracking crusts along the coast.

**Coyote**

The average price paid to Maine hunters and trappers for coyote pelts declined to less than $15 last year. Maine coyotes are of low value compared to coyotes from western North America due to variation in the
The coyote harvest declined to 1,179 in 1983 from 1982's record harvest of 1,405 animals (Table F1). Trappers accounted for the majority of coyotes tagged throughout the State, even though coyotes could be hunted throughout the year and at night this past year, while trapping was limited to 46 days (Table F2). Most hunters who tag a coyote get only one, while the highest trapper total was 12 by 2 individuals. Although the statewide harvest declined, 1983's harvest was the second highest on record, with record numbers of coyotes taken in eastern Aroostook County (WMU 1) and southern Maine (WMU's 7 and 8).

The decline in harvest was most likely due to less trapping effort resulting from low pelt prices. Other factors contributing to lowered harvests are disease and lower coyote populations. Mange in coyotes is fairly common in several areas of the State. Coyotes with severe mange are worthless on the fur market and are destroyed without being tagged. These additional animals would certainly increase the harvest size. Also, the coyote population has peaked and actually dropped in many parts of the State (WMU’s 2 and 3). The population appears to be near peak in WMU’s 5 and 6, and is still increasing in southern Maine (WMU’s 7 and 8). As trappers and hunters increase their knowledge of how to take coyotes, annual harvests should increase over the next few years toward 2,000 animals.


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</thead>
<tbody>
<tr>
<td>Trapper Catch</td>
<td>321</td>
<td>640</td>
<td>798</td>
<td>659</td>
<td>741</td>
<td>1,215</td>
<td>1,031</td>
<td>912</td>
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<tr>
<td>Hunter Kill</td>
<td>48</td>
<td>87</td>
<td>106</td>
<td>82</td>
<td>157</td>
<td>147</td>
<td>93</td>
<td>120</td>
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<tr>
<td>Total Harvest</td>
<td>381</td>
<td>746</td>
<td>938</td>
<td>779</td>
<td>930</td>
<td>1,405</td>
<td>1,179</td>
<td>1,073</td>
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Table F2. Maine’s 1983–84 coyote harvest, by Wildlife Management Unit.

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<thead>
<tr>
<th>WMU</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>Statewide</th>
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</thead>
<tbody>
<tr>
<td>Total Harvest</td>
<td>155</td>
<td>231</td>
<td>141</td>
<td>238</td>
<td>105</td>
<td>145</td>
<td>91</td>
<td>73</td>
<td>1,179</td>
</tr>
<tr>
<td>Harvest/1,000 mi²</td>
<td>48</td>
<td>28</td>
<td>33</td>
<td>42</td>
<td>36</td>
<td>56</td>
<td>43</td>
<td>26</td>
<td>37</td>
</tr>
<tr>
<td>Trapper Catch</td>
<td>134</td>
<td>215</td>
<td>118</td>
<td>213</td>
<td>88</td>
<td>128</td>
<td>73</td>
<td>62</td>
<td>1,031</td>
</tr>
<tr>
<td>Catch/100 Land Trappers</td>
<td>49.1</td>
<td>74.4</td>
<td>70.7</td>
<td>32.2</td>
<td>55.7</td>
<td>73.6</td>
<td>24.3</td>
<td>17.5</td>
<td>43.4</td>
</tr>
<tr>
<td>Hunter Kill</td>
<td>15</td>
<td>12</td>
<td>7</td>
<td>17</td>
<td>11</td>
<td>12</td>
<td>14</td>
<td>5</td>
<td>93</td>
</tr>
<tr>
<td>Kill/Coyote Hunter</td>
<td>1.2</td>
<td>1.1</td>
<td>1.8</td>
<td>1.0</td>
<td>1.1</td>
<td>1.1</td>
<td>1.0</td>
<td>1.0</td>
<td>1.1</td>
</tr>
</tbody>
</table>
Fox

Red fox pelt values, like values of most Maine furbearer pelts, declined last year. The drop in the fox pelt price was not large compared to raccoons; average fox pelt price was higher than the preseason predicted price. Red fox remain among the top five furbearers in total estimated value to Maine hunters and trappers.

The red fox harvest declined to second lowest level since foxes have been tagged (Table F3). Although foxes may be hunted as well as trapped, and the hunting season is much longer, very few foxes are taken by hunters. The hunter kill of foxes in 1983 was the lowest by far since 1976. Most foxes taken by hunters are taken incidental to other hunting; few individuals maintain the tradition of hunting foxes with dogs, and predator calling has not attracted a large following in the State. The low fox harvest in 1983 is probably due to several factors, including reduced effort due to lower pelt prices and fewer foxes due to disease and competition with coyotes. Currently, Maine’s fox population is infected with both mange and rabies. Rabies is most prevalent in WMU’s 7 and 8 along the Kennebec River, but the disease is spreading west. Research on coyotes and red foxes in Maine has shown that coyote home ranges affect the distribution of fox denning sites and home ranges. Essentially, red foxes do not use areas of high coyote activity, reducing the amount of fox habitat available.

Red fox distribution in Maine is similar to raccoon distribution; very few foxes are taken in the northern and western forest land (WMU’s 2 and 3) (Table F4). The highest fox harvests, in terms of take per unit


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</thead>
<tbody>
<tr>
<td>Trapper Catch</td>
<td>4,644</td>
<td>6,046</td>
<td>5,072</td>
<td>5,830</td>
<td>3,876</td>
<td>4,680</td>
<td>5,285</td>
<td>4,043</td>
<td>4,471</td>
</tr>
<tr>
<td>Hunter Kill</td>
<td>240</td>
<td>368</td>
<td>291</td>
<td>285</td>
<td>235</td>
<td>325</td>
<td>252</td>
<td>129</td>
<td>235</td>
</tr>
<tr>
<td>Total Harvest</td>
<td>4,948</td>
<td>6,531</td>
<td>5,466</td>
<td>6,220</td>
<td>4,213</td>
<td>5,097</td>
<td>5,660</td>
<td>4,342</td>
<td>4,828</td>
</tr>
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</table>

Table F4. Maine’s 1983–84 red fox harvest, by Wildlife Management Unit.

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<thead>
<tr>
<th>WMU</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<th>6</th>
<th>7</th>
<th>8</th>
<th>Statewide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Harvest</td>
<td>899</td>
<td>180</td>
<td>232</td>
<td>1,172</td>
<td>270</td>
<td>330</td>
<td>353</td>
<td>906</td>
<td>4,342</td>
</tr>
<tr>
<td>Harvest/1,000 mi²</td>
<td>280</td>
<td>22</td>
<td>55</td>
<td>205</td>
<td>92</td>
<td>126</td>
<td>167</td>
<td>326</td>
<td>136</td>
</tr>
<tr>
<td>Trapper Catch</td>
<td>857</td>
<td>176</td>
<td>200</td>
<td>1,081</td>
<td>253</td>
<td>300</td>
<td>314</td>
<td>862</td>
<td>4,043</td>
</tr>
<tr>
<td>Catch/100 Land Trappers</td>
<td>313.9</td>
<td>60.9</td>
<td>119.8</td>
<td>163.5</td>
<td>160.1</td>
<td>172.4</td>
<td>104.7</td>
<td>242.8</td>
<td>170</td>
</tr>
<tr>
<td>Hunter Kill</td>
<td>10</td>
<td>1</td>
<td>5</td>
<td>34</td>
<td>10</td>
<td>16</td>
<td>17</td>
<td>36</td>
<td>129</td>
</tr>
<tr>
<td>Kill/Red Fox Hunter</td>
<td>1.2</td>
<td>1.0</td>
<td>1.2</td>
<td>1.4</td>
<td>1.1</td>
<td>2.0</td>
<td>1.1</td>
<td>1.4</td>
<td>1.3</td>
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</table>

36
area and catch per trapper, occur in the agricultural areas of Maine (WMU’s 1, 4 and 8). Prior to the current rabies outbreak, high harvests occurred in WMU 7 as well.

