FORESTS AND WILDLIFE IN SOUTHERN MICHIGAN IN THE PAST AS COMPARED TO 1970-1978

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Abstract.--Much of the original southern Michigan forest and wetland have been decimated. The land was used for crops and housing. The forests were used for lumber and fuel. The wildlife was used originally for survival. The result has been that in many regions only small woodlots remain. Some species, recently, such as Canada Geese and Sandhill Cranes have increased because of good management methods. Other species such as Red-winged Blackbirds have increased, regardless, while many other bird species have decreased reaching extinction in many communities. Yet fall migrants show no decrease. Could pesticides and herbicides have some effect on local populations.

INTRODUCTION

During the 1979 Non-Game Bird Workshop meeting in Minneapolis one of the most common themes was that regardless of the biotope, only a small percentage of the original now exists. Accordingly the birds using these habitats have decreased tremendously. In southern Michigan, one such example is the Blue-gray Gnatcatcher (Polioptila caerulea). In Calhoun County in a bottomland woods, C.E. Coles (Oologist, 1876, p. 31) found in 1876 75 nests during a single summer. Probably all the ornithologists in Michigan have not found that many nests during the past 40 years. The original forests are so decimated that some bird species have completely disappeared in many regions.

This change came after white people settled the land, and during a period of 150 years. My great-grandparents and grandparents were examples of pioneers that settled southern Michigan. They moved into the region from Scotland, England, New York, Pennsylvania, etc., cleared the forests, then farmed their newly acquired land. Some of the forest was used for lumber for their new homes, some was used for fuel. Some of the wildlife was used for food - for survival. Shortly after the first settlers arrived White-tailed Deer, Wild Turkeys and Passenger Pigeons disappeared completely.

These couples also had large families which in turn settled more and more land. However, by the time my parents began farming, they realized the value of woodlots and they began reforesting unfarmable regions such as steep hills, planting normally maples, oaks and elms. I also realized the value of wildlife and by 1916-1917 had a line of Bluebird houses on the wooden fenceposts around our fields.

Large families aided the pioneers but they made the world population skyrocket. For example, the seven families alone, belonging to my great-grandparents, grandparents and parents averaged seven children apiece while seven died in childhood. All of those remaining required their own home and land, as did each of their children. Families throughout the world during that period were increasing about the same rate.

Because of the automobile, highways were improved. Some were hard-surfaced. Travel became possible both summer and winter. Simultaneously many city dwellers moved to rural regions while many farmers commuted to city jobs. Consequently many regions became urbanized.

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LAND USE

Between 1910 and 1920 more land was farmed in southern Michigan than now. Much of this is the result of urbanization. Some people when purchasing land, allowed it to revert back to forest, marsh and grassland. Farming became mechanized. More commercial fertilizers were used and hybrid grains increased farm yields. With all of these less land was needed.

Difficulties in other parts of the world are often even more severe when it comes to land use whether it be for forests or farming.

Quote (I.U.C.N.,1978):

" At present about 2.5 million sq. km of drylands are used for irrigated agriculture and new lands are being irrigated at the rate of 2.9 % a year in the developing countries."

"Exacting standards are not always attained. It is estimated that about 50 % of dryland irrigated soils are suffering from salinization and 25 % from erosion."

They continued that rainfed agriculture has always been an important source of food. That with increased populations, especially following a sequence of years with good rains, people have taken chances. By using tractor drawn vehicles, they have farmed far beyond where advisable. In Niger, before the last drought, both cultivation and settlement pushed 100 miles north of the legal limit. In Tunisia 2.7 million ha of former steppes were cleared between 1890 and 1975. The result was the losses of indegenous vegetation, exerting greater pressure on soil that remained. At times there was a loss of soil structure, fertility and often the soil itself. In Rajasthan, India, sandstorms increased from 8 to 25 per annum during a 15 year period. With this loss of world land, an accompanying increase in deserts, which has recently been brought out (I.U.C.N.,loc.cit.), with the urbanization of more and more land, plus a tremendous increase in world population, greater pressure is put on remaining farm land and forest.

In many world regions the status of an individual has been considered by the size of his livestock herd. Often these herds have produced much damage to both plants and soil.

Quote (I.U.C.N.,1978):

" Whether in the rangelands of Australia and the United States or in the grazing pastures of Chile and North Africa, there is a natural reluctance to reduce livestock to match reduced pasture. And whether in the rich or in the poor lands, overgrazing plus drought is a deadly combination."

