MINNESOTA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FISH AND WILDLIFE
ECOLOGICAL SERVICES SECTION

SPECIAL PUBLICATION NO. 123

BIOLOGICAL SURVEY OF THE CROW AND NORTH FORK OF THE CROW RIVER

JULY, 1977

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FISH AND WILDLIFE

RIVER SURVEY REPORT OF NORTH FORK CROW RIVER AND CROW RIVER

by:

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Special Publication No. 123

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GENERAL RIVER INFORMATION

Stream Name: North Fork Crow River and Crow River.

Counties: Meeker, Wright, and Hennepin.

Alternate Name(s): None.

Tributary Number: M-64.

Watershed Name and Number: Crow River Watershed (XVII).

Sequence of Waterways to Basin: North Fork Crow River to Crow River to Mississippi River to Gulf of Mexico.

Map(s) Used: USGS Topographic - 1967 (7½ min.) and 1958 (15 min.) series.

Length of Stream: Approximately 200 miles (total), the downstream 120 miles of which were surveyed.

Location of Mouth: T. 121 N., R. 23 W., sec. 36.

Ave. Flow at Gauging Station: 49 year ave. (1909-17, 1930-31, 1934-74) = 629 cfs.

Location of Gauging Station: T. 119 N., R. 24 W., sec. 29 (near Rockford) - river mile 24.0 (approx.).

Initial Source of Sustained Flow: Grove Lake (Pope Co.) T. 125 N., R. 36 W., sec. 26. The first several miles from the Grove Lake outlet are completely ditched.

Gradient: Ave. = 2.03 ft./mile over the downstream 120 mile study area.

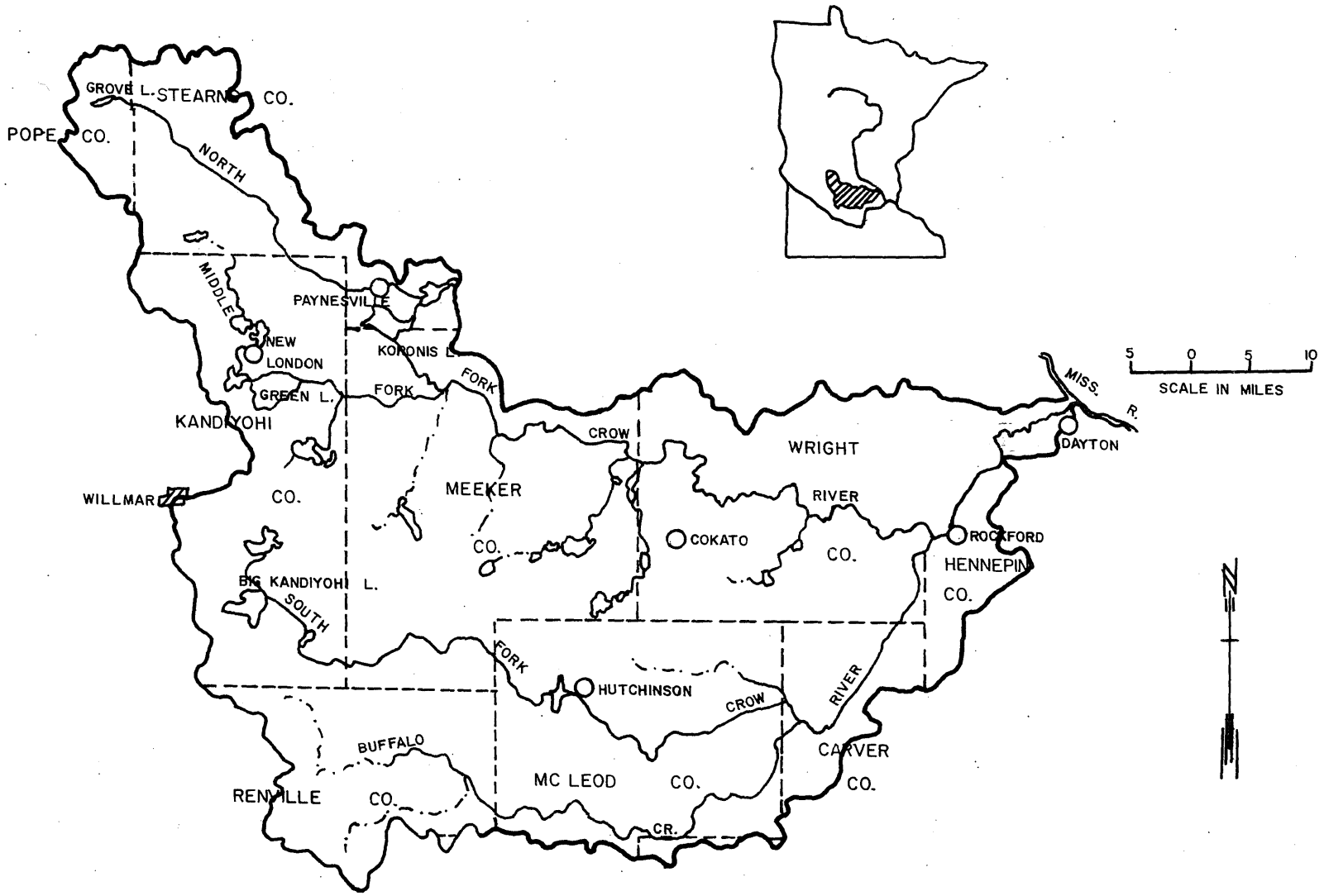
Sinuosity: Sinuosity values of 16 sections of the lower 120 miles ranged from 1.2 to 2.7, being lowest for a channelized section of the river below Lake Koronis, and highest for two sections of the river lying north of Cokato and Waverly.

WATERSHED DESCRIPTION AND USE

Description of Watershed

The North Fork Crow River rises in southeastern Pope County and follows a southeasterly course for approximately 175 miles before joining the South Fork Crow River, and thus forming the Crow River. The Crow River then flows for approximately 24 miles before joining the Mississippi River at Dayton. The North Fork drainage area encompasses 1,250 square miles, while that of the watershed totals 2,756 square miles. Figure 1 (Crow River Watershed Map) on the following page shows the geographic setting of the area.

FIGURE 1: CROW RIVER WATERSHED



Topography consists of an undulating clayey till plain within the southern half of the watershed, and low moranic hills interspersed with glacial till plains within the northern half. The valleys of the North Fork above Paynesville and the Crow River are covered by glacial outwash consisting of sand and gravel.

Soils having developed from the overlying glacial drift material include the dark colored, fine to medium textured limy prairie soils of the southwestern portion of the watershed and the gray to brownish-gray soils derived from limy clayey loam till found throughout much of the remaining portion of the watershed.

Prior to settlement, the vegetative cover varied from native prairie to native hardwoods forest within the western and eastern portions of the watershed respectively. The fertile soils however, resulted in intensive agricultural developments within the watershed.

BACKGROUND INFORMATION

Reasons for Survey

The survey was initiated for two reasons: (1) To determine the basic watershed physical and biological resource characteristics for future reference and management purposes; and (2) To provide data for the Minnesota Wild and Scenic Rivers Program.

Previous Investigations and Surveys

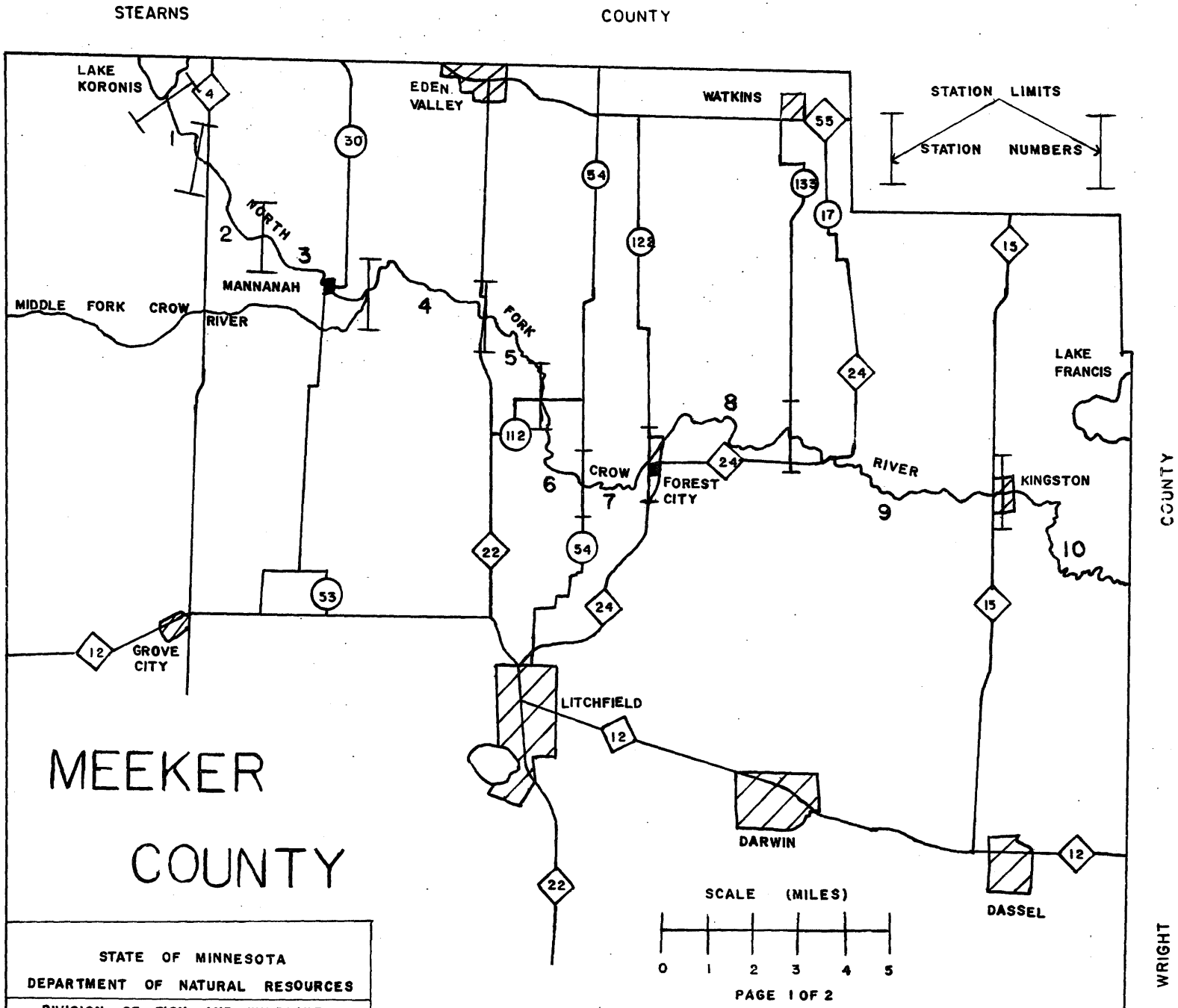
No complete survey of the North Fork Crow River had been made prior to the present survey. Information is available from fish kill and pollution investigations, water quality analyses, and local flood control projects reports. Information on the physical and biological resources of the watershed is available in such reports as USGS and DNR hydrologic investigations, and the North Fork Crow River (Meeker County) Management Plan. Moyle's 1940 Biological Survey of the Upper Mississippi River System included some information on the Crow River.