Since 1980, gray foxes have been tagged separately from red foxes. Gray foxes are restricted to southern Maine, and harvests are low. The gray fox take over the last 4 years included: 169 in 1980, 118 in 1981, 154 in 1982, and 176 in 1983.

Bobcat

Bobcat pelt prices continued to decline from highs paid in 1980. The average price paid at New York auctions for top grade bobcat pelts in 1983-84 was less than one-half of the average price paid in 1980-81. This lower price, combined with poor winter hunting conditions, resulted in a statewide bobcat harvest of 248 animals, the lowest since 1976 (Table F5). The only other recent year in which the bobcat harvest was less than 300 was 1978.


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</thead>
<tbody>
<tr>
<td>Trapper Catch</td>
<td>131</td>
<td>148</td>
<td>129</td>
<td>158</td>
<td>159</td>
<td>141</td>
<td>120</td>
<td>102</td>
<td>131</td>
</tr>
<tr>
<td>Hunter Kill</td>
<td>296</td>
<td>243</td>
<td>140</td>
<td>148</td>
<td>204</td>
<td>185</td>
<td>175</td>
<td>131</td>
<td>174</td>
</tr>
<tr>
<td>Total Harvest</td>
<td>437</td>
<td>399</td>
<td>278</td>
<td>318</td>
<td>381</td>
<td>345</td>
<td>311</td>
<td>248</td>
<td>321</td>
</tr>
</tbody>
</table>

Most bobcats were taken in eastern Maine (WMU’s 5 and 6), with fewer per unit area from the western mountains (WMU 3), central Maine (WMU 4), and eastern Aroostook County (WMU 1) (Table F6). Downeast Maine (WMU 6) has the highest harvest by total number, harvest per unit area, and catch per 100 land trappers (trappers who tag bobcat, coyote, fisher, fox or raccoon).


<table>
<thead>
<tr>
<th>WMU</th>
<th>1</th>
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<th>Statewide</th>
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<tbody>
<tr>
<td>Total Harvest</td>
<td>14</td>
<td>17</td>
<td>34</td>
<td>46</td>
<td>38</td>
<td>91</td>
<td>2</td>
<td>6</td>
<td>248</td>
</tr>
<tr>
<td>Harvest/1,000 mi²</td>
<td>4</td>
<td>2</td>
<td>8</td>
<td>8</td>
<td>13</td>
<td>35</td>
<td>1</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Trapper Catch</td>
<td>7</td>
<td>10</td>
<td>13</td>
<td>21</td>
<td>9</td>
<td>40</td>
<td>0</td>
<td>2</td>
<td>103</td>
</tr>
<tr>
<td>Catch/100 Land Trappers</td>
<td>2.6</td>
<td>3.5</td>
<td>7.8</td>
<td>3.2</td>
<td>5.7</td>
<td>3.0</td>
<td>0</td>
<td>1.2</td>
<td>4.3</td>
</tr>
<tr>
<td>Hunter Kill</td>
<td>7</td>
<td>7</td>
<td>18</td>
<td>18</td>
<td>27</td>
<td>49</td>
<td>2</td>
<td>3</td>
<td>131</td>
</tr>
<tr>
<td>Kill/Bobcat Hunter</td>
<td>2.3</td>
<td>3.5</td>
<td>1.8</td>
<td>1.1</td>
<td>2.7</td>
<td>2.2</td>
<td>1.0</td>
<td>1.0</td>
<td>1.9</td>
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The number of hunters and trappers tagging at least one bobcat in 1983-84 was the lowest since 1976, while the catch per successful individual last season was about average for the last 8 years. Although not all
reasons for Maine's declining bobcat harvest are known, they most likely include a combination of fewer bobcats (due to coyote competition, winter losses, and habitat problems including fewer snowshoe hares) and less hunting and trapping efforts due to low pelt prices. If the State's bobcat harvest continues to decline, the Department will be obligated to try to stabilize the situation through changes in hunting and trapping regulations.

**Fisher**

Fisher have the highest average pelt price of any resident species and also have the highest total estimated value of Maine furbearers. Fisher pelts, unlike most of our other furbearers, have continued to increase in price. Very few fisher are harvested in North America, and Maine has the highest average harvest of any state.

The fisher harvest increased last year after a low harvest in 1982 (Table F7). With pelt prices of other furbearers dropping, more effort was placed on fisher. While trapping license sales declined in 1983, the number of people tagging fisher remained the same and the average catch increased from 1982. Fisher may be legally taken only by trapping during the fall season. There is considerable difference in the fisher catch per unit area and fisher catch per land trapper between Wildlife Management Units (Table F8). Northern, western and central coastal Maine (WMU's 1, 2, 3, and 7) had the highest harvest densities while harvests in eastern Maine (WMU's 5 and 6) continued to be low. WMU's 2 and 3 nearly doubled in tagged harvest to their highest total in 8 years while the harvest in WMU 8 dropped after being stable for 5 years.


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<tbody>
<tr>
<td></td>
<td>1,410</td>
<td>2,022</td>
<td>1,565</td>
<td>2,235</td>
<td>1,941</td>
<td>2,084</td>
<td>1,663</td>
<td>2,025</td>
<td>1,928</td>
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</tbody>
</table>

Historically, fisher harvests have fluctuated up and down annually without 2 consecutive harvests greater than 2,000 animals. Computer modeling (simulation) of the fisher population suggests the average
statewide harvest should be kept near 1,900 to maintain current population size; presently it averages 1,928 animals. If the harvest increases, changes to reduce harvest size will be required in 1985.

**Marten (Sable)**

Marten pelt prices have increased considerably, partly due to a name change. The name by which a fur garment is sold is federally controlled as a result of unethical practices in the past; one of the most famous incidents involved selling muskrat as “Hudson Bay Seal.” Prior to 1983, marten, which is closely related to the sables of Europe, could not be sold as sable. This was recently changed so that marten are now marketed as “American Sable”; consequently, they bring a higher price. Marten pelts average higher in price than much larger beaver or coyote pelts. Marten, as with fisher, can be legally taken only by trapping.

The 1983 marten harvest (5,296) was the highest since the season was reopened, after being closed from 1937-1972 (Table F9). Marten occur only in northern Maine, as essentially all are caught north of a line formed by the Canadian Pacific Railroad in the east and the Appalachian Trail in the west. More marten are taken per unit area and per land trapper in WMU’s 1, 2 and 3 combined than any other upland species (Table F10). Marten were transplanted to suitable habitat in eastern Maine (WMU 6) the last 2 years, but to date the success of this effort to expand the species range is unknown.


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<tbody>
<tr>
<td>Total Harvest</td>
<td>500</td>
<td>1,408</td>
<td>1,118</td>
<td>2,718</td>
<td>3,387</td>
<td>5,174</td>
<td>2,963</td>
<td>5,296</td>
<td>4,205</td>
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Table F10. Maine’s 1983–84 marten harvest, by Wildlife Management Unit.