In many regions we have seen in Nigeria and Sudan these residents require fuel so that in some areas scattered trees and forests have suffered. Yet, human beings, as well as all other animals are almost totally dependent on the plant kingdom. Probably some forms of plants and animal life have never been known because they became extinct prior to our knowledge. Even now many are being or may be lost unless we make definite efforts to save them, and though we have commendable programs trying to save some species, others may be lost before we know their value.

Quote (I.U.C.N., 1978):

" Many of the plant species that are threatened today are, actually or potentially, the sources of valuable products. . . precious timbers such as Mexican mahogany (Swietenia humilis), and certain drug plants like the yam species,(Dioscorea deltoidea), a major source of diosgenin, the starting material for the manufacture of cortisone."

In northern Michigan many forests were clear-cut before our time, especially those of White Pine (Pinus strobus) and even now, 80-100 years later, some regions have never recovered. Many tracts of northern Michigan forestland are being purchased by individuals because of unfavorable living conditions in our cities. More and more people are building their first or second home in these forests. Some ecosystems we have known may be a thing of the past.

But our National and State Forests seem to be in good hands. And well organized research has, is and will aid wildlife species in these forests. This is being carried out by both biologists and foresters as shown at this and previous workshops. Some programs are in progress to aid endangered or threatened species, such as the Kirtland's Warbler (Dendroica kirtlandii). When we aid this species or any endangered species we are simultaneously aiding other wildlife species. We may even keep some other species from becoming rare.

TABLE 1

THE BREEDING BIRDS ON SIX ACRES (2.43 HECTARES) IN SECTION 7, LAKETON TOWNSHIP, MUSKEGON COUNTY, MICHIGAN

The region consisted of red, white and black oaks, sugar maple, beech, white pine and hemlock woods along the shore of Lake Michigan. It was 1,308 feet long and 200 feet wide with two driveways going to two houses. Censuses taken, 1950-1978.

No.	Species	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	Total	Nests
1.	Cooper's Hawk																					1N									1	1N
2.	Ruffed Grouse													x						x	x										Present	
3.	Mourning Dove																		1N	1	1N							1	1	1	6	2N
4.	Yellow-billed Cuckoo																			1N					1N						2	2N
5.	Black-billed Cuckoo								1N																						1	1N
6.	Screech Owl			1N			1																								2	1N
7.	Barred Owl	x	x	x																x	x	x									Present	
8.	Whip-poor-will	x	x	x	x																										Present	
9.	Ruby-throat.Hummingbird																				1N										1	1N
10.	Belted Kingfisher																						1N			1N					2	2N
11.	Red-headed Woodpecker						1N															1N	1N	1N	1N	1N	1N	1N	1N	1N	10	10N
12.	Crested Flycatcher																	1N													1	1N
13.	Eastern Phoebe															1N	1N	1N	1N	1N	1N	1N		1N							8	8N
14.	Acadian Flycatcher													x	x																Present	
15.	Least Flycatcher												x	x	x	1N	3N	3N	3N	4N	5N	4N	2N								25	25N
16.	E. Wood Pewee	4	2	3	3	3	4	3	3	2	3	3	3	3	3	3	3	3	3	3	3	4	3	3	2	1	2	2	1	1	79	32N
17.	Black-cap.Chickadee	x	x									1N									1Y										2	1N,1Y
18.	Tufted Titmouse												1																		1	
19.	White-breast.Nuthatch			1N	1N	1N	1N	1N	1N	1N															1	1N	1	1	1	1N	13	9N
20.	Gray Catbird								1N		1N																				2	2N
21.	American Robin	2	2	2	2	2	2	2	2N	3	3N	3N	3	3	3	2	2	2	3	2	7N	4N	3	3N	2N	2	2	4N	2N	2N	76	32N
22.	Wood Thrush																						1N								1	1N
23.	Cedar Waxwing		1N	1N																											2	2N
24.	Yellow-throated Vireo								1	1	1	3N	1	1																	8	3N
25.	Red-eyed Vireo	6	5	5	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	3	3	2	2	2	2	3	2	122	52N
26.	Black & Wh. Warbler	1Y																													1	1Y
27.	Cerulean Warbler													1N																	1	1N
28.	Pine Warbler	1N	1N	1	1	1	1	1	1																						8	2N
29.	Ovenbird	3	2	3	3	3	3	3	3	3	3	3	1	1																	34	2N
30.	American Redstart	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	1	1									54	5N
31.	Brown-headed Cowbird	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	59	7E
32.	Scarlet Tanager	2	2									3N		2																	9	3N
33.	Cardinal	2	2	1	2	2	2	2	2	2	2N	2	2	2	2	1	2	2	2	2	2	1	1N	1	1	1	1	1N	1	1	47	4N
34.	Rufous-sided Towhee	1								1	1											1N	1N								5	2N
35.	Indigo Bunting	1	1	1																											3	
36.	Chipping Sparrow	4	3	3	3	3	3	3	3	5N	3	4N	3	3N	3	2N	2N	2N	2	2	2N	2N	1N	1N	2	1N	1N	1N	1N	1Y	69	28N,1Y
37.	Song Sparrow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1Y	1Y	1Y	1Y	1Y	29	5Y
	Total Pairs	33	26	28	27	26	29	26	29	29	28	33	25	27	22	21	23	24	25	27	30	26	20	16	15	13	13	16	14	13	684	250N,Y
	Total Species	14	13	14	11	11	13	11	14	12	12	12	11	12	8	10	10	11	11	12	13	13	12	9	10	10	9	10	10	10	328	,37