Special Problems and Conditions

Intensive agricultural land use practices limit the extent and size of fish and wildlife populations. Agricultural problems include drainage, over-grazing, erosion, turbidity, siltation, and pollution. Additional problems to be considered are water level fluctuations and high rough fish populations.

Stream Alterations

Approximately 2 miles of the river in station 2 have been channelized (refer to Figures 2-1 and 2-2 on the following pages for approximate station locations). The work was completed prior to 1967 (date of USGS map), with no record of a permit being issued by this department for the alteration. It was however, likely done in an effort to improve drainage from adjacent areas for agricultural purposes.



STATE OF MINNESOTA
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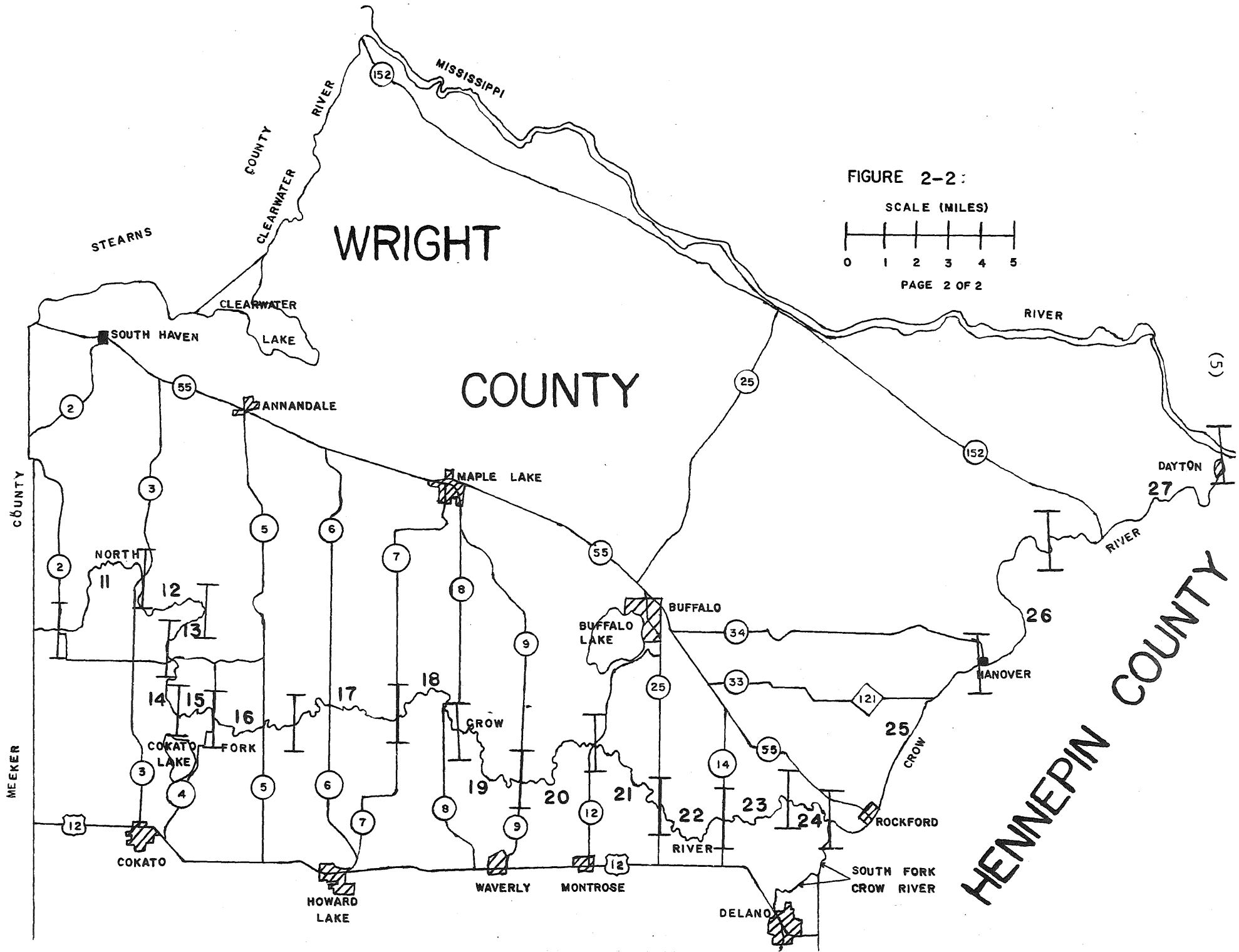
FIGURE 2-1:
MAPS SHOWING GEOGRAPHIC LOCATIONS OF THE 27 CROW RIVER STATIONS


WRIGHT
COUNTY
STEARNS
CLEARWATER
COUNTY
CLEARWATER RIVER
MISSISSIPPI
RIVER
SOUTH HAVEN
CLEARWATER
LAKE
ANNANDALE
MAPLE LAKE
DAYTON
RIVER
MEEKER
COUNTY
NORTH
BUFFALO
BUFFALO
LAKE
MANOVER
CROW
FORK
COKATO
COKATO
LAKE
CROW
RIVER
ROCKFORD
SOUTH FORK
CROW RIVER
HOWARD
LAKE
WAVERLY
MONTROSE
DELANO
HENNEPIN COUNTY
FIGURE 2-2:
SCALE (MILES)
0 1 2 3 4 5
PAGE 2 OF 2
(5)

Dams and Other Obstructions

Three dams are present on the lower 120 miles of the river. The first is located at the outlet of Lake Koronis (river mile 120.0) and has a fixed crest. Planned bridge construction near this structure may include the construction of a new fixed crest dam. The two remaining dams are located at Hanover (mile 16.1) and Berning Mill (9.0). Both dams were used to provide power for flour mills, and maintain seven (7) and four (4) foot heads of water respectively. These dams inhibit upstream fish movement except during high flow over the lower dam. The lower dam showed some signs of deterioration.

Access (Location and Ownership)

Three access sites are located on public lands within Meeker County. These are below the Lake Koronis Dam, at the Forest City Shaw Memorial Park, and at the Kingston Finnish Memorial Park. The North Fork Crow River Management Plan for the Wild and Scenic Rivers Program suggests that watercraft use be limited to canoes since navigation is difficult with larger motorized craft. Canoe access is available at a number of sites (primarily bridge crossings) along the river, and also at the Rockford Riverview Estates Marina and above the Berning Mill Dam.

Use of Water

A primary use of the river is as an outlet for treated wastes from some ten (10) communities within the watershed. Other non-recreational uses include irrigation, fish culture, gravel washing, and livestock watering. The river and its tributary streams, wetlands, and lakes, and its adjacent land corridor afford some opportunity for such outdoor recreational activities as fishing, canoeing, swimming, hunting, trapping, hiking, show-shoeing, and cross-country skiing.

Navigability

Snags and other physical obstacles limited river navigation primarily to canoes. Snags were present in many of the 27 stations, some of which impeded canoe navigation at normal flow. Numerous additional snags, a number of riffle areas, and the two downstream dams further impeded canoe navigation under low flow conditions. Although navigation with motorized craft is possible at several locations during normal river flow, limited access for motorized craft restricted their use.

CROW RIVER TRIBUTARIES

Tributary streams range in size from numerous unnamed creeks with only intermittent flow, to the South Fork Crow River. Table 1 lists the 75 known streams tributary to the lower 120 miles of the North Fork Crow River and the Crow River. Table 2 shows flow measurements recorded on several of these tributary streams.