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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>Total Catch</th>
<th>Catch/1,000 mi²</th>
<th>Catch/100 Land Trappers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>856</td>
<td>3,820</td>
<td>302</td>
<td>300</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5,296</td>
<td>266</td>
<td>308.4</td>
</tr>
<tr>
<td></td>
<td>138</td>
<td>3,916</td>
<td>132</td>
<td>130</td>
<td>20</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>166</td>
<td>1317.6</td>
<td>178.4</td>
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<td></td>
<td>45.1</td>
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<td>45.1</td>
<td>45.1</td>
<td>45.1</td>
<td>155.2</td>
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</tbody>
</table>

Historically, the catch of marten has increased greatly in the State as the population increased and trappers learned to take them. In accessible areas of northern WMU 3, the population and harvest has declined due to heavy trapping pressure from both local and transient trappers taking advantage of the early trapping start in the northern zone. Also, marten habitat (mature softwood) has been reduced due to spruce bud-
worm mortality and increased cutting by timber companies. Based on habitat available in 1970, Maine should be able to support annual harvests averaging 7,000 marten. However, analysis of sex and age information collected in more recent years suggests that average harvests should not exceed 4,500; recent harvests exceeding this level may be excessive.

**Raccoon**

Preseason price predictions for raccoon pelts were low. Prices realized by Maine trappers and hunters in 1983 followed this forecast, as the average pelt price dropped below $10. As a result, raccoon was replaced by fisher as our most valuable fur bearer in total estimated value, after holding that distinction for several years. The number of hunters and trappers pursuing raccoons dropped considerably in 1983 as a result of the decline in their pelt value.

The 1983 raccoon harvest (18,132) was the lowest since pelts have been tagged (1977), with record low numbers being tagged by both hunters and trappers. The decline by hunters was the most drastic; 5,000 fewer raccoon pelts were tagged in 1983 than in 1982 (Table F11). This drop was entirely due to fewer hunters pursuing raccoons, for the average take per successful hunter remained the same while the number of successful hunters was down 50% from the high harvest years of 1979 and 1981. An outbreak of distemper in New Hampshire’s raccoon population has spread into southwestern Maine. Distemper is particularly a problem in high density raccoon populations in towns and cities, where trapping and hunting do not occur.

---

**Table F11. Raccoon harvests in Maine, 1976–1983.**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Trapper Catch</td>
<td>12,160</td>
<td>9,948</td>
<td>12,714</td>
<td>10,086</td>
<td>10,636</td>
<td>9,069</td>
<td>7,912</td>
<td>9,426</td>
</tr>
<tr>
<td>Hunter Kill</td>
<td>11,554</td>
<td>11,081</td>
<td>18,084</td>
<td>13,134</td>
<td>19,004</td>
<td>14,564</td>
<td>9,794</td>
<td>14,124</td>
</tr>
<tr>
<td>Total Harvest</td>
<td>24,148</td>
<td>21,542</td>
<td>31,421</td>
<td>23,737</td>
<td>30,214</td>
<td>24,149</td>
<td>18,132</td>
<td>24,058</td>
</tr>
</tbody>
</table>

**Table F12. Maine’s 1983–84 raccoon harvest, by Wildlife Management Unit.**

<table>
<thead>
<tr>
<th>WMU</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>Statewide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Harvest</td>
<td>1,150</td>
<td>246</td>
<td>478</td>
<td>5,426</td>
<td>676</td>
<td>1,535</td>
<td>4,287</td>
<td>4,334</td>
<td>18,132</td>
</tr>
<tr>
<td>Harvest/1,000 mi²</td>
<td>358</td>
<td>29</td>
<td>113</td>
<td>948</td>
<td>230</td>
<td>588</td>
<td>2,028</td>
<td>1,558</td>
<td>568</td>
</tr>
<tr>
<td>Trapper Catch</td>
<td>835</td>
<td>239</td>
<td>278</td>
<td>2,288</td>
<td>401</td>
<td>657</td>
<td>1,220</td>
<td>1,994</td>
<td>7,912</td>
</tr>
<tr>
<td>Catch/100 Land Trappers</td>
<td>305.9</td>
<td>82.7</td>
<td>166.5</td>
<td>346.1</td>
<td>253.8</td>
<td>377.6</td>
<td>406.7</td>
<td>561.7</td>
<td>332.9</td>
</tr>
<tr>
<td>Hunter Kill</td>
<td>289</td>
<td>6</td>
<td>183</td>
<td>2,887</td>
<td>243</td>
<td>860</td>
<td>2,994</td>
<td>2,332</td>
<td>9,794</td>
</tr>
<tr>
<td>Kill/Raccoon Hunter</td>
<td>11.1</td>
<td>6.0</td>
<td>11.4</td>
<td>10.5</td>
<td>6.9</td>
<td>14.8</td>
<td>18.0</td>
<td>19.1</td>
<td>14.0</td>
</tr>
</tbody>
</table>
Although annual harvests of raccoons have fluctuated widely, the 1980-83 average is within 58 animals of the Department’s harvest goal of 24,000 (Table F11). Harvest density and harvest per successful user are particularly high in central and southern Maine (WMU’s 4, 7, and 8), reflecting differences in raccoon distribution (Table F12). Very few raccoons are found, or harvested, in the big woods areas of the State (WMU’s 2 and 3).

AQUATIC FURBEARERS

Trapping Seasons and Conditions

Trapping seasons for muskrat, mink, and otter started October 20 in the northern zone, and October 28 in the southern zone, and closed statewide on December 4. Trapping zone boundaries were the same as for deer hunting. Beaver season opened December 1 in Wildlife Management Units (WMU’s) 1 and 2 and closed February 29, 1984. In the remainder of the State beaver season ran from January 1 to February 15, 1984. Trappers were permitted to keep otter and muskrat taken incidental to beaver trapping during the winter beaver season. There were 111 townships closed (or mostly closed) to beaver trapping, and 82 additional areas (watersheds, streams, etc.) closed during the season.

If water trapping is affected by water levels, then 1983 was a tough year to trap water animals. Southern streams were higher than northern ones, but freezing weather and snow arrived early in the north. The Portland weather station indicated that November, 1983, was the wet-
test November on record. December beaver trappers had to contend with snow, ice, thawing conditions and rain. It was much colder than usual in January, but snow accumulations were below normal.

Weather during beaver season in February included snow in northern Maine and snow and rain in southern Maine, with colder than average temperatures statewide. All in all, 1983-84 was a tough year for trapping.

**Beaver**

Beaver pelt prices paid to trappers stayed low last year, marking 4 consecutive years with no optimism in the furbuyer market reports. Furbuyers reported paying trappers an average of less than 16 dollars per beaver pelt last winter. Maine trappers appear to pursue beaver for reasons other than money; for although the 1983-84 beaver harvest (8,840 pelts) was considerably lower than the desired harvest level of 12,000-17,000 animals, the harvest was not as low as expected from poor market conditions (Table F13). While most beaver were taken in WMU 4, the greatest numbers of beaver taken per trapper were recorded in northern Maine (Table F14).


<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Harvest</td>
<td>9,833</td>
<td>11,192</td>
<td>10,539</td>
<td>19,209</td>
<td>6,927</td>
<td>7,149</td>
<td>11,342</td>
<td>8,840</td>
</tr>
</tbody>
</table>

Table F14. Maine’s 1983–84 beaver harvest.

