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# WOODCOCK STATUS REPORT 1972

UNITED STATES DEPARTMENT OF THE INTERIOR
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BUREAU OF SPORT FISHERIES AND WILDLIFE

Special Scientific Report—Wildlife No. 169

UNITED STATES DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
Bureau of Sport Fisheries and Wildlife

# WOODCOCK STATUS REPORT, 1972

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ABSTRACT

There is evidence that the woodcock harvest and the number of participating hunters have increased substantially since 1964, with the U.S. harvest in 1970-71 exceeding 1.3 million birds. Information on the current status and population trend of the American woodcock is provided by annual singing-ground surveys over much of the species' breeding range, and by wing-collection surveys in the eastern United States. The 1972 singing-ground survey showed breeding population index increases of 1.6 percent in the Atlantic Region, 3.7 percent in the Central Region, and 2.7 percent rangewide. These indexes are based upon 813 comparable, randomly selected survey routes--4 percent fewer than the record 848 routes in 1971.

The wing-collection survey for the 1971-72 season suggested the greatest 1-year change in productivity in the history of the survey--a 27 percent decline; this followed a substantial increase of 25 percent the preceding year. Both daily bag per hunter and the average season bag decreased slightly.

Woodcock research is increasing, with present emphasis on more banding on breeding grounds. Limited band recoveries to date suggest little interchange between Atlantic Region and Central Region breeding populations.

# THE STATUS OF AMERICAN WOODCOCK - 1972

## INTRODUCTION

The American woodcock (Philohela minor) has become a popular game bird with increasing numbers of hunters over a wider portion of its range during the past decade. The species still rates well below waterfowl on the migratory game bird list, but the woodcock-to-waterfowl harvest ratio has narrowed to 1:3, or less, in several northern States. Although State harvest surveys and the Bureau's waterfowl hunter mail survey show considerable variations in annual woodcock harvests, the general trend is upward. Thus, the species has advanced from a "specialty" game bird highly regarded by a few hunters to a broader based source of recreation.

In the United States, no suitable sampling frame exists upon which to conduct an annual woodcock harvest survey such as is undertaken for waterfowl. Since 1964, the Bureau's waterfowl hunter questionnaire survey has provided data on the numbers of woodcock harvested by waterfowl hunters (MacDonald and Martin, 1971). Comparisons are made in table 1 of the number and rate of increase of (1) waterfowl hunters, (2) waterfowl hunters who hunted woodcock, and (3) woodcock harvested by waterfowl hunters, by woodcock reference areas of the United States (fig. 1). However, the waterfowl hunter survey samples only 10 percent of all licensed hunters. The only measure of the woodcock harvest by the remaining 90 percent is in those States which conduct game harvest questionnaire surveys which include a question about the number of woodcock harvested. Data from the few such surveys cannot be combined because of sampling and procedural differences.

A comparison of woodcock data from reliable surveys in two representative States, Michigan and New York, with those from the Bureau waterfowl hunter questionnaire survey in the same States indicates that harvest estimates from the latter survey averaged about 45 percent of the harvests indicated by State surveys (table 2). Thus, it appears that doubling the woodcock reported bagged by waterfowl hunters provides a conservative estimate of the total U.S. harvest. The resulting figure of 1.3 million woodcock harvested in the 1970-71 season represents an increase of approximately 50 percent over a 5-year period. This is a crude estimate at best. But it provides some idea of the utilization of the resource.

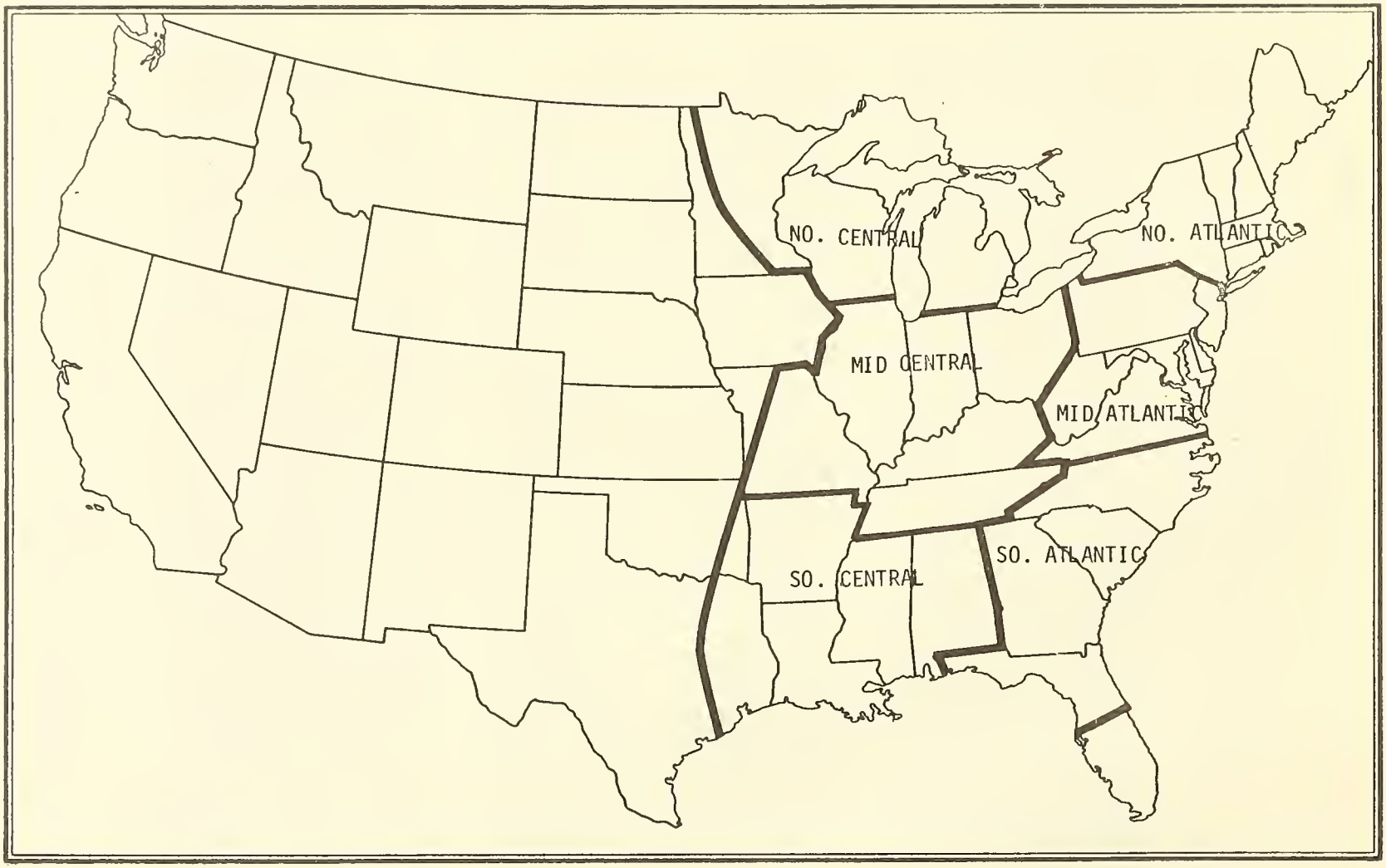


Figure 1.--Reference areas of U.S. woodcock surveys.

In Canada, all migratory game bird hunters are required to obtain Federal permits. Thus, in recent years, woodcock harvests in Canada have been monitored better than has been possible for those in the United States. The Canadian surveys indicate that the woodcock harvest increased from about 90,000 in 1967 to 100,000 in 1968, and to 116,000 in 1969. The harvest declined to 98,000 in 1970 when the New Brunswick season was closed and hunting was curtailed in other areas because high levels of DDT metabolites were detected in a preseason sample of woodcock (Benson, 1968, 1969, 1970, 1971).

The above figures suggest that the continental woodcock harvest currently approaches 1.5 million birds annually--and is increasing. Relatively little woodcock research has been accomplished, and much needs to be learned of its potential for meeting further recreational demands.

Two annual surveys presently comprise the basis for the establishment of woodcock hunting regulations: (1) A singing-ground survey provides an index of the post-migration breeding population; and (2) a wing-collection survey provides data on relative reproductive success of the species the previous breeding season, and changes in size and distribution of the harvest by survey participants.

The collection and analysis of data have steadily improved in both surveys. Although they are imperfect, these surveys produce the best information currently available for managing woodcock. This report presents data from the 1972 singing-ground survey, the 1971-72 wing-collection survey, and additional information accumulated since publication of the 1971 woodcock status report (Clark, 1972).

## SINGING-GROUND SURVEY

### Procedures

The singing-ground survey, which enumerates singing males heard along predetermined routes (table 3), is used as an index to the size of the breeding population. Analysis of these and other data from intensive research on the breeding grounds should increase our ability to relate singing-ground survey results to actual breeding populations. At present, the index is our sole measure of the woodcock breeding population.

Between 1964 and 1970, the basis of the survey gradually changed from routes selectively located in woodcock habitat of average or better quality (management routes) to randomly located routes covering habitat of all levels of quality (Clark, 1970). Because the conversion from management routes to random routes was 90 percent complete in 1969, the 1970 survey provided comparable random sample data for 2 consecutive years from most of the woodcock's breeding range. Beginning in 1970, comparable breeding population indexes for the breeding range of the woodcock are based entirely upon random routes.

The 1972 indexes are based on 813 comparable routes, 4 percent fewer than the high of 848 in 1971. In computing the indexes, data from each State were weighted according to the State's proportion of the total land area (inland water area excluded) in the region or in the range of the species (table 4).

On some routes, no singing males were heard at any of the 10 stops. Routes showing "0" results for 2 consecutive years under comparable circumstances are placed on the "Constant 0" list. They are included in the number of comparable routes, but are not field-checked annually; they will be checked at 5-year intervals to determine if woodcock are present.

Because the group of routes paired with comparable routes the preceding year to determine percent change is not necessarily the same group paired with comparable routes the subsequent year, it is illogical to graphically depict numbers of singing birds heard per route. Also, the conversion to random routes, which usually averaged fewer birds than management routes, precludes portraying the annual average number of birds per route. Therefore, the number of woodcock heard per comparable route, as shown in figure 2, was calculated as follows:

1. Determine the percent difference in number of woodcock heard per comparable route between the 1969 and the 1970 surveys.

2. Apply that percentage to the 1970 (base year) average number of woodcock heard per comparable route to obtain an adjusted figure for 1969.

3. Apply the percent difference between 1968 and 1969 (as shown in the 1969 report) to the adjusted 1969 figure to obtain an adjusted figure for 1968.

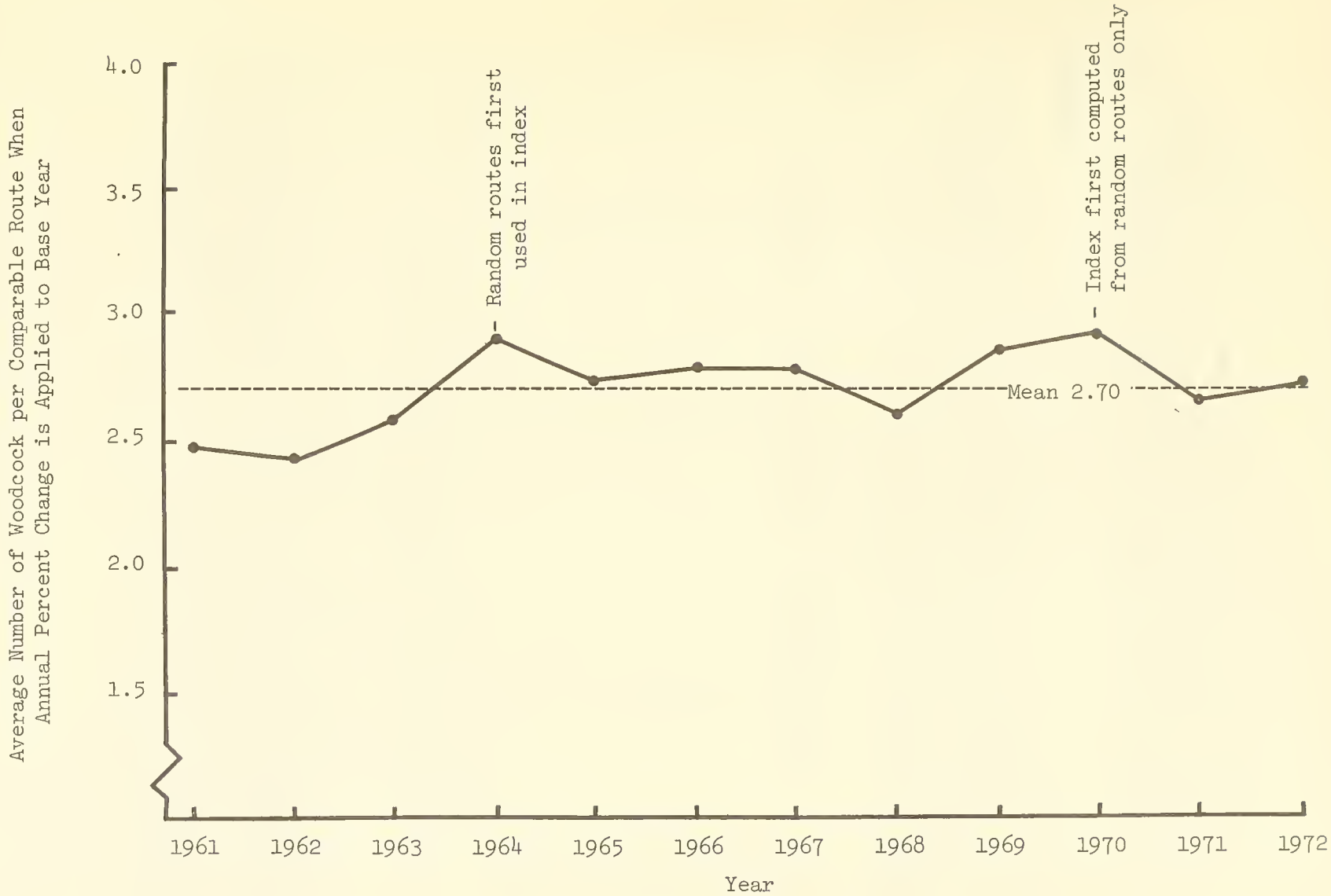


Figure 2.--Trends in singing male woodcock as determined from annual singing-ground surveys (Base year - 1970)

4. Do the same for each year, working back to the beginning of the index period, then forward to the end of the period.

5. Graph the adjusted figures for the index years, rather than the figures actually recorded each of these years.

Results

The 1972 survey showed a 1.59 percent increase from 1971 in the number of woodcock heard per comparable route in the Atlantic Region, and 3.67 percent in the Central Region. When the data were weighted on a rangewide basis, the index showed an increase of 2.73 percent. Following is a summary of the annual changes for the past 8 years, based on data weighted regionally and rangewide.

| | Percent Change from Previous Year | | |
|---|---|---|---|
| Year | Atlantic Region | Central Region | Rangewide |
| 1965 | -0.4 | -11.1 | -6.5 |
| 1966 | +2.4 | -0.5 | +1.7 |
| 1967 | +1.5 | -3.5 | 0 |
| 1968 | -8.4 | -4.5 | -6.9 |
| 1969 | +4.2 | +12.1 | +8.8 |
| 1970 | 0 | +3.1 | +2.1 |
| 1971 | -9.8 | -7.3 | -8.4 |
| 1972 | +1.6 | +3.7 | +2.7 |

Up to 1964 the breeding population trend was upward, and since then annual changes have been generally compensatory (fig. 2).

## WING-COLLECTION SURVEY

The woodcock wing-collection survey was initiated in the United States in 1959. The primary objective is to determine woodcock reproductive success as reflected by the age and sex composition of the harvest. The survey also produces information on changes in geographic and chronologic distribution and size of the harvest. Numbered and dated envelopes are used for each day's bag, so it is possible to determine both daily and seasonal hunter success.

Response to the wing-collection survey has been generally good since its inception in 1959. Annual wing submissions have ranged from 8,786 the first year to 19,165 in the 1971-72 season, averaging 14,463 annually for the 13-year period.

## Procedures

The procedures for collecting and processing wings, and analyzing data, were the same as for the 1968-69 season (Clark, 1970).

Because we lack a uniform method for sampling woodcock hunters, it is necessary to use several sources of names and addresses in assembling a mailing list for prospective participants in the wing-collection survey. To facilitate data analysis, each source is given a code number as follows:

Code 1 - Previous years' Code 1, 2, 4, 7, and 8 hunters who submitted wings.

Code 2 - Waterfowl mail survey hunters who reported hunting woodcock.

Code 4 - Hunters who ask to participate or are proposed by a fellow hunter.

Code 7 - Hunters who appear on both Code 1 and Code 9 lists.

Code 8 - Previous years' Code 9 hunters who submitted wings.

Code 9 - Hunters on a list provided by a State from its harvest survey (except in New Jersey, where list was from woodcock hunting stamp purchasers).

The distribution of contacts by States is shown in table 5. A total of 8,593 hunters was contacted in the 1971-72 woodcock survey, 10 percent more than the previous high of 7,800 in 1969-70. To improve the distribution of the wing sample, more hunters in mid-latitude and southern States have been contacted in recent years (table 6). Adequate samples are readily available from most northern States.

Hunters who cooperated in previous years (Code 1) submitted the most wings and were the sole source of comparable data. Lists of hunters' names and addresses obtained from State harvest surveys (Code 9) probably produce the least biased samples within each State; however, procedural variations between States introduce additional biases. Also, many States either have no harvest survey or do not inquire about woodcock in their questionnaires. Code 4 names added annually at the request of survey participants or their friends are few. The list of woodcock hunters from the Bureau's waterfowl mail survey (Code 2) is the largest source of names, but the number of wings submitted per contact is very low. A significant bias in this source is the large State-to-State variation in the ratio of waterfowl hunters to total hunters. For example, both Louisiana and Pennsylvania are important woodcock harvest States. However, only one Pennsylvania hunter in 20 purchases a duck stamp; in Louisiana, one-third of all hunters purchase duck stamps. Obviously, precise analysis of a survey sample originating from such varied sources is impossible. However, major changes in woodcock productivity and harvest rates probably can be detected.

## Results

The number of wings received increased from 18,385 in 1970-71 to 19,165 in 1971-72. Wing totals vary slightly between different tables in this report because incomplete information necessitated excluding a few wings from some tabulations.

Table 7 shows a listing by States of the number of cooperators, envelopes, and wings received for the past three hunting seasons. Numbers of envelopes are shown because each envelope represents 1 day's hunt by one hunter, and consequently is the bag per successful day.

Comparison of sample source.--Table 8 shows the response rate and wings contributed by hunters in the three principal categories. Code 1 and Code 9 data overlap slightly because both include Code 7 data. Except for the steady decline in Code 2 response rate, weighted averages from 1971-72 in this comparison were similar to those from the preceding three seasons, as indicated in the following summary:

| | | Code 1 | Code 2 | Code 9 |
|---|---|---|---|---|
| Percent response | 1968-69 | 61.1 | 18.4 | 13.9 |
| | 1969-70 | 58.6 | 16.5 | 14.3 |
| | 1970-71 | 58.8 | 14.0 | 13.1 |
| | 1971-72 | 58.6 | 11.1 | 11.5 |
| Wings received per contact | 1968-69 | 8.0 | 0.9 | 0.7 |
| | 1969-70 | 6.3 | 0.7 | 0.7 |
| | 1970-71 | 6.6 | 0.6 | 0.8 |
| | 1971-72 | 6.5 | 0.5 | 0.8 |
| Wings received per contributor | 1968-69 | 13.2 | 4.8 | 4.9 |
| | 1969-70 | 10.8 | 4.0 | 5.2 |
| | 1970-71 | 11.3 | 4.0 | 6.2 |
| | 1971-72 | 11.1 | 4.2 | 6.5 |

Two States provided representative sample hunter lists for the fourth consecutive year. Data from wings contributed by these hunters were compared with data provided by other hunters to determine if any group showed a tendency to hunt earlier in the season, and if the age ratio of their birds differed materially from the average (table 9). Either or both of these factors could influence the age ratio determined from the survey. Results were inconsistent, but additional years' data may clarify the effects of source of hunters' names on survey results. More State lists have been solicited for the 1972-73 season.

Weighting factors.--Because the number of wings received from each State usually was not proportional to the woodcock harvest in that State, it was necessary to weight data used in computing overall productivity and harvest index trends.

Because we lack a uniform sampling frame for woodcock hunters, no completely satisfactory weighting method has been devised. The current procedure is based upon a combination of data from the Bureau's waterfowl mail survey, duck stamp sales, and State license sales (Clark, 1970). The derivation of weighting factors for computing productivity and harvest indexes for the 1971-72 season is shown in table 10.

Productivity index.--In this report, reproductive success is used as a measure of annual productivity. Woodcock can be aged and sexed by wing plumage characters (Martin, 1964). The ratio of immatures to adult females in the harvest, as determined from the wing-collection survey, provides a measure of reproductive success during the preceding breeding

season (table 11). Considerable variation occurs in immature-adult female ratios between different harvest areas (States or Provinces), and between different years for the same harvest areas. These variations are probably caused by differences in hunting season dates, weather conditions, hunting season restrictions imposed by emergency situations (such as fire hazard), and possibly differential migration coupled with differential vulnerability to hunting among sex and/or age groups. However, prior to the 1970-71 season, the annual change in age ratios was small when rangewide data were weighted and combined (fig. 3). The greatest fluctuations to date occurred in the last 2 years--a 25.0 percent increase in 1970-71 followed by a 26.9 percent decline in 1971-72 (table 12).