THE FOREST BIRDS IN MUSKEGON COUNTY

Between Muskegon State Park and Pioneer Park, a distance of four miles, there is solid forest in Michigan. Between the two parks it is residential but still forested. Each residence, in most cases, is 100 feet from the next and each house has a driveway through the woods and some clearing around the dwelling. The properties vary some in length according to which direction both the road and lake go. We own one of these properties about halfway between the parks. It is 100 feet wide and 1,308 feet long. On this and the next lot of the same size, I have recorded the breeding birds since 1950. The studied area consisted of six acres (2.43 ha). On the west is Lake Michigan; on the east is Scenic Drive and across the road is solid forest. On the east end of our property and the next property, is a clearing 150 X 220 feet. It is grown mostly to scattered small trees, Sassafras (Sassafras varifolium), Red Oak (Querous rubra), White Oak (Q. alba), a few planted pines (Pinus sylvestris), some Jack Pine (P. banksiana). Much of the ground is covered with Bracken Fern as are parts of the woods, with some Sweet Fern (Comptonia peregrina) and grasses. In the woods, the most common trees are Red Oak, White Oak, White Pine (P. strobus), Beech (Fagus grandifolia), Sassafras, lesser amounts of Hemlock (Tsuga canadensis), Black Cherry (Prunus serotina), Witch Hazel (Hamamelis virginiana), etc. Besides Bracken Fern, the ground cover is Blueberry (Vaccinium sp.), Wintergreen (Gaultheria procumbens), Trailing Arbutus (Epigaea repens) and many other plants. Only about 20 White Oaks (6 to 9 in. in diameter) and several dead White Pines have been removed during our ownership. Otherwise the forest has continued to grow. The understory has changed little and there has been no fires.

In general 1950-1952, 1967-1978 were rather wet years and 1953-1966 drier years. Coverage was made during all week-ends, 1950-1968 then almost daily much of May, July and August, 1969-1978. The species of birds observed during the 29 year period are listed in Table 1. Two Kingfisher (Megaceryle alcyon) nests were recorded in Table 1 but 57 Bank Swallows(Riparia riparia) were not, 1970,8; 1971,15; 1973,7; 1974,27. They were in the bank above Lake Michigan.

During the six year period, 1950-1955,inc. the mean number of breeding pairs was 28.1 (26-33). During the last six years, 1973-1978,inc., the mean number was 14.0 (13-16) indicating a trend which was reflected throughout the surrounding forest. Some species such as Cooper's Hawk (Accipiter cooperii), Screech Owl (Otus asio), Acadian Flycatcher (Empidonax virescens), all the Parulidae, have not been found in the vicinity for several years.

Simultaneously Cooper's Hawks, Piping Plover, Acadian Flycatchers and other birds disappeared from nearby woodlands and beach. With the above information it was found there were 391 (216-550) breeding pairs per 100 acres in Muskegon County oak-maple,white pine forest or 966 (534-1359) per ha, during this 29 year period. The mean number per 100 acres for the first six years, 1950-1955 inclusive was 468 pairs and for the period, 1973-1978, inclusive, it was 233 pairs (1,156 and 576 pairs per ha respectively).