All flow measurement shown on Table 2 were taken at the mouth of the tributary stream. Stage readings on Table 2 were assumed to be the same as this reading for the North Fork Crow River on the respective date.

STREAM PHYSICAL CHARACTERISTICS

Although the physical characteristics of each of the 27 stations showed some variation, the overall physical character of the river is relatively homogeneous. Physical characteristics of the North Fork Crow River and the Crow River stations (refer to Figures 2-1 and 2-2 for approximate station locations) summarized in Table 3 show a gradual downstream increase in stream width until the confluence of the South Fork Crow River. At this point there is a large increase in stream width. There is also a gradual downstream decrease in stream gradient. Associated with this is a higher percentage of riffle areas in the upper portion of the stream. The percentage of bank cover types shows some variation throughout the river corridor, but was primarily wooded.

The flow in station 3 was measured above the confluence of the Middle Fork Crow River. The flow in stations 4-5 was measured below the confluence of the Middle Fork Crow River. The flow measurement for stations 12-13 was obtained at the downstream end of station 12. The flow estimate for station 25 was high because of heavy rainfall the preceding night. Stream stages shown in Table 3 were recorded as either low, normal, or high. The bank erosion and shade designations (light, moderate, or heavy) were assigned according to the following percentages of occurrence: light (lt.):0-30% of banks eroded or stream shaded; moderate (mod.):31-70% of banks eroded or stream shaded; heavy (hvy.):71-100% of banks eroded or stream shaded. Five percent of the banks in station 27 was residential.

Sand was the dominant bottom substrate type throughout the river. Gravel dominated the riffle areas, and some rubble and boulder was present throughout the area. Gravel, rubble, and boulder were more prevalent in the higher gradient stations. Several areas of mud and silt were noted in the lower gradient stations.

CHARACTERISTICS OF WATER

Water Quality

The data shown in Tables 4, 5, and 6 indicates the water to be very hard (bordering alkaline at times) and very fertile. Hardness is indicated by the range in total alkalinity values (225 - 278 ppm) shown in Table 4, and (168 - 360 ppm) shown in Table 5. Total alkalinity values were generally highest during periods of low flow. Hardness was also indicated by the generally high pH values, and the ranges in total phosphorus values shown in Tables 4 and 5 (0.15 - 0.29 ppm and 0.03 - 0.35 ppm) respectively. Higher total phosphorus values were generally associated with low flows. Total nitrogen values ranged from 1.1 - 5.4 ppm. The lower total nitrogen value exceeds 1.0 ppm which is also indicative of fertile waters. Total nitrogen values were generally highest during the spring and early summer months. The other water quality parameters indicating high water fertility are the generally high BOD (3.6 ppm) and carbon dioxide (6.9 ppm) values.

The data shown in Table 4 was gathered prior to the 1974 survey from sampling sites located at Rockford and Dayton. Water samples used for the data shown in Tables 5 and 6 were collected on a monthly basis (October, 1973 to September 1975) at the USGS guaging station located one (1) mile downstream from the confluence of the North and South Forks of the Crow River near Rockford (station 25).

Discharge Flows

Mean monthly flows from October, 1973 - September, 1975 range from 55.3 - 4,564 cfs, with highest flows generally occurring during the period of April - June. The flow measurements shown in Table 7 were obtained from the same sampling site as was the water quality data contained in Tables 5 and 6.

Water Temperatures

Water temperature data shown in Table 8 indicates that water temperatures tend to fluctuate with ambient air temperatures ($r = 0.66$), but that air temperatures are about $3^{o}F$. higher than water temperatures. Where X = water temperature and Y = air temperature, $Y = 3.14 + 1.00X$.

AQUATIC PLANTS AND ALGAE AND BOTTOM FAUNA

Species Present

Twenty-two species of aquatic plants were observed during the survey. A listing of the common and corresponding scientific names of aquatic plant species noted during the survey is included in Table 29 of the appendix. The survey did not include any sampling for either algae or bottom fauna.

Aquatic Plant Community Distribution

Aquatic plant communities were poorly developed throughout the river system, and particularily within the river channel. Plants were not abundant and were poorly distributed here. The low aquatic plant community diversity resulted from intensive agricultural land use and its effects on erosion, turbidity, siltation, and the dominance of an erodable sand substrate. Less than 1 percent of the river bottom supported aquatic vegetation.

Aquatic plant communities within the numerous wetland areas (including old river oxbows) scattered throughout the adjacent river corridor were more diverse. The presence of carp in some of these wetland areas was causing the destruction of the aquatic plant community.

Algal Community Distribution (Attached and Plankton Algae)

It was noted during the survey that attached filamentous algae became increasingly more abundant in station 2, and that filamentous algae occurred commonly in riffle areas in station 3. This higher density of filamentous algae was a result of the nutrient input from 5 drainage ditches within station 2. In station 3 the filamentous algal growth may be limited by water clarity, and a lack of suitable substrate attaching materials.

Bottom Fauna Distribution

Moyle (1940) in his survey of the Upper Mississippi River System found the bottom fauna density in the Crow River to be considerably lower than the density in other rivers within the system. Moyle estimated mean dry weight/ $yd.^2$ of bottom fauna within his Crow River study area to be 0.46 grams. This is lower than the 7.25 grams/$yd.^2$ found in the Rum River during the same survey. Both the shifting sand substrate, and the destruction of a suitable invertebrate producing substrate type by siltation, were factors inhibiting good invertebrate production.

Three orders of aquatic insects (Odonata, Ephemeroptera, and Diptera) were noted during the survey. Snails, clams, and crayfish were also noted.

FISHERY CHARACTERISTICS

Species Composition and Length-Frequency Distributions of Catch

During the fisheries survey, 35 species of fishes (17 species of large fishes and 18 species of smaller forage fishes) were captured. Five species (carp, black bullhead, white sucker, northern redhorse, and black crappie) comprised 93.0 percent of the total catch of large fishes. Carp was the dominant species comprising the catch both by number and weight. The four most commonly caught species of small sized forage fish were spotfin shiner, long-nose dace, sand shiner, and brassy minnow. Table 10 summarizes the fish species composition (by numbers and weight), the catch per unit of effort (CPE), the median size range of the major fish species sampled, and the numbers of forage fish species sampled. Table 10a summarizes the length-frequency distributions of the major fish species.

Study Area and Method of Capture

The initial wildlife reconnaissance survey segmented the river into 27 stations (based primarily on easily definable geographic areas such as between bridge crossings). The homogeneity of aquatic habitats within adjacent stations permitted some grouping of these stations. The result was the establishment of 16 sampling stations for the fisheries survey study. Table 11 gives a description of the location and length of the shocking (electro-fishing) runs within each station used for the fisheries survey.

The sampling technique employed for this survey was an electro-fishing apparatus utilizing pulsed DC current with two modes of operation. Due to extremely low summer flows, stations 1 - 3 were sampled with a small boat equipped with a portable gas generator and hand-held electrodes. The remaining 13 stations were sampled with a 16 foot pram equipped with a gas powered 230 volt generator, control panel for output of desired electrical field, and boom mounted anodes.

Results - Distribution and Characteristics of Fish Populations

The individual station electro-fishing data shows substantial difference in species composition, numbers of each species sampled, and catch per effort of each species sampled. Tables 12 - 27 in the appendix show the species composition (by numbers and weight) and the catch per effort for each of the 16 stations. Tables 12a - 27a show the length-frequency distributions of the major fish species sampled within each station.

Carp was the most abundant species in the survey sample comprising 44.6 percent of the sample (excluding small forage fishes) by number, and 79.4 percent by weight. Although the percentages (2.8 - 93.6%) of carp caught varied markedly between stations, the species was caught at all 16 stations. This indicates variability of the habitat and suitability and adaptability of the species to the habitat. Since only one young of the year carp was caught, the river does not appear to afford suitable spawning habitat. Tributary streams, marshes, and lakes are apparently utilized as nursery grounds for carp.

Black bullheads were the second most numerous fish species sampled (25.3% of the total catch). Although 51.7 percent of the total bullhead catch came from the first three stations, the species was caught at all 16 stations. Like the carp, this unrestricted distribution gives some indication of the species omnivorous and opportunistic feeding habits. The river appears to offer little or no suitable black bullhead spawning habitat since this species generally requires heavy to moderate submerged vegetation for spawning.

The two most abundant Catostomid species (white sucker and northern redhorse) comprised 15.3 percent of the total catch. The white sucker was caught at all 16 stations and the northern redhorse was caught at all stations, except numbers 1, 2, and 25. Many of the young of year white sucker were caught at station 2. No young of year northern redhorse were caught during the survey. Nursery grounds for the northern redhorse appear to exist in adjacent tributaries.

Of the two species of crappies sampled, black crappies were sampled in all but three of the 16 stations. Thirty-one of the 96 black crappies were captured in station 3. The remaining sample was quite uniformly distributed over the remaining 12 stations. Reproduction of black crappies appears to be limited to tributary lakes. The white crappie was not sampled until station 15, but was subsequently sampled in 5 of the remaining 7 stations.

Northern pike comprised 1.9 percent (by number) of the total sample, and were collected in 12 of the 16 stations. The distribution of the species within the 12 stations was quite uniform. The catch per effort rates were highest in stations 12 and 17. The river provides little or no suitable spawning habitat for this species, but spawning can occur in tributary streams, marshes, and lakes.