The cause of the unusual fluctuations in age ratio has not been determined. Adverse weather when chicks are most vulnerable shortly after hatching may be a factor. Examination of climatological data for May (when most woodcock hatch) in States having the greatest density of breeding woodcock shows that average temperatures were above normal in 1970 and below normal in 1971 (U.S. Dept. of Commerce, 1970 and 1971):

| | 1970 (25.0% increase in age ratio) | 1971 (26.9% decrease in age ratio) |
|---|---|---|
| ATLANTIC REGION (25 weather divisions) | | |
| Average departure from normal | +1.12° | -1.58° |
| Temperature range | -1.4° to +3.1° | -3.9° to +1.4° |
| Number divisions above normal | 22 | 2* |
| Number divisions normal | 1 | 1 |
| Number divisions below normal | 2** | 22 |
| CENTRAL REGION (25 weather divisions) | | |
| Average departure from normal | +0.62° | -2.38° |
| Temperature range | -3.4° to +3.2° | -4.4° to -0.2° |
| Number divisions above normal | 17 | 0 |
| Number divisions normal | 0 | 0 |
| Number divisions below normal | 8*** | 25 |

*Coastal Maine and New York's St. Lawrence valley
**Northern Maine and northwestern Vermont
***Northern Minnesota, northern Wisconsin, and Michigan's Upper Peninsula

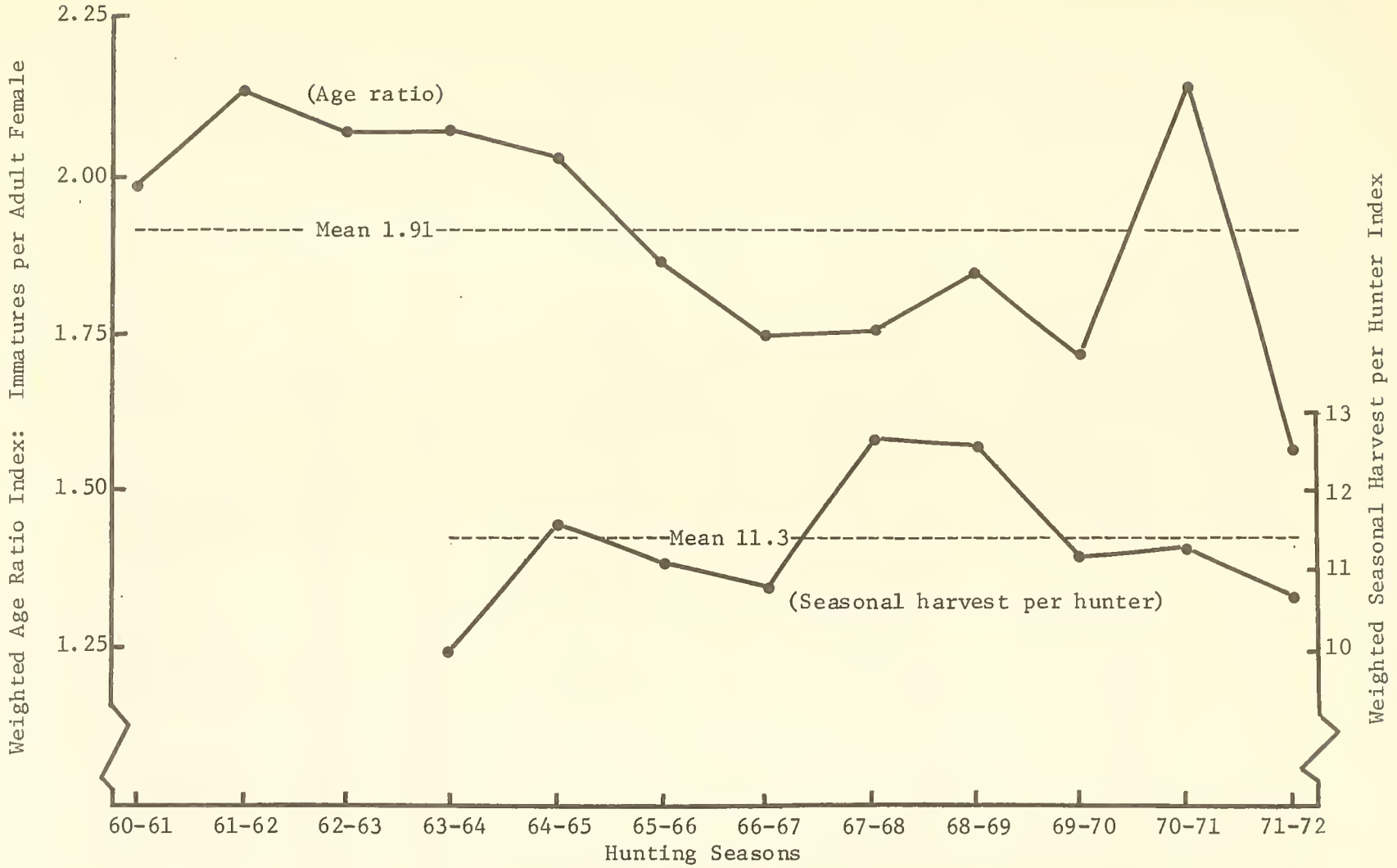


Figure 3.--Weighted age ratio and seasonal harvest per hunter indexes, as determined from annual woodcock wing-collection survey data from comparable hunters (Base year - 1969-70).

Although data from only 2 years surely do not establish positive correlation between spring temperatures and woodcock productivity, they suggest that this and other weather factors merit closer scrutiny.

When age ratios are graphically depicted, using annual percent change with 1969-70 as the base year, the 1970-71 age ratio is highest, while the 1971-72 figure is the lowest.

Variation in the productivity index due to differences in hunters sampled has been eliminated by using only data from comparable hunters (hunters participating in the survey both years) in computing the change in weighted index.

Hunter success index.--Trends in the woodcock daily and seasonal harvest have been appraised by determining annual percent change in the number of wings submitted by hunters who participated in the survey for 2 consecutive years (table 13). Average daily harvests have changed little from year to year. The trend was downward from 1963 to 1966, upward from 1966 to 1968, and down slightly since 1968.

Seasonal harvest has shown slightly greater annual percent changes than daily harvest. The apparent upward trend through 1970-71 (fig. 3) is misleading because the substantial increases in 1964-65 and 1967-68 probably resulted from greater hunting opportunity. Hunting was curtailed by hazardous fire conditions in the Northeast in 1963. The return to normal in 1964 resulted in the much higher seasonal harvest-per-hunter. The increased harvest in 1967-68 may be attributed to an increase in season length from 50 to 65 days. When sharp increases in 1964-65 and 1967-68 are discounted, the trend is almost steadily downward.

The composition of the wing collection by daily bag size was examined for the three past seasons; however, little variation between seasons was evident.

| | 1969-70 | | 1970-71 | | 1971-72 | |
|---|---|---|---|---|---|---|
| Bag Size | Successful Hunts | Percent of Total | Successful Hunts | Percent of Total | Successful Hunts | Percent of Total |
| 1 | 2,822 | 39.7 | 2,088 | 40.1 | 3,142 | 39.5 |
| 2 | 1,533 | 21.6 | 1,637 | 21.2 | 1,758 | 22.1 |
| 3 | 1,042 | 14.7 | 1,081 | 14.0 | 1,181 | 14.8 |
| 4 | 733 | 10.3 | 842 | 10.9 | 711 | 8.9 |
| 5 | 976 | 13.7 | 1,060 | 13.8 | 1,163 | 14.6 |
| Total | 7,106 | 100.0 | 7,708 | 100.0 | 7,955 | 100.0 |

Greater variations were evident in regional summaries of the data (table 14). However, annual variations were small when samples totaled over 1,000 hunts.

Hunter success, along with other factors, needs further study before hunting pressure can be equated with woodcock population trends. A correlation may be revealed by information obtained through a uniform sampling frame such as the proposed Federal migratory upland game bird hunting permit, and from accumulating banding data.

Regional analysis of wing-collection data

Sex and age ratios.--An investigation of factors affecting productivity and hunter success was initiated in 1970. Since differential migration by sex-age groups in correlation with the timing of hunting seasons would materially influence the productivity index, the first step was an analysis of regional sex and age ratios by time periods.

Recent band recovery data suggest less intermingling of woodcock between the Central and Atlantic Regions than was formerly supposed. Thus, data from the two regions were analyzed separately. Within each region, three subunits were established (fig. 1). The criteria used in selecting these were:

1. Northern subunit--States having relatively high density woodcock breeding populations and harvests with a high proportion of locally reared birds.

2. Middle subunit--States having moderate to low density breeding populations and harvests consisting primarily of migrant woodcock.

3. Southern subunit--States having very low breeding population densities and harvests consisting almost entirely of wintering and migrant woodcock.

Naturally, there is overlapping of characteristics between these subregions, because State boundaries, though best, do not accurately delineate the criteria described.

The woodcock harvest, as represented by the wing collection, was divided into 10-day periods for regional comparisons. These minor periods were grouped into three major periods for each subregion. Grouping dates were selected that placed approximately 50 percent of the wings in the middle period and 25 percent each in the first and

third periods. If seasonal trends in sex or age ratios occur, the broad separation between early and late season should make them more apparent. Data for the 1968-69 through 1971-72 seasons are summarized for the Central Region in table 15, and for the Atlantic Region in table 16. Extension of the season framework through February (February 15 in 1971 and February 28 in 1972) shifted the median harvest period to a later time in southern subregions the 2 latest years.

In view of the effect of weather on timing of migration, and subsequently the availability of woodcock for harvest, conclusive results cannot be expected from only 4 years' data. Inconsistencies will be noted in sex and age ratios in the tables. However, we believe that accumulated data may eventually reveal enlightening trends.

Timing of harvest.--Distribution of the harvest as shown by 10-day wing-collection periods provides some insight into timing of the fall migration. Inasmuch as substantial numbers of woodcock are produced in Canada, the harvest in even the northern States includes some migrants. It is possible, however, to encompass the period of greatest abundance of woodcock for a particular State within a season length of 65 days. In those few States where the most advantageous hunting season for resident game birds is the prime consideration in determining the opening date of the woodcock season, the period of greatest woodcock abundance may be missed in many, if not most, years. A north-to-south distribution of the 1968-69 through 1971-72 harvests is shown for the Central Region (table 17) and Atlantic Region (table 18). Larger samples are needed for some States, but the tables indicate the chronology of fall migration as reflected by the harvest.

No adjustment was made in either table for periods in which the beginning or end of the season occurred, and which encompassed less than 10 days of hunting. Heavier hunting pressure on the opening day or first weekend may partially compensate for a shortened period at the beginning of the season. However, concentration of hunting effort and harvest in the forepart of the season probably is not as great for woodcock as for some game birds.

The wing-collection survey data were summarized by 7-day periods as well as by 10-day periods. Distribution of the harvest by 7-day periods beginning with the opening date in each State provides better information on the timing of harvests in individual States (tables 19 and 20). The shorter period makes regional pooling of data more difficult because it magnifies problems of State-to-State variation in opening dates. However, it eliminates the variation in hunting opportunity associated with 10-day periods where the first period may contain from 1 to 10 days, and some periods may include two weekends. The effect of weekend hunting varies materially, depending upon whether or not Sunday hunting is permitted.

The woodcock hunting season in some northern States may be curtailed by weather conditions or conflicts with the deer hunting season when use of bird dogs may be undesirable. However, hunters in most of those States still enjoy good woodcock harvests.

Data in tables 19 and 20 suggest that some States could benefit from earlier or later seasons than those selected in 1969-70, 1970-71, and 1971-72. Although results may be biased by inadequate sample size, unduly high percentages of the total season's harvest in the first 2 weeks suggest that an earlier season might be desirable. In contrast, the concentration of the harvest towards the end of the season suggests the need for a later season. States having small samples in the survey may profit by examining data from other States in their same general latitude.

Figures 4 and 5 show correlation between the advent of freezing temperatures and progress of migration. Average dates of the first killing frost, a reflection of freeze temperature frequency (fig. 4), show irregular patterns due to the influence of elevation and nearby large bodies of water. The average duration of snow cover, as reflected by mean annual snowfall (fig. 5), shows patterns which relate to timing of harvests shown in tables 15 and 16.

## SUMMARY OF RESEARCH ACTIVITIES

Emphasis on woodcock research has now shifted to breeding ground banding and to the exploration of specific problems. Federally funded woodcock projects in progress during the fiscal year ending June 30, 1972, are listed in table 21. Banding is a particularly pressing need, and pilot banding projects have begun in several States and Provinces. Since several newly developed techniques are involved, additional training sessions are needed before a comprehensive banding program can be implemented. Many different organizations at the Federal and State-Provincial level are involved. While this somewhat complicates coordination of plans for training, it will increase the output of banded woodcock for the limited funds and manpower that each organization can allot to this species. Expansion of banding effort in the 11-year period, 1961-71, is reflected in table 22. The increase, particularly evident in preseason banding, is graphically shown in figure 6.

Comparisons of recovery locations of woodcock banded in the Atlantic Region with those banded in the Central Region (table 23 and fig. 7) add to existing evidence that, except for the shearing effect of the Atlantic coastline, principal woodcock migration routes have north-south orientation. Interspersion on the wintering grounds of birds reared in Atlantic and Central Regions is suggested by recoveries of winter-banded birds in the northern parts of both regions. However, 85 percent of the recoveries from winter-banded woodcock were in the region of banding.

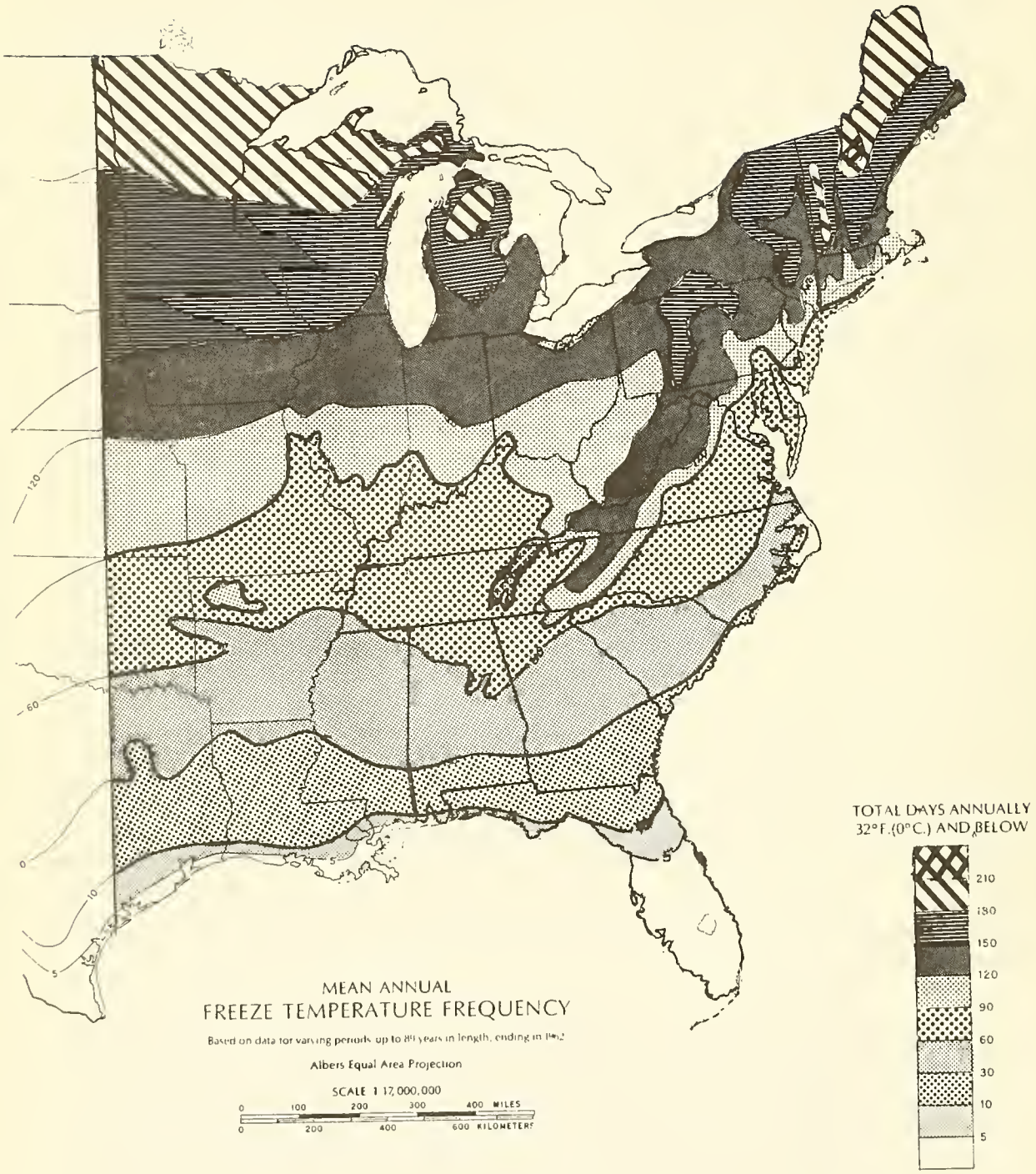


Figure 4.--Mean annual freeze temperature frequency (Anonymous, 1970)


Figure 5.--Mean annual snowfall (Anonymous, 1970)

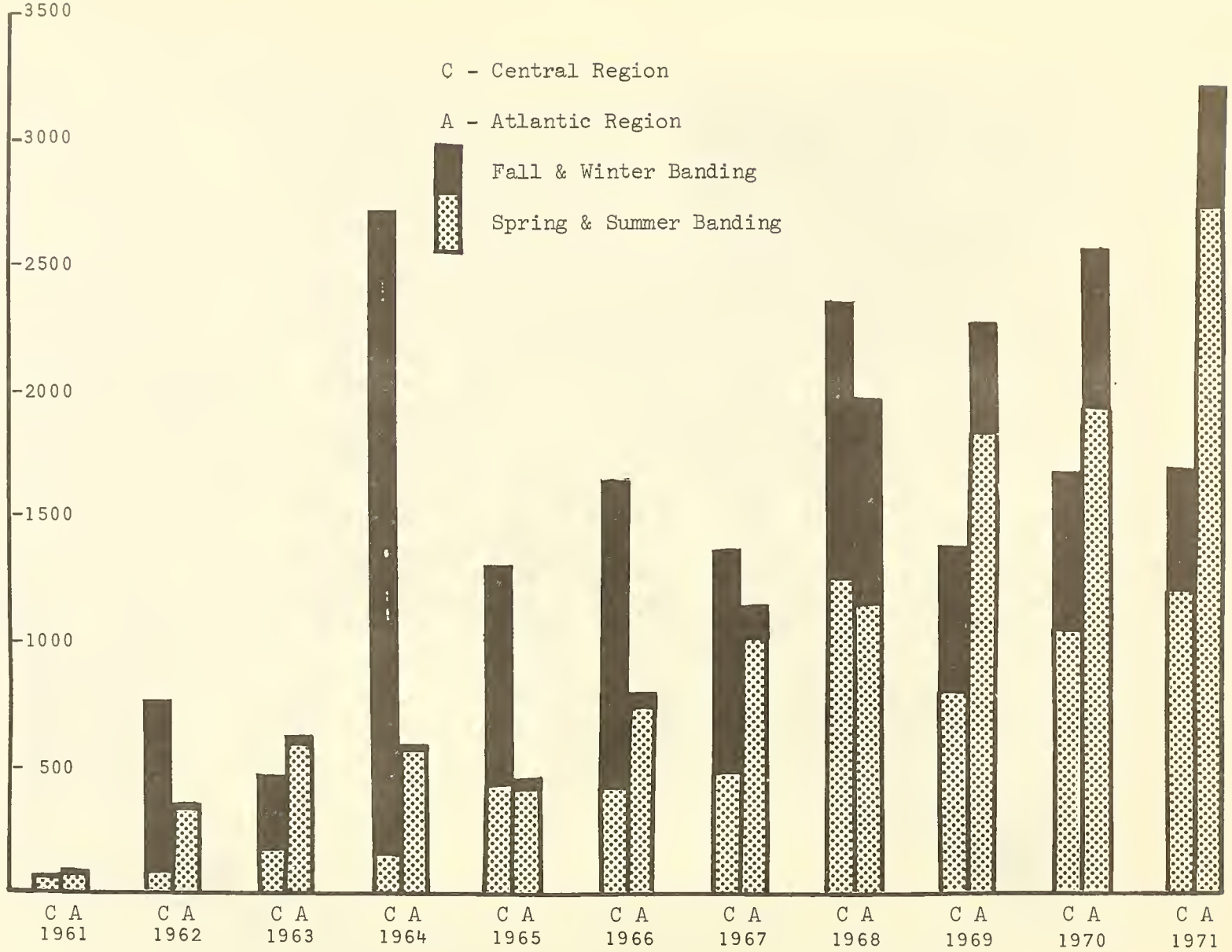


Figure 6.--Woodcock banding by regions, 1961-71 (excluding experimental birds)