<table>
<thead>
<tr>
<th>WMU</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Catch</td>
<td>940</td>
<td>963</td>
<td>864</td>
<td>2,662</td>
<td>1,135</td>
<td>645</td>
<td>1,047</td>
<td>584</td>
<td>8,840</td>
</tr>
<tr>
<td>Catch per 100 Stream Miles</td>
<td>27.6</td>
<td>13.1</td>
<td>28.1</td>
<td>44.4</td>
<td>39.4</td>
<td>22.1</td>
<td>54.5</td>
<td>20.3</td>
<td>29.1</td>
</tr>
<tr>
<td>Catch per Winter Trapper</td>
<td>11.8</td>
<td>13.2</td>
<td>15.2</td>
<td>11.7</td>
<td>11.2</td>
<td>9.4</td>
<td>9.7</td>
<td>6.6</td>
<td>11.0</td>
</tr>
</tbody>
</table>

Maine’s beaver population is managed differently from other furbearer populations in the State. For the past 30 years, beaver trapping has been regulated on a township basis. Every year the number of beaver taken in each township is recorded, and townships with excessively high harvest levels are closed to trapping for the next 1 or 2 years to allow beaver densities to increase. In some instances only portions of townships are closed to trapping. This township management system allows close control over beaver populations in those parts of the State where most trapping effort occurs. However, the system depends on accurate reporting.
of the township of harvest by beaver trappers. Therefore, beaver trappers are encouraged to carefully note the location (township) of catch on every beaver they tag.

Our township harvest records suggest that beaver densities are high in the State. Changes in forest management practices in recent years have resulted in excellent food conditions for beaver. A desired harvest level of 15,000 beaver is difficult to attain without favorable market conditions for beaver pelts; however, until this harvest level is reached, we will continue to experience nuisance problems with beaver in most of the State.

**Otter**

Maine trappers tagged 696 otter during the 1983 season. The State's otter harvests have remained relatively stable since 1976, with the exception of 1979's harvest (Table F15). High pelt prices for beaver in 1979 resulted in more trappers setting for beaver that year and as a result they took a large number of otter incidentally in their beaver traps.

Table F15. Otter harvests in Maine, 1976-1983.

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Harvest</td>
<td>540</td>
<td>677</td>
<td>718</td>
<td>964</td>
<td>671</td>
<td>613</td>
<td>701</td>
<td>696</td>
</tr>
</tbody>
</table>

Table F16. Maine's 1983-84 otter harvest.

<table>
<thead>
<tr>
<th>WMU</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Catch</td>
<td>56</td>
<td>69</td>
<td>56</td>
<td>175</td>
<td>83</td>
<td>89</td>
<td>77</td>
<td>91</td>
<td>696</td>
</tr>
<tr>
<td>Catch per 100 Stream Miles</td>
<td>1.6</td>
<td>0.9</td>
<td>1.8</td>
<td>2.9</td>
<td>2.9</td>
<td>3.1</td>
<td>4.0</td>
<td>3.2</td>
<td>2.3</td>
</tr>
<tr>
<td>Catch per 100 Water Trappers</td>
<td>28</td>
<td>38</td>
<td>42</td>
<td>36</td>
<td>43</td>
<td>64</td>
<td>32</td>
<td>40</td>
<td>39</td>
</tr>
</tbody>
</table>

Trappers seemed to be more successful at catching otter in WMU 6 than in other parts of the State during 1983 (Table F16). More otter were caught per mile of stream in southern Maine (WMU's 4-8) last season, but this greater harvest density may reflect higher trapper densities in that region instead of greater densities of otter.

Otter pelt prices have varied considerably in recent years, partially due to changes in federal regulations restricting the export of otter. These export restrictions have been relaxed recently, and otter pelt prices are expected to stabilize. However, federal regulations still require all otter pelts to be tagged with special tags before export. In addition, all states must maintain conservative otter management programs to guard against overharvesting this resource.
All available data on Maine’s otter population indicate that trapping is not presently affecting the numbers of otter in the State. Maine’s otter population is believed to be increasing, as an increased amount of area has become suitable for otter in the State due to recent improvements in water quality.

**Mink**

Maine trappers tagged 2,457 mink in 1983. Last year was the third year that pelt tags were used to record mink harvests in the State (Table F17). Although the number of mink harvested has increased slightly each of the last 3 years, there is no evidence that trappers are affecting mink population levels in the State. WMU’s 1-5 were the most productive areas of the State for mink last season, based on number of mink taken per fall water trapper, and number of mink taken per 100 miles of stream (Table F18).

Table F18. Maine’s 1983 mink harvest.

<table>
<thead>
<tr>
<th>WMU</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Catch</td>
<td>449</td>
<td>322</td>
<td>150</td>
<td>503</td>
<td>317</td>
<td>177</td>
<td>297</td>
<td>242</td>
<td>2,457</td>
</tr>
<tr>
<td>Catch per 100 Stream Miles</td>
<td>13.2</td>
<td>4.4</td>
<td>4.9</td>
<td>8.4</td>
<td>11.0</td>
<td>6.1</td>
<td>15.5</td>
<td>8.4</td>
<td>8.1</td>
</tr>
<tr>
<td>Catch per Fall Water Trapper</td>
<td>3.8</td>
<td>3.0</td>
<td>2.0</td>
<td>2.0</td>
<td>3.5</td>
<td>2.5</td>
<td>2.2</td>
<td>1.7</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Last fall, trappers received an average price of 26 dollars for male mink pelts; the less valuable female mink pelts brought half that price. Mink prices increased throughout the fall and winter, with male pelts bringing trappers 30 dollars at the end of the year.

**Muskrat**

Muskrat pelts are not tagged in Maine, and except for counts of pelts kept by fur buyers, no attempts are made to record the number and distribution of muskrat harvests in the State. Tagging of the large number of muskrats taken each year would be too expensive to be practical. In addition, muskrats have very high reproductive rates and low winter survival; trapping does not normally affect their numbers.
Furbuyers' reports indicate approximately 45,000 muskrats were trapped in Maine in 1983-84; over 55,000 were taken in 1982-83. Trappers received an average of 3 dollars per muskrat pelt last year, with prices rising throughout the season.

Furbearer Ages

More information is needed to monitor the status of some furbearer species than can be obtained from pelt tagging. During the past trapping season, Department personnel collected the carcasses of bobcat, fisher, marten, and otter to obtain better information on when most of these species are taken, where they are harvested, and the sex and age of harvested animals. In addition, some reproductive and body condition information was obtained. This information is used in population modeling. Sex and age information is always of interest to hunters and trappers. The following table (Table F19) summarizes the results from our collections this year.

Table F19. Sex and age data of bobcat, fisher, marten and otter collected from trappers during the 1983-84 season.

<table>
<thead>
<tr>
<th>Age</th>
<th>Bobcat</th>
<th>Fisher</th>
<th>Marten</th>
<th>Otter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>M</td>
<td>Total</td>
<td>F</td>
</tr>
<tr>
<td>0</td>
<td>28</td>
<td>18</td>
<td>46</td>
<td>290</td>
</tr>
<tr>
<td>1</td>
<td>17</td>
<td>10</td>
<td>27</td>
<td>157</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>10</td>
<td>22</td>
<td>63</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>7</td>
<td>16</td>
<td>29</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>10</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
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<td>14</td>
<td>17</td>
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<td>8</td>
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<td>9</td>
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<td>3</td>
<td>4</td>
<td>2</td>
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<tr>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
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<td>11</td>
<td>0</td>
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<td>1</td>
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<td>12</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>53</td>
<td>129</td>
<td>576</td>
</tr>
</tbody>
</table>
SMALL GAME

Maine's principal small game species include ruffed grouse (partridge), rabbit (mostly snowshoe hares but a few cottontails), pheasants, and gray squirrels.