With this decrease in breeding birds we have wondered about the migrants. From 1957 to date we have mist-netted birds during the fall migration. The numbers of birds banded during this period is shown in Table 2:

TABLE 2

THE NUMBER OF BIRDS MIST-NETTED DURING THE FALL MIGRATION IN LAKETON TWP.,MUSKEGON CO.,MICHIGAN

YEARS	BIRDS CAPTURED	NET HOURS	BIRDS CAUGHT PER NET HOUR
1957-1962	3,631	6,546	0.55468
1963-1968	5,799	9,179	0.63177
1969-1973	12,653	20,918	0.60488
1974-1978	7,083	11,798	0.60036
21 YR. TOTAL	29,166	48,441	0.60209

During two autumns the number of birds caught per net hour were higher than normal. During 1973, 2,294 birds were netted during 1,935 hours or 1.185 per net hour. During 1974, 1,715 were caught during 1,146 net hours, or 1.186 per net hour. The most common bird caught during this period was the Tennessee Warbler (Vermivora peregrina). The numbers captured per month are given in Table 3. During the first ten years, 604 of these birds were captured (1957-1966,inc.). During the last four years, 1975-1978, 668 were caught. During the years, 1970-1974, 2,402 were caught, 663 during late August 1972. This species has fluctuated in numbers reaching peaks, with the greatest peak in 1972.

TABLE 3

TENNESSEE WARBLERS MIST-NETTED IN THE FALL, LAKETON TWP., MUSKEGON CO., MICHIGAN

YEAR	AUGUST	SEPTEMBER	OCTOBER	TOTAL
1957	0	0	0	0
1958	25	4	2	31
1959	4	7	5	16
1960	0	3	0	3
1961	7	55	5	67
1962	17	11	2	30
1963	73	96	10	179
1964	8	47	50	105
1965	x	x	x	x
1966	50	104	18	172
1967	4	38	4	46
1968	x	x	x	x
1969	42	18	26	86
1970	87	231	4	322
1971	265	256	9	530
1972	663	76	18	757
1973	40	338	112	490
1974	20	222	61	303
1975	52	37	0	89
1976	12	182	0	194
1977	179	58	0	237
1978	82	65	1	148
TOTAL	1,630	1,848	327	3,805

It is evident that Tennessee Warblers and other migratory birds may fluctuate from year to year. If the entire migratory population is considered this may not be evident. There could be a similar fluctuation with breeding birds but it does not seem likely. Some species have disappeared completely from the entire area.

It is also evident that during recent years many other species of birds in eastern United States have increased. Examples are Canada Geese (Branta canadensis), Sandhill Cranes (Grus canadensis tabida), Blue Jays (Cyanocitta cristata), Ravens (Corvus corax), Brewer's Blackbirds (Euphagus cyanocephalus), Common Grackles (Quiscalus quiscula), Brown-headed Cowbirds (Molothrus ater) and Redwinged Blackbirds (Agelaius phoeniceus).

Canada Geese and Sandhill Cranes probably increased because of better management practices and because new refuges have been established for them to use. Many species have increased without any appreciable help except they make better use of the environment. Blue Jays make continuous use of feeders.they may have been also aided by the loss of predators.

Why then have many bird species decreased, throughout southern Michigan? Some species such as Prairie Chickens (Tympanuchus cupido) and Marsh Hawks (Circus cyaneus) are gone from Calhoun and surrounding counties. Their habitat looks unchanged. Even into the 1920's a bounty of 25 cents was paid on Marsh Hawks in Calhoun County. And even later than that flocks of 50 or more Prairie Chickens could be found. I found nests of both species there but did lose some hawk nests to bounty hunters, 1918 to 1930.

Poachers, the boy with an illegal gun, cats and dogs have always taken a toll of bird life. Domestic animals have increased in numbers but they certainly do not compare with former predators, many of which have also disappeared.

With some birds it could be their method of migration. Night migrants encounter many more hazards than were formerly present. Even during daytime they meet some of these hazards. Imagine how many birds lose their lives flying into television towers, power lines, tall buildings, picture windows and other man-made objects plus those killed by automobiles.

G.J. Wallace (1960, 1962), Wallace, Nickell and Bernard (1961), Hickey and Hunt (1960) and Mehner and Wallace (1959) and many others have shown that many birds have died from the use of pesticides, many forms of which came into use following World War II. I doubt if anyone can inform us the true effect of herbicides on wildlife. Apparently some species are susceptible to pesticides, possibly herbicides, while others are not. Otherwise all species would decrease in numbers where they are resident in Michigan's southern counties. The fact that migrants from farther north,where few or no pesticides are used, have not decreased makes it look as though this could be the cause for the continued decrease of many species of both Parulidae and Fringillidae and probably other groups of birds. The food some birds eat probably makes them more susceptible than others but this is hard to pin down.

Formerly the large number of birds found in southern Michigan helped keep insect pests, even some weed seeds,down. Such insect eaters as Tree Swallows (Iridoprocne bicolor) and other swallows have not decreased in my study areas and the Tree Swallow has practically replaced the Bluebird (Sialia sialis) in many regions. It appears as though we may lose certain species of birds whether we improve our forests or not while other species increase until they become pests.

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