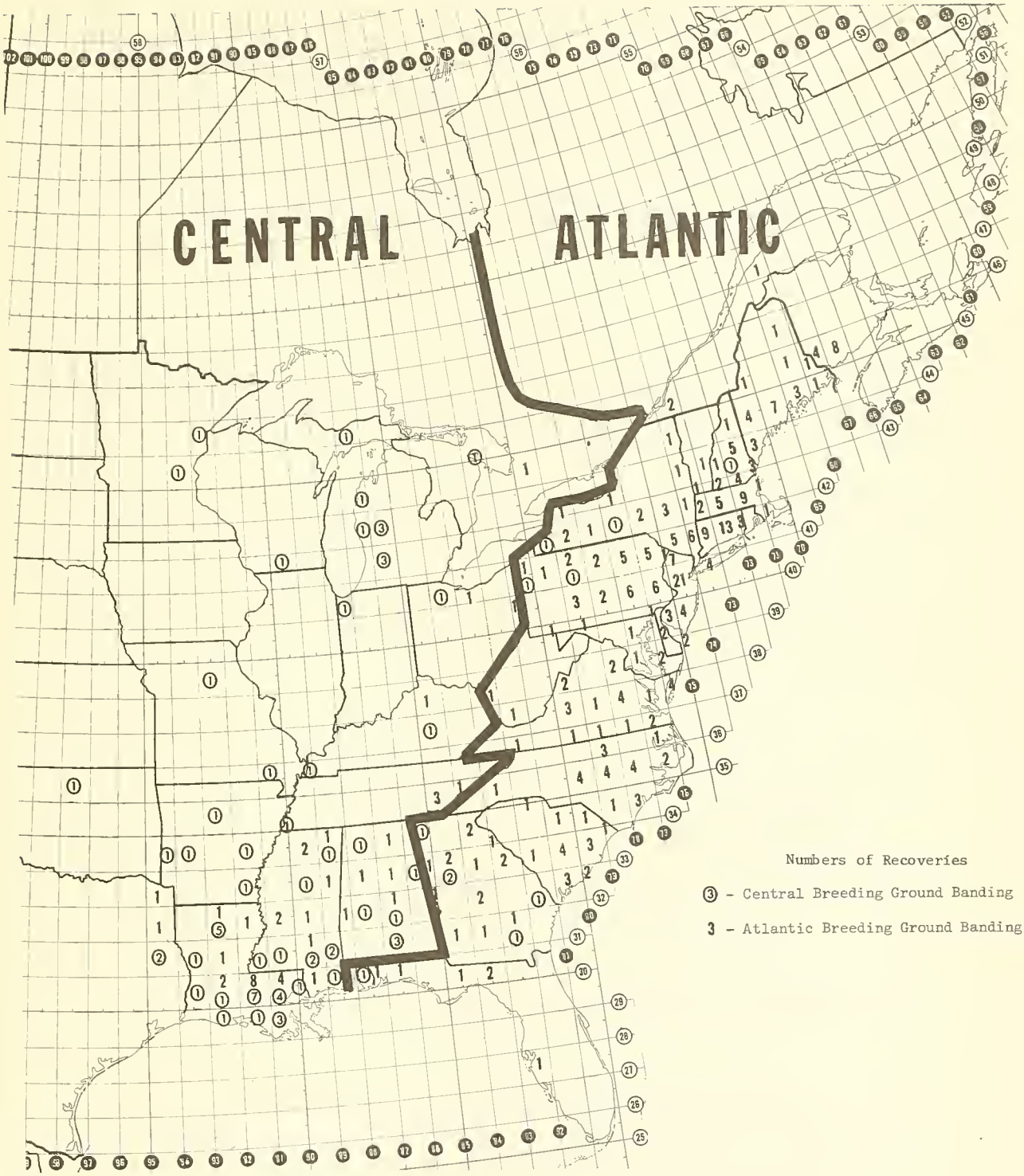


Figure 7.--Recoveries of woodcock banded on breeding grounds north of 40th parallel and in West Virginia (excluding birds recovered in degree block of banding or in contiguous degree block but including all years and all "How Obtained" codes)

Few woodcock banded in the northern part of one region have been recovered in the northern part of the other. Except for an indirect recovery in New Hampshire of a woodcock banded in Indiana, and a direct recovery in Pennsylvania of a bird banded in Michigan, lateral movement has been limited to border area banding. These recoveries demonstrate a minor problem in using State and Province boundaries to delineate regions. Lack of interchange between breeding grounds suggests strong fidelity to natal areas and fairly distinct Atlantic and Central breeding populations.

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# A P P E N D I X

Table 1.--Woodcock harvest data from Waterfowl Hunter Mail Survey

| REFERENCE AREA | Waterfowl hunters in woodcock hunting States | | Waterfowl hunters who hunted woodcock | | Woodcock harvest by waterfowl hunters | |
|---|---|---|---|---|---|---|
| | Number* | % Increase** | Number* | % Increase** | Number* | % Increase** |
| North Central | 410,125 | 34.1 | 58,750 | 41.5 | 156,946 | 11.6 |
| Mid-Central | 230,030 | 44.2 | 15,731 | 74.5 | 41,306 | 47.5 |
| South Central | 362,985 | 47.4 | 24,323 | 89.1 | 132,678 | 88.8 |
| REGION TOTAL | 1,003,140 | 41.0 | 98,804 | 55.8 | 330,882 | 38.5 |
| North Atlantic | 179,655 | 71.8 | 55,758 | 82.5 | 191,498 | 59.2 |
| Mid-Atlantic | 179,315 | 56.8 | 35,315 | 117.9 | 103,585 | 125.5 |
| South Atlantic | 101,655 | 44.6 | 8,398 | 88.7 | 28,058 | 54.2 |
| REGION TOTAL | 460,625 | 59.3 | 99,471 | 94.2 | 323,141 | 75.2 |
| Northern Zone | 589,780 | 43.7 | 114,507 | 58.9 | 348,444 | 33.6 |
| Mid-Zone | 409,345 | 49.5 | 51,046 | 102.4 | 144,892 | 95.9 |
| Southern Zone | 464,640 | 46.7 | 32,722 | 89.0 | 160,687 | 81.7 |
| U.S. TOTAL IN WOODCOCK RANGE | 1,463,765 | 46.3 | 198,274 | 73.0 | 654,022 | 54.5 |

*Average of two latest seasons for which data are available (1969-70 and 1970-71).
**From average of 1964-65 and 1965-66 seasons to average of 1969-70 and 1970-71 seasons (5-year period).

Table 2.--Comparison of woodcock harvest reported by waterfowl hunters with that reported by State game harvest surveys in Michigan and New York

| Year | Michigan | | | New York | | |
|---|---|---|---|---|---|---|
| | Woodcock Reported in Waterfowl Mail Survey | Woodcock Reported in State Harvest Survey | Percent of State Harvest Reported in Waterfowl Mail Survey | Woodcock Reported in Waterfowl Mail Survey | Woodcock Reported in State Harvest Survey | Percent of State Harvest Reported in Waterfowl Mail Survey |
| 1964 | 94,554 | 176,470 | 53.6 | 39,672 | 110,623 | 35.9 |
| 1965 | 63,025 | 152,310 | 41.4 | 44,365 | 107,090 | 41.4 |
| 1966 | 68,813 | 180,750 | 38.1 | 49,468 | 118,764 | 41.7 |
| 1967 | 73,866 | 180,480 | 40.9 | 77,397 | 134,566 | 57.5 |
| 1968 | 43,125 | 160,840 | 26.8 | 78,166 | 138,252 | 56.5 |
| 1969 | 56,678 | 141,950 | 39.9 | 86,501 | 158,397 | 54.6 |

Table 3.--Woodcock breeding population indexes as indicated by singing-ground surveys in 1971 and 1972 (random routes only)

| State or Province | Number of routes conducted | | Comparable routes* | Woodcock heard per comparable route | |
|---|---|---|---|---|---|
| | 1971 | 1972 | | 1971 | 1972 |
| ATLANTIC REGION | | | | | |
| Connecticut | 10 | 9 | 11 | 2.27 | 2.36 |
| Delaware | 3 | 2 | 2 | 0.00 | 0.00 |
| Maine | 58 | 53 | 45 | 4.38 | 4.49 |
| Maryland | 18 | 11 | 13 | 1.54 | 1.31 |
| Massachusetts | 15 | 17 | 12 | 3.08 | 2.17 |
| New Brunswick | 57 | 56 | 29 | 5.14 | 6.00 |
| New Hampshire | 15 | 15 | 13 | 3.62 | 5.15 |
| New Jersey | 14 | 13 | 14 | 2.29 | 1.57 |
| New York | 70 | 71 | 77 | 3.01 | 2.77 |
| North Carolina | 21 | 14 | 53 | .06 | .06 |
| Nova Scotia | 53 | 43 | 38 | 2.45 | 2.03 |
| Pennsylvania | 54 | 43 | 60 | 1.25 | 1.28 |
| Prince Edward Island | 11 | 9 | 9 | 4.89 | 2.89 |
| Quebec | 10 | 20 | 6 | 3.33 | 4.50 |
| Rhode Island | 3 | 2 | 4 | 2.25 | 1.25 |
| Vermont | 20 | 21 | 18 | 2.89 | 3.83 |
| Virginia | 47 | 41 | 58 | .62 | .48 |
| West Virginia | 23 | 21 | 48 | .62 | .92 |
| REGIONAL TOTAL & WEIGHTED AVG.** | 502 | 461 | 510 | 2.46 | 2.50 |
| REGIONAL INDEX CHANGE | | | | | +1.59% |
| CENTRAL REGION | | | | | |
| Illinois | 23 | 20 | 19 | .58 | .32 |
| Indiana | 39 | 25 | 54 | .26 | .56 |
| Michigan | 122 | 117 | 97 | 3.86 | 3.62 |
| Minnesota | 48 | 47 | 54 | 1.74 | 1.65 |
| Ohio | 81 | 57 | 72 | 1.47 | 1.57 |
| Ontario | 66 | 65 | 45 | 6.07 | 6.93 |
| Wisconsin | 78 | 68 | 90 | 2.11 | 2.02 |
| REGIONAL TOTAL & WEIGHTED AVG.** | 457 | 399 | 431 | 3.18 | 3.29 |
| REGIONAL INDEX CHANGE | | | | | +3.67% |
| RANGEWIDE TOTAL & WEIGHTED AVG.** | 959 | 860 | 941 | 2.81 | 2.89 |
| RANGEWIDE INDEX CHANGE | | | | | +2.73% |

*Includes routes carried as constant zero routes.

**Weighted averages are sums of products of woodcock heard per comparable route and the corresponding State or Province percentage of the total land area sampled. States or Provinces excluded where one comparable route represents more than 2,000 square miles or where fewer than 0.5 birds are heard per route.

Table 4.--Computation of woodcock singing-ground survey weighting factors

| Survey Area* | Land Area** (Sq. Mi.) | Comparable Routes | Sq.Mi. per Comp. Rt. | Weighting Factor Regional | Weighting Factor Rangewide |
|---|---|---|---|---|---|
| ATLANTIC REGION | | | | | |
| Connecticut | 4,870 | 11 | 443 | .0169 | .0088 |
| Maine | 30,933 | 45 | 687 | .1075 | .0558 |
| Maryland | 9,891 | 13 | 761 | .0344 | .0178 |
| Massachusetts | 7,833 | 12 | 653 | .0272 | .0141 |
| New Brunswick | 27,835 | 29 | 960 | .0968 | .0502 |
| New Hampshire | 9,033 | 13 | 695 | .0314 | .0163 |
| New Jersey | 7,532 | 14 | 538 | .0262 | .0136 |
| New York | 47,869 | 77 | 622 | .1664 | .0863 |
| Nova Scotia | 20,402 | 38 | 537 | .0709 | .0368 |
| Pennsylvania | 45,025 | 60 | 750 | .1565 | .0812 |
| Prince Edward Island | 2,184 | 9 | 243 | .0076 | .0039 |
| Rhode Island | 1,049 | 4 | 262 | .0036 | .0019 |
| Vermont | 9,274 | 18 | 515 | .0322 | .0167 |
| Virginia | 39,841 | 58 | 687 | .1385 | .0719 |
| West Virginia | 24,084 | 48 | 502 | .0837 | .0434 |
| REGIONAL TOTAL | 287,655 | 455 | 632 | 1.0000 | |
| CENTRAL REGION | | | | | |
| Michigan | 56,818 | 97 | 586 | .2129 | .1025 |
| Minnesota*** | 55,655 | 54 | 1,031 | .2086 | .1004 |
| Ohio | 41,018 | 72 | 570 | .1537 | .0740 |
| Ontario*** | 58,859 | 45 | 1,308 | .2206 | .1062 |
| Wisconsin | 54,464 | 90 | 605 | .2041 | .0982 |
| REGIONAL TOTAL | 266,814 | 358 | 745 | 1.0000 | |
| RANGEWIDE TOTAL | 554,469 | 813 | 682 | | 1.0000 |

*Excluding States and Provinces where each comparable route represents more than 2,000 square miles or where fewer than 0.5 birds are heard per route.

**Land area only (inland water excluded) as listed in 1970 Commercial Atlas and Marketing Guide - Rand-McNally & Co.

***Excluding sections of Minnesota and Ontario outside of survey area.

Table 5.--Distribution of contacts and response rate in 1971-72 woodcock wing-collection survey (including Code 4 contacts added during season)

| State of residence | Packets mailed by contact code* | | | | | | Packets returned | Total hunters contacted | Total wings received** | Wings per contact |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 4 | 7 | 8 | 9 | | | | |
| Ala. | 8 | 96 | -- | -- | 6 | 36 | 3 | 143 | 46 | .32 |
| Ark. | 5 | 15 | 1 | -- | -- | -- | -- | 21 | 19 | .90 |
| Conn. | 129 | 176 | 8 | -- | -- | -- | -- | 313 | 660 | 2.11 |
| Del. | 10 | 73 | 3 | -- | -- | -- | 1 | 85 | 62 | .73 |
| D.C. | -- | 2 | -- | -- | -- | -- | -- | 2 | 0 | 00 |
| Fla. | 2 | 85 | 2 | 1 | 1 | 17 | 1 | 107 | 20 | .19 |
| Ga. | 21 | 80 | 17 | -- | 18 | 108 | 9 | 235 | 147 | .63 |
| Ill. | 12 | 89 | 1 | -- | -- | 2 | -- | 104 | 113 | 1.09 |
| Ind. | 23 | 89 | 5 | -- | -- | 1 | 2 | 116 | 148 | 1.28 |
| Iowa | 1 | 15 | 1 | -- | -- | -- | -- | 17 | 18 | 1.06 |
| Kans. | -- | 72 | -- | -- | -- | -- | 2 | 70 | 0 | 00 |
| Ky. | 4 | 27 | -- | -- | -- | -- | -- | 31 | 0 | 00 |
| La. | 34 | 312 | 7 | -- | -- | -- | 4 | 349 | 299 | .86 |
| Maine | 163 | 85 | 12 | 7 | 89 | 490 | 10 | 836 | 3,194 | 3.82 |
| Md. | 30 | 174 | 5 | 1 | 9 | 177 | 5 | 391 | 278 | .71 |
| Mass. | 140 | 249 | 9 | -- | -- | -- | -- | 398 | 1,462 | 3.67 |
| Mich. | 153 | 245 | 24 | 1 | 49 | 505 | 12 | 965 | 2,184 | 2.26 |
| Minn. | 32 | 159 | 9 | -- | -- | 61 | 2 | 259 | 712 | 2.75 |
| Miss. | 10 | 83 | 3 | -- | -- | 198 | 16 | 278 | 25 | .09 |
| Mo. | 8 | 62 | 3 | -- | 1 | 3 | -- | 77 | 33 | .43 |
| N.H. | 55 | 174 | 10 | 1 | -- | 8 | 2 | 246 | 424 | 1.72 |
| N.J. | 177 | 169 | 23 | -- | 43 | -- | 4 | 408 | 2,223 | 5.45 |
| N.Y. | 161 | 100 | 19 | -- | -- | 477 | 12 | 745 | 1,668 | 2.24 |
| N.C. | 18 | 97 | 8 | -- | 12 | 16 | 2 | 149 | 179 | 1.20 |
| Ohio | 75 | 241 | 3 | -- | -- | 2 | 4 | 317 | 592 | 1.87 |
| Okla. | 2 | 30 | -- | -- | -- | 5 | -- | 37 | 7 | .19 |
| Pa. | 151 | 288 | 22 | -- | -- | -- | 3 | 458 | 1,093 | 2.39 |
| R.I. | 19 | 49 | 3 | 7 | -- | 124 | 3 | 199 | 320 | 1.61 |
| S.C. | 16 | 78 | 4 | 1 | -- | 23 | 2 | 120 | 129 | 1.08 |
| Tenn. | 16 | 22 | -- | -- | -- | 23 | -- | 61 | 28 | .46 |
| Tex. | 8 | 46 | 3 | -- | -- | 16 | 2 | 71 | 60 | .85 |
| Vt. | 39 | 60 | 2 | 2 | -- | 49 | 1 | 151 | 870 | 5.76 |
| Va. | 23 | 78 | 4 | -- | 5 | 84 | 3 | 191 | 99 | .52 |
| W. Va. | 19 | 40 | 2 | -- | 7 | 142 | 4 | 206 | 254 | 1.23 |
| Wis. | 151 | 225 | 29 | -- | 36 | -- | 4 | 437 | 1,505 | 3.44 |
| TOTAL | 1,715 | 3,885 | 242 | 21 | 276 | 2,567 | 113 | 8,593 | 18,871 | 2.20 |

* Code 1 - Previous year's Code 1, 2, 4, 7, and 8 hunters who submitted wings.
Code 2 - Waterfowl mail survey hunters who reported hunting woodcock.
Code 4 - Requested participation or proposed by fellow hunter.
Code 7 - Appeared on both Code 1 and Code 9 lists.
Code 8 - Previous year's Code 9 hunters who submitted wings.
Code 9 - From list provided by State, primarily from State kill survey.