Hunting Seasons and Conditions

The 1983 hunting season on these species opened October 1 and closed November 30 with the exception of rabbit season which ran through March 31, 1984. There was no open season on spruce grouse and no closed season for woodchuck, porcupine, and red squirrels. Bag limits for grouse, hare, and gray squirrels were 4 per day (8 in possession). Pheasant bag limits were 2 per day or 4 in possession.

October and November began with above normal temperatures, which soon changed to below normal, and included heavy rains near the end of the season. Snow fell in northern Maine and in the mid-coast belt during November, but the month ended without snow cover over most of the State.

Conditions for hunting rabbits with dogs last winter were generally poor. Hard crusts, or snow too deep and soft for hounds to run well, persisted until March when temperatures dropped below normal and conditions improved.

Harvest Trends

Annual harvests of major small game species are estimated through a mail survey (Personal Hunting Report) of licensed hunters. Summaries of recent harvest trends, by species, are presented below.

Ruffed Grouse

An estimated 514,563 grouse were harvested by 117,000 hunters in Maine during 1983 (Table SG1). WMU 1 (eastern Aroostook County), an area with many reverting farms and small woodlots that provide excellent grouse habitat, produced the highest estimated harvest density in

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Hunter Kill</td>
<td>462,614</td>
<td>366,752</td>
<td>658,021</td>
<td>644,178</td>
<td>514,563</td>
<td>529,226</td>
</tr>
</tbody>
</table>
1983 (55 birds/mi²) (Table SG2). WMU 2 produced the highest kill per hunter, but had the lowest kill per unit area. Hunter densities are low in this area and grouse are primarily hunted by driving woods roads until birds are encountered. Hunters are often highly successful, but travel long distances to obtain birds. There was little difference in harvest rates between the six remaining WMU’s. However, the season kill per hunter was lower where hunter densities were greatest (WMU’s 4, 7, and 8).

Table SG2. Maine’s 1983 ruffed grouse harvest, by Wildlife Management Unit.

<table>
<thead>
<tr>
<th>WMU</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>Statewide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Kill</td>
<td>90,562</td>
<td>103,767</td>
<td>97,464</td>
<td>97,523</td>
<td>52,373</td>
<td>31,663</td>
<td>29,626</td>
<td>38,946</td>
<td>514,563</td>
</tr>
<tr>
<td>Kill/Mi²</td>
<td>55</td>
<td>12</td>
<td>27</td>
<td>20</td>
<td>21</td>
<td>15</td>
<td>19</td>
<td>20</td>
<td>19</td>
</tr>
<tr>
<td>Kill/Hunter</td>
<td>7.0</td>
<td>9.3</td>
<td>6.9</td>
<td>4.5</td>
<td>6.2</td>
<td>4.9</td>
<td>3.8</td>
<td>3.3</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Historically, Maine’s grouse harvest has fluctuated considerably from year to year (Table SG1). This is due to annual changes in bird populations and hunting conditions. A pilot “grouse abundance survey” was conducted in the spring of 1984. Comparisons of years and areas will be possible in the future.

**Snowshoe Hare**

About 219,534 snowshoe hares were harvested during Maine’s 1983-84 hunting season (Table SG3). WMU 1 led the State in harvest per square mile and number of hares killed per hunter. This is apparently due to high populations resulting from the good quality habitat mentioned above. High harvest densities also occurred in WMU’s 7 and 8, which also had high hunter densities.

Over the last five years, snowshoe hare harvests have fluctuated from 218,000 in 1983 to over 300,000 in 1981 (Table SG4). Annual harvests may

Table SG3. Maine’s 1983-84 snowshoe hare harvest, by Wildlife Management Unit.

<table>
<thead>
<tr>
<th>WMU</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>Statewide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Kill</td>
<td>40,583</td>
<td>4,274</td>
<td>23,289</td>
<td>55,126</td>
<td>9,920</td>
<td>18,696</td>
<td>52,624</td>
<td>40,549</td>
<td>219,534</td>
</tr>
<tr>
<td>Kill/Mi²</td>
<td>25</td>
<td>1</td>
<td>7</td>
<td>11</td>
<td>4</td>
<td>9</td>
<td>34</td>
<td>21</td>
<td>8</td>
</tr>
<tr>
<td>Kill/Hunter</td>
<td>6.7</td>
<td>3.0</td>
<td>4.6</td>
<td>3.8</td>
<td>4.1</td>
<td>4.4</td>
<td>5.6</td>
<td>3.1</td>
<td>4.1</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunter Kill</td>
<td>279,899</td>
<td>227,062</td>
<td>300,359</td>
<td>287,966</td>
<td>219,534</td>
<td>262,564</td>
</tr>
</tbody>
</table>
reflect changes in rabbit populations. Weather conditions during the long hunting season are believed to have little impact on the size of harvests.

At present, financial limitations have prevented the Department from conducting surveys of snowshoe hare abundance.

**Gray Squirrels and Pheasants**

Maine’s gray squirrel and pheasant harvests have not been closely monitored. These species are not widely pursued in Maine and only limited research/management programs are being conducted.

Estimates suggest that fewer than 50,000 squirrels are killed annually and more than \( \frac{1}{3} \) are taken by hunters under the age of 16. Most of the squirrel harvest takes place in WMU 8.

The number of birds stocked annually determines Maine’s pheasant harvest. A steady decline has occurred in pheasant kills in recent years according to survey estimates. This trend parallels the decline in pheasant hunting stamp sales which dictates the number of birds released under the Cooperative Pheasant Program.
The following sections highlight 1983 and 1984 population, harvest and production trends for Maine’s migratory bird populations. Two major management issues involve the current efforts to rebuild the black duck population; and a nation wide effort to encourage the use of non-toxic shot for waterfowl hunting.

**Mid-Winter Waterfowl Survey**

States within the various administrative flyways cooperate with the U.S. Fish and Wildlife Service in collecting data on wintering waterfowl found during the first week of January. This survey, established in the 1950’s, continues to be used as an index to continental waterfowl populations and provides long-term trend information for many species. In the case of the black duck, the winter survey total has been selected as one of the measures against which the effectiveness of current regulation changes will be evaluated. Tables MB1 and MB2 present comparative data for Maine and the Atlantic Flyway.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Duck</td>
<td>9,294</td>
<td>11,809</td>
<td>10,678</td>
<td>14,146</td>
</tr>
<tr>
<td>Mallard</td>
<td>99</td>
<td>184</td>
<td>124</td>
<td>105</td>
</tr>
<tr>
<td>Goldeneye</td>
<td>8,216</td>
<td>8,771</td>
<td>6,544</td>
<td>7,440</td>
</tr>
<tr>
<td>Bufflehead</td>
<td>1,308</td>
<td>2,000</td>
<td>1,423</td>
<td>2,655</td>
</tr>
<tr>
<td>Scaup</td>
<td>670</td>
<td>1,456</td>
<td>2,032</td>
<td>3,115</td>
</tr>
<tr>
<td>Scoter</td>
<td>1,373</td>
<td>1,233</td>
<td>2,029</td>
<td>2,270</td>
</tr>
<tr>
<td>Eider</td>
<td>37,347</td>
<td>30,719</td>
<td>33,001</td>
<td>29,777</td>
</tr>
<tr>
<td>Old Squaw</td>
<td>2,709</td>
<td>3,155</td>
<td>2,492</td>
<td>2,345</td>
</tr>
<tr>
<td>Merganser</td>
<td>3,048</td>
<td>569</td>
<td>1,552</td>
<td>960</td>
</tr>
<tr>
<td>Canada Goose</td>
<td>1,096</td>
<td>760</td>
<td>719</td>
<td>346</td>
</tr>
<tr>
<td>Unidentified</td>
<td>780</td>
<td>838</td>
<td>1,103</td>
<td>1,715</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>65,940</td>
<td>61,494</td>
<td>61,697</td>
<td>64,874</td>
</tr>
</tbody>
</table>

**Maine Waterfowl Kill**

The numbers shown are from the National Harvest survey conducted by the U.S. Fish and Wildlife Service. The 1983 season was the first in which restrictive seasons were implemented in the Atlantic and Mississippi Flyways in an attempt to reduce black duck kill. Canadian provinces are planning to restrict their black duck harvest in 1984 through bag limit reductions. These restrictions vary from province to
### Table MB2. Midwinter Waterfowl Survey, Atlantic Flyway.

