# RACCOON ASSESSMENT

**March 4, 1986**

Prepared by:

James M. Connolly

Maine Department of Inland Fisheries and Wildlife
Hedin Hall, BMHI Complex
P.O. Box 1298
Bangor, Maine  04401

## NATURAL HISTORY

The raccoon is very adaptable in its habitat and food requirements, which enables it to thrive in an increasingly developed environment.

Raccoons have a high reproductive capacity. While there is no data for Maine, other states have found that up to 60% of the juvenile females breed. Raccoons are polygamous with most breeding activity occurring during February. Gestation averages 63 days, with most births occurring in late April (Kaufmann 1982). Adult females that do not become pregnant during the first estrus may go through a second cycle two to four months later. The offspring from these late matings enter winter much smaller and may suffer increased mortality as a result.

Females prepare a den and raise their young alone. Young raccoons first leave the den to follow their mother, while she forages, when they are 8 to 12 weeks old. The young are weaned by October and begin venturing on their own. In November, with the approach of winter, family groups begin sleeping together again. With the arrival of permanent snow cover, the family group dens together or in adjacent trees or burrows.

Raccoons appear to have small shifting centers of activity within a larger home range. Home range estimates vary from 12 acres in the city of Glendale, Ohio to 988 acres in rural Massachusetts (Hoffman and Gottschang 1977, Olsen 1983). They often travel outside their usual home range to take advantage of temporary food sources such as cornfields or orchards.

Raccoons are found in hardwood swamps, flood plain forests, fresh and salt marshes, hardwood stands, farmlands and suburban residential areas. Availability of

water is a requirement of raccoon habitat. Raccoons are omnivorous and opportunistic, with plants generally more important for food than animals. Wild fleshy fruits, cultivated fruits, nuts, grains, buds and grasses are some of the plants eaten. Rodents, insects, birds, reptiles, fish, frogs, crayfish, mussels, and garbage are some of the other foods acceptable to raccoons.

Raccoons can successfully occupy a wide variety of habitats. The highest population densities mentioned in the literature are found in urban areas. The ability to thrive in close proximity to man creates potential disease and nuisance problems for humans; particularly with high raccoon densities that are often found in urban areas. Canine distemper and rabies are important diseases that spread rapidly in these high populations. While rabies poses a direct threat to human health, both diseases have the potential to drastically reduce raccoon populations. These urban raccoons create many nuisance problems as they seek food and shelter among people. Raccoon have been found to harbor a parasite Baylisascaris procyonis (roundworm) that can be fatal to humans especially children. People coming into contact with raccoon feces fro infected animals are exposed to the roundworm eggs, which may be ingested, infecting the person. Taxidermists may also come in contact with the parasite when handling a raccoon. People as well as animals infected with this parasite may exhibit symptoms similar to those of rabies. Reducing high raccoon populations found in close proximity to man may reduce nuisance incidents and slow disease transmission.

# HISTORY

## Habitat Trends

Raccoons are generally associated with wetlands. However, their ability to thrive in a variety of habitats makes it difficult to assess habitat availability. The one theme that comes from all of the literature on habitat usage is that raccoons seldom occupy large homogeneous areas of softwoods. Elimination of large areas of mature softwood forests has improved raccoon habitat. Expansion of agriculture from the time of the first settlers in Maine until 1880 increased food supply and habitat diversity for raccoons. Even with the abandonment of farms from 1880 thru 1920, reverting farmland that resulted was more diverse and productive than the original mature softwood forests. Along with the increase in forestland since 1920 has been an increase in development. While development eliminates some habitat, it also enhances other areas, providing more diversity and a larger food base.

## Population Trends

Raccoons were present in the State when it was first settled in the 1600's (Johnson 1939). John Josselyn was quoted by Norton (1930) as saying, "they do infest our Indian corn very much; they will be exceeding fat in Autumn; their flesh is somewhat dark but good food, roasted." Little information is recorded on the status of the raccoon population until 1939.

The 1939 distribution of raccoons in Maine was estimated from a mail questionnaire of game wardens (Johnson 1939). Raccoons were common or abundant

in the central, eastern, and southern portions of the State, while they were considered rare in the extreme northwestern and northern portions. This population distribution parallels the land use patterns of the State, with farming concentrated in central and southern Maine.

There are no reliable population estimates available for the period prior to the initiation of the species planning process. The 1976 species plan (Hurley and Hunt 1975) estimated 41,200 to 236,600 raccoons in the fall population. The 1980 species plan estimated a statewide fall population of 64,500 raccoons, based on an evaluation of the habitat. The lowest densities per unit of habitat occurred in wildlife Management Unit's (WMU) 2, 3, and 4, with the highest in WMU's 1, 5, 6, 7, and 8. An analysis of the recent 8 year average legal kill for the towns in Maine shows the general distribution and abundance is similar today to what Johnson noted.

## Use and Demand Trends

According to Norton (1930) early settlers regarded the raccoon as a pest. The fur, while utilized, was not considered an important resource while other more valuable furbearers were abundant. In 1913 the raccoon was classed as a forbearer and protected by State law. Interest in the raccoon has increased since then, as the pelt price has increased.

### *Harvest Regulations*

Raccoon trapping and hunting seasons were relatively constant before the Department had regulatory authority for setting raccoon seasons. Fish and Game laws

in the early 1940's also included a daily bag limit of two raccoons per hunting party in any night, and a season bag limit of twenty raccoons per person. From 1955 until 1971 the trapping season opened November I and closed February 15 (Table 1). In 1971 the-closing date was changed to November 30. This season framework was used in the 1972 and 1973 seasons also. Hunting seasons from 1955 through 1964 opened August 15 and closed December 15. From 1965 thru 1968 this season framework was changed to a September 15 opening, while retaining the December 15 closing. In 1969 the hunting season was changed to a September 1 opening with the December 15 closing. This season framework was used thru 1972.

Since the statutory provisions for raccoon seasons were repealed in 1972 and replaced by regulations, factors other than raccoon populations have influenced the setting of trapping seasons for raccoons. Traps set for raccoons can catch other species (especially fisher). As a result, the trapping seasons have been set to take into account the highest priority forbearing species such as fisher and marten.

In the fall of 1976, the trapping season was lengthened by changing the opening date from November 1 to October 20 and delaying the closing from November 30 until December 15. However, in an attempt to limit the fisher harvest the use of Conibear traps on land was prohibited. Even though the Conibear is an effective raccoon trap, this regulation did not appear to effect the overall raccoon harvest.