** Excluding wings with incomplete identification data or from Special Study areas.

Table 6.--Changes in regional distribution of hunter contacts, 1968-69 to 1971-72

| REFERENCE AREA | 1968-69 | 1969-70 | 1970-71 | 1971-72 | 4-Year Percent Change |
|---|---|---|---|---|---|
| North Central | 1,894 | 1,850 | 1,757 | 1,661 | -12.3 |
| Mid-Central | 542 | 791 | 721 | 793 | +46.3 |
| South Central | 286 | 254 | 454 | 899 | +214.3 |
| REGION TOTAL | 2,722 | 2,895 | 2,932 | 3,353 | +23.2 |
| North Atlantic | 2,836 | 3,105 | 2,304 | 2,888 | +1.8 |
| Mid-Atlantic | 1,424 | 1,470 | 1,764 | 1,741 | +22.3 |
| South Atlantic | 264 | 330 | 447 | 611 | +131.4 |
| REGION TOTAL | 4,524 | 4,905 | 4,515 | 5,240 | +15.8 |
| Northern Zone | 4,730 | 4,955 | 4,061 | 4,549 | -3.8 |
| Mid-Zone | 1,966 | 2,261 | 2,485 | 2,534 | +28.9 |
| Southern Zone | 550 | 584 | 901 | 1,510 | +174.5 |
| U.S. TOTAL | 7,246 | 7,800 | 7,447 | 8,593 | +18.6 |

Table 7.--Data from woodcock wing-collection surveys conducted during the 1969-70, 1970-71, and 1971-72 hunting seasons

| State of residence | Number of cooperators | | | Number of envelopes | | | Number of wings | | | Avg. no. of wings per envelope | | | Avg. no. of wings per cooperator | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 69-70 | 70-71 | 71-72 | 69-70 | 70-71 | 71-72 | 69-70 | 70-71 | 71-72 | 69-70 | 70-71 | 71-72 | 69-70 | 70-71 | 71-72 |
| Ala. | 8 | 14 | 14 | 24 | 33 | 37 | 36 | 59 | 46 | 1.5 | 1.8 | 1.2 | 5 | 4 | 3 |
| Ark. | 5 | 6 | 4 | 29 | 31 | 11 | 43 | 54 | 19 | 1.5 | 1.7 | 1.7 | 9 | 9 | 5 |
| Conn. | 137 | 127 | 101 | 476 | 439 | 321 | 1,062 | 930 | 660 | 2.2 | 2.1 | 2.1 | 8 | 7 | 7 |
| Del. | 8 | 10 | 12 | 15 | 28 | 29 | 17 | 40 | 62 | 1.1 | 1.4 | 2.1 | 2 | 4 | 5 |
| Fla. | 7 | 3 | 8 | 18 | 13 | 19 | 26 | 26 | 20 | 1.4 | 2.0 | 1.1 | 4 | 9 | 3 |
| Ga. | 17 | 38 | 46 | 27 | 64 | 83 | 42 | 104 | 147 | 1.6 | 1.6 | 1.8 | 2 | 3 | 3 |
| Ill. | 7 | 12 | 18 | 35 | 30 | 51 | 69 | 53 | 113 | 2.0 | 1.8 | 2.2 | 10 | 4 | 6 |
| Ind. | 21 | 22 | 23 | 76 | 63 | 75 | 178 | 111 | 148 | 2.3 | 1.8 | 2.0 | 8 | 5 | 6 |
| Iowa | -- | -- | 1 | -- | -- | 9 | -- | -- | 18 | -- | -- | 2.0 | -- | -- | 18 |
| Ky. | 5 | 4 | -- | 7 | 4 | -- | 7 | 5 | -- | 1.0 | 1.2 | -- | 1 | 1 | -- |
| La. | 47 | 34 | 36 | 223 | 128 | 136 | 678 | 302 | 299 | 3.0 | 2.4 | 2.2 | 14 | 9 | 8 |
| Maine | 247 | 262 | 236 | 1,117 | 1,257 | 1,200 | 2,957 | 3,356 | 3,194 | 2.6 | 2.7 | 2.7 | 12 | 13 | 14 |
| Md. | 28 | 40 | 47 | 71 | 108 | 126 | 169 | 215 | 278 | 2.4 | 2.0 | 2.2 | 6 | 5 | 6 |
| Mass. | 166 | 139 | 129 | 733 | 611 | 579 | 1,813 | 1,488 | 1,462 | 2.5 | 2.4 | 2.5 | 11 | 11 | 11 |
| Mich. | 199 | 203 | 222 | 641 | 827 | 932 | 1,524 | 2,058 | 2,184 | 2.4 | 2.5 | 2.3 | 8 | 10 | 10 |
| Minn. | 31 | 30 | 71 | 114 | 98 | 288 | 330 | 264 | 712 | 2.9 | 2.7 | 2.5 | 11 | 9 | 10 |
| Miss. | 6 | 10 | 11 | 18 | 25 | 20 | 36 | 42 | 25 | 2.0 | 1.7 | 1.3 | 6 | 4 | 2 |
| Mo. | 7 | 9 | 9 | 11 | 19 | 16 | 15 | 42 | 33 | 1.4 | 2.2 | 2.1 | 2 | 5 | 4 |
| N.H. | 68 | 55 | 55 | 271 | 265 | 190 | 598 | 598 | 424 | 2.2 | 2.3 | 2.2 | 9 | 11 | 8 |
| N.J. | 245 | 222 | 180 | 1,062 | 904 | 856 | 2,561 | 2,052 | 2,223 | 2.4 | 2.3 | 2.6 | 10 | 9 | 12 |
| N.Y. | 244 | 160 | 160 | 853 | 728 | 696 | 6,006 | 1,743 | 1,668 | 2.4 | 2.4 | 2.4 | 8 | 11 | 10 |
| N.C. | 17 | 30 | 28 | 34 | 90 | 103 | 62 | 211 | 179 | 1.8 | 2.3 | 1.7 | 4 | 7 | 6 |
| Ohio | 60 | 75 | 79 | 202 | 247 | 257 | 510 | 654 | 592 | 2.5 | 2.6 | 2.3 | 9 | 9 | 7 |
| Okla. | -- | 2 | 4 | -- | 3 | 6 | -- | 3 | 7 | -- | 1.0 | 1.2 | -- | 2 | 2 |
| Pa. | 144 | 150 | 151 | 434 | 467 | 476 | 977 | 1,068 | 1,093 | 2.3 | 2.3 | 2.3 | 7 | 7 | 7 |
| R.I. | 26 | 26 | 39 | 100 | 97 | 131 | 238 | 239 | 320 | 2.4 | 2.5 | 2.4 | 9 | 9 | 8 |
| S.C. | 15 | 17 | 23 | 32 | 43 | 73 | 64 | 77 | 129 | 2.0 | 1.8 | 1.8 | 4 | 5 | 6 |
| Tenn. | 29 | 14 | 8 | 34 | 18 | 17 | 53 | 22 | 28 | 1.6 | 1.2 | 1.6 | 2 | 2 | 4 |
| Tex. | 4 | 7 | 13 | 23 | 14 | 25 | 95 | 16 | 60 | 4.1 | 1.1 | 2.4 | 24 | 2 | 5 |
| Vt. | 41 | 41 | 56 | 171 | 225 | 330 | 323 | 552 | 870 | 1.9 | 2.5 | 2.6 | 8 | 13 | 16 |
| Va. | 16 | 28 | 31 | 48 | 81 | 61 | 105 | 163 | 99 | 2.2 | 2.0 | 1.6 | 7 | 6 | 3 |
| W. Va. | 13 | 26 | 25 | 52 | 83 | 100 | 136 | 184 | 254 | 2.6 | 2.2 | 2.5 | 10 | 7 | 10 |
| Wis. | 169 | 180 | 160 | 495 | 614 | 651 | 1,003 | 1,411 | 1,505 | 2.0 | 2.3 | 2.3 | 6 | 8 | 9 |
| Other | -- | -- | -- | -- | -- | -- | 230 | 243 | 294 | -- | -- | -- | -- | -- | -- |
| TOTAL | 2,020 | 1,996 | 2,000 | 7,436 | 7,657 | 7,904 | 17,963 | 18,385 | 19,165 | 2.4* | 2.4* | 2.4* | 8.8* | 9.2* | 9.4* |

*Unweighted mean (includes data from all States, but excludes information from the special study areas and unknown contact codes).

Table 8.--Comparison of hunters and rate of wings received for principal code categories, 1971-72 season

| State of Residence | No. of Contacts | | | No. Responding | | | No. of Wings | | | % Responding | | | Wings/Contact | | | Wings/Contributor | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Contact Code | | | Contact Code | | | Contact Code | | | Contact Code | | | Contact Code | | | Contact Code | | |
| | 1 | 2 | 9 | 1 | 2 | 9 | 1 | 2 | 9 | 1 | 2 | 9 | 1 | 2 | 9 | 1 | 2 | 9 |
| Ala. | 8 | 93 | 36 | 0 | 13 | 0 | 0 | 42 | 0 | 0 | 14 | 0 | 0 | 0.5 | 0 | 0 | 3.2 | 0 |
| Ark. | 5 | 15 | -- | 4 | 0 | -- | 19 | 0 | -- | 80 | 0 | -- | 3.8 | 0 | -- | 4.8 | 0 | -- |
| Conn. | 129 | 176 | -- | 70 | 21 | -- | 535 | 41 | -- | 54 | 12 | -- | 4.1 | 0.2 | -- | 7.6 | 2.0 | -- |
| Del. | 10 | 72 | -- | 5 | 3 | -- | 49 | 5 | -- | 50 | 4 | -- | 4.9 | 0.1 | -- | 9.8 | 1.7 | -- |
| D.C. | -- | 2 | -- | -- | 0 | -- | -- | 0 | -- | -- | 0 | -- | -- | 0 | -- | -- | 0 | -- |
| Fla. | 3 | 84 | 18 | 1 | 4 | 1 | 3 | 4 | 3 | 33 | 5 | 6 | 1.0 | T | 0.2 | 3.0 | 1.0 | 3.0 |
| Ga. | 21 | 78 | 101 | 7 | 7 | 10 | 21 | 18 | 36 | 33 | 9 | 10 | 1.0 | 0.2 | 0.4 | 3.0 | 2.6 | 3.6 |
| Ill. | 12 | 89 | 2 | 2 | 5 | 0 | 20 | 8 | 0 | 17 | 6 | 0 | 1.7 | 0.1 | 0 | 10.0 | 1.6 | -- |
| Ind. | 23 | 87 | -- | 10 | 7 | -- | 42 | 11 | -- | 43 | 8 | -- | 1.8 | 0.1 | -- | 4.2 | 1.6 | -- |
| Iowa | 1 | 15 | -- | 0 | 1 | -- | 0 | 0* | -- | 0 | 7 | -- | 0 | 0 | -- | 0 | 0 | -- |
| Kans. | -- | 70 | -- | -- | 0 | -- | -- | 0 | -- | -- | 0 | -- | -- | 0 | -- | -- | 0 | -- |
| Ky. | 4 | 27 | -- | 0 | 0 | -- | 0 | 0 | -- | 0 | 0 | -- | 0 | 0 | -- | 0 | 0 | -- |
| La. | 33 | 309 | -- | 19 | 15 | -- | 167 | 80 | -- | 58 | 5 | -- | 5.1 | 0.3 | -- | 8.8 | 5.3 | -- |
| Maine | 169 | 84 | 491 | 113 | 12 | 77 | 1956 | 126 | 667 | 67 | 14 | 16 | 11.6 | 1.5 | 1.4 | 17.3 | 10.5 | 8.7 |
| Md. | 31 | 169 | 178 | 11 | 14 | 16 | 95 | 57 | 60 | 35 | 8 | 9 | 3.1 | 0.3 | 0.3 | 8.6 | 4.1 | 3.8 |
| Mass. | 140 | 249 | -- | 70 | 28 | -- | 543 | 109 | -- | 50 | 11 | -- | 3.9 | 0.4 | -- | 7.8 | 3.9 | -- |
| Mich. | 154 | 243 | 497 | 105 | 29 | 53 | 1562 | 111 | 213 | 68 | 12 | 11 | 10.1 | 0.5 | 0.4 | 14.9 | 3.8 | 4.0 |
| Minn. | 32 | 158 | 60 | 18 | 18 | 30 | 191 | 57 | 317 | 56 | 11 | 50 | 6.0 | 0.4 | 5.3 | 10.6 | 3.2 | 10.6 |
| Miss. | 10 | 82 | 183 | 3 | 6 | 3 | 8 | 11 | 6 | 30 | 7 | 2 | 0.8 | 0.1 | T | 2.7 | 1.8 | 2.0 |
| Mo. | 8 | 62 | 3 | 1 | 5 | 0 | 1 | 8 | 0 | 12 | 8 | 0 | 0.1 | 0.1 | 0 | 1.0 | 1.6 | 0 |
| N.H. | 56 | 173 | 8 | 27 | 21 | 2 | 232 | 65 | 22 | 48 | 12 | 25 | 4.1 | 0.4 | 2.8 | 8.6 | 3.1 | 11.0 |
| N.J. | 175 | 168 | -- | 116 | 20 | -- | 1453 | 116 | -- | 66 | 12 | -- | 8.3 | 0.7 | -- | 12.5 | 5.8 | -- |
| N.Y. | 160 | 99 | 467 | 99 | 15 | 32 | 1187 | 98 | 133 | 62 | 15 | 7 | 7.4 | 1.0 | 0.3 | 12.0 | 6.5 | 4.2 |
| N.C. | 18 | 95 | 16 | 9 | 8 | 4 | 39 | 35 | 8 | 50 | 8 | 25 | 2.2 | 0.4 | 0.5 | 4.3 | 4.4 | 2.0 |
| Ohio | 74 | 238 | 2 | 46 | 27 | 0 | 350 | 77 | 0 | 62 | 11 | 0 | 4.7 | 0.3 | 0 | 7.6 | 2.9 | 0 |
| Okla. | 2 | 30 | 5 | 2 | 1 | 1 | 4 | 1 | 2 | 100 | 3 | 20 | 2.0 | T | 0.4 | 2.0 | 1.0 | 2.0 |
| Pa. | 150 | 286 | -- | 95 | 43 | -- | 769 | 151 | -- | 63 | 15 | -- | 5.1 | 0.5 | -- | 8.1 | 3.5 | -- |
| R.I. | 26 | 49 | 128 | 9 | 5 | 13 | 44 | 7 | 40 | 35 | 10 | 10 | 1.7 | 0.1 | 0.3 | 4.9 | 1.4 | 3.1 |
| S.C. | 17 | 76 | 24 | 5 | 6 | 10 | 49 | 9 | 46 | 29 | 8 | 42 | 2.9 | 0.1 | 1.9 | 9.8 | 1.5 | 4.6 |
| Tenn. | 16 | 22 | -- | 6 | 2 | -- | 18 | 5 | -- | 38 | 9 | -- | 1.1 | 0.2 | -- | 3.0 | 2.5 | -- |
| Tex. | 8 | 44 | 16 | 2 | 4 | 5 | 10 | 8 | 10 | 25 | 9 | 31 | 1.2 | 0.2 | 0.6 | 5.0 | 2.0 | 2.0 |
| Vt. | 40 | 60 | 50 | 28 | 11 | 16 | 410 | 152 | 248 | 70 | 18 | 32 | 10.2 | 2.5 | 5.0 | 14.6 | 13.8 | 15.5 |
| Va. | 23 | 77 | 82 | 12 | 9 | 6 | 48 | 20 | 18 | 52 | 12 | 7 | 2.1 | 0.3 | 0.2 | 4.0 | 2.2 | 3.0 |
| W. Va. | 19 | 40 | 139 | 7 | 5 | 8 | 94 | 66 | 16 | 37 | 12 | 6 | 4.9 | 1.6 | 0.1 | 13.4 | 13.2 | 2.0 |
| Wis. | 150 | 223 | -- | 97 | 41 | -- | 1133 | 163 | -- | 65 | 18 | -- | 7.6 | 0.7 | -- | 11.7 | 4.0 | -- |
| TOTAL AND WTD. AVG. | 1727 | 3844 | 2506 | 999 | 406 | 287 | 11052 | 1661 | 1845 | 59 | 11 | 12 | 6.5 | 0.5 | 0.8 | 11.1 | 4.2 | 6.5 |

*One respondent contributed wing of other species.

Table 9.--Comparison of early season hunting and harvest age ratios by principal code categories in two States, 1968-69 to 1971-72

| | Maine | | | | Michigan | | | |
|---|---|---|---|---|---|---|---|---|
| | 1968-69 | 1969-70 | 1970-71 | 1971-72 | 1968-69 | 1969-70 | 1970-71 | 1971-72 |
| First Week of Season Wings | | | | | | | | |
| Code 1* | | | | | | | | |
| Number | 199 | 173 | 360 | 372 | 220 | 227 | 237 | 267 |
| Percent of Season Total | 12.2 | 10.7 | 17.9 | 19.0 | 20.1 | 19.8 | 17.1 | 17.1 |
| Code 2* | | | | | | | | |
| Number | 66 | 35 | 23 | 38 | 37 | 50 | 63 | 16 |
| Percent of Season Total | 20.4 | 18.1 | 18.4 | 30.2 | 21.9 | 40.0 | 30.9 | 14.4 |
| Code 9* | | | | | | | | |
| Number | 122 | 111 | 194 | 109 | 58 | 33 | 42 | 30 |
| Percent of Season Total | 18.1 | 13.0 | 23.4 | 16.3 | 29.4 | 19.4 | 17.3 | 14.1 |
| State Total** | | | | | | | | |
| Number | 396 | 355 | 631 | 603 | 315 | 321 | 364 | 343 |
| Percent of Season Total | 15.1 | 12.8 | 19.2 | 19.7 | 21.6 | 21.7 | 19.3 | 16.7 |
| Immatures/Adult Female Ratio | | | | | | | | |
| Code 1* | | | | | | | | |
| Immatures | 910 | 715 | 1,072 | 968 | 552 | 492 | 853 | 701 |
| Immatures/Ad. Female | 2.26 | 1.54 | 2.09 | 1.72 | 1.59 | 1.21 | 2.39 | 1.28 |
| Code 2* | | | | | | | | |
| Immatures | 160 | 90 | 77 | 70 | 87 | 51 | 84 | 42 |
| Immatures/Ad. Female | 1.93 | 1.73 | 2.96 | 2.19 | 1.74 | 1.19 | 1.56 | 0.93 |
| Code 9* | | | | | | | | |
| Immatures | 383 | 421 | 419 | 340 | 86 | 74 | 135 | 103 |
| Immatures/Ad. Female | 1.95 | 1.70 | 1.96 | 1.63 | 1.23 | 1.35 | 1.71 | 1.36 |
| State Total** | | | | | | | | |
| Immatures | 1,383 | 1,294 | 1,751 | 1,525 | 725 | 631 | 1,094 | 939 |
| Immatures/Ad. Female | 2.12 | 1.64 | 2.10 | 1.72 | 1.55 | 1.22 | 2.17 | 1.30 |

*Code 1 - Submitted wings the previous year (excluding Code 9 hunters of previous year).
Code 2 - Hunters on waterfowl mail survey who reported hunting woodcock.
Code 9 - From list provided by State from its kill survey.
(Note: Code 7 figures are included with both Code 1 and Code 9 results).

**Excluding Code 4.

Table 10.--Derivation of weighting factors for the 1971-72 woodcock wing-collection survey

| | A | B | C | D | E | F | G | H | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Hunting License Holders | | Duck Stamp Sales | | Woodcock Kill by Duck Stamp Purchasers | | License Holders to Stamp Sales Ratio | | | Percent of Mean | State Kill Index | State Weight Factor |
| STATE* | 1969-70 | 1970-71 | 1969-70 | 1970-71 | 1969-70 | 1970-71 | 1969-70 | 1970-71 | Mean | | | |
| Conn. | 77,488 | 85,452 | 12,889 | 15,779 | 19,531 | 24,312 | 6.0119 | 5.4156 | 5.7137 | 64.792 | 14,203 | .0313 |
| La. | 337,641 | 348,635 | 105,274 | 129,046 | 111,991 | 99,385 | 3.2072 | 2.7016 | 2.9544 | 33.502 | 35,408 | .0781 |
| Maine | 202,766 | 219,373 | 15,939 | 18,182 | 26,786 | 34,420 | 12.7214 | 12.0654 | 12.3934 | 140.539 | 43,009 | .0948 |
| Mass. | 118,518 | 123,589 | 25,630 | 29,993 | 33,489 | 33,410 | 4.6242 | 4.1206 | 4.3724 | 49.582 | 16,585 | .0366 |
| Mich. | 941,025 | 941,426 | 101,562 | 131,404 | 56,678 | 80,595 | 9.2655 | 7.1644 | 8.2149 | 93.156 | 63,939 | .1410 |
| Minn. | 356,607 | 377,384 | 144,562 | 173,877 | 13,840 | 21,501 | 2.4667 | 2.1704 | 2.3186 | 26.292 | 4,646 | .0102 |
| N.H. | 98,887 | 97,360 | 8,938 | 9,880 | 13,599 | 9,876 | 11.0637 | 9.8543 | 10.4590 | 118.603 | 13,921 | .0307 |
| N.J. | 184,527 | 196,533 | 32,974 | 35,002 | 29,812 | 29,086 | 5.5965 | 5.6149 | 5.6057 | 63.568 | 18,720 | .0413 |
| N.Y. | 758,512 | 756,060 | 98,403 | 108,582 | 86,501 | 77,693 | 7.7082 | 6.9630 | 7.3356 | 83.184 | 68,292 | .1506 |
| Ohio | 540,718 | 565,896 | 35,841 | 43,508 | 20,300 | 13,631 | 15.0866 | 13.0067 | 14.0467 | 159.287 | 27,024 | .0596 |
| Pa. | 1,134,316 | 1,166,634 | 67,224 | 81,074 | 44,641 | 56,816 | 16.8737 | 14.3897 | 15.6317 | 177.261 | 89,922 | .1982 |
| Vt. | 138,378 | 148,282 | 6,317 | 7,435 | 5,393 | 11,885 | 21.9056 | 19.9438 | 20.9247 | 237.283 | 20,499 | .0452 |
| Wis. | 629,445 | 634,992 | 122,291 | 151,524 | 47,092 | 94,187 | 5.1471 | 4.1907 | 4.6689 | 52.944 | 37,399 | .0824 |

*Thirteen States having substantial woodcock harvests and being adequately represented in wing-collection survey.

$$\frac{A}{C} = G \qquad \frac{B}{D} = H \qquad \frac{G+H}{2} = J \qquad \frac{J}{\frac{\Sigma J}{13}} = K \qquad K\left(\frac{E+F}{2}\right) = L \qquad \frac{L}{\Sigma L} = M$$

Table 11.--Woodcock productivity by harvest area as indicated by the 1971-72 wing-collection survey

| State or Province of harvest | Age and Sex Categories | | | | | | | Total wings received* | Immatures per adult female** |
|---|---|---|---|---|---|---|---|---|---|
| | ADULT | | | IMMATURE | | | Unknown age | | |
| | Male | Female | Unknown | Male | Female | Unknown | | | |
| Ala. | 14 | 7 | -- | 12 | 9 | 1 | 2 | 45 | -- |
| Ark. | 11 | 3 | -- | 4 | 3 | -- | -- | 21 | -- |
| Conn. | 97 | 101 | 1 | 215 | 176 | 6 | 1 | 597 | 3.93 |
| Del. | 6 | 3 | -- | 21 | 22 | 1 | 3 | 56 | -- |
| Fla. | 1 | 6 | -- | 8 | 3 | -- | -- | 18 | -- |
| Ga. | 42 | 47 | -- | 26 | 27 | -- | 3 | 145 | 1.13 |
| Ill. | 6 | 5 | -- | 11 | 7 | -- | -- | 29 | -- |
| Ind. | 12 | 14 | -- | 12 | 16 | 1 | -- | 55 | -- |
| La. | 52 | 96 | -- | 72 | 79 | -- | 11 | 310 | 1.57 |
| Maine | 764 | 1,127 | 18 | 965 | 881 | 21 | 11 | 3,787 | 1.66 |
| Md. | 39 | 43 | -- | 69 | 53 | 2 | 5 | 211 | 2.88 |
| Mass. | 153 | 192 | 6 | 196 | 165 | 3 | 4 | 719 | 1.90 |
| Mich. | 446 | 856 | 3 | 567 | 529 | 3 | 12 | 2,416 | 1.28 |
| Minn. | 137 | 224 | 6 | 147 | 176 | 3 | 21 | 714 | 1.46 |
| Miss. | 2 | 14 | -- | 10 | 12 | -- | 1 | 39 | -- |
| Mo. | 4 | 5 | -- | 1 | 2 | -- | -- | 12 | -- |
| N.B. | 32 | 33 | 5 | 43 | 42 | -- | 3 | 158 | 2.58 |
| N.H. | 171 | 304 | 6 | 178 | 202 | 3 | 12 | 876 | 1.26 |
| N.J. | 221 | 373 | 8 | 520 | 693 | 3 | 1 | 1,819 | 3.26 |
| N.Y. | 402 | 686 | 1 | 387 | 478 | 2 | 3 | 1,959 | 1.26 |
| N.C. | 44 | 55 | -- | 28 | 23 | -- | 3 | 153 | .93 |
| Ohio | 95 | 108 | 9 | 97 | 109 | 6 | 8 | 432 | 1.96 |
| Okla. | 1 | 1 | -- | 3 | 2 | -- | -- | 7 | -- |
| Ont. | 1 | 2 | -- | 3 | 2 | -- | 1 | 9 | -- |
| Pa. | 236 | 368 | 6 | 272 | 259 | 5 | 12 | 1,158 | 1.46 |
| R.I. | 20 | 10 | -- | 22 | 28 | 1 | -- | 81 | -- |
| S.C. | 32 | 47 | 1 | 26 | 24 | 1 | 1 | 132 | 1.09 |
| Tenn. | 10 | 14 | -- | 18 | 10 | -- | -- | 52 | -- |
| Texas | 18 | 18 | -- | 8 | 13 | -- | 4 | 61 | -- |
| Vt. | 197 | 285 | 4 | 215 | 228 | 3 | 6 | 938 | 1.56 |
| Va. | 13 | 17 | -- | 28 | 31 | -- | 2 | 91 | -- |
| W. Va. | 52 | 71 | 1 | 56 | 59 | -- | 5 | 244 | 1.62 |
| Wis. | 276 | 543 | 7 | 396 | 440 | 3 | 18 | 1,683 | 1.55 |
| TOTAL | 3,607 | 5,678 | 82 | 4,636 | 4,803 | 68 | 153 | 19,027 | 1.67 |

*Excluding wings from special study areas and unknown harvest areas.
**Unweighted data from harvest areas represented by at least 100 wings.