Walleyes were caught in 11 of the 16 sampling stations. The river appears to afford some habitat suitable for adult fish. However, limited light penetration, high flow, turbid waters, and siltation of spawning sites during normal spawning periods probably limit natural recruitment.

Smallmouth bass comprised only 0.5 percent of the total catch. The upper several stations of the river appear to afford suitable habitat for a sparse population of this species. Several small fish were captured in this area, indicating the possibility of natural reproduction occurring here. Five of the remaining six captures were in station 27 near the mouth. Some suitable habitat for channel catfish appears to be present even though none were sampled during the survey. This species preference for deep holes, and the turbidity of the water can make it difficult to sample during electrofishing operations.

Stations 1 and 2 were sampled during periods of extremely low flow and were not considered typical of the remaining study area. A high percentage of several Centrarchids (largemough bass, pumpkinseed, bluegill, and rock bass), and 26 of the 33 perch sampled during the survey, were captured in these 2 stations.

Some of the more common species of minnows sampled throughout the study area were spotfin shiner, longnose dace, sand shiner, brassy minnow and johnny darter.

Species Composition Comparison With Statewide Average

The North Fork Crow River and the Crow River had a diverse fish population, but the population was composed primarily of large rough fish and black bullheads. The overall species composition of the entire river (excluding the small forage fishes) was 60.9 percent Catostomids and carp; 4.8 percent game fish; 7.4 percent sport fish; and 27.0 percent other fish. Peterson (1975) indicates that the average species composition for such large warmwater rivers is: 71 percent Catostomids and carp; 14 percent game fish (smallmouth bass, walleye, northern pike, channel catfish, and white bass); 4 percent sport fish (Centrarchids); nine percent other fish (bullheads, yellow perch, dogfish, and sheepshead); and trace was small fishes. The range in diversity indices for the 16 sampling stations of the North Fork Crow River and the Crow River was 0.64 to 2.57, and the median diversity value was 2.17. The overall diversity index value was 2.51 (for the large fish species). Electro-fishing data summarized by Peterson (1975) indicates that in large warmwater rivers, the diversity index for the fish species composition ranges between 1.8 and 2.6, and has a median value of 2.33 (for the large fish species).

HISTORY OF STREAM AND FISHING CONDITIONS

Effects of Erosion and Pollution

Agricultural land use within the watershed, including the river corridor, has caused some serious soil erosion. Erosion problems, particularly during periods of spring runoff and following heavy rains, result in abnormally heavy silt loads being washed into the river. The resultant increase in turbidity and siltation has decreased biological productivity within the entire river system. Besides imposing a definite detrimental effect upon the biological resources of the river, the aesthetic qualities of the system are also decreased.

Comparison With Past Investigations and Surveys

Moyle (1940) mentioned the waters below the Berning Mill Dam to be shallow, warm, and rather unproductive of bottom fauna. Moyle also reported the Crow River to be the warmest of the Mississippi River tributaries and carp and black bullheads to be common in the mouth and the lower portions of the Crow River respectively.

History of Fishing Conditions

A letter from the area fisheries manager (dated Nov., 1971) reports northern pike fishing and dark house spearing to be good in the North Fork Crow River, some walleye fishing, good carp fishing and spearing, bullhead fishing, and very few sunfish and crappies are caught. Fishing at the junction of the North and South Forks is good, particularly during the fall. From this junction to

the Hanover Dam, fishing is fair for all species. Fishing for crappies and bullheads is good at "The Tube", a backwater area about one mile above the Hanover Dam. Fishing is reported to be good in the Hanover Dam vicinity, and fair between this dam and the Berning Mill Dam where largemouth and smallmouth bass are present. From Berning Mill Dam to the Mississippi River fishing is reported to be good for northern pike, walleye, and smallmouth bass.

Records of Past Management

Table 28 shows the fish stocking and removal records for the Crow River during the past 10 years. There are no records of special regulations or habitat improvements for either the North Fork Crow River or the Crow River.

DISCUSSION OF FISHERY

General

The Crow River fishery is generally characterized by a dominance of rough fish species. Carp, white suckers, and northern redhorse, along with black bullheads, collectively comprised 85.2 percent of the catch by number, and 94.3 percent by weight. The three most abundant game and sport fishes (black crappie, northern pike, and walleye) comprised 6.9 percent of the catch by number. Survey information indicates that recruitment to many of the individual species populations comes from tributary streams, marshes, and lakes.

Existing fishery management problems relate to poor land management practices. These practices have caused increased erosion, turbidity, and siltation. Very low fall and winter flows, large, short-term flow fluctuations are also problems. Control of the high rough fish populations (particularly carp) within the river is a problem related to poor land management. The North Fork Crow River and the Crow River can be classified as a warmwater river which supports a high population and biomass of rough fish species, particularly of carp.

Fishery Recommendations

To improve the sport fishery, improper land management practices should be corrected. Implementation of good land use practices will reduce erosion, turbidity, and siltation. Stabilization of the river substrate will permit colonization of the substrate by aquatic invertebrates and macrophytes. Establishment of good aquatic habitats will be more conducive to the natural maintenance of a sport fishery. Normally, rough fish populations are reduced where good quality habitats for game and sport fish exist.

TERRESTRIAL VEGETATION

Approximately 80 percent of the river floodplain was forested. Species composition of the floodplain woodlands consisted primarily of American elm, green ash, basswood, willow, and box elder along the upper part of the river corridor. Silver maple, willow, and cottonwood become more important components of the floodplain woodlands further downstream. Some areas of willow brush were

located within this floodplain. Upland woodlands adjacent to the river corridor were more prevalent further downstream than along the upper river. Species composition of these woodlands was primarily bur oak, aspen, and sugar maple, with some birch and red cedar.

Bottomland woodlands ranged from being non-existent, to a narrow and often discontinuous wooded margin adjacent to the river, to large woodland stands in some areas. Upland woodlands were generally quite small (less than 40 acres) and were generally associated with wetland areas. Most of the bottomland and upland woodlands were mature.

Pasturing of woodlands was a common practice along the river, and some areas were intensively used for such practices in the upper reaches of the river (up to approximately 50% heavily grazed). Overgrazing in the upper reaches had occurred to the extent that the shrub understory was either poorly developed or had been eliminated. Good shrub development occurred in the light or ungrazed woodlands of the lower river reaches.

The non-forested river floodplain (approximately 20%) was comprised primarily of wetland and pastured grasslands. Adjacent to the floodplain, and within the river corridor, lands were predominantly open and used for agricultural purposes.

A listing of the terrestrial plant species noted during the survey is found in Table 29 of the appendix.

WILDLIFE CHARACTERISTICS

During the initial wildlife reconnaissance survey, the presence of 64 species of birds, 14 species of mammals, and 5 species of amphibians and reptiles was noted. Listings of those species noted during the survey is found in Table 29.

The river itself provided only marginal waterfowl habitat because of the lack of food and cover. A number of wetland areas within the river corridor did provide valuable waterfowl habitat, especially for mallard, blue-winged teal, and wood duck. Types III, IV, and V-A wetlands were scattered throughout the corridor and provided the best available waterfowl habitats. Included here were a number of old oxbows within the river floodplain. Several Type V wetlands were also located within the river corridor. Although not as productive of waterfowl as Types III, IV, and V-A, the Type V wetlands did provide some waterfowl habitat. Type II wetlands were of little value as waterfowl habitat unless connected to more permanent wetland types. Type II wetlands adjacent to station 1 were connected to some Type III and IV wetland areas. Some Type I-seasonally flooded basins or flats, and Type VI shrub swamps were also present.

Five species of small game, upland game, or big game (cottontail rabbit, gray and fox squirrels, white-tailed deer, and pheasant) were found within the river corridor. The river corridor provided only marginal to fair habitat for rabbits and squirrels but good habitat for deer (particularly in the lightly to ungrazed woodlands of the lower river corridor). Winter habitat for deer was available in the heavily vegetated willow swamp areas. Pheasant habitat within the river corridor was marginal.

Five species of furbearers (beaver, muskrat, raccoon, mink, and red fox) were also noted to occur within the river corridor. Little or no utilization of the river corridor by these species was noted in the more intensively used agricultural areas. Beaver utilization of the river was limited primarily to areas where suitable vegetation (mainly willow) for food and den construction was available. Signs of both old and new beaver activity (cuttings, bank dens) were noted along these areas. Muskrat habitat was limited because of the lack of aquatic vegetation within the river channel. The non-riverine areas providing good waterfowl habitat also provided suitable habitats for muskrat and beaver, particularly for muskrat.

The entire area provided some suitable habitat for a wide-variety of non-game wildlife species. There was good habitat for shore and marsh birds, the smaller less observable passerine birds, and the small insectivore and rodent mammals.

The area wildlife manager (1971 letter) indicated the presence of several good to excellent waterfowl-furbearer marshes in the watershed. He also indicated the North Fork Crow River to be good waterfowl, furbearer, and deer country, fair squirrel and rabbit country, and poor to fair upland game (pheasant) country. No special hunting regulations concerning the particular area are known to have been imposed. No records of past wildlife habitat improvements are known to have occurred within the area.

DISCUSSION OF WILDLIFE RESOURCE

The largest problem confronting the wildlife resource concerns the destruction of habitats for agricultural use. The primary losses were occurring as a result of accelerated drainage practices. Despite the fact that the habitat for many wildlife species within the watershed has been reduced from former times, there remains a rather diverse wildlife resource. In a geographic area which is so intensively utilized for agricultural purposes (and becoming more so), this resource is becoming more dependent upon the available habitats afforded by the river and its adjacent corridor.