Bag limits and trap restrictions were repealed in 1978 after being found to be ineffective in limiting the fisher harvests. Problems with the fisher population still existed, particularly in WMU's 7 and 8. The 1978 trapping season was shortened in southern Maine in an attempt to reduce the fisher harvest. The later starting season in

Table 1. Raccoon management history.

| Year | Estimated harvest | | | Estimated efforts[2] | | Estimated average price[3] | Statutes and Regulations | |
|---|---|---|---|---|---|---|---|---|
| | Trapped | Hunted | Total[1] | Trappers | Hunters | | Trapping | Hunting |
| 1955 | -- | -- | 33,509 | -- | -- | 2.42 | November 1-February 15 | August 15-December 15 |
| 1956 | -- | -- | 33,506 | -- | -- | 2.01 | | |
| 1957 | -- | -- | 33,765 | -- | -- | 1.82 | | |
| 1958 | -- | -- | 22,891 | -- | -- | 0.83 | | |
| 1959 | -- | -- | 23,034 | -- | -- | 1.43 | | |
| 1960 | -- | -- | -- | -- | -- | 1.74 | | |
| 1961 | -- | -- | -- | -- | -- | -- | | |
| 1962 | -- | -- | -- | -- | -- | 2.22 | | |
| 1963 | -- | -- | -- | -- | -- | 1.67 | | |
| 1964 | -- | -- | 26,791 | -- | -- | 1.57 | | |
| 1965 | -- | -- | -- | -- | -- | 2.19 | November 1-February 15 | September 15-December 15 |
| 1966 | -- | -- | 34,179 | -- | -- | 2.22 | | |
| 1967 | -- | -- | 28,707 | -- | -- | 2.10 | | |
| 1968 | -- | -- | 29,785 | -- | -- | 3.60 | | |
| 1969 | -- | -- | 19,384 | -- | -- | 3.62 | November 1-February 15 | September 1-December 15 |
| 1970 | | | 26,972 | -- | -- | 2.65 | | |
| 1971 | | | 27,284 | -- | -- | 3.66 | November 1-November 30 | September 1-December 15 |
| 1972 | | | 54,102 | -- | -- | 5.48 | Statutory provisions repealed and replaced by regu- | |
| 1973 | | | 88,540 | -- | -- | 9.70 | lations. | |
| 1974 | | | 54,876 | -- | -- | 10.40 | November 1-November 30[4] | September 1-December 15 |
| 1975 | | | 55,078 | -- | -- | 13.30 | | |
| 1976 | | | 55,673 | -- | -- | 19.50 | October 20-December 15[5] | October 20-December 15 |
| 1977 | 12,160 | 11,554 | 24,148 | 2,505 | 1,212 | 17.00 | | |
| 1978 | 9,948 | 11,081 | 21,542 | 2,322 | 1,142 | 23.93 | WMU's 1 to 6<br>October 20-November 25<br>WMU's 7 and 8<br>October 25-November 15 | WMU's 1 to 6<br>October 20-November 30<br>WMU's 7 and 8<br>October 25-November 30 |
| 1979 | 12,714 | 18,084 | 31,421 | 2,831 | 1,421 | 33.87 | WMU's 1, 2, 3, 5, 6<br>October 20-November 25<br>WMU's 4, 7, 8<br>October 20-November 10 | WMU's 1 to 6<br>October 20-November 30<br>WMU's 7 and 8<br>October 25-November 30 |
| 1980 | 10,086 | 13,134 | 23,737 | 2,722 | 1,299 | 22.27 | Northern and Western Zones[6]<br>October 20-November 30<br>Southern Zone<br>October 28-November 30 | WMU's 1 to 6<br>October 20-November 29<br>WMU's 7 and 8<br>October 25-November 29 |
| 1981 | 10,636 | 19,004 | 30,214 | 2,807 | 1,582 | 27.01 | Northern and Western Zones<br>October 20-November 30<br>Southern Zone<br>October 28-November 30 | Northern and Western Zones<br>October 20-November 30<br>Southern Zone<br>October 28-November 30 |
| 1982 | 9,069 | 14,564 | 24,149 | 2,663 | 1,391 | 16.62 | Northern Zone<br>October 20-November 30<br>Southern and Western Zones<br>October 28-November 30 | October 28-November 30[8] |
| 1983 | 7,912 | 9,794 | 18,132 | 2,377 | 923 | 9.90 | Northern Zone[7]<br>October 20-December 4<br>Southern Zone, all districts<br>October 28-December 4 | October 28-December 14 |
| 1984 | 8,271 | 13,626 | 22,089 | 2,356 | 1,245 | 16.83 | Northern Zone<br>October 28-December 15<br>Southern Zone, all districts<br>October 28-December 4 | October 28-December 15 |

[1] From Hunter and Trapper Questionnaires for 1955-76. From Fur Tagging Data 1977 to present.

[2] No information available prior to 1977. For trappers this is the number of trappers tagging at least one land animal. For hunters this is represented by the number of hunters tagging at least one land animal.

[3] From Hunter and Trapper Questionnaires for 1955 to 1978, from adjusted N.A. average price for 1979-1981, and from local fur buyers reports 1982-84.

[4] A bag limit two per person per party in WMU 8 1974 and 1975. Extended to statewide in 1976. This regulation considered unenforceable, was rescinded in 1977.

[5] Mandatory tagging of all raccoon pelts implemented in 1977.

[6] Zones refer to the Deer Hunting Zones in effect that year.

[7] After November 30 it is unlawful to trap above ground level or snow.

[8] Legislature mandated uniform statewide raccoon hunting season.

southern Maine also addressed concerns about the primeness of furs. In addition, land and water seasons coincided in order to distribute trapping pressure over all furbearers. The trapping season for the rest of the State was also shortened from a December 15 to a November 25 closing. The later opening of the Southern Zone disturbed some resident Northern Zone trappers who felt Southern Zone trappers shifted north, "carpet bagging", until the opening in WMU's 7 and 8.

To address this concern a common opening day for land trapping in all WMU's was implemented in 1979. In addition the season length was again reduced in WMU's 4, 7, and 8 (Table 1). The 1980 season brought another factor into focus; a public demand for increased opportunity to kill coyotes. Two contradictory ideas, improving pelt primeness which necessitates implementing a later opening season and maximizing trapping days before the deer hunting season which necessitates an earlier opening season, continued to be of concern (Clark 1985). The resulting trapping season ran until November 30 statewide but opened later in the southern zone than in 1979. Land and water seasons continued to coincide to distribute trapping pressure among species over this extended time frame. This season framework was in effect from 1980 until 1982 when the Western Zone was included with the Southern Zone for the later opening. This was done to eliminate trappers shifting to take advantage of different season openings.

Public demand for increased hunting and trapping opportunity led to extended hunting and trapping seasons in 1983. In order to control the possible increased fisher harvest, a regulation making it illegal to trap above ground level or snow after November 30 was adopted. The 1984 season was changed to provide for a common opening day

statewide for trapping and increase trapping opportunity in the north. This season was an attempt to balance maximum number of days of trapping in the north with pelt primeness in the south while having a common opening day for trapping statewide.

Hunting seasons have changed relatively fewer times than trapping seasons since the statutory provisions for forbearer seasons were replaced by regulations in 1972. From 1972 thru 1976 MDIFW adopted regulations that continued previously legislated seasons. Regulations have allowed hunting between one-half hour after sunset to one-half hour before sunrise providing: (1) the hunter is accompanied by a dog, (2) uses an electric flashlight, and (3) no firearm except a pistol utilizing no greater than .22 caliber long rifle ammunition is in the hunters possession.

Restricted seasons were set in the 1970's as high pelt prices increased the demand for raccoons. A daily bag limit of two per person per party was imposed in WMU 8 in 1974 and 1975, and a statewide limit of 2 per person per party in 1976. These limits were considered unenforceable and the regulation was rescinded in 1977. In 1976, based on the data that had become available from the Game Kill Questionnaire, the Department believed an over-harvest of raccoons by hunters was occurring. As a result the hunting season was shortened to coincide with the trapping season by delaying the starting date from September 1 to October 20.

Reliable information on the raccoon harvest was first available with the beginning of mandatory pelt tagging in 1977. This information showed that the hunted and trapped portions of the harvest were approximately equal. An attempt was made to maintain that balance in the harvest between the two user groups. The 1978 hunting season was changed to coincide with the new trapping season. When the hunting

season was not changed to correspond with the trapping season changes in 1979 and 1980, a conflict arose between Southern Zone trappers and hunters. Southern Zone trappers believed the hunters had an unfair advantage of a 3 day head start at the raccoon resource. The 1981 trapping and hunting seasons were set up to coincide within zones to eliminate that problem.