Table 12.--Indexes of woodcock productivity as indicated by age ratios determined from wings received from cooperators who participated in both 1970-71 and 1971-72 wing-collection surveys

| State of harvest | Proportion of "total" kill (Weighting factor) | Number of wings received | | Adult Females | | Immatures | | Immatures per adult female* | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1970-71 | 1971-72 | 1970-71 | 1971-72 | 1970-71 | 1971-72 | 1970-71 | 1971-72 |
| Ala. | | 1 | 3 | 1 | 1 | | 1 | -- | -- |
| Ark. | | 52 | 21 | 20 | 3 | 13 | 7 | -- | -- |
| Conn.** | .0313 | 658 | 546 | 107 | 90 | 440 | 366 | 4.11 | 4.07 |
| Del. | | 22 | 51 | 3 | 3 | 13 | 41 | -- | -- |
| Fla. | | 21 | 3 | 4 | | 14 | 3 | -- | -- |
| Ga. | | 26 | 31 | 8 | 8 | 12 | 10 | -- | -- |
| Ill. | | 2 | 19 | 1 | 5 | | 9 | -- | -- |
| Ind. | | 48 | 42 | 11 | 10 | 29 | 25 | -- | -- |
| La.** | .0781 | 216 | 177 | 47 | 62 | 130 | 86 | 2.77 | 1.39 |
| Maine** | .0948 | 2,908 | 2,767 | 737 | 810 | 1,592 | 1,355 | 2.16 | 1.67 |
| Md. | | 121 | 99 | 34 | 23 | 74 | 55 | 2.18 | 2.39 |
| Mass.** | .0366 | 565 | 520 | 150 | 147 | 316 | 251 | 2.11 | 1.71 |
| Mich.** | .1410 | 1,882 | 1,987 | 508 | 699 | 1,096 | 909 | 2.16 | 1.30 |
| Minn.** | .0102 | 192 | 236 | 63 | 76 | 83 | 100 | 1.32 | 1.32 |
| Miss. | | 15 | 15 | 3 | 4 | 10 | 10 | -- | -- |
| Mo. | | 11 | 1 | 1 | | 9 | | -- | — |
| N.H.** | .0307 | 915 | 693 | 264 | 233 | 465 | 308 | 1.76 | 1.32 |
| N.J.** | .0413 | 1,349 | 1,597 | 309 | 338 | 789 | 1,056 | 2.55 | 3.12 |
| N.Y.** | .1506 | 1,669 | 1,492 | 392 | 550 | 1,081 | 636 | 2.76 | 1.16 |
| N.C. | | 106 | 99 | 30 | 36 | 53 | 30 | 1.77 | .83 |
| Ohio** | .0596 | 331 | 337 | 104 | 80 | 168 | 170 | 1.62 | 2.13 |
| Okla. | | 3 | 4 | 2 | 1 | | 2 | -- | -- |
| Pa.** | .1982 | 944 | 857 | 287 | 279 | 458 | 382 | 1.60 | 1.37 |
| R.I. | | 49 | 44 | 7 | 4 | 33 | 28 | -- | -- |
| S.C. | | 49 | 54 | 12 | 18 | 26 | 20 | -- | -- |
| Tenn. | | 11 | 18 | 3 | 3 | 5 | 10 | -- | -- |
| Texas | | 6 | 10 | 2 | 2 | 3 | 5 | -- | -- |
| Vt.** | .0452 | 548 | 454 | 151 | 139 | 257 | 211 | 1.70 | 1.52 |
| Va. | | 135 | 50 | 9 | 11 | 111 | 32 | 12.33 | 2.91 |
| W. Va. | | 105 | 138 | 34 | 41 | 50 | 70 | 1.47 | 1.71 |
| Wis.** | .0824 | 1,192 | 1,290 | 328 | 434 | 586 | 631 | 1.79 | 1.45 |
| TOTAL AND WEIGHTED AGE RATIO** | | 14,152 | 13,655 | 3,632 | 4,110 | 7,916 | 6,819 | 2.16 | 1.58 |
| CHANGE IN WEIGHTED AGE RATIO | | | | | | | | | -26.85% |

*Computed only for harvest areas (States) represented by at least 150 wings in the 2 years.

**Weighted age ratios are the sum of the products of State age ratios multiplied by their specific weighting factors.

Table 13.--Indexes of woodcock hunting success as indicated by the number of wings received from cooperators who participated in both 1970-71 and 1971-72 wing-collection surveys

| State of residence | Weighting factor | Number who cooperated both years | Number of envelopes | | Number of wings | | Average number of wings per envelope* | | Average number of wings per cooperator* | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1970-71 | 1971-72 | 1970-71 | 1971-72 | 1970-71 | 1971-72 | 1970-71 | 1971-72 |
| Ala. | | 1 | 1 | 2 | 1 | 3 | 1.0 | 1.5 | -- | -- |
| Ark. | | 4 | 24 | 11 | 46 | 19 | 1.9 | 1.7 | -- | -- |
| Conn.** | .0313 | 68 | 280 | 245 | 639 | 530 | 2.3 | 2.2 | 9.4 | 7.8 |
| Del. | | 5 | 14 | 18 | 21 | 49 | 1.5 | 2.7 | -- | -- |
| Fla. | | 1 | 10 | 3 | 21 | 3 | 2.1 | 1.0 | -- | -- |
| Ga. | | 10 | 21 | 26 | 26 | 31 | 1.2 | 1.2 | 2.6 | 3.1 |
| Ill. | | 1 | 2 | 8 | 2 | 18 | 1.0 | 2.3 | -- | -- |
| Ind. | | 9 | 31 | 27 | 48 | 40 | 1.5 | 1.5 | -- | -- |
| La.** | .0781 | 19 | 77 | 76 | 177 | 167 | 2.3 | 2.2 | 9.3 | 8.8 |
| Maine** | .0948 | 146 | 891 | 852 | 2,505 | 2,292 | 2.8 | 2.7 | 17.2 | 15.7 |
| Md. | | 13 | 53 | 46 | 121 | 99 | 2.3 | 2.2 | 9.3 | 7.6 |
| Mass.** | .0366 | 62 | 259 | 234 | 536 | 497 | 2.1 | 2.1 | 8.6 | 8.0 |
| Mich.** | .1410 | 128 | 642 | 689 | 1,645 | 1,740 | 2.6 | 2.5 | 12.9 | 13.6 |
| Minn.** | .0102 | 17 | 61 | 81 | 158 | 189 | 2.6 | 2.3 | 9.3 | 11.1 |
| Miss. | | 3 | 10 | 6 | 14 | 8 | 1.4 | 1.3 | -- | -- |
| Mo. | | 1 | 3 | 1 | 11 | 1 | 3.7 | 1.0 | -- | -- |
| N.H.** | .0307 | 25 | 159 | 110 | 354 | 230 | 2.2 | 2.1 | 14.2 | 9.2 |
| N.J.** | .0413 | 129 | 571 | 592 | 1,304 | 1,562 | 2.3 | 2.6 | 10.1 | 12.1 |
| N.Y.** | .1506 | 99 | 549 | 500 | 1,326 | 1,187 | 2.4 | 2.4 | 13.4 | 12.0 |
| N.C. | | 13 | 41 | 59 | 106 | 99 | 2.6 | 1.7 | 8.2 | 7.6 |
| Ohio** | .0596 | 42 | 128 | 148 | 327 | 335 | 2.6 | 2.3 | 7.8 | 8.0 |
| Okla. | | 2 | 3 | 4 | 3 | 4 | 1.0 | 1.0 | -- | -- |
| Pa.** | .1982 | 94 | 347 | 319 | 846 | 760 | 2.4 | 2.4 | 9.0 | 8.1 |
| R.I. | | 9 | 24 | 22 | 49 | 44 | 2.0 | 2.0 | -- | -- |
| S.C. | | 5 | 22 | 29 | 39 | 49 | 1.8 | 1.7 | -- | -- |
| Tenn. | | 6 | 10 | 11 | 11 | 18 | 1.1 | 1.6 | -- | -- |
| Tex. | | 2 | 6 | 4 | 6 | 10 | 1.0 | 2.5 | -- | -- |
| Vt.** | .0452 | 28 | 182 | 163 | 472 | 410 | 2.6 | 2.5 | 16.9 | 14.6 |
| Va. | | 12 | 50 | 32 | 119 | 49 | 2.4 | 1.5 | 9.9 | 4.1 |
| W. Va. | | 12 | 47 | 46 | 97 | 123 | 2.1 | 2.7 | 8.1 | 10.3 |
| Wis.** | .0824 | 103 | 454 | 491 | 1,089 | 1,150 | 2.4 | 2.3 | 10.6 | 11.2 |
| TOTAL AND WEIGHTED AVERAGE** | | 1,069 | 4,972 | 4,855 | 12,119 | 11,716 | 2.5 | 2.4 | 11.6 | 11.0 |

*Computed only for States represented by at least 10 hunters who cooperated both years.

**Weighted average is the sum of the products of State averages multiplied by their specific weighting factors using only States represented by at least 15 hunters who cooperated both years.

Table 14.--Distribution of daily bag sizes in woodcock wing collection by harvest areas

| Harvest Area | Year | Bag Size 1 | | 2 | | 3 | | 4 | | 5 | | Total Successful Hunts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | No. | % | No. | % | No. | % | No. | % | No. | % | |
| No. Central | 1969-70 | 529 | 41.3 | 260 | 20.3 | 191 | 14.9 | 126 | 9.8 | 174 | 13.6 | 1,280 |
| | 1970-71 | 643 | 38.9 | 328 | 19.9 | 240 | 14.5 | 193 | 11.7 | 248 | 15.0 | 1,652 |
| | 1971-72 | 803 | 39.8 | 419 | 20.8 | 317 | 15.7 | 169 | 8.4 | 309 | 15.3 | 2,017 |
| Mid-Central | 1969-70 | 121 | 44.0 | 68 | 24.7 | 37 | 13.5 | 25 | 9.1 | 24 | 8.7 | 275 |
| | 1970-71 | 129 | 48.5 | 51 | 19.2 | 34 | 12.8 | 18 | 6.8 | 34 | 12.8 | 266 |
| | 1971-72 | 170 | 54.8 | 68 | 21.9 | 39 | 12.6 | 8 | 2.6 | 25 | 8.1 | 310 |
| So. Central | 1969-70 | 101 | 33.1 | 52 | 17.0 | 38 | 12.5 | 38 | 12.5 | 76 | 24.9 | 305 |
| | 1970-71 | 117 | 49.2 | 40 | 16.8 | 36 | 15.1 | 19 | 8.0 | 26 | 10.9 | 238 |
| | 1971-72 | 133 | 53.8 | 51 | 20.6 | 29 | 11.7 | 9 | 3.6 | 25 | 10.1 | 247 |
| Central Total | 1969-70 | 751 | 40.4 | 380 | 20.4 | 266 | 14.3 | 189 | 10.2 | 274 | 14.7 | 1,860 |
| | 1970-71 | 889 | 41.2 | 419 | 19.4 | 310 | 14.4 | 230 | 10.7 | 308 | 14.3 | 2,156 |
| | 1971-72 | 1,106 | 43.0 | 538 | 20.9 | 385 | 15.0 | 186 | 7.2 | 359 | 13.9 | 2,574 |
| No. Atlantic | 1969-70 | 1,370 | 37.7 | 822 | 22.6 | 551 | 15.2 | 395 | 10.9 | 492 | 13.6 | 3,630 |
| | 1970-71 | 1,366 | 36.0 | 828 | 21.8 | 584 | 15.4 | 467 | 12.3 | 548 | 14.4 | 3,793 |
| | 1971-72 | 1,280 | 35.3 | 840 | 23.2 | 576 | 15.9 | 371 | 10.2 | 557 | 15.4 | 3,624 |
| Mid-Atlantic | 1969-70 | 627 | 41.9 | 304 | 20.3 | 219 | 14.6 | 140 | 9.4 | 205 | 13.7 | 1,495 |
| | 1970-71 | 706 | 45.9 | 355 | 23.1 | 167 | 10.9 | 128 | 8.3 | 181 | 11.8 | 1,537 |
| | 1971-72 | 588 | 39.6 | 322 | 21.7 | 192 | 12.9 | 144 | 9.7 | 239 | 16.1 | 1,485 |
| So. Atlantic | 1969-70 | 74 | 61.2 | 27 | 22.3 | 6 | 5.0 | 9 | 7.4 | 5 | 4.1 | 121 |
| | 1970-71 | 127 | 57.2 | 35 | 15.8 | 20 | 9.0 | 17 | 7.7 | 23 | 10.4 | 222 |
| | 1971-72 | 168 | 61.8 | 58 | 21.3 | 28 | 10.3 | 10 | 3.7 | 8 | 2.9 | 272 |
| Atlantic Total | 1969-70 | 2,071 | 39.5 | 1,153 | 22.0 | 776 | 14.8 | 544 | 10.4 | 702 | 13.4 | 5,246 |
| | 1970-71 | 2,199 | 39.6 | 1,218 | 21.9 | 771 | 13.9 | 612 | 11.0 | 752 | 13.5 | 5,552 |
| | 1971-72 | 2,036 | 37.8 | 1,220 | 22.7 | 796 | 14.8 | 525 | 9.8 | 804 | 14.9 | 5,381 |
| U.S. Total | 1969-70 | 2,822 | 39.7 | 1,533 | 21.6 | 1,042 | 14.7 | 733 | 10.3 | 976 | 13.7 | 7,106 |
| | 1970-71 | 3,088 | 40.1 | 1,637 | 21.2 | 1,081 | 14.0 | 842 | 10.9 | 1,060 | 13.8 | 7,708 |
| | 1971-72 | 3,142 | 39.5 | 1,758 | 22.1 | 1,181 | 14.8 | 711 | 8.9 | 1,163 | 14.6 | 7,955 |

Table 15.--Summary of sex and age ratios in woodcock wing collection by periods - Central Region

| Region Period | Hunting Season | Sample Size* | Percent of Season Sample | Ad F / 100 Ad M | Im F / 100 Im M | Im / 100 Ad F |
|---|---|---|---|---|---|---|
| NORTH CENTRAL | 1968-69 | 702 | 21.4 | 183 | 80 | 166 |
| I (to 9/30) | 1969-70 | 761 | 26.1 | 128 | 92 | 199 |
| | 1970-71 | 1,013 | 26.8 | 163 | 97 | 208 |
| | 1971-72 | 1,043 | 22.1 | 156 | 89 | 161 |
| II (10/1-20) | 1968-69 | 1,541 | 47.0 | 176 | 108 | 144 |
| | 1969-70 | 1,618 | 55.4 | 195 | 115 | 143 |
| | 1970-71 | 1,926 | 50.9 | 201 | 118 | 188 |
| | 1971-72 | 2,125 | 45.0 | 215 | 107 | 141 |
| III (after 10/20) | 1968-69 | 1,037 | 31.6 | 153 | 93 | 137 |
| | 1969-70 | 542 | 18.6 | 185 | 102 | 99 |
| | 1970-71 | 843 | 22.3 | 161 | 99 | 188 |
| | 1971-72 | 1,549 | 32.8 | 183 | 109 | 125 |
| MID-CENTRAL | 1968-69 | 212 | 33.3 | 149 | 82 | 240 |
| I (to 10/10) | 1969-70 | 170 | 31.1 | 107 | 113 | 184 |
| | 1970-71 | 215 | 40.5 | 142 | 117 | 166 |
| | 1971-72 | 117 | 21.4 | 152 | 103 | 200 |
| II (10/11-11/10) | 1968-69 | 354 | 55.6 | 181 | 101 | 182 |
| | 1969-70 | 276 | 50.5 | 135 | 68 | 155 |
| | 1970-71 | 259 | 48.8 | 209 | 76 | 207 |
| | 1971-72 | 303 | 55.5 | 122 | 114 | 188 |
| III (after 11/10) | 1968-69 | 71 | 11.1 | 83 | 61 | 253 |
| | 1969-70 | 101 | 18.5 | 59 | 45 | 263 |
| | 1970-71 | 58 | 10.7 | 180 | 61 | 167 |
| | 1971-72 | 126 | 23.1 | 90 | 76 | 239 |
| SOUTH CENTRAL | 1968-69 | 124 | 19.0 | 156 | 61 | 279 |
| I (to 12/10) | 1969-70 | 125 | 15.1 | 141 | 81 | 232 |
| | 1970-71 | 39 | 8.2 | 162 | 200 | 138 |
| | 1971-72 | 65 | 14.1 | 82 | 56 | 139 |
| II (12/11-1/10) | 1968-69 | 365 | 55.8 | 138 | 112 | 284 |
| | 1969-70 | 494 | 59.5 | 118 | 109 | 319 |
| | 1970-71 | 306 | 64.6 | 125 | 81 | 330 |
| | 1971-72 | 257 | 55.6 | 162 | 116 | 176 |
| III (after 1/10) | 1968-69 | 165 | 25.2 | 150 | 118 | 177 |
| | 1969-70 | 211 | 25.4 | 163 | 77 | 244 |
| | 1970-71 | 129 | 27.2 | 157 | 124 | 227 |
| | 1971-72 | 140 | 30.3 | 161 | 120 | 149 |

*Excluding adult unknowns and unknown sex and age.