Wildlife Recommendations

The single, long-term recommendation necessary to at least maintain existing wildlife resource levels requires that the present trend in land abuses be stopped, especially wetlands drainage. Short-term recommendations concerning the wildlife resource include minimizing the effects of grazing, and limiting cattle access to river banks. Several additional recommendations which could be implemented for resource improvement include:

1. Rough fish control in those wetland areas which are accessible by drainage ditches or tributary streams. In some areas, carp were causing destruction of submerged vegetation and habitat deterioration.
2. Excavate or blast potholes in those Type II and III wetlands which are prone to drying out early. This would enhance these wetland areas for a variety of wildlife species.
3. Delay hay mowing by local farmers and weed control practices along county ditches until these areas have been utilized by nesting mallards, blue-winged teal, and pheasants.

4. Place wood duck houses in appropriate places. Although much of the bottomland woodlands were in a mature stage, natural cavity nesting sites appeared to be in short supply.

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APPENDIX

Table 1 - Streams tributary to the Crow River in Meeker, Wright, and Hennepin Counties

Station	Tributary Name	Tributary Number	Location of Mouth (T.R. Sec.)	County	Source of Flow	Flow
1	Unnamed Cr.	M-64-39	121,32,10	Meeker	L.Emma	
2	Unnamed Cr.	M-64-38.5	121,32,14	Meeker	Marsh	Intermitt.
2	Ditch	M-64-38	121,32,14	Meeker	West L.	
2	Unnamed Cr.	M-64-37.7	121,32,24	Meeker	Swamp	Intermitt.
2	Unnamed Cr.	M-64-37.5	121,32,24	Meeker	Swamp	Intermitt.
3	Unnamed Cr.	M-64-37	121,31,19	Meeker	Swamp	Intermitt.
4	Middle Fork Crow River	M-64-36	121,31,32	Meeker	Swamp	Intermitt.
4	Grove Cr.	M-64-35.5	121,31,29	Meeker	Swamp	Intermitt.
4	Stag Brook	M-64-35	121,31,29	Meeker	Swamp	Intermitt.
4	Unnamed Cr.	M-64-34.8	121,31,28	Meeker	Swamp	Intermitt.
4	Unnamed Cr.	M-64-34.6	121,31,28	Meeker	Swamp	Intermitt.
4	Unnamed Cr.	M-64-34.4	121,31,27	Meeker	Swamp	Intermitt.
4	Unnamed Cr.	M-64-34.3	121,31,34	Meeker	Kalken-brenner Swamp	
5	Unnamed Cr.	M-64-34.2	121,31,35	Meeker	Marsh	Intermitt.
5	Unnamed Cr.	M-64-34.1	121,31,35	Meeker	Marsh	Intermitt.
5	Unnamed Cr.	M-64-34	121,31,35	Meeker	Marsh	Intermitt.
6	Unnamed Cr.	M-64-33	120,31,12	Meeker	Marsh	Intermitt.
6	Unnamed Cr.	M-64-32.7	120,31,13	Meeker	Marsh	Intermitt.
6	Co.Ditch #17	M-64-32.5	120,31,13	Meeker	Jewitts Cr.	
7	Unnamed Ditch	M-64-32	120,31,13	Meeker	Marsh	Intermitt.
7	Unnamed Cr.	M-64-31	120,30,17	Meeker	Marsh	Intermitt.
8	Unnamed Cr.	M-64-30	120,30,9	Meeker	Marsh	Intermitt.
8	Unnamed Cr.	M-64-29	120,30,9	Meeker	Marsh	Intermitt.
9	Unnamed Cr.	M-64-28	120,30,11	Meeker	Marsh	Intermitt.
9	Unnamed Cr.	M-64-27	120,30,13	Meeker	Marsh	Intermitt.
9	Unnamed Cr.	M-64-26.5	120,29,20	Meeker	Marsh	Intermitt.
9	Unnamed Cr.	M-64-26	120,29,20	Meeker	Marsh	Intermitt.
9	Unnamed Cr.	M-64-25	120,29,21	Meeker	Marsh	
10	Unnamed Cr.	M-64-24	120,29,23	Meeker	L. Francis	

Table 1 - Streams tributary to the Crow River in Meeker, Wright, and Hennepin Counties (continued)

Station	Tributary Name	Tributary Number	Location of Mouth (T.R. Sec.)	County	Source of Flow	Flow
10	Unnamed Cr.	M-64-23	120,29,26	Meeker	L. Arville	
10	Unnamed Cr.	M-64-22	120,29,25	Meeker	Mud L.	
10	Unnamed Cr.	M-64-21	120,29,36	Meeker	Big Swan L.	
11	Unnamed Cr.	M-64-20.5	120,28,16	Wright	Marsh	Intermitt.
11	French Cr.	M-64-20	120,28,21	Wright	French L.	
12	Unnamed Cr.	M-64-19.7	120,28,26	Wright	Marsh	Intermitt.
12	Unnamed Cr.	M-64-19.5	120,28,25	Wright	Marsh	Intermitt.
12	Unnamed Cr.	M-64-19	120,28,25	Wright	Granite L.	
12	Unnamed Cr.	M-64-18	119,28,3	Wright	Marsh	
16	Unnamed Cr.	M-64-17	119,27,18	Wright	Cokato L.	
16	Unnamed Cr.	M-64-15.17	119,27,7	Wright	Marsh	Intermitt.
16	Unnamed Cr.	M-64-15.5	119,27,17	Wright	Marsh	Intermitt.
17	Unnamed Cr.	M-64-15	119,27,10	Wright	Marsh	Intermitt.
17	Unnamed Cr.	M-64-14	119,27,10	Wright	Marsh	Intermitt.
17	Unnamed Cr.	M-64-13.5	119,27,11	Wright	Marsh	Intermitt.
17	Unnamed Cr.	M-64-13	119,27,11	Wright	Marsh	Intermitt.
18	Unnamed Cr.	M-64-12	119,26,6	Wright	Marsh	Intermitt.
18	Unnamed Cr.	M-64-11.5	119,26,6	Wright	Marsh	Intermitt.
19	Twelvemile Cr.	M-64-11	1119,26,21	Wright	Waverly L.	
20	Unnamed Cr.	M-64-10.7	119,26,22	Wright	Marsh	Intermitt.
20	Unnamed Cr,	M-64-10.5	119,26,14	Wright	Marsh	Intermitt.
21	Unnamed Cr.	M-64-10	119,26,13	Wright	Deer L.	
21	Frederick Cr.	M-64-9	119,26,13	Wright	Mary L.	
22	Unnamed Cr.	M-64-8	119,25,32	Wright	Marsh	Intermitt.
22	Unnamed Cr.	M-64-7.5	119,25,33	Wright	Marsh	Intermitt.
22	Unnamed Cr.	M-64-7	119,25,28	Wright	Marsh	Intermitt.
24	Unnamed Cr.	M-64-6	119,25,27	Wright	Marsh	Intermitt.
24	Unnamed Cr.	M-64-5.5	119,25,24	Wright	Marsh	Intermitt.
25	South Fork Crow River	M-64-5	119,24,30	Wright		
25	Unnamed Cr.	M-64-4.5	119,24,31	Wright	Marsh	Intermitt.
25	Sarah Cr.	M-64-4	119,24,29	Hennepin	Marsh	Intermitt.
25	Unnamed Cr.	M-64-3.8	119,24,20	Wright	Marsh	Intermitt.

Table 1 - Stream tributary to the Crow River in Meeker, Wright, and Hennepin Counties (continued)

Station	Tributary Name	Tributary Number	Location of Mouth (T.R. Sec.)	County	Source of Flow	Flow
25	Unnamed Cr.	M-64-3.7	120,24,16	Hennepin	Marsh	Intermitt.
25	Unnamed Cr.	M-64-3.6	120,24,16	Wright	Marsh	Intermitt.
25	Unnamed Cr.	M-64-3.4	120,24,9	Wright	Marsh	Intermitt.
25	Unnamed Cr.	M-64-3.2	120,24,9	Hennepin	Marsh	Intermitt.
26	Unnamed Cr.	M-64-3.1	120,24,36	Hennepin	Marsh	Intermitt.
26	Unnamed Cr.	M-64-3	120,24,32	Hennepin	Marsh	Intermitt.
26	Unnamed Cr.	M-64-2	120,23,31	Hennepin	Marsh	Intermitt.
26	Unnamed Cr.	M-64-1.7	120,23,30	Hennepin	Marsh	Intermitt.
26	Unnamed Cr.	M-64-1.5	120,23,24	Wright	Marsh	Intermitt.
26	Unnamed Cr.	M-64-1.3	120,24,13	Hennepin	Marsh	Intermitt.
26	Unnamed Cr.	M-64-1	120,24,13	Wright	Marsh	
26	Unnamed Cr.	M-64-.7	120,23,18	Wright	Marsh	
27	Unnamed Cr.	M-64-.5	120,23,17	Hennepin	Pond	
27	Unnamed Cr.	M-64-.3	120,23,12	Hennepin	Marsh	