This move aggravated the existing hunter shift problem of Southern Zone hunters to the Western Zone by delaying the Western Zone opening further. Many people expressed their dissatisfaction to MDIFW over this hunter shift. The Department did not address this social problem in a timely enough manner to suit the public (pers. comm. A. Clark). These people then requested help from their representatives in the Maine State Legislature. The 1982 Maine State Legislature attempted to solve the hunter shift problem by mandating a uniform raccoon hunting season statewide. The 1983 and 1984 hunting seasons were extended into December to provide more hunting opportunity. Regulations for raccoon hunting and trapping will continue to evolve as some of the factors mentioned above and any new ones that arise interact to present new management challenges.

*Harvest Trends*

The earliest raccoon harvest records were based on the Hunter and Trapper Questionnaires conducted by MDIFW (Table 1). These figures, while not reliable in providing accurate numbers due to sampling and design problems, do provide significant trends. As pelt price increased from 1955 to 1976 the raccoon harvest increased by 66%. The first reliable figures became available after mandatory tagging

was implemented in 1977. Harvests have fluctuated in response to changes in average pelt price. The raccoon harvest was 24,148 in 1977 and 31,421 in 1979. The peak harvest of 31,421 in 1979 coincided with a peak pelt price of $33.87.

*Users*

There is no reliable information on the number of users for the period prior to 1977. Since 1977, mandatory tagging of raccoon pelts provides information on the number of successful users. The best estimates of total users suggest that 3,537 to 4,313 users were afield yearly from 1977 to 1980; trappers ranged from 2 , 322 to 2,831; and hunters ranged from 1,142 to 1,421. During this 4 year period, hunters were 32% of all users but accounted for 53% of the average annual harvest.

Past Management Goals

Changes made in regulations since 1975 are the result of the refinement of species plan goals and objectives set in 1975 and 1980. A goal of maintaining the abundance and increasing the use of raccoons in Maine was established in the 1975 plan. A management objective of harvesting 40,000 to 50,000 raccoons annually by 5,000 to 6,000 hunters and trappers was also established. At this time, it appeared the allowable harvest in WMU 8 was being exceeded. All other WMU's were thought to be underutilized. A strategy was devised to utilize regulations to reduce the harvest in WMU 8, stabilize it in WMU 6 and 7, and increase it in WMU 4. The 1976 raccoon hunting season was shortened as a result of this finding. The effectiveness of this move could not be determined because accurate harvest and user figures did not exist for this

time period. Mandatory raccoon pelt tagging was implemented in 1977 to accomplish this.

A goal to maintain statewide raccoon harvests and abundance at the average conditions experienced in 1975, 1976, and 1977 was established in the 1980 plan. The management objective for the 1980 plan was to harvest 24,000 raccoons annually with the take adequately distributed among WMU'S. This was intended to provide for greater use in WMU's (1, 2, 5, 6, and 8) with surplus supplies and decreased harvests in WMU's (3, 4, and 7) experiencing excessive demand.

On a statewide basis (Table 2) the harvest objective since 1975 has been met in only 1981 and 1982. From 1977 to 1984 the harvests in WMU's 2 and 5 never exceeded estimated allowable harvests. During this same period, harvests in WMU's 4, 7 and 8 consistently exceeded estimated allowable levels where access, raccoon populations, and human populations are the greatest. Of the twenty-eight times a WMU's estimated allowable harvest was exceeded, fifteen occurred from 1979 to 1981 when pelt prices were the highest. The concept of adequately distributing harvests among WMU's has not been effectively implemented to date.

Table 2. Comparison of statewide raccoon harvests and raccoon species plan objective harvests, 1975 to 1984.

| Year | Objective harvest | Harvest[1] | Deviation (%) |
|---|---|---|---|
| 1975 | 40,000 - 50,000 | 55,078 | + 22.4 |
| 1976 | " | 55,673 | + 23.7 |
| 1977[2] | " | 24,148 | - 46.3 |
| 1978 | " | 21,542 | - 52.1 |
| 1979 | " | 31,421 | - 30.2 |
| 1980 | 24,000 | 23,737 | - 1.1 |
| 1981 | " | 30,214 | 25.9 |
| 1982 | " | 24,149 | 0.6 |
| 1983 | " | 18,132 | - 24.5 |
| 1984 | " | 22,089 | - 8.0 |

[1]Harvest estimated from Hunter and Trapper Questionnaire for 1975 and 1976. From 1977 to present harvest based on Pelt Tagging Data.

[2]Post fur tagging.

# HABITAT ASSESSMENT

## Statewide

### *Status*

The raccoons adaptability makes determining the amount of habitat difficult. Wetlands, mast trees, bottomland hardwoods, and agriculture have been identified as being important components of raccoon habitat. However, studies in New Jersey and Ohio have shown development can compensate for a lack of some of these components. How and to what extent development compensates for a lack of natural habitat components is not fully understood. The size and juxtaposition of the components has also been found to be important.

The 1980 Maine Forest Resurvey (USFS 1982) was utilized in assessing raccoon habitat. Utilizing these data, WMU's were evaluated on a plot by plot basis for the presence of agriculture, forest, shrub, cultural and aquatic edges. The plots were rated based on the value to raccoons of these different edge combinations. Minimum raccoon densities were then applied to the areas represented by each category. Fifty-one percent or 16,360 $mi^2$ of the State was considered to be raccoon habitat (Table 3). Optimum habitat comprised 10,702 $mi^2$ (65%), while the remaining 5,658 $mi^2$ (35%) was found to have lower quality habitat, and therefore supports raccoons at lower population densities. This method may overestimate raccoon habitat because the different types of edge within categories are not weighted based on their value to raccoons. For example, an agricultural edge resulting from a corn field is valued the same as one resulting from a potato field. The benefits derived by raccoons from these

Table 3. Current (1985) raccoon habitat suitability.

| Wildlife Management Unit | Total area ($mi^2$) | Square miles of optimum habitat[1] | (%) | Square miles of less than optimum habitat[2] | (%) | Total raccoon habitat | (%) |
|---|---|---|---|---|---|---|---|
| 1 | 3,216 | 1,478 | (46) | 545 | (17) | 2,022 | (63) |
| 2 | 8,397 | 685 | (8) | 882 | (11) | 1,567 | (19) |
| 3 | 4,234 | 353 | (8) | 697 | (16) | 1,050 | (25) |
| 4 | 5,726 | 3,148 | (55) | 865 | (15) | 4,013 | (70) |
| 5 | 2,949 | 470 | (16) | 1,034 | (35) | 1,504 | (51) |
| 6 | 2,610 | 948 | (36) | 921 | (35) | 1,869 | (72) |
| 7 | 2,113 | 1,439 | (68) | 400 | (19) | 1,838 | (87) |
| 8 | 2,825 | 2,182 | (77) | 315 | (11) | 2,497 | (88) |
| Statewide | 32,070 | 10,702 | (33) | 5,658 | (18) | 16,360 | (51) |

[1]Optimum habitat was considered to be the area represented by 1982 USFS Maine Forest Resurvey plots having any one of the following combinations of edge hits: agriculture-shrub-forest, aquatic-agriculture-forest, aquatic-agriculture-shrub, aquatic-agriculture-shrub-forest, cultural-agriculture-forest, cultural-agriculture-shrub-forest, cultural-aquatic-forest, cultural-aquatic-shrub-forest, cultural-aquatic-agriculture-forest, cultural-aquatic-agriculture-shrub, cultural-aquatic-agriculture-shrub-forest.