<table>
<thead>
<tr>
<th>Species</th>
<th>Flyway Totals</th>
<th>1974-83 % Change</th>
<th>1984 From 74-83 Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1984 Mean</td>
<td>1983 Mean</td>
<td></td>
</tr>
<tr>
<td>Mallard</td>
<td>165,700</td>
<td>170,200</td>
<td>223,119</td>
</tr>
<tr>
<td>Black duck</td>
<td>226,500</td>
<td>201,300</td>
<td>241,484</td>
</tr>
<tr>
<td>Mottled duck</td>
<td>2,100</td>
<td>700</td>
<td>800</td>
</tr>
<tr>
<td>Gadwall</td>
<td>16,700</td>
<td>19,100</td>
<td>26,186</td>
</tr>
<tr>
<td>Wigeon</td>
<td>33,100</td>
<td>46,900</td>
<td>65,219</td>
</tr>
<tr>
<td>G-W teal</td>
<td>39,800</td>
<td>46,900</td>
<td>43,613</td>
</tr>
<tr>
<td>B-W teal</td>
<td>18,400</td>
<td>13,700</td>
<td>12,873</td>
</tr>
<tr>
<td>Cinn. teal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shoveler</td>
<td>10,500</td>
<td>9,800</td>
<td>9,292</td>
</tr>
<tr>
<td>Pintail</td>
<td>46,200</td>
<td>48,100</td>
<td>73,906</td>
</tr>
<tr>
<td>Wood duck</td>
<td>10,600</td>
<td>9,100</td>
<td></td>
</tr>
<tr>
<td>Whistling duck</td>
<td>1,700</td>
<td>300</td>
<td>310</td>
</tr>
<tr>
<td>Wood duck</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Dabblers</td>
<td>571,300</td>
<td>566,100</td>
<td>697,712</td>
</tr>
<tr>
<td>Redhead</td>
<td>104,700</td>
<td>88,700</td>
<td>117,297</td>
</tr>
<tr>
<td>Canvasback</td>
<td>146,800</td>
<td>102,700</td>
<td>128,502</td>
</tr>
<tr>
<td>Scaup</td>
<td>379,100</td>
<td>369,400</td>
<td>410,048</td>
</tr>
<tr>
<td>Ringnecks</td>
<td>56,800</td>
<td>39,700</td>
<td>44,045</td>
</tr>
<tr>
<td>Goldeneye</td>
<td>51,400</td>
<td>44,700</td>
<td>44,491</td>
</tr>
<tr>
<td>Bufflehead</td>
<td>56,900</td>
<td>46,800</td>
<td>57,951</td>
</tr>
<tr>
<td>Ruddy duck</td>
<td>39,200</td>
<td>40,400</td>
<td>65,952</td>
</tr>
<tr>
<td>Total Divers</td>
<td>834,900</td>
<td>732,400</td>
<td>868,286</td>
</tr>
<tr>
<td>Eider</td>
<td>147,700</td>
<td>98,600</td>
<td>102,236</td>
</tr>
<tr>
<td>Scoter</td>
<td>114,900</td>
<td>107,200</td>
<td>54,680</td>
</tr>
<tr>
<td>Oldsquaw</td>
<td>20,100</td>
<td>26,100</td>
<td>15,721</td>
</tr>
<tr>
<td>Harlequin</td>
<td>TR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Seaducks</td>
<td>282,700</td>
<td>142,000</td>
<td>172,637</td>
</tr>
<tr>
<td>Mergansers</td>
<td>63,100</td>
<td>107,200</td>
<td>61,821</td>
</tr>
<tr>
<td>Unident. ducks</td>
<td>4,500</td>
<td>5,900</td>
<td>18,332</td>
</tr>
<tr>
<td>TOTAL DUCKS</td>
<td>1,756,500</td>
<td>1,553,600</td>
<td>1,818,788</td>
</tr>
<tr>
<td>Brant</td>
<td>127,300</td>
<td>123,600</td>
<td>86,049</td>
</tr>
<tr>
<td>Snow goose</td>
<td>99,400</td>
<td>82,100</td>
<td>92,176</td>
</tr>
<tr>
<td>Blue goose</td>
<td>500</td>
<td>2,000</td>
<td>2,216</td>
</tr>
<tr>
<td>Ross' goose</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White-fronted goose</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada goose</td>
<td>822,400</td>
<td>888,700</td>
<td>825,984</td>
</tr>
<tr>
<td>TOTAL GEESE</td>
<td>1,049,600</td>
<td>1,096,400</td>
<td>1,010,615</td>
</tr>
<tr>
<td>Whistling swan</td>
<td>81,100</td>
<td>86,500</td>
<td>74,711</td>
</tr>
<tr>
<td>Trumpeter swan</td>
<td>4,200</td>
<td>3,300</td>
<td>2,627</td>
</tr>
<tr>
<td>Mute swan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL SWANS</td>
<td>85,300</td>
<td>89,800</td>
<td>77,338</td>
</tr>
<tr>
<td>COOT</td>
<td>378,500</td>
<td>318,500</td>
<td>328,288</td>
</tr>
<tr>
<td>GRAND TOTAL</td>
<td>3,269,900</td>
<td>3,058,300</td>
<td>3,230,829</td>
</tr>
</tbody>
</table>
province. The 1984 season will be the first year of reduced black duck limits in both the U.S. and Canada.

Table MB3 shows the 3-year average harvest for 8 key species compared to the 1982 and 1983 harvest. The 1983 season recorded a high kill for Maine and was 25 percent greater than the average kill of 1979-81. Maine’s black duck kill was reduced by 42 percent from this period. The kill of the other species except hooded mergansers increased.

There was an increase in the average daily bag from 4 to 5 game ducks in 1983. Maine sportsmen have apparently shifted some of their emphasis to sea duck gunning which permits a 7 bird daily bag limit. The 1983 eider kill was more than 3 times larger than the 1979-81 average. Our wood duck, mallard and teal kills have also increased in the years since the implementation of reduced black duck season lengths and bag limits. Overall the 1983 harvest in Maine was high and increases in the kill of wood duck, eider, and teal have offset the reductions realized in the black duck kill.