Table 2 - Flow measurements on several Crow River tributary stream

Name	Tributary Number	Length (Miles)	Miles from Mouth of Crow River	Flow (CFS)	Stage	Date
Middle Fork Crow River	M-64-36	30	0.0	148	Normal	6-14-74
Unnamed Cr.	M-64-17		0.0	14.4	Normal	5-22-74
Unnamed Cr.	M-64-15.7		0.0	0.75	Normal	5-22-74
Unnamed Cr.	M-64-10		0.0	50	High	5-23-74
Unnamed Cr.	M-64-7.5		0.0	5	Normal	5-22-74

Table 3 - Physical Characteristics of the Crow River (May - July, 1974)

Station Number	1	2	3	4-5	6-7
Date	6/13	6/14	6/14	6/15	7/24
Station Location - Upstream end (miles from mouth)	120.0	118.6	115.3	112.4	103.3
Length of Station (miles)	1.4	3.3	2.9	9.1	6.3
Stream Width (ft.) - Median (range)	40(30-75)	35(30-45)	50(30-75)	55(35-100)	55(40-80)
Stream Depth - median (ft.)					
Gradient (ft./mile)	2.7	1.5	3.1	3.2	2.4
Stream Stage	Nor.	Nor.		Nor.	Nor.
Flow (cfs)			157	332	
Riffles and Rapids (%)			30	5	<5
Bank Height (ft.) - median (range)	2(1-12)	6(1-10)	3(1-35)	3(1-30)	3(1-15)
Banks Ditched (%)	0	100	0	0	0
Bank Erosion (lt., mod., hvy.)	lt.	mod.	lt.	lt.-mod.	lt.
Bank Shade (lt., mod., hvy.)	lt.	mod.	mod.	mod.-hvy.	mod.
Percent of Bank Cover Types:					
Wooded	25	55	65	68	50
Marsh	70		2	2	
Cropland		25			
Grassland	5	20	33	30	50 (pasture)

Table 3 - Physical Characteristics of the Crow River (May - July, 1974) (continued)

Station Number	8-9	10-11	12-13	14-16	17-18
Date	7/25	7/26	5/21	5/22	5/22
Station Location - Upstream end (miles from mouth)	97.0	85.1	73.0	66.4	58.4
Length of Station (miles)	11.9	12.1	6.6	8.0	9.2
Stream Width (ft.) - median (range)	65(40-100)	60(40-75	55(40-80)	80(60-100)	80(60-100)
Stream Depth - median (ft.)	3		4	4	4
Gradient (ft./mile)	3.9	2.4	2.7	2.6	1.9
Stream Stage	Nor.	low	low	Nor.	Nor.
Flow (cfs)			450		400
Riffles and Rapids (%)	< 5	< 1			
Bank Height (ft.) - median (range)	9(3-30)	5(2-40)	5(1-50)	4-6(2-80)	4(2-60)
Banks Ditched (%)	0	0	0	0	0
Bank Erosion (lt., mod., hvy.)	mod.	lt.	lt.	lt.	lt.-mod.
Bank Shade (lt., mod., hvy.)	mod.	hvy.	hvy.	hvy.	hvy.
Percent of Bank Cover Types:					
Wooded	65	90	75	75	75
Marsh			20	< 5	
Cropland					
Grassland	35 (pasture)	10 (pasture)	20 (pasture)	20 (pasture)	25

Table 3 - Physical Characteristics of the Crow River (May - July, 1974) (continued)

Station Number	19-20	21-23	24	25	26	27
Date	5/23	5/21,23 6/14	6/5	6/5	6/12	6/12
Station Location - Upstream end (miles from mouth)	49.2	39.3	26.7	24.4	16.2	9.0
Length of Station (miles)	10.9	1.6	2.3	8.2	7.2	9.0
Stream Width (ft.) - median (range)	85(25-110)	85(60-135)	90(75-130)	150(100-200)	180(130-210)	170(100-300)
Stream Depth - median (ft.)						
Gradient (ft./mile)	1.4	0.7	0.9	1.6	1.1	1.9
Stream Stage	Nor.	Variable	high	high	high	high
Flow (cfs)						
Riffles and Rapids (%)			<5			
Bank Height (ft.) - median (range)	3(1-15)	2(1-30)	34(1-20)	3(1-15)	6(1-75)	7(1-50)
Banks Ditched (%)	0	0	0	0	0	0
Bank Erosion (lt., mod., hvy.)	lt.	lt.-mod.	lt.	lt.	lt.	lt.
Bank Shade (lt., mod., hvy.)	hvy.	mod.	lt.	hvy.	hvy.	hvy.
Percent of Bank Cover Types:						
Wooded	75	55	20	80	90	80
Marsh	<5	8	5	<1	1-2	
Cropland		2	30			2
Grassland	20	35	35	15	8	13

Table 4 - Water quality data from the Crow River at Rockford (Station 24) and Dayton (Station 27) prior to 1974

Station number	24	24	24	27	27	27	27
Dates	1956, 1957	1968-1970	1972, 1974	1953-1957	1958-1965	1967-1970	1971-1974
Color (Pt-Co Units)		12	30			27.5	
T. Alkalinity (ppm)	230	225	278	270		250	240
Turbidity (JTU)	16.0		6.5	16.0	15.0	13.5	10.0
T. Phosphorus (ppm)			0.15		0.28	0.26	0.29
NO_2-N (ppm)						0.02*	0.02*
NO_3-N (ppm)					0.05*	0.38	0.80
TKN-N (ppm)						1.82	2.54
NH_3N (ppm)						0.12	0.12
Org-N (ppm)						1.30	1.60
PH	7.9	7.8	7.9	8.2	7.8	8.1	7.9

* The actual value is less than that indicated

Table 5 - Summary of water quality data from station 25 of the Crow River (October, 1973 to September, 1975)

Parameter	Range in Values	Mean Value
Instantaneous Discharge (cfs)	40 - 4,710	711
Air Temp. (^{o}C)	-17.0 - 29.0	9.7
Water Temp. (^{o}C)	0.0 - 26.0	12.6
Color (Pt-Co Units)	5 - 65	27
Total Alkalinity (ppm)	168 - 360	267
Chlorides (ppm)	15 - 73	29
Turbidity (JTU)	2 - 60	14
Total Phosphorus (ppm)	0.03 - 0.35	0.20
Nitrogen (ppm)		
TN	1.1 - 5.4	2.81
NO_2-N	0.00 - 0.06	0.02
NO_3-N	0.00 - 3.70	1.12
TKN-N	0.07 - 2.50	1.40
NH_3-N	0.00 - 0.96	0.30
Org-N	0.14 - 1.80	0.99
BOD (ppm - 5 day)	0.6 - 6.9	3.6
Dissolved Oxygen (ppm)	3.5 - 13.2	8.5
Carbon Dioxide (ppm)	0.7 - 24.0	6.9
pH	7.4 - 8.7	8.1
Total Dissolved Solids (ppm)	301 - 524	421

Table 6 - Water quality data from station 25 of the Crow River (October, 1973 - September, 1975)

Date	10/12	11/8	1/4	1/28	2/25	3/26	4/25	5/28	6/25	7/25
Air Temp. (^{o}C)		-7.0		-3.5		-6.5	12.0	20.0	29.0	26.0
Water Temp. (^{o}C)	14.0	14.0	14.0	14.0	14.0	14.0	10.0	18.0	23.0	25.5
Instantaneous Discharge (cfs)	980	544	362	233	246	809	2070	1100	1140	267
Color (pt-Co Units)	50	30	10	30	40	30	30	30	40	30
T. Alkalinity (ppm)	171	258	296	303	292	285	230	255	241	259
Chlorides (ppm)	16	17	24	29	33	31	19	17	19	44
Turbidity (JTU)	60	8	2	2	2	5	10	30	30	20
T. Phosphorus (ppm)	0.29	0.19	0.15	0.20	0.23	0.20	0.10	0.08	0.15	0.18
TN (ppm)		3.0	3.6	2.8	3.2	4.5	4.3	3.8	4.1	2.1
NO_2-N (ppm)	0.04	0.03	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01
NO_3-N (ppm)	1.4	1.3	2.1	1.3	0.98	2.5	1.8	1.4	1.3	0.13
TKN-N (ppm)		1.3	2.1	1.4	1.3	2.5	2.4	1.6	1.7	0.07
NH_3N (ppm)	0.16	0.15	0.36	0.59	0.25	0.21	0.07	0.06	0.03	0.02
Org-N (ppm)										
BOD (ppm - 5 day)	5.0	2.8	1.4	0.9	1.8	5.6	5.1	4.7	5.7	6.7
Dissolved Oxygen (ppm)	7.2	13.2	8.5	7.2	5.9	8.4	10.6	8.7	7.1	8.9
Carbon Dioxide (ppm)	8.4	4.0	15.0	15.0	18.0	8.8	1.1	2.5	3.7	2.0
pH	7.6	8.1	7.6	7.6	7.5	7.8	8.6	8.3	8.1	8.4
T. Dissolved Solids (ppm)	306	416	484	483	460	507	398	389	383	431

Table 6 - Water quality data from station 25 of the Crow River (October, 1973 - September, 1975) (continued)