[2]Less than optimum habitat was considered to be the area represented by 1982 USFS Maine Forest Resurvey plots having any one of the following combinations of edge hits: agriculture-forest, agriculture-shrub, aquatic-shrub-forest, cultural-forest, cultural-shrub, cultural-shrub-forest, cultural-aquatic-shrub.

different types of agricultural, forest, shrub, and aquatic edges are not the same. Currently the information needed to weight different types of edge within a category is not available.

*Changes*

In the 1980 species update, raccoon habitat was estimated to be 9,380 $mi^2$. The current estimate for raccoon habitat is 16,360 $mi^2$. The increase in habitat is due in part to the changes in the criteria used to measure raccoon habitat.

In 1980, for croplands, wetlands, and certain forest types were estimated to be raccoon habitat. In this update the presence of various combinations of habitat features such as agriculture, forest, shrub, cultural and aquatic edges within a broader forest or land use classification was found to be a more discriminating way to evaluate raccoon habitat. The dominant land use type is not indicative enough of all the features that can result in raccoon habitat. This data was not available to the authors of the 1980 plan, although they recognized the importance of the concept. In 1980, potential changes in the quantity of habitat due to development were noted, but no projections were made. The ability of raccoons to exploit suburban habitats effectively makes the significance of habitat changes resulting from development difficult to assess.

*Projections*

Given current development trends raccoon habitat should increase by 140 Mi2 from 1985 to 1990 (Table 4). While the structure of Maine's forest could change, it appears that the compensatory effect of new human development could mitigate

Table 4. Future (1990) raccoon habitat suitability.

| Wildlife Management Unit | Total area ($mi^2$) | Square miles of optimum habitat[1] | (%) | Square miles of less than optimum habitat | (%) | Total raccoon habitat | (%) |
|---|---|---|---|---|---|---|---|
| 1 | 3,216 | 1,488 | (46) | 545 | (17) | 2,032 | (63) |
| 2 | 8,397 | 685 | (8) | 882 | (11) | 1,567 | (19) |
| 3 | 4,234 | 356 | (8) | 697 | (16) | 1,053 | (25) |
| 4 | 5,726 | 3,182 | (56) | 865 | (15) | 4,047 | (71) |
| 5 | 2,949 | 474 | (16) | 1,034 | (35) | 1,508 | (51) |
| 6 | 2,610 | 963 | (37) | 921 | (35) | 1,884 | (72) |
| 7 | 2,113 | 1,466 | (69) | 400 | (19) | 1,865 | (88) |
| 8 | 2,825 | 2,229 | (79) | 315 | (11) | 2,544 | (90) |
| Statewide | 32,070 | 10,843 | (34) | 5,658 | (18) | 16,500 | (51) |

[1]See Table 3 for habitat descriptions

possible losses. In fact, development may enhance some otherwise unsuitable habitat by providing additional food and cover.

## Wildlife Management Units

### *Status*

Two WMU's differ from the statewide status of raccoon habitat. WMU's 2 and 3 consist of less than 30% raccoon habitat, while a minimum of 51% of all the other Units was found to be raccoon habitat. WMU 4 had the most raccoon habitat with 4,013 $mi^2$, while WMU 3 had the least with 1,050 $mi^2$ of habitat.

### *Changes*

No changes in raccoon habitat conditions in the WMU's could be determined.

### *Projections*

Trends in rural housing development from 1970 to 1980 served as a basis for the 1990 raccoon habitat projections. Twenty-five percent of the land projected to change due to this development was assumed to be nonhabitat that will become less than optimum habitat. Another 25% was assumed to be less than optimum habitat that will become habitat. The remaining 50% of the development was assumed to have little or no effect on raccoon habitat. Using the above criteria from 1985 to 1990, raccoon habitat will increase by 2% in WMU 8 and 1% in WMU's 4 and 7. In all other WMU's raccoon habitat will increase by less than 1% or in the case of WMU 2 not at all.

## POPULATION ASSESSMENT - CARRYING CAPACITY

Statewide

*Status*

The type as well as the diversity of habitat determines the amount of food and cover available throughout the year. The amount of food and cover available was determined to be sufficient for raccoon depending on the presence or absence of aquatic, agriculture, cultural, shrub and forest habitats in a USFS Maine Forest Resurvey plot. The presence of these habitats determined whether the area was considered to be nonhabitat, less than optimum habitat (6 raccoon/$mi^2$), or optimum habitat (12 raccoon/mi2). The raccoon densities were then applied to the total area in each category, in order to determine carrying capacity of the Unit (Table 3). A statewide maximum supportable population of 162,400 raccoons was produced from this procedure (Table 5).

*Changes*

The maximum supportable population for Maine's raccoons was not determined for the 1980 species assessment update (Hunt and Hilton 1980). As a result no comparisons with current estimates are possible. The necessary data to apply the present procedure to that time period is not available.

Table 5. Current (1985) and projected (1990) maximum supportable fall populations by Wildlife Management Unit for raccoons.

| Wildlife Management Unit | 1985 maximum supportable population Best guess | 1990 maximum supportable population Best guess |
|---|---|---|
| 1 | 21,000 | 21,100 |
| 2 | 13,500 | 13,500 |
| 3 | 8,400 | 8,500 |
| 4 | 43,000 | 43,400 |
| 5 | 11,800 | 11,900 |
| 6 | 16,900 | 17,100 |
| 7 | 19,700 | 20,000 |
| 8 | 28,100 | 28,600 |
| Statewide | 162,400 | 164,100 |

*Projections*

The maximum supportable fall raccoon population is projected to increase from 162,400 raccoons in 1985 to 164,100 raccoons in 1990. This population increase is based on a projected increase in the quality and quantity of raccoon habitat, resulting from development.

Wildlife Management Units

*Status*

No significant differences for WMU's occurred from the statewide assessment. The maximum supportable fall populations for individual WMU's ranged from 8,400 raccoons in WMU 3 to 43,000 in WMU 4.

*Changes*

No estimate was made in the 1980 assessment.

*Projections*

WMU 8 was projected to have the largest increase in the maximum supportable population as it increased from 28,100 to 28,600. WMU 2 was not projected to change, while WMU's 1., 3, and 5 should increase 100 animals. The other WMU's showed projected increases from 200 to 400 raccoons. The pattern of these changes coincides with the development trends for the State.

## POPULATION ASSESSMENT - CURRENT ESTIMATED POPULATION

Statewide

*Status*

The distribution of raccoons in Maine is determined from fur tagging records. Distribution of fur tagging records is strongly biased by variable trapping and hunting effort, pelt price and the tendency of "users" to inaccurately report the location of kill. However, the relative differences in raccoon densities Johnson (1939) found (eastern Maine was included in the central area) appear to hold true today.

The fall population estimates in Table 6 are derived from two numbers which are then averaged to give the best estimate. The first number is the maximum supportable population based on the habitats ability to support raccoons. The second number is a population estimate based on three assumptions: (1) in Maine we have a stable raccoon population; (2) in order to have a stable raccoon population the harvest can't exceed 30% of the population (pers. comm. J. Hunt); and (3) the recent 4 year average harvest (1981-84) was the best indicator of the harvest as it averages out yearly harvest fluctuations that may be the result of pelt prices and trapping conditions not population changes. This method results in a 1985 fall population estimate of 120,700 animals statewide (Table 6).