Table 16.--Summary of sex and age ratios in woodcock wing collection by periods - Atlantic Region

| Region Period | Hunting Season | Sample Size* | Percent of Season Sample | Ad F / 100 Ad M | Im F / 100 Im M | Im / 100 Ad F |
|---|---|---|---|---|---|---|
| NORTH ATLANTIC | 1968-69 | 2,424 | 27.4 | 137 | 100 | 187 |
| I (to 10/10) | 1969-70 | 1,938 | 23.0 | 156 | 107 | 146 |
| | 1970-71 | 2,140 | 23.9 | 174 | 100 | 189 |
| | 1971-72 | 1,941 | 22.2 | 168 | 104 | 138 |
| II (10/11-31) | 1968-69 | 5,405 | 61.1 | 143 | 97 | 182 |
| | 1969-70 | 5,359 | 63.6 | 144 | 94 | 165 |
| | 1970-71 | 5,434 | 60.6 | 149 | 104 | 230 |
| | 1971-72 | 5,341 | 61.1 | 159 | 101 | 148 |
| III (after 10/31) | 1968-69 | 1,015 | 11.5 | 128 | 81 | 230 |
| | 1969-70 | 1,129 | 13.4 | 96 | 87 | 211 |
| | 1970-71 | 1,393 | 15.5 | 123 | 83 | 348 |
| | 1971-72 | 1,462 | 16.7 | 95 | 90 | 290 |
| MID-ATLANTIC | 1968-69 | 854 | 22.4 | 162 | 76 | 140 |
| I (to 10/20) | 1969-70 | 794 | 23.6 | 155 | 107 | 181 |
| | 1970-71 | 738 | 23.3 | 175 | 109 | 160 |
| | 1971-72 | 593 | 16.9 | 175 | 150 | 192 |
| II (10/21-11/20) | 1968-69 | 2,568 | 67.5 | 145 | 99 | 194 |
| | 1969-70 | 2,114 | 62.9 | 119 | 96 | 209 |
| | 1970-71 | 1,973 | 62.3 | 155 | 108 | 200 |
| | 1971-72 | 2,470 | 70.6 | 157 | 114 | 224 |
| III (after 11/20) | 1968-69 | 383 | 10.1 | 96 | 73 | 686 |
| | 1969-70 | 455 | 13.5 | 80 | 79 | 667 |
| | 1970-71 | 454 | 14.3 | 87 | 87 | 731 |
| | 1971-72 | 438 | 12.5 | 84 | 94 | 623 |
| SOUTH ATLANTIC | 1968-69 | 74 | 29.6 | 95 | 88 | 165 |
| I (to 12/10) | 1969-70 | 50 | 24.9 | 144 | 87 | 215 |
| | 1970-71 | 20 | 5.0 | 200 | 40 | 350 |
| | 1971-72 | 73 | 17.2 | 144 | 93 | 112 |
| II (12/11-1/10) | 1968-69 | 131 | 52.4 | 161 | 78 | 192 |
| | 1969-70 | 109 | 54.2 | 122 | 103 | 314 |
| | 1970-71 | 243 | 60.1 | 119 | 48 | 250 |
| | 1971-72 | 171 | 40.3 | 86 | 81 | 133 |
| III (after 1/10) | 1968-69 | 45 | 18.0 | 160 | 138 | 388 |
| | 1969-70 | 42 | 20.9 | 60 | 73 | 433 |
| | 1970-71 | 141 | 34.9 | 91 | 57 | 231 |
| | 1971-72 | 180 | 42.5 | 158 | 84 | 101 |

*Excluding adult unknowns and unknown sex and age.

Table 17.--Distribution of harvest by 10-day periods in Central Region

| STATE & YEAR | SEASON OPENED | SAMPLE SIZE | PERIOD* 1 9/1-10 | 2 | 3 | 4 10/1-10 | 5 | 6 | 7 11/1-10 | 8 | 9 | 10 12/1-10 | 11 | 12 | 13 1/1-10 | 14 | 15 | 16 2/1-10 | 17 | 18 | MEDIAN PERIOD OF HARVEST |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Percent of sample collected during period (dashes indicate season open but no wings collected) | | | | | | | | | | | | | | | | | | |
| MINN. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 9/7 | 242 | 6.2 | 5.8 | 13.2 | 20.7 | 26.9 | 24.8 | 2.5 | | | | | | | | | | | | 10/11-20 |
| 69-70 | 9/6 | 252 | 6.3 | 12.3 | 16.3 | 13.1 | 32.9 | 17.9 | 1.2 | | | | | | | | | | | | 10/11-20 |
| 70-71 | 9/5 | 246 | 5.3 | 6.1 | 16.3 | 21.5 | 33.3 | 14.6 | 2.8 | | | | | | | | | | | | 10/1-20 |
| 71-72 | 9/4 | 707 | 5.9 | 13.3 | 7.1 | 18.7 | 24.3 | 26.4 | 4.2 | | | | | | | | | | | | 10/11-20 |
| WIS. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 9/14 | 1,120 | | 2.3 | 17.0 | 18.9 | 33.2 | 24.4 | 4.2 | | | | | | | | | | | | 10/11-20 |
| 69-70 | 9/13 | 1,048 | | 8.1 | 13.2 | 18.7 | 38.1 | 15.6 | 5.5 | 0.8 | | | | | | | | | | | 10/11-20 |
| 70-71 | 9/12 | 1,483 | | 10.9 | 14.9 | 26.4 | 25.6 | 16.7 | 5.5 | 0.1 | | | | | | | | | | | 10/1-10 |
| 71-72 | 9/11 | 1,680 | | 7.1 | 5.8 | 24.3 | 25.0 | 33.6 | 2.6 | 1.7 | | | | | | | | | | | 10/11-20 |
| MICH. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 9/15** | 2,054 | | 9.3 | 14.3 | 19.9 | 23.9 | 28.4 | 4.0 | 0.1 | | | | | | | | | | | 10/11-20 |
| 69-70 | 9/15** | 1,684 | | 11.8 | 16.4 | 27.1 | 28.7 | 11.7 | 3.8 | 0.5 | | | | | | | | | | | 10/1-10 |
| 70-71 | 9/15** | 2,166 | | 12.8 | 15.3 | 29.6 | 20.0 | 16.6 | 5.3 | 0.4 | | | | | | | | | | | 10/1-10 |
| 71-72 | 9/15** | 2,388 | | 14.3 | 12.8 | 23.1 | 19.7 | 24.0 | 5.6 | 0.5 | | | | | | | | | | | 10/1-20 |
| ILL. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 10/1 | 13 | | | | -- | -- | -- | 30.8 | 53.8 | 15.4 | -- | | | | | | | | | 11/11-20 |
| 69-70 | 10/1 | 14 | | | | -- | -- | -- | 21.4 | 78.6 | -- | -- | | | | | | | | | 11/11-20 |
| 70-71 | 10/1 | 4 | | | | 25.0 | 25.0 | -- | -- | 50.0 | -- | -- | | | | | | | | | --- |
| 71-72 | 10/15 | 28 | | | | | 3.6 | 7.1 | 10.7 | 57.1 | 21.4 | -- | | | | | | | | | 11/11-20 |
| IND. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 9/28 | 120 | | | 10.0 | 24.2 | 35.0 | 20.8 | 5.8 | 3.3 | 0.8 | -- | | | | | | | | | 10/11-20 |
| 69-70 | 9/20 | 114 | | 7.0 | 13.2 | 6.1 | 14.9 | 22.8 | 24.6 | 10.5 | 0.9 | | | | | | | | | | 10/21-31 |
| 70-71 | 9/19 | 63 | | 17.5 | 25.4 | 4.8 | 11.1 | 25.4 | 12.7 | 1.6 | 1.6 | | | | | | | | | | 10/11-20 |
| 71-72 | 9/25 | 52 | | | -- | 9.6 | 21.2 | 23.1 | 11.5 | 28.8 | 5.8 | | | | | | | | | | 10/21-31 |
| OHIO | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 9/20 | 487 | | 3.5 | 13.3 | 20.7 | 19.9 | 20.7 | 18.3 | 3.1 | 0.4 | | | | | | | | | | 10/11-20 |
| 69-70 | 9/19 | 394 | | 11.2 | 13.7 | 12.7 | 22.8 | 17.3 | 12.2 | 10.2 | -- | | | | | | | | | | 10/11-20 |
| 70-71 | 9/18 | 434 | | 14.3 | 11.0 | 18.4 | 16.3 | 22.3 | 12.4 | 4.8 | 0.5 | | | | | | | | | | 10/11-20 |
| 71-72 | 9/17 | 419 | | 9.8 | 8.6 | 9.6 | 18.9 | 24.3 | 19.8 | 9.1 | | | | | | | | | | | 10/21-31 |
| MO. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 10/1 | 12 | | | | -- | 41.7 | -- | 25.0 | 33.3 | -- | -- | | | | | | | | | 11/1-10 |
| 69-70 | 10/1 | 11 | | | | 9.1 | -- | -- | 9.1 | 27.3 | 45.5 | 9.1 | | | | | | | | | 11/21-30 |
| 70-71 | 10/1 | 32 | | | | 3.1 | 9.4 | 25.0 | 43.8 | 15.6 | 3.1 | -- | | | | | | | | | 11/1-10 |
| 71-72 | 10/1 | 12 | | | | 8.3 | -- | -- | 25.0 | 50.0 | 16.7 | -- | | | | | | | | | 11/11-20 |
| KY. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 11/21 | 2 | | | | | | | | | 100.0 | -- | -- | -- | -- | -- | -- | | | | 11/21-30 |
| 69-70 | 11/20 | 7 | | | | | | | | 28.6 | 57.1 | 14.3 | -- | -- | -- | -- | -- | | | | 11/21-30 |
| 70-71 | 11/19 | 4 | | | | | | | | -- | 50.0 | 50.0 | -- | -- | -- | -- | -- | | | | --- |
| 71-72 | 11/18 | 0 | | | | | | | | -- | -- | -- | -- | -- | -- | -- | -- | | | | --- |

Table 17.--Distribution of harvest by 10-day periods in Central Region--continued

| STATE & YEAR | SEASON OPENED | SAMPLE SIZE | PERIOD* 1 9/1-10 | 2 | 3 | 4 10/1-10 | 5 | 6 | 7 11/1-10 | 8 | 9 | 10 12/1-10 | 11 | 12 | 13 1/1-10 | 14 | 15 | 16 2/1-10 | 17 | 18 | MEDIAN PERIOD OF HARVEST |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Percent of sample collected during period (dashes indicate season open but no wings collected) | | | | | | | | | | | | | | | | | | |
| OKLA. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 11/21 | 0 | | | | | | | | | -- | -- | -- | -- | -- | -- | -- | | | | --- |
| 69-70 | 11/2 | 1 | | | | | | | -- | -- | 100.0 | -- | -- | -- | -- | | | | | | 11/21-30 |
| 70-71 | 11/21 | 4 | | | | | | | | | 50.0 | 25.0 | 25.0 | -- | -- | -- | | | | | --- |
| 71-72 | 11/20 | 7 | | | | | | | | | 42.9 | 14.3 | 14.3 | 14.3 | 14.3 | -- | | | | | 12/1-10 |
| ARK. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 11/28 | 16 | | | | | | | | | -- | 18.8 | 6.3 | 56.3 | 6.3 | 12.5 | | | | | 12/21-31 |
| 69-70 | 11/28 | 40 | | | | | | | | | -- | -- | 27.5 | 15.0 | 12.5 | 25.0 | 20.0 | | | | 1/1-10 |
| 70-71 | 12/1 | 50 | | | | | | | | | | 26.0 | 14.0 | 14.0 | 20.0 | 8.0 | 16.0 | 2.0 | | | 12/21-31 |
| 71-72 | 12/1 | 21 | | | | | | | | | | 9.5 | 9.5 | 57.1 | 9.5 | 9.5 | -- | 4.8 | | | 12/21-31 |
| TENN. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 11/18 | 37 | | | | | | | | 45.9 | 48.6 | 2.7 | -- | -- | -- | 2.7 | -- | | | | 11/21-30 |
| 69-70 | 11/17 | 24 | | | | | | | | 45.8 | 25.0 | 4.2 | 12.5 | -- | -- | 8.3 | 4.2 | | | | 11/21-30 |
| 70-71 | 11/26 | 21 | | | | | | | | | 71.4 | 14.3 | 4.8 | 4.8 | -- | 4.8 | -- | | | | 11/21-30 |
| 71-72 | 11/6 | 50 | | | | | | | 20.0 | 36.0 | 32.0 | 4.0 | 6.0 | 2.0 | -- | | | | | | 11/11-30 |
| TEX. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 11/23 | 39 | | | | | | | | | 5.1 | 2.6 | 20.5 | 5.1 | 2.6 | 10.3 | 53.8 | | | | 1/21-31 |
| 69-70 | 11/22 | 94 | | | | | | | | | 5.3 | 14.9 | 19.1 | 5.3 | 16.0 | 28.7 | 10.6 | | | | 1/1-10 |
| 70-71 | 11/21 | 19 | | | | | | | | | 10.5 | 21.1 | 10.5 | 5.3 | 21.1 | 5.3 | 26.3 | | | | 1/1-10 |
| 71-72 | 11/20 | 59 | | | | | | | | | 1.7 | 11.9 | 11.9 | 18.6 | 13.6 | 37.3 | 5.1 | | | | 1/1-10 |
| LA. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 11/28 | 500 | | | | | | | | | 5.4 | 13.6 | 15.0 | 28.0 | 16.8 | 12.6 | 8.6 | | | | 12/21-31 |
| 69-70 | 11/27 | 641 | | | | | | | | | 5.3 | 8.9 | 13.1 | 22.2 | 27.6 | 11.7 | 11.2 | | | | 1/1-10 |
| 70-71 | 11/26 | 332 | | | | | | | | | 3.9 | 1.8 | 18.7 | 38.9 | 13.3 | 9.0 | 11.4 | 3.0 | | | 12/21-31 |
| 71-72 | 11/25 | 307 | | | | | | | | | 5.5 | 11.1 | 16.9 | 25.7 | 16.6 | 11.1 | 13.0 | | | | 12/21-31 |
| MISS. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 11/30 | 83 | | | | | | | | | 7.2 | 16.9 | 14.5 | 6.0 | 33.7 | 10.8 | 10.8 | | | | 1/1-10 |
| 69-70 | 11/28 | 30 | | | | | | | | | -- | 10.0 | 10.0 | 50.0 | 16.7 | 13.3 | -- | | | | 12/21-31 |
| 70-71 | 12/12 | 33 | | | | | | | | | | | 3.0 | 18.2 | 27.3 | 6.1 | 24.2 | 15.2 | 6.1 | | 1/11-21 |
| 71-72 | 12/18 | 37 | | | | | | | | | | | 43.2 | 10.8 | 8.1 | 2.7 | 13.5 | 8.1 | 13.5 | | 12/21-31 |
| ALA. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 11/28 | 42 | | | | | | | | | -- | 9.5 | 19.0 | -- | 16.7 | 26.2 | 28.6 | | | | 1/11-20 |
| 69-70 | 11/28 | 35 | | | | | | | | | 8.6 | 14.3 | 17.1 | 11.4 | 20.0 | 22.9 | 5.7 | | | | 12/21-31 |
| 70-71 | 12/13 | 52 | | | | | | | | | | | 23.1 | 11.5 | 32.7 | 1.9 | 13.5 | 15.4 | 1.9 | | 1/1-10 |
| 71-72 | 12/24 | 43 | | | | | | | | | | | | 14.0 | 18.6 | 16.3 | 7.0 | 11.6 | 11.6 | 20.9 | 1/21-31 |

*Eleven days in last period of 31-day months; eight days in Period 18.
**Later opening in Zone 3 (approximately southern one-third of State).

Table 18.--Distribution of harvest by 10-day periods in Atlantic Region

| STATE & YEAR | SEASON OPENED | SAMPLE SIZE | PERIOD* 1 9/1-10 | 2 | 3 | 4 10/1-10 | 5 | 6 | 7 11/1-10 | 8 | 9 | 10 12/1-10 | 11 | 12 | 13 1/1-10 | 14 | 15 | 16 2/1-10 | 17 | 18 | MEDIAN PERIOD OF HARVEST |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Percent of sample collected during period (dashes indicate season open but no wings collected) | | | | | | | | | | | | | | | | | | |
| MAINE | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 9/24 | 3,495 | | | 13.3 | 24.8 | 28.7 | 31.4 | 1.7 | 0.1 | | | | | | | | | | | 10/11-20 |
| 69-70 | 9/24 | 3,167 | | | 12.8 | 20.5 | 33.2 | 30.8 | 2.0 | 0.8 | | | | | | | | | | | 10/11-20 |
| 70-71 | 10/1 | 3,715 | | | 2. | 28.9 | 28.6 | 38.4 | 3.7 | 0.4 | T | | | | | | | | | | 10/11-20 |
| 71-72 | 9/24** | 3,750 | | | 2.6 | 25.6 | 38.6 | 28.4 | 4.5 | 0.3 | | | | | | | | | | | 10/11-20 |
| N.Y. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 9/23** | 2,123 | | | 3.4 | 16.0 | 32.9 | 33.8 | 12.5 | 1.3 | 0.2 | | | | | | | | | | 10/11-20 |
| 69-70 | 9/22** | 2,161 | | | 3.3 | 17.8 | 32.9 | 28.8 | 11.6 | 5.2 | 0.5 | | | | | | | | | | 10/11-20 |
| 70-71 | 9/21** | 2,035 | | | 3.5 | 20.1 | 24.0 | 29.1 | 17.7 | 4.8 | 0.8 | | | | | | | | | | 10/21-31 |
| 71-72 | 9/20** | 1,939 | | 0.9 | 3.5 | 17.1 | 19.6 | 30.7 | 24.7 | 3.0 | 0.5 | | | | | | | | | | 10/21-31 |
| VT. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 9/28 | 663 | | | 14.2 | 26.1 | 29.4 | 25.9 | 3.9 | 0.5 | -- | -- | | | | | | | | | 10/11-20 |
| 69-70 | 9/27 | 395 | | | 9.9 | 26.8 | 46.3 | 14.9 | 1.8 | 0.3 | -- | | | | | | | | | | 10/11-20 |
| 70-71 | 9/26 | 611 | | | 8.3 | 29.1 | 25.9 | 24.1 | 11.8 | 0.6 | 0.2 | | | | | | | | | | 10/11-20 |
| 71-72 | 9/25 | 893 | | | 13.0 | 13.2 | 26.4 | 39.4 | 7.6 | 0.3 | -- | | | | | | | | | | 10/11-31 |
| N.H. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 10/1 | 1,451 | | | | 32.9 | 28.4 | 26.2 | 12.3 | 0.1 | -- | -- | | | | | | | | | 10/11-20 |
| 69-70 | 10/1 | 1,026 | | | | 28.2 | 38.5 | 22.3 | 9.8 | 1.2 | -- | -- | | | | | | | | | 10/11-20 |
| 70-71 | 10/1 | 1,185 | | | | 28.0 | 25.1 | 29.8 | 16.9 | 0.1 | 0.2 | -- | | | | | | | | | 10/11-20 |
| 71-72 | 10/1 | 850 | | | | 28.2 | 34.1 | 30.1 | 7.4 | 0.1 | -- | -- | | | | | | | | | 10/11-20 |
| MASS. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 10/10 | 730 | | | | 7.9 | 30.4 | 42.6 | 16.8 | 1.6 | 0.5 | | | | | | | | | | 10/21-31 |
| 69-70 | 10/10 | 1,033 | | | | 6.1 | 36.6 | 36.4 | 11.5 | 8.1 | 1.3 | | | | | | | | | | 10/21-31 |
| 70-71 | 10/10 | 749 | | | | 11.1 | 36.2 | 37.0 | 12.0 | 3.1 | 0.7 | | | | | | | | | | 10/21-31 |
| 71-72 | 10/10 | 709 | | | | | 41.3 | 32.2 | 19.5 | 6.2 | 0.8 | | | | | | | | | | 10/21-31 |
| CONN. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 10/19 | 647 | | | | | 7.4 | 50.7 | 32.1 | 4.5 | 4.6 | 0.5 | -- | 0.2 | | | | | | | 10/21-31 |
| 69-70 | 10/18 | 859 | | | | | 11.2 | 51.2 | 23.6 | 10.8 | 2.7 | 0.5 | -- | | | | | | | | 10/21-31 |
| 70-71 | 10/17 | 825 | | | | | 20.2 | 37.0 | 23.4 | 14.5 | 3.8 | 1.1 | -- | | | | | | | | 10/21-31 |
| 71-72 | 10/16 | 581 | | | | | 11.0 | 23.8 | 26.7 | 28.7 | 7.6 | 1.0 | 1.2 | | | | | | | | 11/1-10 |
| R.I. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 10/26 | 112 | | | | | | 39.3 | 47.3 | 4.5 | 8.9 | -- | -- | | | | | | | | 11/1-10 |
| 69-70 | 10/25 | 56 | | | | | | 35.7 | 39.3 | 10.7 | 12.5 | 1.2 | -- | -- | | | | | | | 11/1-10 |
| 70-71 | 10/24 | 65 | | | | | | 33.8 | 46.2 | 7.7 | 7.7 | 3.1 | -- | 1.5 | -- | | | | | | 11/1-10 |
| 71-72 | 10/23 | 81 | | | | | | 50.6 | 17.3 | 13.6 | 13.6 | 3.7 | -- | 1.2 | | | | | | | --- |
| PA. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 10/12 | 1,419 | | | | | 31.2 | 39.7 | 22.4 | 4.3 | 2.3 | -- | -- | | | | | | | | 10/21-31 |
| 69-70 | 10/18 | 1,040 | | | | | 25.5 | 42.9 | 19.1 | 9.4 | 3.1 | -- | -- | | | | | | | | 10/21-31 |
| 70-71 | 10/17 | 1,114 | | | | | 22.4 | 41.1 | 24.7 | 8.6 | 3.1 | -- | -- | | | | | | | | 10/21-31 |
| 71-72 | 10/16 | 1,140 | | | | | 22.5 | 28.9 | 32.3 | 15.3 | 1.1 | -- | -- | | | | | | | | 10/20-11/10 |
| N.J. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 10/5 | 2,261 | | | | 10.3 | 8.5 | 25.5 | 29.6 | 13.5 | 10.5 | 2.0 | | | | | | | | | 11/1-10 |
| 69-70 | 10/4 | 2,102 | | | | 10.8 | 14.1 | 29.1 | 20.6 | 11.8 | 9.4 | 4.0 | | | | | | | | | 10/21-31 |
| 70-71 | 10/3 | 1,609 | | | | 12.1 | 17.0 | 23.9 | 21.4 | 14.1 | 8.9 | 2.6 | | | | | | | | | 10/21-31 |
| 71-72 | 10/2 | 1,799 | | | | 6.7 | 9.2 | 11.0 | 35.2 | 24.5 | 10.8 | 2.6 | | | | | | | | | 11/1-10 |