This is the third year of regulations intended to reverse the long-term downward trend in black duck population size. Since 1982, Maine has established waterfowl seasons designed to reduce early October kills of black ducks that are known to be local breeders, thereby directly affecting Maine hunting. A moratorium on black duck gunning recommended in 1982 was intended to reverse this decline; however, a compromise established by the other states within the Atlantic Flyway has resulted in a strategy that reduces the total Flyway kill by 25-30 percent for a 3-5 year period. The black duck population should respond positively from a continued reduction in U.S. harvests coupled with an anticipated reduction in Canadian harvest in 1984. Under this compromise strategy


<table>
<thead>
<tr>
<th>Species</th>
<th>Prior to Regulation Changes</th>
<th>After Implementing Black Duck Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1979</td>
<td>1980</td>
</tr>
<tr>
<td>Mallard Duck</td>
<td>5,188</td>
<td>5,701</td>
</tr>
<tr>
<td>Black Duck</td>
<td>15,910</td>
<td>21,208</td>
</tr>
<tr>
<td>Green-Winged Teal</td>
<td>5,606</td>
<td>9,095</td>
</tr>
<tr>
<td>Blue-Winged Teal</td>
<td>4,365</td>
<td>1,636</td>
</tr>
<tr>
<td>Wood Duck</td>
<td>9,729</td>
<td>10,878</td>
</tr>
<tr>
<td>Ring-necked Duck</td>
<td>3,449</td>
<td>2,659</td>
</tr>
<tr>
<td>Eider Duck</td>
<td>5,159</td>
<td>9,136</td>
</tr>
<tr>
<td>Hooded Merganser</td>
<td>980</td>
<td>1,399</td>
</tr>
<tr>
<td>State Total**</td>
<td>70,960</td>
<td>81,787</td>
</tr>
<tr>
<td>Duck Stamps Sold</td>
<td>16,974</td>
<td>16,473</td>
</tr>
</tbody>
</table>

*Preliminary (based on stamp sales through March 1984)
**State total includes all waterfowl species.
the increase in black duck populations will be slower but should have the desirable effect of maintaining moderate hunting opportunity for Atlantic Flyway gunners. After 3-5 years, if the population has not responded favorably, Atlantic Flyway waterfowl hunters will likely face regulations curtailing black duck hunting opportunity.

Table MB4 shows the black duck harvest for Maine and the Atlantic Flyway. Maine's black duck kill comprises 7-9 percent of the total Flyway kill both before and after the restrictive seasons implemented in 1982.

Table MB4. Black Duck Kill — Atlantic Flyway.

<table>
<thead>
<tr>
<th>Year</th>
<th>Flyway</th>
<th>Maine</th>
<th>New England¹</th>
<th>Mid-Atlantic²</th>
<th>South³</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Number</td>
<td>Percent</td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>1980</td>
<td>309,029</td>
<td>21,207</td>
<td>6.9</td>
<td>59,380</td>
<td>19.2</td>
</tr>
<tr>
<td>1981</td>
<td>230,800</td>
<td>20,844</td>
<td>9.0</td>
<td>41,580</td>
<td>18.0</td>
</tr>
<tr>
<td>1982*</td>
<td>186,700</td>
<td>15,188</td>
<td>8.1</td>
<td>43,873</td>
<td>23.5</td>
</tr>
<tr>
<td>1983*</td>
<td>153,074</td>
<td>11,293</td>
<td>7.4</td>
<td>35,331</td>
<td>23.1</td>
</tr>
</tbody>
</table>

¹New England — VT, NH, MA, CT, RI.
²Mid-Atlantic — NY, PA, DEL, MD, VA, NJ.
³Southern — WVA, NC, SC, GA, FL.
*First year with black duck restriction in Maine.
*First year with black duck restriction in U.S. Atlantic Flyway.

Waterfowl Production

Waterfowl production is studied by sampling production (spring broods) on 37 index areas for which there are long-term data to compare (Table MB5). In 1984 the total number of broods observed on these areas was 7 percent lower than 1983. During this same period the total number of black duck broods increased from 22 to 27 and accounted for...
17 percent of the broods observed on these wetlands. This number is still well below historical levels for these areas. Fewer wood duck broods were observed in 1984 on these areas which offset the increase in black duck broods.

Wet, cool weather during the breeding season in 1984, as in 1983, resulted in high water and flooding in much of Maine. This was likely


<table>
<thead>
<tr>
<th>Area Name and Location</th>
<th>Wetland Type</th>
<th>Total Broods 1981</th>
<th>Total Broods 1982</th>
<th>Total Broods 1983</th>
<th>Total Broods 1984</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scarborough WMA, Scarborough</td>
<td>18</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Brownfield WMA, Brownfield</td>
<td>3</td>
<td>14</td>
<td>24</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Pattee Brook Marsh, Albany</td>
<td>7</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Umerhinds, Richmond</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Ruffingham WMA, Searsmont</td>
<td>3</td>
<td>4</td>
<td>10</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Sandy Point WMA, Stockton Springs</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Krah-Yeaton S.M., Sheepscot</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>M. D. James #1 S.M., Cushing</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>M. D. James #2 S.M., Cushing</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lyle Frost WMA, Eastbrook</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>West Bay Pond, Gouldsboro</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Eastern-Olsen M., Baileyville</td>
<td>8</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Kennebago Logans, T3 R4 Stetsontown</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Stump Pond, New Vineyard</td>
<td>6</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Lily Pond, New Vineyard</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Pierce Pond, Pierce Pond Twp.</td>
<td>5</td>
<td>9</td>
<td>11</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Chesterville WMA, Chesterville</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Mercer Bog WMA, Mercer</td>
<td>4</td>
<td>2</td>
<td>9</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Fahi Pond WMA, Embden</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Piscataquis River, Dover, Sebec, Milo</td>
<td>5R</td>
<td>4</td>
<td>19</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Little Androscoggin R., Oxford/Norway</td>
<td>5R</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Rush Pond, Herseytown</td>
<td>5</td>
<td>26</td>
<td>17</td>
<td>19</td>
<td>11</td>
</tr>
<tr>
<td>Manuel WMA (Hodgdon Deadwater)</td>
<td>3</td>
<td>12</td>
<td>11</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Ingraham Pond, Hodgdon</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Lower Sawtelle Deadwater, T5 R7</td>
<td>4</td>
<td>8</td>
<td>5</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Mattawamkeag R., Kingman-Wytopitlock</td>
<td>5R</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>not surveyed</td>
</tr>
<tr>
<td>Mud Pond, Drew Plt.</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Upper Deadwater Pond, T10 R11</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Umsaskis Inlet, T11 R13 &amp; T10 R13</td>
<td>6</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Long Lake, T12 R13</td>
<td>5</td>
<td>8</td>
<td>8</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Madawaska WMA, Palmyra</td>
<td>3 &amp; 4</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Pennamaquan R., Pembroke</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Mosher Pond, Industry</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Arnold Brook Lake, Presque Isle</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Blind Brook, T10 R9</td>
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<td>Drews Lake, Oakfield (Bear Bk)</td>
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Total Broods (36 Areas): 171 172 168 155
Percent Change: +0.58 -2.91 -7.7
a cause for decline in total broods observed and resulted in considerable renesting, especially by ring-necked ducks. Late broods and smaller brood sizes are typical of this type of weather pattern. Production studies indicate that black ducks hatched successfully before the heavy rains which caused widespread flooding after Memorial Day.

Non-Toxic Shot

Migratory bird management and hunting are affected by waterfowl losses caused by the ingestion of lead pellets. Annually this loss is estimated up to 2-3 million birds. Lead poisoning occurs in waterfowl and other birds when they consume lead pellets during normal feeding activities. Other species, notably bald eagles, are affected indirectly after they feed on sick or crippled waterfowl.