*Changes*

The range of the raccoon has not changed since 1980. In 1980, Maine's preharvest raccoon population was estimated to be 64,500 animals which is 53% of the

Table 6. Current (1985) and projected (1990) fall population estimates by Wildlife Management Units for raccoons.

| Wildlife Management Unit | 1985 estimated population | | 1990 estimated population[1] | |
|---|---|---|---|---|
| | Range | Best guess | Range | Best guess |
| 1 | 4,400- 21,000 | 12,700 | 4,400- 21,100 | 12,750 |
| 2 | 800- 13,500 | 7,150 | 800- 13,500 | 7,150 |
| 3 | 1,900- 8,400 | 5,150 | 1,900- 8,500 | 5,200 |
| 4 | 24,600- 43,000 | 33,800 | 24,600- 43,400 | 34,000 |
| 5 | 3,000- 11,800 | 7,400 | 3,000- 11,900 | 7,450 |
| 6 | 7,300- 16,900 | 12,100 | 7,300- 17,100 | 12,200 |
| 7 | 18,600- 19,700 | 19,150 | 18,600- 20,000 | 19,300 |
| 8 | 18,300- 28,100 | 23,200 | 18,300- 28,600 | 23,450 |
| Statewide | 78,800-162,400 | 120,700 | 78,800-164,100 | 121,500 |

[1]Population projected not to change due to inconsistent data.

1985 preharvest estimate of 120,700 raccoon. The difference between these estimates may be attributed to the fact that raccoon habitat was underestimated in 1980. Average raccoon densities were applied to those habitat estimates to get population estimates. The current population estimate is based on the juxtaposition of habitat components as well as the amount of habitat. Technique differences may indicate a change in the size of the raccoon population on paper. However, there are no indications that a real population change occurred since 1980.

*Projections*

Due to the increased development outlined in the habitat section, the statewide fall population is projected to increase from 120,700 in 1985 to 121,500 in 1990. Raccoon populations in other states have withstood hunting and trapping mortality. While no data on reproductive success and survival of raccoons is available for Maine, the only threat to a stable or increasing raccoon population appears to be disease. Increasingly developed rural areas may support high populations of raccoons that contribute to the spread of rabies and distemper. Distemper has been found in Maine raccoons but exact figures on the extent of the problem are not available. While rabid animals are reported when they come in contact with humans or domestic animals, Maine's wildlife populations are not systemically monitored for any disease on a regular basis. However the high reproductive potential of raccoons should eventually compensate for the resulting decline after the disease has run its course.

Wildlife Management Units

*Status*

WMU 4 had the largest 1985 estimated fall raccoon population (33,800, Table 6). WMU 8 had the second highest population (23,200 raccoons) and the greatest density of raccoons per $mi^2$ of land area ($10/mi^2$), WMU's 2 and 3 had the smallest populations with 7,150 and 5,150 raccoons, respectively and the lowest density with 2 raccoons per $mi^2$.

*Changes*

Changes on a WMU basis do not differ significantly from those discussed in the statewide section.

*Projections*

Raccoons occur in all eight WMU's but are most abundant in WMU's 4, 7, and 8. The effects of rabies and distemper may be more profound in these more densely populated areas. outbreaks of canine distemper have been identified in raccoons by regional biologists in WMU's 1 and 2 (1981-83), southwestern WMU 4 (1983-85), WMU 7 (1985), and northern WMU 8 (1984-85). once any rabies or distemper epidemic has run its course, the overall high quality of habitat in WMU's 4, 7, and 8 should enable populations in these areas to recover. Populations in areas of poorer habitat may recover at a slower rate.

Given current conditions the 1990 fall populations of all WMU's should be nearly the same as the fall 1985 levels. The only exception is WMU 2 raccoon populations

which weren't projected to increase by 1990.  Severe outbreaks of distemper coupled with increased user demand resulting from higher pelt prices could drastically change this outlook.

## POPULATION ASSESSMENT - RELATIONSHIP OF CURRENT ESTIMATED POPULATION TO MAXIMUM SUPPORTABLE POPULATION

The estimates for current estimated population and maximum supportable population were both based on habitat quantity and quality. Based on the data available and taking into account reports from regional biologists raccoon populations are not at maximum supportable populations. The statewide estimated raccoon population of 120,700 raccoons is 74% of the maximum supportable population of 162,400 raccoons. The 1985 population estimates for individual WMU's ranged from 52% of the maximum supportable in WNU 2 to 97% in WMU 7. In general WMU's 1, 3, and 5 resembled the WMU 2 situation, while 4, 6, and 8 resembled WMU 7.

## USE AND DEMAND ASSESSMENT - HARVEST

Statewide

*Status*

The season length changes since 1977 have not appeared to have impacted the raccoon harvest. Harvests have ranged from 18,132 to 31,421 raccoons since 1979. The peak harvest occurred in 1979, and was only approached again in 1981. Since 1979 the harvest fluctuations have coincided with average pelt price changes. Other factors such as weather conditions and increased posting of land would also affect the harvest. The harvest, effort, and success rates for raccoon trappers and hunters are presented in Table 7.

Overall the raccoon harvest does not exceed the allowable harvest on a statewide basis. The legal harvest (averaging 23,646 raccoons 1981-84) is 65% of the statewide allowable harvest of 36,150 raccoons.

Raccoons taken on nuisance permits are another type of mortality that is measured. The records are not complete but they do indicate approximately 942 raccoons in 1980, 600-1,100 in 1981, and 458 in 1982 were taken on nuisance permits. Indications are that approximately half of these end up being tagged and included in the legal harvest (pers. comm. A. Clark). The other raccoons are taken at a time when the pelt is not prime. These raccoons wouldn't be included in the legal harvest. From 1978 to 1981 Wardens averaged 218 responses (range 153 to 248) to raccoon complaints. The nuisance complaints are concentrated in southern Maine (WMU's 4, 7, and 8)

Table 7. Present harvest, effort and success rates by raccoon trappers and hunters based on the recent 4-year average, 1981-1984.

| Wildlife Management Unit | Type of user | Allowable harvest | Harvest[1] | Estimated number of users[2] | Successful users[3] | Percent successful | Users/ 100 mi² habitat |
|---|---|---|---|---|---|---|---|
| 1 | Trappers | | 812 | 295 | 185 | 63 | 15 |
| | Hunters | | 460 | 64 | 34 | 53 | 3 |
| | Total | 3,800 | 1,313 | | | | |
| 2 | Trappers | | 225 | 274 | 83 | 30 | 17 |
| | Hunters | | 12 | 26 | 3 | 11 | 2 |
| | Total | 2,150 | 244 | | | | |
| 3 | Trappers | | 245 | 177 | 81 | 46 | 17 |
| | Hunters | | 317 | 51 | 26 | 51 | 5 |
| | Total | 1,550 | 580 | | | | |
| 4 | Trappers | | 2,398 | 689 | 513 | 74 | 17 |
| | Hunters | | 4,753 | 447 | 366 | 82 | 11 |
| | Total | 10,150 | 7,366 | | | | |
| 5 | Trappers | | 457 | 173 | 120 | 69 | 12 |
| | Hunters | | 405 | 91 | 56 | 61 | 6 |
| | Total | 2,200 | 888 | | | | |
| 6 | Trappers | | 916 | 208 | 169 | 81 | 11 |
| | Hunters | | 1,220 | 161 | 97 | 60 | 9 |
| | Total | 3,600 | 2,175 | | | | |
| 7 | Trappers | | 1,441 | 323 | 266 | 82 | 18 |
| | Hunters | | 4,083 | 256 | 219 | 85 | 14 |
| | Total | 5,750 | 5,583 | | | | |
| 8 | Trappers | | 2,478 | 409 | 352 | 86 | 16 |
| | Hunters | | 2,994 | 190 | 157 | 83 | 8 |
| | Total | 6,950 | 5,493 | | | | |
| Statewide | Trappers | | 8,972 | 2,551 | 1,769 | 69 | 16 |
| | Hunters | | 14,247 | 1,285 | 958 | 75 | 8 |
| | Total | 36,150 | 23,646 | | | | |

[1]Total includes raccoons harvested by users other than trappers and hunters as well as unknowns.