Table 18.--Distribution of harvest by 10-day periods in Atlantic Region--continued

| STATE & YEAR | SEASON OPENED | SAMPLE SIZE | PERIOD* 1 9/1-10 | 2 | 3 | 4 10/1-10 | 5 | 6 | 7 11/1-10 | 8 | 9 | 10 12/1-10 | 11 | 12 | 13 1/1-10 | 14 | 15 | 16 2/1-10 | 17 | 18 | MEDIAN PERIOD OF HARVEST |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Percent of sample collected during period (dashes indicate season open but no wings collected) | | | | | | | | | | | | | | | | | | |
| W. VA. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 10/12*** | 71 | | | | | 16.9 | 28.2 | 32.4 | 8.5 | 14.1 | -- | | | | | | | | | 11/1-10 |
| 69-70 | 10/11*** | 80 | | | | | 20.0 | 30.0 | 26.3 | 23.8 | -- | -- | | | | | | | | | 10/21-11/10 |
| 70-71 | 10/10*** | 159 | | 0.6 | 3.8 | 6.3 | 10.7 | 30.8 | 25.8 | 18.9 | 3.1 | -- | | | | | | | | | 10/21-31 |
| 71-72 | 10/16 | 244 | | | | | 16.0 | 16.8 | 40.2 | 23.0 | 3.3 | 0.8 | -- | | | | | | | | 11/1-10 |
| MD. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 10/16 | 128 | | | | | 10.2 | 16.4 | 31.3 | 19.5 | 9.4 | 0.8 | 12.5 | | | | | | | | 11/1-10 |
| 69-70 | 10/10 | 122 | | | | -- | 7.4 | 22.1 | 24.6 | 14.8 | 12.3 | 16.4 | 2.5 | | | | | | | | 11/1-10 |
| 70-71 | 10/9 | 176 | | | | 1.1 | 6.8 | 25.6 | 18.8 | 14.2 | 19.3 | 10.2 | 4.0 | | | | | | | | 11/1-10 |
| 71-72 | 10/5 | 210 | | | | 1.0 | 3.8 | 8.1 | 13.8 | 34.8 | 31.0 | 7.6 | | | | | | | | | 11/11-20 |
| DEL. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 11/22 | 22 | | | | | | | | | 72.7 | 9.1 | 4.5 | 9.1 | 4.5 | -- | -- | | | | 11/21-30 |
| 69-70 | 11/21 | 11 | | | | | | | | | 63.6 | 27.3 | 9.1 | -- | -- | -- | -- | | | | 11/21-30 |
| 70-71 | 11/20 | 32 | | | | | | | | 9.4 | 18.8 | 9.4 | 18.8 | 18.8 | 9.4 | 12.5 | 3.1 | | | | 12/11-20 |
| 71-72 | 11/19 | 56 | | | | | | | | 21.4 | 28.6 | 7.1 | 7.1 | 12.5 | 14.3 | 8.9 | -- | | | | 11/21-12/10 |
| VA. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 11/18 | 42 | | | | | | | | 23.8 | 47.6 | 9.5 | 7.1 | -- | -- | | | | | | 11/21-30 |
| 69-70 | 11/17 | 113 | | | | | | | | 10.6 | 29.2 | 21.2 | 21.2 | 3.5 | 0.9 | 13.3 | | | | | 12/1-10 |
| 70-71 | 11/16 | 166 | | | | | | | | 6.6 | 24.1 | 15.1 | 9.6 | 15.1 | 9.0 | 20.1 | | | | | 12/11-20 |
| 71-72 | 11/15 | 84 | | | | | | | | 39.3 | 14.3 | 19.0 | 9.5 | 4.8 | 2.4 | 10.7 | | | | | 11/21-30 |
| N.C. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 11/16 | 66 | | | | | | | | 9.2 | 20.0 | 13.8 | 23.1 | 20.0 | 13.8 | -- | | | | | 12/11-20 |
| 69-70 | 11/28 | 55 | | | | | | | | | 9.1 | 21.8 | 16.4 | 21.8 | 16.4 | 10.9 | 3.6 | | | | 12/21-31 |
| 70-71 | 12/11 | 209 | | | | | | | | | | | 14.8 | 21.5 | 19.1 | 7.2 | 26.3 | 7.2 | 3.8 | | 1/1-10 |
| 71-72 | 12/11 | 133 | | | | | | | | | | | 15.0 | 17.3 | 12.8 | 14.3 | 11.3 | 16.5 | 12.8 | | 1/11-20 |
| S.C. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 11/28 | 119 | | | | | | | | | 13.4 | 8.4 | 23.5 | 20.2 | 3.4 | 10.9 | 20.2 | | | | 12/21-31 |
| 69-70 | 11/28 | 81 | | | | | | | | | 2.5 | 8.6 | 25.9 | 7.4 | 25.9 | 14.8 | 14.8 | | | | 1/1-10 |
| 70-71 | 12/13 | 67 | | | | | | | | | | | 13.4 | 17.9 | 26.9 | 7.5 | 17.9 | 3.0 | 13.4 | | 1/1-10 |
| 71-72 | 12/24 | 114 | | | | | | | | | | | | 14.0 | 10.5 | 8.8 | 14.0 | 14.0 | 21.9 | 16.7 | 1/21-2/10 |
| GA. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 11/28 | 50 | | | | | | | | | 8.0 | 22.0 | 22.0 | 10.0 | 22.0 | 12.0 | 4.0 | | | | 12/11-20 |
| 69-70 | 11/20 | 40 | | | | | | | | 5.0 | 15.0 | 27.5 | 12.5 | 12.5 | 12.5 | 10.0 | 5.0 | | | | 12/11-20 |
| 70-71 | 11/20 | 101 | | | | | | | | 2.0 | 8.9 | 5.9 | 19.8 | 26.7 | 21.8 | 8.9 | 5.9 | | | | 12/21-31 |
| 71-72 | 11/20 | 137 | | | | | | | | 2.2 | 9.5 | 33.6 | 11.7 | 16.1 | 16.1 | 7.3 | 3.6 | | | | 12/11-20 |
| FLA. | | | | | | | | | | | | | | | | | | | | | |
| 68-69 | 11/9 | 18 | | | | | | | -- | 11.1 | 5.6 | 11.1 | 16.7 | 55.6 | -- | -- | | | | | 12/21-31 |
| 69-70 | 11/15 | 29 | | | | | | | | 3.4 | 10.3 | 3.4 | 17.2 | 24.1 | 27.6 | 13.8 | | | | | 12/21-31 |
| 70-71 | 11/21 | 31 | | | | | | | | | -- | 12.9 | 12.9 | 41.9 | 9.7 | 12.9 | 9.7 | | | | 12/21-31 |
| 71-72 | 11/20 | 18 | | | | | | | | -- | 5.6 | 11.1 | 22.2 | 27.8 | 11.1 | 16.7 | 5.6 | | | | 12/21-31 |

*Eleven days in last period of 31-day months; eight days in Period 18.
**Later opening in southern part of State.
***Except for special 8-day early season in late September.

Table 19.--Distribution of 1969-70, 1970-71, and 1971-72 wing collections by 7-day periods* - Central Region

| State | Year | Opening Date | Sample Size | Percent of harvest in single period | | | | | | | | | | Percent of harvest in combined periods | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1&2 | 3-6 | 7-10 |
| Ala. | 1969-70 | 11-28 | 34 | 17.6 | 2.9 | 8.8 | 20.6 | -- | 20.6 | 5.9 | 17.6 | 5.9 | -- | 20.6 | 50.0 | 29.4 |
| | 1970-71 | 12-13 | 51 | 21.6 | 2.0 | 15.7 | 23.5 | 3.9 | 3.9 | 2.0 | 19.6 | 5.9 | 2.0 | 23.5 | 47.1 | 29.4 |
| | 1971-72 | 12-24 | 42 | 11.9 | 14.3 | 9.5 | 11.9 | 4.8 | 4.8 | 9.5 | 9.5 | 19.0 | 4.8 | 26.2 | 31.0 | 42.9 |
| Ark. | 1969-70 | 11-28 | 40 | -- | -- | 25.0 | 10.0 | 12.5 | 7.5 | 20.0 | 10.0 | 10.0 | 5.0 | 0 | 55.0 | 45.0 |
| | 1970-71 | 12-1 | 56 | 23.2 | 14.3 | 3.6 | 7.1 | 21.4 | 5.4 | 8.9 | -- | 14.3 | 1.8 | 37.5 | 37.5 | 25.0 |
| | 1971-72 | 12-1 | 21 | 9.5 | 4.8 | 28.6 | 23.8 | 19.0 | 4.8 | 4.8 | -- | -- | 4.8 | 14.3 | 76.2 | 9.5 |
| Ill. | 1969-70 | 10-1 | 14 | -- | -- | -- | -- | 21.4 | -- | 78.6 | -- | -- | -- | -- | 21.4 | 78.6 |
| | 1970-71 | 10-1 | 4 | -- | 25.0 | 25.0 | -- | -- | -- | 50.0 | -- | -- | -- | 25.0 | 25.0 | 50.0 |
| | 1971-72 | 10-15 | 28 | 3.6 | 7.1 | 10.7 | -- | 53.6 | 3.6 | 21.4 | -- | -- | Closed | 10.7 | 67.9 | 21.4 |
| Ind. | 1969-70 | 9-20 | 115 | 8.7 | 13.9 | 3.5 | 3.5 | 13.0 | 20.9 | 14.8 | 13.0 | 8.7 | -- | 22.6 | 40.9 | 36.5 |
| | 1970-71 | 9-19 | 60 | 33.3 | 6.7 | 3.3 | 6.7 | 8.3 | 16.7 | 11.7 | 10.0 | 1.7 | 1.7 | 40.0 | 35.0 | 25.0 |
| | 1971-72 | 9-25 | 52 | -- | 7.7 | 13.5 | 9.6 | 21.2 | 7.7 | 9.6 | 11.5 | 19.2 | -- | 7.7 | 51.9 | 40.4 |
| Ky. | 1969-70 | 11-20 | 7 | 85.7 | 14.3 | -- | -- | -- | -- | -- | -- | -- | -- | 100.0 | -- | -- |
| | 1970-71 | 11-19 | 4 | 25.0 | 75.0 | -- | -- | -- | -- | -- | -- | -- | -- | 100.0 | -- | -- |
| | 1971-72 | 11-18 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| La. | 1969-70 | 11-27 | 641 | 6.6 | 7.6 | 9.2 | 9.4 | 16.7 | 18.7 | 12.6 | 10.0 | 8.1 | 1.1 | 14.2 | 54.0 | 31.8 |
| | 1970-71 | 12-9 | 332 | 3.9** | 7.5 | 18.4 | 22.3 | 17.8 | 9.0 | 5.1 | 11.1 | 1.8 | 3.0 | 11.4 | 67.5 | 21.1 |
| | 1971-72 | 11-25 | 307 | 6.2 | 7.8 | 12.7 | 11.1 | 19.2 | 5.5 | 15.0 | 7.8 | 12.4 | 2.3 | 14.0 | 48.5 | 37.5 |
| Mich. | 1969-70 | 9-15 | 1,684 | 14.7 | 10.6 | 19.1 | 17.0 | 18.6 | 13.8 | 3.7 | 1.9 | 0.5 | Closed | 25.2 | 68.6 | 6.1 |
| | 1970-71 | 9-15 | 2,165 | 13.8 | 12.0 | 17.3 | 19.4 | 13.4 | 13.6 | 6.8 | 3.3 | 0.4 | Closed | 25.7 | 63.7 | 10.5 |
| | 1971-72 | 9-15 | 2,385 | 15.4 | 9.5 | 12.2 | 16.9 | 14.1 | 15.8 | 11.2 | 4.2 | 0.7 | Closed | 24.9 | 59.1 | 16.1 |
| Minn. | 1969-70 | 9-6 | 252 | 8.3 | 8.7 | 5.6 | 14.3 | 11.1 | 25.8 | 13.5 | 11.5 | 1.2 | -- | 17.1 | 56.7 | 26.2 |
| | 1970-71 | 9-5 | 246 | 5.3 | 5.3 | 4.1 | 15.0 | 13.4 | 26.0 | 17.9 | 8.1 | 4.9 | -- | 10.6 | 58.5 | 30.9 |
| | 1971-72 | 9-4 | 707 | 5.9 | 4.2 | 11.5 | 5.4 | 11.9 | 17.3 | 18.5 | 18.7 | 6.2 | 0.4 | 10.2 | 46.0 | 43.8 |

Table 19.--Distribution of 1969-70, 1970-71, and 1971-72 wing collections by 7-day periods* - Central Region --continued

| State | Year | Opening Date | Sample Size | Percent of harvest in single period | | | | | | | | | | Percent of harvest in combined periods | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1&2 | 3-6 | 7-10 |
| Miss. | 1969-70 | 11-28 | 32 | -- | 9.4 | 3.1 | 37.5 | 21.9 | 12.5 | 3.1 | 12.5 | -- | -- | 9.4 | 75.0 | 15.6 |
| | 1970-71 | 12-12 | 33 | -- | 6.1 | 18.2 | 12.1 | 12.1 | 6.1 | 24.2 | 6.1 | 12.1 | 3.0 | 6.1 | 48.5 | 45.5 |
| | 1971-72 | 12-18 | 37 | 46.0 | 8.1 | 5.4 | 2.7 | 2.7 | 10.8 | 2.7 | 8.1 | 5.4 | 8.1 | 54.1 | 21.6 | 24.3 |
| Mo. | 1969-70 | 10-1 | 11 | 9.1 | -- | -- | -- | 9.1 | -- | 27.3 | 36.4 | 9.1 | 9.1 | 9.1 | 9.1 | 81.8 |
| | 1970-71 | 10-1 | 32 | 3.1 | -- | 9.4 | 15.6 | 34.4 | 18.8 | 12.5 | 6.2 | -- | -- | 3.1 | 78.1 | 18.8 |
| | 1971-72 | 10-1 | 12 | 8.3 | -- | -- | -- | 8.3 | 50.0 | 16.7 | -- | 16.7 | -- | 8.3 | 58.3 | 33.3 |
| Ohio | 1969-70 | 9-19 | 394 | 19.0 | 8.4 | 5.8 | 15.7 | 17.0 | 10.1 | 7.1 | 11.9 | 4.8 | -- | 27.4 | 48.7 | 23.9 |
| | 1970-71 | 9-18 | 435 | 17.5 | 12.0 | 9.7 | 9.4 | 12.9 | 13.8 | 12.9 | 7.4 | 4.1 | 0.5 | 29.4 | 45.7 | 24.8 |
| | 1971-72 | 9-17 | 419 | 13.1 | 5.2 | 5.2 | 13.6 | 14.1 | 12.2 | 18.1 | 10.0 | 6.7 | 1.7 | 18.4 | 45.1 | 36.5 |
| Okla. | 1969-70 | 11-2 | 1 | -- | -- | 100.0 | -- | -- | -- | -- | -- | -- | -- | -- | 100.0 | -- |
| | 1970-71 | 11-21 | 4 | 25.0 | 50.0 | -- | -- | 25.0 | -- | -- | -- | Closed | Closed | 75.0 | 25.0 | -- |
| | 1971-72 | 11-20 | 7 | 14.3 | 28.6 | 14.3 | -- | 14.3 | 14.3 | 14.3 | -- | Closed | Closed | 42.9 | 42.9 | 14.3 |
| Tenn. | 1969-70 | 11-17 | 47 | 72.3 | 12.8 | 2.1 | -- | 6.4 | -- | -- | -- | 4.3 | 2.1 | 85.1 | 8.5 | 6.4 |
| | 1970-71 | 11-26 | 21 | 76.2 | 9.5 | 4.8 | -- | 4.8 | -- | -- | 4.8 | -- | -- | 85.7 | 9.5 | 4.8 |
| | 1971-72 | 11-6 | 50 | 22.0 | 26.0 | 26.0 | 14.0 | 4.0 | 4.0 | 4.0 | -- | -- | -- | 48.0 | 48.0 | 4.0 |
| Tex. | 1969-70 | 11-22 | 94 | 5.3 | 14.9 | -- | 13.8 | 5.3 | 10.6 | 5.3 | 19.1 | 20.2 | 5.3 | 20.2 | 29.8 | 50.0 |
| | 1970-71 | 11-21 | 20 | 5.0 | 20.0 | 10.0 | 10.0 | -- | 5.0 | 20.0 | 5.0 | -- | 25.0 | 25.0 | 25.0 | 50.0 |
| | 1971-72 | 11-20 | 59 | -- | 8.5 | 5.1 | 10.2 | 11.9 | 8.5 | 6.8 | 20.3 | 23.7 | 5.1 | 8.5 | 35.6 | 55.9 |
| Wis. | 1969-70 | 9-13 | 1,049 | 6.8 | 7.1 | 9.8 | 16.3 | 22.7 | 21.5 | 9.4 | 4.2 | 1.6 | 0.5 | 13.9 | 70.4 | 15.7 |
| | 1970-71 | 9-12 | 1,480 | 7.4 | 6.6 | 12.6 | 17.5 | 23.0 | 15.0 | 10.3 | 5.8 | 1.7 | 0.1 | 14.0 | 68.2 | 17.8 |
| | 1971-72 | 9-11 | 1,680 | 4.6 | 4.2 | 4.1 | 12.3 | 22.6 | 19.3 | 18.9 | 11.9 | 1.0 | 1.3 | 8.8 | 58.2 | 33.0 |

*First period begins on season opening date; 10th period 2 days or less.
**Four-day period Nov. 26-29 only.

Table 20.--Distribution of 1969-70, 1970-71, and 1971-72 wing collections by 7-day periods* - Atlantic Region