Date	8/27	10/9	11/19	12/17	1/14	2/11	3/13	4/16	5/12	6/20
Air Temp. (°C)	20.5	12.5	7.0	-6.0	-15.0	-17.0	-13.0	9.6	16.0	26.5
Water Temp. (°C)	22.0	9.5	2.0	0.0	0.0	0.0	0.0	0.0	17.0	21.5
Instantaneous Discharge (cfs)	95	94	111	70	40	65	81	977	4710	1500
Color (pt-Co Units)	20	20	5	5	10	30	20	20	25	40
T. Alkalinity (ppm)	286	335	318	360	330	315	324	168	177	218
Chlorides (ppm)	73	55	34	53	31	23	31	23	15	19
Turbidity (JTU)	30	10	4	3	3	2	2	10	2	21
T. Phosphorus (ppm)	0.15	0.16	0.35	0.31	0.22	0.16	0.28	0.35	0.03	0.21
TN (ppm)	2.1	1.3	1.2	1.7	1.5	1.9	2.0	5.7	2.8	5.4
NO_2-N (ppm)	0.00	0.00	0.01	0.01	0.02	0.00	0.01	0.06	0.01	0.04
NO_3-N (ppm)	0.13	0.00	0.47	0.76	0.41	0.48	0.54	3.6	0.99	3.7
TKN-N (ppm)	0.12	1.3	0.71	0.91	1.1	1.4	1.4	2.0	1.8	1.6
NH_3N (ppm)		0.16	0.21	0.58	0.96	0.96	0.96	0.65	0.02	0.04
Org-N (ppm)		1.1	0.50	0.33	0.14	0.44	0.44	1.4	1.8	1.6
BOD (ppm - 5 day)	4.8	4.8	0.6		1.1	0.6	1.4	6.9	5.2	3.7
Dissolved Oxygen (ppm)	8.6	9.2	12.7	12.8	4.0	3.5	5.6	11.8	9.8	6.6
Carbon Dioxide (ppm)	1.4	5.2	3.9	8.8	10.0	24.0	13.0	5.2	0.7	3.4
pH	8.6	8.1	8.2	7.9	7.8	7.4	7.7	7.8	8.7	8.1
T. Dissolved Solids (ppm)	481	503	461	524	449	421	462	301	332	404

Table 6 - Water quality data from station 25 of the Crow River (October, 1973 - September, 1975) (Continued)

Date	7/23	8/19	9/26	
Air Temp. (°C)	28.0	19.0	14.5	
Water Temp. (°C)	26.0	19.0	12.0	
Instantaneous Discharge (cfs)	566	141	143	
Color (pt-Co Units)	30	65	6	
T. Alkalinity (ppm)	211	261	253	
Chlorides (ppm)	18	21	22	
Turbidity (JTU)	31	23	7	
T. Phosphorus (ppm)	0.25	0.13	0.14	
TN (ppm)	2.4	1.4	1.1	
NO_2-N (ppm)	0.03	0.01	0.01	
NO_3-N (ppm)	0.46	0.00	0.07	
TKN-N (ppm)	1.8	1.4	0.99	
NH_3N (ppm)	0.07	0.00	0.00	
Org-N (ppm)	1.7	1.4	0.99	
BOD (ppm - 5 day)	2.0	5.6	2.6	
Dissolved Oxygen (ppm)	6.0	8.1	10.5	
Carbon Dioxide (ppm)	1.6	1.6	2.0	
pH	8.4	8.5	8.4	
T. Dissolved Solids (ppm)	339	397	360	

Table 7 - Mean monthly flows (c.f.s.) from the Crow River near Rockford (October, 1973 - September, 1975)

Month	Monthly Flows (CFS) 1973-74	1974-75
Oct.	1,166	72.2
Nov.	797	88.5
Dec.	670	66.8
Jan.	292	55.3
Feb.	236	64.7
March	938	110
April	2,161	2,001
May	1,277	4,564
June	1,688	1,878
July	284	1,474
Aug.	138	193
Sept.	65.8	181

Mean flow - 49 years (1909-17, 1930-31, 1934-74) = 629 CFS
1973 calendar year mean monthly flow = 931 CFS
1974 calendar year mean monthly flow = 608 CFS

Table 8 - Water temperature data from the Crow River (May - August, 1974)

Station	Date	Water Temp.(°F)	Air Temp.(°F)	Water Stage	Time	Cloud Cover
1	6-13-74	68		Normal		
1	8-23-74	69	66	Low	1000	10%
2	8-22-74	64	68	Low	1400	70%
3	8-2-74	74	75	Low	1500	5%
6	7-24-74	73	77	Normal	1300	90%
12	5-21-74	65	70	Low		
12	7-30-74	77	84	Low	1400	Clear
15	7-31-74	69	74	Low	1030	20%
22	8-2-74	72	66	Low	1100	100%
23	6-4-74	70	80	High		
24	8-7-74	75	77	Low	1230	40%
25	7-2-74	74	81	Near Normal	1230	Clear
27	8-8-74	73	76	Low	1000	10%

Table 10 - A summary of the species composition, CPE, median size, and length-frequency distributions of fishes sampled in 16 stations of the Crow River during 1974 (9.9 miles shocked, 12.58 hours fished)

Species		No.	% of catch	wt.	% by wt.	CPE in fish/hr	Median size in inches
Cyprinus carpio	Carp	1131	44.6	2489.9	79.4	89.9	15.0 - 15.9
Ictalurus melas	Black bullhead	642	25.3	65.1	2.1	51.0	5.0 - 5.4
Catostomus commersoni	White sucker	200	7.9	107.2	3.4	15.9	9.5 - 9.9
Moxostoma macrolepidotum	Northern redhorse	187	7.4	261.9	8.4	14.9	16.0 - 16.9
Pomoxis nigromaculata	Black crappie	96	3.8	25.5	0.8	7.6	7.5 - 7.9
Esox lucius	Northern pike	49	1.9	69.6	2.2	3.9	17.0 - 17.9
Perca flavescens	Yellow perch	33	1.3	2.4	0.1	2.6	3.5 - 3.9
Stizostedion vitreum	Walleye	30	1.2	31.9	1.0	2.4	14.0 - 14.9
Micropterus salmoides	Largemouth bass	30	1.2	1.7	0.1	2.4	< 2.9
Lepomis gibbosus	Pumpkinseed	28	1.1	2.0	0.1	2.2	3.0 - 3.4
Moxostoma anisurum	Silver redhorse	25	1.0	61.0	2.0	2.0	16.0 - 16.9
Lepomis macrochirus	Bluegill	20	0.8	1.6	0.1	1.6	3.0 - 3.4
Amblopites rupestris	Rock bass	17	0.7	0.9	-	1.4	3.0 - 3.4
Micropterus dolomieui	Smallmouth bass	13	0.5	5.8	0.2	1.0	6.5 - 6.9
Pomoxis annularis	White crappie	13	0.5	2.5	0.1	1.0	6.0 - 6.4
Lepomis cyanellus	Green sunfish	13	0.5	0.9	-	1.0	3.0 - 3.4
Ictalurus natalis	Yellow bullhead	11	0.4	4.5	0.1	0.9	7.0 - 7.4
	Subtotals	2538	68.6	3134.4		201.7	
Hybopsis biguttata	Hornyhead chub	57	4.9			4.5	
Semotilus atromaculatus	Creek chub	4	0.3			0.3	
Notropis dorsalis	Bigmouth shiner	1	0.1			0.1	
Notropis hudsonius	Spottail shiner	70	6.0			5.6	
Notropis spilopterus	Spotfin shiner	282	24.3			22.4	
Notropis cornutus	Common shiner	76	6.5			6.0	
Notropis stramineus	Sand shiner	132	11.4			10.5	
Rhinichthys atratulus	Blacknose dace	13	1.1			1.0	
Rhinichthys cataractee	Longnose dace	197	16.9			15.7	
Hybognathus hankinsoni	Brassy minnow	106	9.1			8.4	
Pimephales notatus	Bluntnose minnow	68	5.8			5.4	
Pimephales promelas	Fathead minnow	16	1.4			1.3	
Noturus gyrinus	Tadpole madtom	22	1.9			1.7	
Umbra limi	Central mudminnow	1	0.1			0.1	
Percina caprodes	Logperch	20	1.7			1.6	
Perconpis omiscomaycus	Troutperch	7	0.6			0.6	
Etheostoma exile	Iowa darter	2	0.2			0.2	
Etheostoma nigrum	Johnny darter	88	7.6			7.0	
	Subtotals	1162	31.4			92.4	
	TOTALS	3700	100.0			294.1	

Table 10a- A summary of the length-frequency distributions of major fish species shocked from 16 stations of the Crow River during 1974

Species and Numbers of Fish in Length Groups

Total Length in Inches	White sucker	Silver red-horse	Northern red-horse	Carp	Black bull-head	Yellow bull-head	Northern pike	Yellow perch	Walleye
< 2.9	21			1	5			4	
3.0 - 3.4	11				10			7	
3.5 - 3.9					44			12	
4.0 - 4.4	3		1		99			7	
4.5 - 4.9	7		2		97			2	
5.0 - 5.4	6		3		130	1	1		
5.5 - 5.9	9		8		86	3	3	1	
6.0 - 6.4	6		15		37		3		
6.5 - 6.9	8	1	9		29		1		
7.0 - 7.4	8		1		22	2	2		1
7.5 - 7.9	5				27				
8.0 - 8.4	5				31	3			1
8.5 - 8.9	6				19				2
9.0 - 9.4	4		1	1	3				5
9.5 - 9.9	3		6	1	2				
10.0 - 10.4	6		6	7		1			
10.5 - 10.9	1		2	6		1			1
11.0 - 11.4	4			13					1
11.5 - 11.9	2		1	18					
12.0 - 12.9	19	2	6	55	1		1		
13.0 - 13.9	36		1	121			1		3
14.0 - 14.9	17	2	7	219			6		9
15.0 - 15.9	12	5	17	181			1		2
16.0 - 16.9	1	3	23	139			4		
17.0 - 17.9		1	30	83			6		1
18.0 - 18.9		1	32	85			3		1
19.0 - 19.9		1	8	55			4		1
20.0 - 20.9		2	5	49			4		2
21.0 - 21.9		6	3	37			1		
22.0 - 22.9		1		17			1		
23.0 - 23.9				18			1		
24.0 - 24.9				11			2		
25.0 - 25.9				7			1		
26.0 - 26.9				3			1		
27.0 - 27.9				1			1		
28.0 - 28.9				2					
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9							1		
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	200	25	187	1131	642	11	49	33	30