[2]Mean number of trappers or hunters tagging at least 1 land furbearer.

[3]Mean number of trappers or hunters tagging at least 1 raccoon.

where the raccoons interact with the high human populations. Raccoons in these areas create problems by moving into buildings and damaging crops.

*Changes*

The projections of raccoon harvests included in the 1980 species assessment update were based on the regressions of annual harvests from 1973-1977. The harvest was projected to be 21,937 raccoons in 1982 based on that trend. The average harvest from 1981-84 of 23,646 is lower than the average harvest from 1977 to 1980 of 25,212. At the same time the average price paid for raccoon pelts dropped from $24.27 to $17.59. We do not have a reliable measure of effort such as trap-nights that would indicate whether or not effort decreased. A decline in effort along with falling pelt prices would support the idea that harvest declines were not the result of population declines. In the last plan it was stated that, "supply and demand conditions are extremely difficult to predict due to the variability of historical information and the general lack of knowledge concerning many of the factors that affect supply and demand". This statement is still applicable today.

*Projections*

Average pelt price for the current season and t e previous years pelt price were found to influence the raccoon harvest. Currently the information and resources to predict fur price is not available to MDIFW. In addition, the effect that rabies or distemper outbreaks could have on Maine's raccoon population and harvest is not known. Given the reproductive potential of raccoons, in the long-term, the population

should recover from an epidemic. However, local population declines may affect the harvest in the short-term, particularly in southern and central Maine. Given current conditions, the projected harvest (1986-1990 average) for trappers is expected to be 8,970 raccoons and for hunters is expected to be 14,230 raccoons (Table 8). These figures do not differ substantially from 1981-1984 average harvest figures.

Wildlife Management Units

*Status*

Raccoon harvests in WMU's 4, 7, and 8 on the average make up 75% of the statewide harvest. The other units individually make up less than 10% of the harvest. Legal harvests in WMU's 4, 7, and 8 averaged 73%, 97%, and 79%, respectively of the allowable harvest. The high user densities, good access, and high raccoon populations of these WMU's contribute to the high harvests. These numbers, while high, appear within reason based on the accuracy of the data base. This area of the State is vulnerable to over exploitation and should be monitored for changes in success rates and harvest declines. While the raccoon population in the other WMU's may have been overestimated it does appear that under present conditions the legal harvest could be increased in WMU's 1, 2, 3, 5, and 6 without exceeding the allowable harvest. In WMU's 1, 2, 3, 5, and 6 the legal harvest is 35%, 11%, 37%, 40%, and 60% of the allowable harvest, respectively.

Table 8. Future (1986-1990 average) harvest, effort, and success rates by raccoon trappers and hunters.

| Wildlife Management Unit | Type of user | Allowable harvest | Harvest[1] | Estimated number of users | Successful users | Percent successful | Users/ 100 mi² habitat |
|---|---|---|---|---|---|---|---|
| 1 | Trappers | | 810 | 290 | 180 | 62 | 14 |
| | Hunters | | 460 | 60 | 30 | 50 | 3 |
| | Total | 3,800 | 1,310 | | | | |
| 2 | Trappers | | 220 | 270 | 80 | 30 | 17 |
| | Hunters | | 10 | 30 | 5 | 17 | 2 |
| | Total | 2,150 | 240 | | | | |
| 3 | Trappers | | 240 | 180 | 80 | 44 | 17 |
| | Hunters | | 320 | 50 | 30 | 60 | 5 |
| | Total | 1,550 | 580 | | | | |
| 4 | Trappers | | 2,400 | 690 | 510 | 74 | 17 |
| | Hunters | | 4,750 | 450 | 370 | 82 | 11 |
| | Total | 10,200 | 7,370 | | | | |
| 5 | Trappers | | 460 | 170 | 120 | 71 | 11 |
| | Hunters | | 400 | 90 | 60 | 67 | 6 |
| | Total | 2,250 | 890 | | | | |
| 6 | Trappers | | 920 | 210 | 170 | 81 | 11 |
| | Hunters | | 1,220 | 160 | 100 | 62 | 8 |
| | Total | 3,650 | 2,170 | | | | |
| 7 | Trappers | | 1,440 | 320 | 270 | 84 | 17 |
| | Hunters | | 4,080 | 260 | 220 | 85 | 14 |
| | Total | 5,800 | 5,580 | | | | |
| 8 | Trappers | | 2,480 | 410 | 350 | 85 | 16 |
| | Hunters | | 2,990 | 190 | 160 | 84 | 7 |
| | Total | 7,050 | 5,490 | | | | |
| Statewide | Trappers | | 8,970 | 2,540 | 1,760 | 69 | 15 |
| | Hunters | | 14,230 | 1,290 | 975 | 76 | 8 |
| | Total | 36,450 | 23,630 | | | | |

[1]Projection for harvest total includes raccoons harvested by users other than trappers and hunters as well as unknowns.

*Changes*

The same limitations discussed in the statewide changes above apply to WMU'S.

*Projections*

Unless current conditions change, the demand for raccoons as measured by the legal harvest should approach the allowable harvest in southern Maine (Table 8). Given prevailing conditions, northern, eastern, and western Maine raccoon populations should continue to be underutilized by hunters and trappers.

## USE AND DEMAND ASSESSMENT - TYPE OF USERS

Statewide

*Status*

The raccoon is important to hunters and trappers as well as nonconsumptive users such as campers and hikers. While the extent of nonconsumptive use is not known, there has been an increase in recreational use of the State by hikers and campers. These individuals as well as the owners of recreational homes enjoy the presence of raccoons and other wildlife.

Raccoons are tagged on hunting and trapping licenses. This information provides the Department with a measure of use and success rates. Based on this data, an average of 1,285 hunters and 2,551 trappers pursued raccoons from 1981 to 1984. The success rate averaged 69% for trappers and 75% for hunters (Table 7). The areas of the State (WMU's 8, 7, and 4) with the highest densities of humans per mi2 of land area also have the highest densities of raccoons. This enables the majority of the people of the State of Maine to utilize the raccoon resource.

Determining who the raccoon hunters are is difficult since a special license is not required just to hunt raccoons. In this report a raccoon hunter was anyone who tagged at least one of the huntable land furbearers (raccoon, fox, coyote, or bobcat) with a hunting license. This figure is used to account for unsuccessful raccoon hunters and any individuals whose partner tags all their fur. People who use a hunting license to tag raccoons killed by cars or nuisance raccoons are also included.

Trapping licenses are not limited to one forbearer species, either. As a result, the best estimate of the number of raccoon trappers was considered to be anyone tagging at least one land forbearer with a trapping license. Like hunters some trapping partners have one person tag all of the fur (A. Clark 1985).