| State | Year | Opening Date | Sample Size | Percent of harvest in single period | | | | | | | | | | Percent of harvest in combined periods | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1&2 | 3-6 | 7-10 |
| Conn. | 1969-70 | 10-18 | 856 | 29.4 | 32.8 | 16.5 | 12.6 | 5.6 | 2.3 | 0.5 | 0.2 | -- | -- | 62.3 | 37.0 | 0.7 |
| | 1970-71 | 10-17 | 821 | 27.3 | 23.0 | 18.6 | 17.4 | 8.2 | 3.3 | 1.1 | 0.5 | -- | 0.6 | 50.3 | 47.5 | 2.2 |
| | 1971-72 | 10-16 | 581 | 15.1 | 15.8 | 15.0 | 19.8 | 18.8 | 11.2 | 2.8 | 0.3 | 0.9 | 0.3 | 31.0 | 64.7 | 4.3 |
| Del. | 1969-70 | 11-21 | 11 | 54.5 | 27.3 | 18.2 | -- | -- | -- | -- | -- | -- | -- | 81.8 | 18.2 | -- |
| | 1970-71 | 11-20 | 32 | 18.8 | 12.5 | 6.2 | -- | 21.9 | 15.6 | 9.4 | 6.2 | 9.4 | -- | 31.2 | 43.8 | 25.0 |
| | 1971-72 | 11-19 | 56 | 26.8 | 25.0 | 5.4 | 7.1 | 1.8 | 1.8 | 12.5 | 10.7 | 8.9 | -- | 51.8 | 16.1 | 32.1 |
| Fla. | 1969-70 | 11-15 | 29 | 3.4 | 10.3 | 3.4 | 6.9 | 10.3 | 3.4 | 20.7 | 27.6 | 13.8 | -- | 13.8 | 24.1 | 62.1 |
| | 1970-71 | 11-21 | 31 | -- | 9.7 | 3.2 | 9.7 | 16.1 | 29.0 | 9.7 | 12.9 | 3.2 | 6.5 | 9.7 | 58.1 | 32.3 |
| | 1971-72 | 11-20 | 18 | -- | 11.1 | 5.6 | 5.6 | 27.8 | 16.7 | 11.1 | -- | 16.7 | 5.6 | 11.1 | 55.6 | 33.3 |
| Ga. | 1969-70 | 11-20 | 40 | 12.5 | 15.0 | 20.0 | 12.5 | -- | 12.5 | 7.5 | 10.0 | 10.0 | -- | 27.5 | 45.0 | 27.5 |
| | 1970-71 | 11-20 | 106 | 7.5 | 4.7 | 3.8 | 11.3 | 13.2 | 19.8 | 14.2 | 6.6 | 8.5 | 10.4 | 12.3 | 48.1 | 39.6 |
| | 1971-72 | 11-20 | 135 | 11.9 | 2.2 | 31.9 | 10.4 | 13.3 | 4.4 | 13.3 | 3.0 | 7.4 | 2.2 | 14.1 | 60.0 | 25.9 |
| Maine | 1969-70 | 9-24 | 3,161 | 12.6 | 14.1 | 17.5 | 26.6 | 19.5 | 8.1 | 1.0 | 0.6 | Closed | Closed | 26.7 | 71.7 | 1.6 |
| | 1970-71 | 10-1 | 3,715 | 18.5 | 20.1 | 23.2 | 24.3 | 11.4 | 2.1 | 0.2 | 0.2 | -- | Closed | 38.6 | 61.0 | 0.4 |
| | 1971-72 | 9-24 | 3,750 | 2.6 | 16.3 | 28.5 | 22.5 | 20.0 | 7.9 | 1.9 | 0.3 | Closed | Closed | 18.9 | 78.9 | 2.2 |
| Md. | 1969-70 | 10-10 | 122 | 3.3 | 8.2 | 18.0 | 15.6 | 12.3 | 11.5 | 8.2 | 13.9 | 8.2 | 0.8 | 11.5 | 57.4 | 31.1 |
| | 1970-71 | 10-9 | 176 | 1.7 | 6.8 | 13.6 | 17.6 | 15.9 | 9.1 | 14.2 | 8.5 | 8.5 | 4.0 | 8.5 | 56.3 | 35.2 |
| | 1971-72 | 10-5 | 210 | 1.9 | 1.0 | 4.3 | 9.0 | 7.1 | 18.6 | 29.5 | 20.0 | 7.1 | 1.4 | 2.9 | 39.0 | 58.1 |
| Mass. | 1969-70 | 10-10 | 1,032 | 29.6 | 23.5 | 23.0 | 11.2 | 6.7 | 4.7 | 1.0 | 0.3 | Closed | Closed | 53.1 | 45.6 | 1.3 |
| | 1970-71 | 10-10 | 753 | 31.5 | 24.2 | 24.0 | 10.2 | 8.5 | 0.5 | 0.7 | 0.4 | Closed | Closed | 55.6 | 43.3 | 1.1 |
| | 1971-72 | 10-10 | 709 | 31.5 | 20.7 | 21.3 | 14.0 | 8.0 | 3.7 | 0.8 | -- | Closed | Closed | 52.2 | 47.0 | 0.8 |
| N.H. | 1969-70 | 10-1 | 1,026 | 23.6 | 18.9 | 25.8 | 16.1 | 11.3 | 3.1 | 1.2 | -- | -- | Closed | 42.5 | 56.3 | 1.2 |
| | 1970-71 | 10-1 | 1,185 | 20.5 | 16.4 | 18.8 | 19.1 | 16.0 | 8.9 | 0.1 | 0.1 | 0.1 | Closed | 36.9 | 62.9 | 0.3 |
| | 1971-72 | 10-1 | 850 | 20.7 | 17.6 | 26.5 | 18.3 | 12.9 | 3.8 | -- | 0.1 | -- | Closed | 38.4 | 61.5 | 0.1 |
| N.J. | 1969-70 | 10-4 | 2,102 | 10.8 | 8.4 | 14.0 | 20.8 | 15.5 | 8.9 | 10.1 | 6.7 | 3.6 | 1.2 | 19.2 | 59.2 | 21.6 |
| | 1970-71 | 10-3 | 1,612 | 9.4 | 7.3 | 16.9 | 15.7 | 12.6 | 17.4 | 9.1 | 6.7 | 3.7 | 1.3 | 16.6 | 62.6 | 20.8 |
| | 1971-72 | 10-2 | 1,799 | 4.4 | 7.5 | 4.6 | 6.9 | 21.3 | 20.9 | 17.7 | 9.9 | 5.7 | 1.0 | 11.9 | 53.7 | 34.4 |

Table 20.--Distribution of 1969-70, 1970-71, and 1971-72 wing collections by 7-day periods* - Atlantic Region --continued

| State | Year | Opening Date | Sample Size | Percent of harvest in single period | | | | | | | | | | Percent of harvest in combined periods | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1&2 | 3-6 | 7-10 |
| N.Y. | 1969-70 | 9-22 | 2,161 | 2.9 | 12.4 | 13.9 | 21.1 | 24.6 | 11.9 | 7.0 | 4.7 | 1.3 | 0.1 | 15.3 | 71.6 | 13.1 |
| | 1970-71 | 9-21 | 2,035 | 2.8 | 12.1 | 11.4 | 14.3 | 21.7 | 17.3 | 12.8 | 5.2 | 2.1 | 0.1 | 15.0 | 64.7 | 20.3 |
| | 1971-72 | 9-20 | 1,939 | 4.1 | 6.9 | 10.5 | 14.5 | 15.3 | 20.6 | 22.0 | 4.9 | 1.3 | -- | 10.9 | 60.9 | 28.2 |
| N.C. | 1969-70 | 11-28 | 53 | 7.5 | 20.8 | 3.8 | 22.6 | 13.2 | 7.5 | 18.9 | 1.9 | 1.9 | 1.9 | 28.3 | 47.2 | 24.5 |
| | 1970-71 | 12-11 | 209 | 8.6 | 12.9 | 14.8 | 14.3 | 7.2 | 7.2 | 12.0 | 15.3 | 5.3 | 2.4 | 21.5 | 43.5 | 34.9 |
| | 1971-72 | 12-11 | 133 | 8.3 | 19.5 | 4.5 | 9.8 | 7.5 | 11.3 | 5.3 | 6.8 | 19.5 | 7.5 | 27.8 | 33.1 | 39.1 |
| Pa. | 1969-70 | 10-18 | 1,032 | 47.0 | 20.7 | 14.2 | 11.1 | 4.9 | 1.6 | 0.4 | -- | -- | -- | 67.7 | 31.9 | 0.4 |
| | 1970-71 | 10-17 | 1,107 | 32.3 | 23.2 | 25.2 | 11.3 | 4.8 | 2.7 | 0.5 | -- | -- | -- | 55.6 | 44.0 | 0.5 |
| | 1971-72 | 10-16 | 1,137 | 27.3 | 17.8 | 25.9 | 16.8 | 8.4 | 3.7 | 0.3 | -- | -- | -- | 45.0 | 54.7 | 0.3 |
| R.I. | 1969-70 | 10-25 | 56 | 35.7 | 25.0 | 14.3 | 10.7 | 12.5 | 1.8 | Closed | -- | -- | -- | 60.7 | 39.3 | -- |
| | 1970-71 | 10-24 | 65 | 29.2 | 15.4 | 40.0 | 3.1 | 6.2 | 4.6 | Closed | -- | -- | 1.5 | 44.6 | 53.8 | 1.5 |
| | 1971-72 | 10-23 | 81 | 39.5 | 14.8 | 21.0 | 6.2 | 3.7 | 9.9 | 3.7 | -- | 1.2 | -- | 54.3 | 40.7 | 4.9 |
| S.C. | 1969-70 | 11-28 | 81 | 4.9 | 6.2 | 14.8 | 13.6 | 4.9 | 13.6 | 12.3 | 14.8 | 11.1 | 3.7 | 11.1 | 46.9 | 42.0 |
| | 1970-71 | 12-13 | 66 | 9.1 | 16.7 | 13.6 | 10.6 | 10.6 | 16.7 | 4.5 | 4.5 | 3.0 | 10.6 | 25.8 | 51.5 | 22.7 |
| | 1971-72 | 12-24 | 109 | 9.2 | 5.5 | 7.3 | 8.3 | 9.2 | 5.5 | 14.7 | 17.4 | 20.2 | 2.8 | 14.7 | 30.3 | 55.0 |
| Vt. | 1969-70 | 9-27 | 393 | 14.8 | 21.6 | 28.5 | 22.1 | 10.9 | 1.8 | 0.3 | -- | -- | -- | 36.4 | 63.4 | 0.3 |
| | 1970-71 | 9-26 | 609 | 10.2 | 21.7 | 18.7 | 18.1 | 14.8 | 13.8 | 2.6 | -- | 0.2 | -- | 31.9 | 65.4 | 2.8 |
| | 1971-72 | 9-25 | 888 | 13.3 | 9.9 | 11.0 | 24.4 | 26.5 | 10.8 | 3.7 | 0.3 | -- | -- | 23.2 | 72.7 | 4.1 |
| Va. | 1969-70 | 11-17 | 113 | 20.4 | 19.5 | 13.3 | 14.2 | 15.0 | 0.9 | 3.5 | -- | 9.7 | 3.5 | 39.8 | 43.4 | 16.8 |
| | 1970-71 | 11-16 | 168 | 8.3 | 17.9 | 6.0 | 15.5 | 7.1 | 14.9 | 1.8 | 7.1 | 13.7 | 7.7 | 26.2 | 43.5 | 30.4 |
| | 1971-72 | 11-15 | 84 | 39.3 | 8.3 | 22.6 | 10.7 | 1.2 | 2.4 | 2.4 | 2.4 | 6.0 | 4.8 | 47.6 | 36.9 | 15.5 |
| W. Va. | 1969-70 | 10-11** | 80 | 10.0 | 20.0 | 20.0 | 17.5 | 30.0 | 2.5 | -- | -- | -- | Closed | 30.0 | 70.0 | -- |
| | 1970-71 | 10-10** | 147 | 8.8 | 9.5 | 22.4 | 19.0 | 27.2 | 9.5 | 3.4 | -- | -- | Closed | 18.4 | 78.2 | 3.4 |
| | 1971-72 | 10-16 | 243 | 21.0 | 11.1 | 25.9 | 19.3 | 12.8 | 7.8 | 2.1 | -- | -- | -- | 32.1 | 65.8 | 2.1 |

*First period begins on season opening date; 10th period 2 days or less.
**Excluding special 8-day season in September.

Table 21.--Bureau-funded woodcock research in progress in FY 1972 in the United States*

| Organization | Activity | Annual Allotment | Duration (Years) | Scheduled Expiration (Fiscal Year) |
|---|---|---|---|---|
| Bureau of Sport Fisheries and Wildlife | | | | |
| Orono Field Station | Habitat, banding, and behavioral studies** | $25,000 | Long term | Indefinite |
| Moosehorn NWR | Banding and habitat studies | 5,000 | Long term | Indefinite |
| Connecticut | Breeding ground banding** | 2,400 | 3 | 1974 |
| Maine | Breeding ground banding** | 5,250 | 5 | 1972 |
| Michigan | Breeding biology | 4,400 | 1 | 1972*** |
| Minnesota | Behavioral studies (telemetry)** | 14,000 | 3 | 1972 |
| New York | Breeding ground banding** | 7,650 | 5 | 1972*** |
| Pennsylvania | Breeding ground banding** | 5,250 | 5 | 1972*** |
| West Virginia | Breeding ground banding** | 5,250 | 5 | 1972*** |
| | Parasite studies** | 6,000 | 3 | 1973 |
| Wisconsin | Breeding ground banding** | 5,250 | 5 | 1972 |

*In addition, the following Provinces and States are supporting projects under one or more of the activities listed, from their own resources and/or (in the States) Federal Aid Funds: Illinois, Massachusetts, Michigan, Mississippi, New Brunswick, Nova Scotia, Ontario, Prince Edward Island, Quebec, Virginia, and West Virginia.

**Funds made available through the Accelerated Research Program for Shore and Upland Migratory Game Birds.

***To be extended.

Table 22.--Woodcock banding by States, 1961-71 (excluding experimental birds)

| LOCATION | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 11-YR TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATLANTIC REG. | | | | | | | | | | | | |
| Conn. | | | | 1 | | | | 1 | 2 | 22 | 23 | 49 |
| Fla. | | 1 | | | | | | | 4 | | | 5 |
| Ga. | | | | 1 | | 1 | | | 4 | | | 6 |
| Maine | 35 | 263 | 515 | 457 | 301 | 471 | 549 | 732 | 828 | 866 | 1,244 | 6,261 |
| Md. & D.C. | 4 | 6 | 22 | 12 | 16 | 13 | 7 | 5 | 2 | 4 | 9 | 100 |
| Mass. | 1 | 5 | 1 | 5 | 1 | 8 | 121 | | 4 | 31 | 166 | 343 |
| N.B. | | | | 17 | 5 | | | | 261 | 191 | 263 | 737 |
| N.H. | | | | | | | 4 | 5 | | | 1 | 10 |
| N.J. | 9 | 6 | 13 | 12 | 7 | 13 | 4 | 645 | 345 | 556 | 452 | 2,062 |
| N.Y. | 8 | 9 | 15 | 20 | 9 | 19 | 8 | 14 | 485 | 479 | 762 | 1,828 |
| N.C. | 1 | 1 | | | | | | 3 | | 1 | | 6 |
| N.S. | | | | 34 | | | | 1 | | 7 | 1 | 43 |
| Pa. | 19 | 45 | 51 | 9 | 6 | 9 | 5 | 36 | 38 | 69 | 54 | 341 |
| P.E.I. | 1 | | | | | 1 | | | | | | 2 |
| R.I. | | | 2 | | | 6 | 2 | 7 | 9 | 6 | | 32 |
| S.C. | 2 | | 1 | | 1 | 1 | 1 | | 1 | | 4 | 11 |
| Vt. | | | | | | | | | | 1 | 3 | 4 |
| Va. | 1 | 1 | | | | | | 3 | 7 | 2 | | 14 |
| W. Va. | 3 | | 8 | 16 | 103 | 301 | 434 | 516 | 249 | 291 | 207 | 2,128 |
| REGIONAL TOTAL | 84 | 337 | 628 | 584 | 449 | 843 | 1,135 | 1,968 | 2,239 | 2,526 | 3,189 | 13,982 |
| CENTRAL REG. | | | | | | | | | | | | |
| Ala. | | | | 2 | 2 | | | 2 | 2 | 1 | 7 | 16 |
| Ill. | 1 | | 2 | | 1 | 2 | 2 | 3 | 4 | | 9 | 24 |
| Ind. | | 1 | 1 | 5 | 8 | | | | 76 | 69 | 17 | 177 |
| Iowa | | 2 | 3 | 1 | 5 | 3 | 2 | | | 3 | 1 | 20 |
| La. | | 748 | 292 | 2,549 | 815 | 1,230 | 900 | 1,076 | 472 | 521 | 329 | 8,932 |
| Mich. | 51 | 50 | 124 | 79 | 355 | 365 | 396 | 868 | 403 | 397 | 472 | 3,560 |
| Minn. | | 1 | 13 | 4 | 3 | | 17 | 79 | 111 | 58 | 94 | 380 |
| Miss. | | 1 | | | | | | | 146 | 132 | 98 | 377 |
| Ohio | | | 6 | 8 | | 6 | 6 | 1 | 3 | 12 | 16 | 58 |
| Okla. | | | 1 | | | | | | | | | 1 |
| Ont. | 6 | 12 | 10 | 20 | 41 | 14 | 22 | 19 | 26 | 9 | 19 | 198 |
| Tenn. | 1 | | 1 | 1 | 1 | | 1 | 3 | | 1 | | 9 |
| Tex. | | | | | | | | | 1 | | | 1 |
| Wis. | 8 | 9 | 19 | 31 | 20 | 27 | 22 | 281 | 185 | 473 | 599 | 1,674 |
| REGIONAL TOTAL | 67 | 824 | 472 | 2,700 | 1,251 | 1,647 | 1,368 | 2,332 | 1,429 | 1,676 | 1,661 | 15,427 |
| COMB. TOTAL | 151 | 1,161 | 1,100 | 3,284 | 1,700 | 2,490 | 2,503 | 4,300 | 3,668 | 4,202 | 4,850 | 29,409 |

Table 23.--Summary of woodcock band recovery file through October 19, 1972 (excluding How Obtained Code 99, recaptured season of banding)

| State or Province of Recovery | State or Province of Banding: ATLANTIC REGION | | | | | | | | | | | | Region Total | CENTRAL REGION | | | | | | | | | Region Total | Range Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conn. | Maine | Md. | Mass. | N.B. | N.H. | N.J. | N.Y. | N.S. | Pa. | Vt. | W.Va. | | Ala. | Ind. | La. | Mich. | Minn. | Miss. | Ohio | Ont. | Wis. | | |
| ATLANTIC REGION | | | | | | | | | | | | | | | | | | | | | | | | |
| Conn. | 4 | 18 | | 1 | 3 | | 4 | | | 1 | 1 | | 32 | | | 2 | | | | | | | 2 | 34 |
| Del. | | 1 | | | 1 | | | | | | | | 2 | | | | | | | | | | | 2 |
| Fla. | | 4 | | 1 | 1 | | | | | | | | 6 | | | | | | | | | | | 6 |
| Ga. | | 9 | 1 | 1 | | 1 | | 2 | | | | 2 | 16 | | | 2 | 4 | | | | 1 | | 7 | 23 |
| Maine | | 336 | | 3 | 4 | | 2 | | | 2 | | 1 | 348 | | | 8 | | | | | | | 8 | 356 |
| Md. | | 4 | 2 | | | | | | | | | | 6 | | | | | | | | | | | 6 |
| Mass. | | 17 | | 96 | | | 2 | | | | | 1 | 116 | | | 6 | | | | | | | 6 | 122 |
| N.B. | | 12 | 1 | | 47 | | 1 | | | | | | 61 | | | | | | | | | | | 61 |
| N.H. | | 10 | | 3 | 1 | 1 | 1 | | | | | 1 | 17 | | 1 | 8 | | | | | | | 9 | 26 |
| N.J. | | 21 | | 4 | 6 | | 76 | | | | | | 107 | | | 3 | | | | | | | 3 | 110 |
| N.Y. | | 15 | 1 | 2 | 1 | | 3 | 67 | | 1 | | 5 | 95 | | | 19 | | | 1 | 1 | 1 | | 22 | 117 |
| N.C. | | 15 | | 2 | | | 8 | 2 | | 1 | | 3 | 31 | | | 1 | | | | | | | 1 | 32 |
| N.S. | | | | | | | | | 9 | | | | 9 | 1 | | 7 | | | | | | | 8 | 17 |
| Pa. | | 18 | 1 | 2 | 4 | | 7 | 7 | | 51 | | 4 | 94 | | | 28 | 1 | | | | 1 | | 30 | 124 |
| Que. | | | | | | | 1 | 2 | | | | 1 | 4 | | | 2 | | | | | | | 2 | 6 |
| S.C. | | 9 | | 2 | | | | | | 1 | | 4 | 16 | | | 2 | | | | | | | 2 | 18 |
| Vt. | | 1 | | 1 | | | | | | | | | 2 | | | 3 | | | | | | | 3 | 5 |
| Va. | | 13 | | 4 | 1 | | 5 | 2 | | | | 3 | 28 | | | | | | | | | | | 28 |
| W. Va. | | | | | 1 | | | 1 | | | | 430 | 432 | | | 3 | | | | | | | 3 | 435 |
| Subtotal | 4 | 503 | 6 | 122 | 70 | 2 | 110 | 83 | 9 | 57 | 1 | 455 | 1,422 | 1 | 1 | 94 | 5 | | 1 | 1 | 3 | | 106 | 1,528 |
| CENTRAL REGION | | | | | | | | | | | | | | | | | | | | | | | | |
| Ala. | | 1 | | | | | 1 | 2 | | | | 2 | 6 | | | 15 | 5 | | 2 | | 2 | 1 | 25 | 31 |
| Ark. | | | | | | | | | | | | | | | | 18 | | | | | 1 | 4 | 23 | 23 |
| Ill. | | | | | | | | | | | | | | | | 6 | | | | | | | 6 | 6 |
| Ind. | | | | | | | | | | | | | | | 3 | 6 | 1 | | | | | | 10 | 10 |
| Iowa | | | | | | | | | | | | | | | | 2 | | | | | | | 2 | 2 |
| Ky. | | 1 | | | | | | | | | | | 1 | | | 9 | 1 | | | | | 1 | 11 | 12 |
| La. | | 8 | | 1 | 3 | | | 1 | | | | 5 | 18 | | 1 | 183 | 14 | 1 | 1 | | 1 | 8 | 209 | 227 |
| Mich. | | | | | | | | | | | | | | | 1 | 122 | 339 | | 1 | | | 3 | 466 | 466 |
| Minn. | | | | | | | | | | | | | | | | 13 | | 16 | | | | 1 | 30 | 30 |
| Miss. | | 1 | | 1 | | | 2 | 1 | | 1 | | 4 | 10 | | 1 | 3 | | 1 | 1 | | | 1 | 7 | 17 |
| Mo. | | | | | | | | | | | | | | | | 7 | | 1 | | | | | 8 | 8 |
| Ohio | | 1 | | | | | 1 | 1 | | | | | 3 | | | 12 | | | | 3 | | | 15 | 18 |
| Okla. | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 |
| Ont. | | | | | | | 1 | | | | | 1 | 2 | | | 18 | | | 1 | | 5 | | 24 | 26 |
| Tenn. | | 3 | | | | | | 1 | | | | | 4 | | | 5 | | | | | | 1 | 6 | 10 |
| Tex. | | 2 | | | | | | | | | | | 2 | | | 2 | | | | | | 1 | 3 | 5 |
| Wis. | | | | | | | | | | | | | | | | 52 | | | | | | 31 | 83 | 83 |
| Subtotal | | 17 | | 2 | 3 | | 5 | 6 | | 1 | | 12 | 46 | | 6 | 473 | 360 | 19 | 6 | 3 | 9 | 53 | 929 | 975 |
| Total | 4 | 520 | 6 | 124 | 73 | 2 | 115 | 89 | 9 | 58 | 1 | 467 | 1,468 | 1 | 7 | 567 | 365 | 19 | 7 | 4 | 12 | 53 | 1,035 | 2,503 |



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