Not all birds ingesting lead pellets die from lead poisoning, but research indicates that their health and reproductive capacity is diminished. Studies of the incidence of lead poisoning in wintering black ducks in New Jersey showed that as high as 20 percent of the live birds examined showed high levels of lead in the blood. These numbers suggest a high and widespread incidence of toxic lead in the environment and a proportional frequency of contamination in waterfowl.

Attempts initiated in 1976 to encourage the use of non-toxic shot have not been effective, largely because of early public skepticism concerning possible damage by steel shot to gun barrels, possible increase in the crippling rate, and the higher cost of steel loads. However, over the last decade non-toxic shot loads have been ballistically improved and now many waterfowl hunters have made a successful conversion to steel shot.

The improved acceptance of steel shot by many waterfowl hunters has led to renewed hope for more widespread use of the “non-toxic” shot. This solution to toxic lead poisoning in waterfowl is being actively supported by conservation and sporting organizations. Maine waterfowl hunters are encouraged to read published information on lead poisoning and non-toxic shot, and to buy and use steel shot during this season. Their conclusions based on readings and field tests will allow individuals to make sound personal decisions regarding steel shot. The hunting regulations that will be imposed on waterfowlers in the future will depend in large part on the decisions they make now in the use of non-toxic shot. A reduction in the annual losses caused by toxic lead shot may be brought about only with the strong support and cooperation by waterfowl hunters.

CANADA GOOSE STUDY

The long-term effort to establish the Canada goose as a common breeding species throughout the State has been successful. These new popu-
Figure MB-1. Canada goose release sites • and confirmed brood observations ■.
lations have been developed from birds relocated from nuisance flocks in New Jersey, New York, Connecticut and Massachusetts. The first efforts to establish breeding populations were concentrated in southern Maine; the lastest efforts have been in more northern remote locations. Release site locations and townships with confirmed breeding are shown in Figure MB1. This program has been popular with Maine wildlife enthusiasts since its inception.

No geese were transplanted in 1984 as a precautionary measure to check the spread of avian influenza prevalent in mid-Atlantic state poultry flocks. However, we expect to continue the project in future years.

WOODCOCK STUDY

1984 Spring Census

Department personnel and private individuals have been cooperating with the U.S. Fish and Wildlife Service in an annual “singing ground survey” for several years. Spring counts of displaying male woodcock are conducted along permanent, randomly selected routes in Maine and other states within the breeding range. Last year cooperators completed 42 routes in Maine and the data collected were used to compute an index to the breeding woodcock population size. This data compiled by the U.S. Fish and Wildlife Service are summarized in Table MB6.

Table MB6. Ten Year Summary — Woodcock Singing Ground Survey 1975–1984 — Comparable Routes Only* (USFWS Data). *Only routes conducted by the same person in both years.

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56
The 1984 spring census in Maine measured a decrease of 7.6 percent from the previous year and a 11.5 percent decrease for the Eastern region. The 1984 index approaches the all-time low recorded in 1982.

Woodcock Harvest - 1983

The 1983 hunting season started on October 1st and ended November 30th. The Maine gunner was allowed 5 birds per day with 10 in possession. This season followed a curtailed season in 1982 and was slightly better for hunters than the 1982 season. The percent of successful hunters (Table MB7), declined from about 67 percent to 63 percent in 1982.

Table MB7. Maine Woodcock Harvest 1979-1983. (Maine Game Kill Questionnaire data)

<table>
<thead>
<tr>
<th>Year</th>
<th>1979</th>
<th>1980</th>
<th>1981</th>
<th>1982</th>
<th>1983</th>
<th>5-Year Average</th>
<th>3-Year Average</th>
<th>3-Year Change From 1982</th>
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<tbody>
<tr>
<td>Est. Total Hunters</td>
<td>27,418</td>
<td>26,984</td>
<td>31,590</td>
<td>25,382</td>
<td>24,189</td>
<td>27,113</td>
<td>27,054</td>
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<tr>
<td>Percent Successful</td>
<td>68.00</td>
<td>69.00</td>
<td>68.00</td>
<td>63.00</td>
<td>64.00</td>
<td>66.40</td>
<td>65.00</td>
<td>-1.54</td>
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<tr>
<td>Total Kill Lower Limit</td>
<td>60,616</td>
<td>75,112</td>
<td>50,713</td>
<td>33,940</td>
<td>30,283</td>
<td>50,133</td>
<td>38,312</td>
<td>-20.96</td>
</tr>
<tr>
<td>Estimated Total Kill</td>
<td>142,733</td>
<td>172,766</td>
<td>164,170</td>
<td>109,785</td>
<td>107,586</td>
<td>139,408</td>
<td>127,180</td>
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<tr>
<td>Total Kill Upper Limit</td>
<td>224,850</td>
<td>270,421</td>
<td>277,626</td>
<td>185,630</td>
<td>184,889</td>
<td>228,683</td>
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<td>Average Kill</td>
<td>5.21</td>
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<td>4.33</td>
<td>4.45</td>
<td>5.14</td>
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and remained low (64 percent) in 1983. The average seasonal kill per hunter showed similar trends. Compared to the previous three year seasonal average of 5.6 birds/hunter the 1982-83 average was 4.4 birds/hunter — down 22 percent. Estimates of woodcock hunter numbers, average seasonal kill, and total kill from 1950 through 1983 are plotted in figure MB2. The 1983 harvest estimates are close to the ten-year low.

Federal Framework Changes 1985

The U.S.F.W. Service’s Office of Migratory Bird Management is evaluating how best to implement regulatory changes in 1985-86 that will equitably reduce the Flyway woodcock kill. The need for additional framework restrictions has been brought about by long-term population declines and reduced populations in recent years. Most woodcock managers attribute the declining population to habitat loss and the deteriorating quality of remaining habitat. Many feel that present low populations require reduced harvest rates. Harvest restrictions planned to begin in 1985 will need to continue for several successive years in order to halt the decline.
Figure MB 2. Woodcock Harvest Trends - Maine 1952-1982.
MARINE WILDLIFE STUDY

Perhaps the most significant product of the marine wildlife study over the past year was the completion of the final report on the Muscongus Bay Marine Wildlife Inventory and Evaluation. Completion of this work provides comprehensive documentation of marine wildlife abundance and distribution, both geographically and seasonally, along the Maine coast from Cape Elizabeth to Owls Head. The data, analyzed and compiled in this report and two similar previous reports (Casco Bay and Sheepscot Bay), provide a detailed reference concerning site specific habitat use by marine wildlife. This is invaluable to land use planners and particularly to those concerned with evaluating potential wildlife losses which might occur as a result of a marine disaster such as an oil spill.

Much of the program, which was developed within the Migratory Bird Project, will be incorporated into the newly established Nongame Project. (For an overview of the Marine Wildlife Study please refer to the 1982-83 Migratory Bird Project report.)
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Staff Acknowledgments

The Wildlife Division consists of a Management Section and a Research Section. Both groups contribute in various ways to the overall management of the state's wildlife resources.

Regional Biologists and their staffs collect biological and harvest information, evaluate local trends and management needs, and provide valuable input to the development and execution of management programs. The Research Section consists of four major projects: Non-game and Endangered Species; Big Game; Small Game and Furbearers, and Migratory Bird. Within the "Projects" are various studies to determine the status and needs of specific wildlife species.

Without the dedication and hard work contributed by each member of the Division’s staff, this report would not be possible and the wildlife management program in the State of Maine would not be held in as high regard as it is today.

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Deer, Moose, Red Fox by Henry Hilton
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Art by Dick Bernard, Richmond, VA