Currently, the harvest is not divided evenly between hunters and trappers. Constraints placed on trappers to protect other furbearers from over-exploitation, can limit raccoon trapping opportunity. Hunters who do not face these same restrictions, account for over one-half the harvest in southern Maine (Table 7). Raccoon hunters need good access to hunt an area effectively. In addition, the most favorable areas for hunters to find raccoons, orchards and farms, are more common in southern Maine. In northern and western Maine, areas less suited to raccoon hunting, trappers take the majority of raccoons harvested. The difference in effectiveness of the two methods, across the State is important. It enables one user group to utilize a resource that the other group cannot exploit effectively in a particular area. Both hunting and trapping are needed in order to sustain a harvest of the raccoon resource under varying conditions such as high human densities or low raccoon densities.

*Changes*

Information on the number of users is not available prior to the start of mandatory tagging in 1977. Since 1977 trappers have averaged 42% (range 35% to 50%) of the legal harvest while hunters have accounted for 58% (range 50% to 65%). In the 1980 species update, the trend in the number of successful users from 1973-1977 was used to project 1982 figures. It appears that it was inappropriate to use this technique during

this time period. The projected number of 1982 successful users was 1,598, while the actual number of successful users was 2,911.

*Projections*

Changes in use opportunity in the future are very likely. The increased development of southern and central Maine may limit hunting opportunity in these areas. This development may also cause a shift in trapping methods from leg hold traps to cage type live traps in urban areas where hunting and traditional trapping methods cannot be used. Previously it was unlawful for any person to trap outside his own land, within ½ mile of the compact, built-up portion of a city or village. In 1985 this was amended to allow the use of cage type live traps by others with permission of the landowner. Urban areas support high raccoon populations and this change increases the opportunity of trappers to utilize this resource. The effects that all these changes have could balance each other out. As a result no change in numbers of users or success rates (Table 8) were predicted for 1990.

Wildlife Management Units

*Status*

Demand for raccoons is highest in WMU's 7, 4, and 8 with 32, 28, and 24 users/100 mi2 habitat respectively. Hunters and trappers in WMU's 7 and 8 also experience the highest success rates as well (Table 7). WMU 2 has the lowest success rates for trapping (30%) and hunting (11%). Low raccoon densities in WMU 2 and the inability of trappers and hunters to utilize the available resource could explain this.

Clark (1985) found that nearly 80% of trappers responding to his questionnaire in 1980 worked during the trapping season. This would limit their available time for trapping and could confine their efforts to areas adjacent to their homes and places of work. WMU 2 has the smallest human population of all WNU'S.

*Changes*

Estimates of the total number of users were not made in the 1980 plan. In the 1980 plan WMU's 4, 7, and 8 were recognized as having the greatest number of users, WMU's 2 and 3 the least. Today southern Maine still has higher levels of use than other sections of the State.

*Projections*

Changes in success, demand, and opportunity or users of the raccoon resource will likely be greatest in Southern and Central Maine (WMU's 4, 7, and 8). However, these areas won't be the only ones to experience change. Disease, posted land, use of cage type live traps, and increased development are factors that will cause change throughout the State. Whether these factors can balance each other out can't be predicted now. No changes were predicted (Table 8) in harvest, effort and success rates due to the inconsistent data.

## SUMMARY AND CONCLUSIONS

Raccoons have been found in the State since the arrival of settlers in the 1600's. The elimination of large expanses of softwoods and increased development has improved and increased the habitat available to raccoons. Raccoons have thrived in traditional habitats such as wetlands and bottomland hardwoods as well as urban areas. In fact, urban areas contain some of the greatest raccoon densities documented in the literature. This proximity of the raccoon resource to man has enabled a large segment of Maine's population to utilize it. At the same time, dense raccoon populations found in conjunction with man especially in urban areas and farmlands have created nuisance problems over the years.

In response to these nuisance problems and the accessibility of the resource the Department has worked to balance user opportunity and resource concerns. Since 1973, when the Department was granted the authority to set hunting and trapping seasons, a balancing of interests has occurred. Improved harvest information made available with the implementation of mandatory raccoon pelt tagging was an important part of the evolving process of raccoon management. Refinements in the length and timing of seasons have occurred in response-to biological and social concerns. Fisher management, pelt primeness, hunter shift, equal trapping and hunting opportunity, and trapping opportunity in urban areas are some of the factors influencing raccoon management.

Raccoon harvests have ranged from 18,122 in 1983 to 31,421 in 1979. Factors such as fall food availability, weather, and competing activities (other types of trapping

and hunting) have all affected the harvest. However, pelt price appears to have the greatest impact on the harvest. While harvest totals vary hunters usually comprise less than 40% of all consumptive users but they harvest over one-half of the raccoons, annually.

Adequately distributing the raccoon take among all WKU's has been mentioned in both the 1975 species plan and 1980 update. This has not been accomplished to date and may not be attainable at this point. Concern for the fisher may limit the possibilities of increasing trapping opportunity for raccoons. Hunters have not fully utilized the opportunity that exists already in these remote areas. Poor hunting conditions may lessen their willingness to travel from traditional areas. A system that would be effective in distributing pressure may not be acceptable to the public.

Overall WMU's 4, 7, and 8 have the best combination of quality and quantity of raccoon habitat. These WMU's also have the highest densities of raccoons per $mi^2$ of habitat. On a total land area basis WMU's 7 and 8 have more raccoons ($10/mi^2$) than any other areas. WM's 2 and 3 have the fewest with $2/mi^2$. Development should continue to improve raccoon habitat statewide even though it will destroy some habitat locally.

A statewide maximum supportable population of 162,400 raccoons was estimated from an evaluation of the habitat. The maximum supportable population within WMU's ranged from 8,400 raccoons in WMU 3 to 43,000 in WMU 4. The current estimated population followed this same pattern ranging from 5,150 raccoons in WMU 3 to 33,800 in WMU 4. At this time there is not any WMU that has reached the maximum supportable population level. Raccoon hunters and trappers are most successful in

WMU 8 (86% for trappers, 83% for hunters), and least successful in WMU 2 (30% for trappers, 11% for hunters). WMU 7 has the largest number of trappers with 2,478, while WMU 4 has the most hunters with 4,753.

On a statewide basis these trappers and hunters do not exceed the allowable harvest. However, WMU's 7 and 8 are near estimated allowable harvests. These areas are currently experiencing an increase in distemper cases which could cause a population decline.

The possibility of distemper drastically reducing the raccoon population appears to be the only major threat to raccoons. Currently, we cannot accurately determine the extent of the problem. However, there is no reason to feel that in the long run the iDoDulation would not recover. In local areas diminishing returns would occur as a result of a population decline (pers. comm. J. Hunt) due to sustained harvest pressure. Given similar conditions in the future as exist now, todays harvest and success rates are possible in 1990 (Table 9).

Maintaining hunting and trapping opportunity in populated areas could help to control the raccoon population. Higher raccoon densities that are found in conjunction with man favor the spread of disease. The ability of trappers to use cage type live traps should prove to be important method to take raccoons in these urban areas. To what extent this method is used, may prove critical in increasing the raccoon catch. Currently, raccoon management is a result of fisher management. Actions taken to manage the fisher population will ultimately determine raccoon management for trappers.

Table 9. Past, present, and estimated future raccoon harvest (actual, allowable, and objective) and users (total and successful).

| Year | | Harvest | | | Users | |
|---|---|---|---|---|---|---|
| | | Actual | Maximum Allowable[1] | Objective[2] | Total[3] | Successful[4] |
| 1977 | Trappers | 12,160 | | | 2,505 | 1,768 |
| | Hunters | 11,544 | | | 1,212 | 919 |
| | Total[5] | 24,148 | 19,350 | 45,000 | 3,787 | 2,728 |
| 1978 | Trappers | 9,948 | | | 2,322 | 1,703 |
| | Hunters | 11,081 | | | 1,142 | 840 |
| | Total | 21,542 | 19,350 | 45,000 | 3,537 | 2,596 |
| 1979 | Trappers | 12,714 | | | 2,831 | 2,226 |
| | Hunters | 18,084 | | | 1,421 | 1,096 |
| | Total | 31,421 | 19,350 | 45,000 | 4,313 | 3,357 |
| 1980 | Trappers | 10,086 | | | 2,722 | 1,919 |
| | Hunters | 13,134 | | | 1,299 | 970 |
| | Total | 23,737 | 19,350 | 24,000 | 4,105 | 2,943 |
| 1981 | Trappers | 10,636 | | | 2,807 | 2,030 |
| | Hunters | 19,004 | | | 1,582 | 1,204 |
| | Total | 30,214 | 19,350 | 24,000 | 4,453 | 3,286 |
| 1982 | Trappers | 9,069 | | | 2,663 | 1,835 |
| | Hunters | 14,564 | | | 1,391 | 1,037 |
| | Total | 24,199 | 19,350 | 24,000 | 4,118 | 2,911 |
| 1983 | Trappers | 7,912 | | | 2,377 | 1,651 |
| | Hunters | 9,794 | | | 923 | 699 |
| | Total | 18,132 | 19,350 | 24,00 | 3,412 | 2,421 |
| 1984 | Trappers | 8,271 | | | 2,356 | 1,561 |
| | Hunters | 13,626 | | | 1,245 | 893 |
| | Total | 22,089 | 19,350 | 24,000 | 3,666 | 2,494 |
| 1985 | Total | | 36,150 | | | |
| 1990 | Trappers | 8,970 | | | 2,540 | 1,760 |
| | Hunters | 14,230 | | | 1,290 | 975 |
| | Total | 23,630 | 36,450 | | 3,910 | 2,780 |

[1]Maximum allowable harvest figure taken from 1980 Species Plan Update.

[2]Harvest objective for 1975 thru 1979 based on data from MDIFW Game Kill Questionnaires. Harvest objective for 1980 thru 1984 based on data from mandatory raccoon tagging which began in 1977.

[3]Total equals Sucland in 1984 Furbearer Performance Report Appendix.

[4]Successful equals Sraccoon in 1984 Furbearer Performance Report Appendix.

[5]Includes unknowns.

The raccoon has proved to be a very adaptable species in the face of changes in its environment. Presently the Department doesn't have adequate measures of Population densities, recruitment rates, mortality rates, or the sex and age composition of the raccoon population or harvest. However, in spite of our lack of knowledge, raccoons appear able to survive the changing conditions found in Maine today and the foreseeable future.

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# RACCOON MANAGEMENT GOAL AND OBJECTIVES
# 1985-1990

**GOAL:** Maintain raccoon population at 1985 levels, through 1990.

## OBJECTIVES

**Abundance:** Maintain an average statewide raccoon population near 1985 levels (currently estimated at 78,800 to 162,400 raccoons), while allowing for fluctuations between WMUis through 1990.

**Harvest:** Maintain current user opportunity (season length and timing) through 1990, and minimize the mortality due to nuisance control outside of season.

Capability of Habitat: Raccoon habitat throughout Maine is capable of supporting raccoon densities at 1985 levels through 1990.

Feasibility: Maintaining an average statewide raccoon population at 1985 levels is possible as long as distemper does not spread beyond current levels. Should the current canine distemper outbreak spread, raccoon population levels will be reduced, especially in the most heavily utilized areas of the State (WMU's 4, 7, and 8). The harvest objective can be accomplished under current raccoon harvest regulations.

Desirability: These objectives may be desirable to hunters and trappers because of continued opportunity to pursue raccoons. Nonconsumptive users will appreciate the continued opportunity to view raccoons. However, homeowners in developed areas may find current raccoon population levels are creating unacceptable levels of nuisance and disease transmission problems. In addition, agricultural interests may feel that current management is not controlling raccoon populations, and that nuisance complaints and crop damage are excessive. People living in areas of the State with few raccoons or areas with declining harvests due in part to distemper may find these objectives undesirable. These people may feel that raccoon numbers should be increased statewide.

Possible Consequences: Current raccoon population levels in urban areas may present potential disease transmission problems that could adversely affect raccoon and other furbearer populations statewide. However , a reduction in the raccoon population resulting from distemper could reduce the spread or severity of a rabies outbreak in Maine in the future. A rabies outbreak in Maine similar to the one being experienced presently in the mid-Atlantic states would have serious health and financial implications for the people of Maine. A reduction in the raccoon population should also lead to lower harvest levels during a portion of the 5-year planning period. This temporary harvest reduction could lead to the perception by hunters and trappers that MIDIFW is not

concerned about raccoons, and result in legislative intervention in the management process.

Current or increased raccoon nuisance levels may be unacceptable to urban landowners and agricultural interests. This could lead to an increase in the extralegal kill of raccoons. Should present levels of hunting and trapping prove ineffective in controlling raccoon populations in populated areas, the Department may be forced to intensify its animal damage control efforts, or provide opportunities for the harvest of these populations.

Users in areas of the State where raccoon populations are either historically low or where disease has populations reduced populations may be unsatisfied with maintaining the status quo. They may pressure the Department to take action to encourage higher population levels. Should the Department's response prove unsatisfactory, these people may seek legislative action to accomplish their goals.

Summary of Working Group Concerns

# RACCOON

## Habitat

1. Development in southern Maine results in high populations which are not available to be harvested. Nuisance problems are great.

## Populations

1. Distemper in S.W. Maine has caused a significant population decrease.

## Harvest

1. Most management of trapping is done in concern for fisher.
2. Harvest pressures not distributed evenly throughout the State.
3. Cannot harvest in populated areas where populations high.
4. Do not put too much emphasis on inaccuracies of data.
5. Non-resident coon hunters are not tagging Maine raccoons before leaving the State.
6. Raccoons are not being tagged to accurate location.
7. Need a fur harvesters license for both hunters and trappers pursuing furbearers.
8. Control of nuisance raccoons should emphasize live capture and moving over killing.
9. Harvest has decreased significantly in WMU 8 as well as 4 and 6.

## Raccoon Problems and Strategies in Order of Priority

**Problem 1:** Lack of information on the size and dynamics of raccoon population.

**Strategy 1:** Develop a system to monitor raccoon populations on a WMU basis.

**Problem 2:** Opposition to consumptive use of raccoons by non-consumptive users.

**Strategy 1:** Develop programs to minimize the conflicts and concerns of these various interest groups and maintain use opportunity.

**Problem 3:** Decreasing accessibility of private lands to the trapping and hunting of raccoons.

**Strategy 1:** Develop a system to monitor the amount of land being lost to public access for consumptive use by WMU.

**Strategy 2:** Develop and implement programs to maintain access to private lands for consumptive use by W14U.

**Problem 4:** The number of raccoons killed for nuisance control outside of the season is unacceptably high to hunters and trappers.

**Strategy 1:** Implement the nuisance wildlife policy to ensure non-lethal methods are used whenever practical in solving raccoon nuisance