Table 10a - A summary of the length-frequency distributions of major fish species shocked from 16 stations of the Crow River during 1974 (Cont'd)

Species and Numbers of Fish in Length Groups

Total Length in Inches	Small-mouth bass	Large-mouth bass	Green sunfish	Pumpkin-seed	Blue-gill	Rock bass	White crappie	Black crappie	
< 2.9		28	6	6	3	7			
3.0 - 3.4		1	5	15	11	3			
3.5 - 3.9			1	4	3	3			
4.0 - 4.4				1	2	2		1	
4.5 - 4.9	1		1	1	1	1			
5.0 - 5.4				1		1			
5.5 - 5.9	2	1					1		
6.0 - 6.4	3						6	1	
6.5 - 6.9	1							1	
7.0 - 7.4								20	
7.5 - 7.9	1						3	31	
8.0 - 8.4	1							33	
8.5 - 8.9							1	6	
9.0 - 9.4							1	3	
9.5 - 9.9							1		
10.0 - 10.4									
10.5 - 10.9									
11.0 - 11.4	2								
11.5 - 11.9	1								
12.0 - 12.9	1								
13.0 - 13.9									
14.0 - 14.9									
15.0 - 15.9									
16.0 - 16.9									
17.0 - 17.9									
18.0 - 18.9									
19.0 - 19.9									
20.0 - 20.9									
21.0 - 21.9									
22.0 - 22.9									
23.0 - 23.9									
24.0 - 24.9									
25.0 - 25.9									
26.0 - 26.9									
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	13	30	13	28	20	17	13	96	

Table 11 - Shocking run locations used for the 1974 Crow River survey

Station Number	Shocking Run	Location (T.,R., Sec.) and Length (River Miles)
1	1	T. 121, R. 32, Sec. 3 and 10, located 0.1 miles below the Lake Koronis Dam - 0.2 miles.
2	2a&b	T. 121, R. 32, Sec. 14 - 0.2 miles.
3	3	T. 121, R. 31, Sec. 20, located near Manannah - 0.2 miles.
5	5	T. 121, R. 3 , Sec. 35 - 1.0 miles.
6	6	T. 120, R. 31, Sec. 13 - approx. 1.1 miles.
8	8	T. 120, R. 30, Sec. 17 - 8, located near Forest City - approximately 0.5 miles.
10	10	T. 120, R. 29, Sec. 26 - 0.5 miles.
12	12	T. 120, R. 28, Sec. 25 - 0.6 miles.
15	15	T. 119, R. 28, Sec. 11 - 0.6 miles.
17	17	T. 119, R. 26, Sec. 11 - 12 - 0.6 miles.
20	20	T. 119, R. 24, Sec. 13 - 14 - 0.5 miles.
22	22	T. 119, R. 25, Sec. 27 - 28 - 0.4 miles.
24	24	T. 119, R. 25, Sec. 24 - 25 - 0.5 miles.
25	25	T. 119, R. 24, Sec. 29, 30 - 31, near Rockford- 1.2 miles.
26	26	T. 120, R. 24, Sec. 13, 18 - 24 - 1.3 miles.
27	27	T. 120, R. 23, Sec. 17, 18 - 0.5 miles.

Table 12 - The species compostion and CPE of fishes sampled from station #1 of the Crow River (0.2 miles Shocked, 1.33 hours fished)

Species		No.	% of catch	wt.	% by wt.	CPE in fish/hr
Cyprincus carpio	Carp	38	15.0	62.0	71.6	28.6
Ictalurus melas	Black bullhead	127	50.2	12.8	14.8	95.5
Catostomus commersoni	White sucker	3	1.2	0.8	0.9	2.3
Esox lucius	Northern pike	5	2.0	3.2	3.7	3.8
Perca flavescens	Yellow perch	15	5.9	1.1	1.3	11.3
Micropterus salmoides	Largemouth bass	9	3.6	0.5	0.6	6.8
Lepomis gibbosus	Pumpkinseed	21	8.3	1.3	1.5	15.8
Lepomis macrochirus	Bluegill	7	2.8	0.5	0.6	5.3
Amblopites rupestris	Rock bass	17	6.7	0.9	1.0	12.8
Lepomis cyanellus	Green sunfish	6	2.4	0.5	0.6	4.5
Ictalurus natalis	Yellow bullhead	5	2.0	3.0	3.5	3.8
	Subtotals	253	73.1	86.6		190.2
Hybopsis biguttata	Hornyhead chub	1	1.1			0.7
Notropis hudsonius	Spottail shiner	1	1.1			0.7
Notropis spilopterus	Spotfin shiner	5	5.4			3.8
Notropis cornutus	Common shiner	48	51.6			36.1
Rhinichthys atratulus	Blacknose dace	3	3.2			2.3
Pimephales notatus	Bluntnose minnow	2	2.1			1.5
Noturus gyrinus	Tadpole madtom	17	18.3			12.8
Percina caprodes	Logperch	9	9.7			6.7
Etheostoma exile	Iowa darter	2	2.1			1.5
Etheostoma nigrum	Johnny darter	5	5.4			3.8
	Subtotals	93	26.9			69.9
	TOTALS	346	100.0			260.1

Table 12a - The length frequency distributions of fishes sampled from station #1 of the Crow River

Total Length in Inches	White sucker	Carp	Black bull-head	Yellow bull-head	Northern pike	Yellow perch	Large-mouth bass	Green sunfish	Pumpkin-seed
< 2.9		1	1			2	8	4	6
3.0 - 3.4	1		1			4		1	9
3.5 - 3.9			12			8			6
4.0 - 4.4			28					1	
4.5 - 4.9			14						
5.0 - 5.4			30		1				
5.5 - 5.9			12	1	2	1	1		
6.0 - 6.4	1		3						
6.5 - 6.9			3						
7.0 - 7.4			2	1					
7.5 - 7.9			5						
8.0 - 8.4			7	1					
8.5 - 8.9			8						
9.0 - 9.4		1							
9.5 - 9.9			1						
10.0 - 10.4	1	2		1					
10.5 - 10.9				1					
11.0 - 11.4		5							
11.5 - 11.9									
12.0 - 12.9		2							
13.0 - 13.9		6							
14.0 - 14.9		5							
15.0 - 15.9		3							
16.0 - 16.9		1							
17.0 - 17.9									
18.0 - 18.9		2			1				
19.0 - 19.9									
20.0 - 20.9					1				
21.0 - 21.9		1							
22.0 - 22.9									
23.0 - 23.9		2							
24.0 - 24.9		1							
25.0 - 25.9		1							
26.0 - 26.9									
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	3	38	127	5	5	15	9	6	21

Table 12a - The length frequency distributions of fishes sampled from station #1 of the Crow River (cont'd)

Total Length in Inches	Blue-gill	Rock bass							
< 2.9	2	7							
3.0 - 3.4	3	3							
3.5 - 3.9	2	3							
4.0 - 4.4		2							
4.5 - 4.9		1							
5.0 - 5.4		1							
5.5 - 5.9									
6.0 - 6.4									
6.5 - 6.9									
7.0 - 7.4									
7.5 - 7.9									
8.0 - 8.4									
8.5 - 8.9									
9.0 - 9.4									
9.5 - 9.9									
10.0 - 10.4									
10.5 - 10.9									
11.0 - 11.4									
11.5 - 11.9									
12.0 - 12.9									
13.0 - 13.9									
14.0 - 14.9									
15.0 - 15.9									
16.0 - 16.9									
17.0 - 17.9									
18.0 - 18.9									
19.0 - 19.9									
20.0 - 20.9									
21.0 - 21.9									
22.0 - 22.9									
23.0 - 23.9									
24.0 - 24.9									
25.0 - 25.9									
26.0 - 26.9									
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	7	17							

Table 13 - The species composition and CPE of fishes sampled from station #2 of the Crow River (0.2 miles shocked, 0.83 hours fished).

Species		No.	% of catch	wt.	% by wt.	CPE in fish/hr
Cyprinus carpio	Carp	6	2.8	13.0	49.4	7.2
Ictalurus melas	Black bullhead	137	63.7	9.0	34.2	165.1
Catostomus commersoni	White sucker	32	14.9	1.2	4.6	38.6
Perca flavescens	Yellow perch	11	5.1	0.9	0.8	13.3
Micropterus salmoides	Largemouth bass	21	9.8	1.2	4.6	25.3
Lepomis gibbosus	Pumpkinseed	4	1.8	0.4	1.5	4.8
Micropterus dolomieui	Smallmouth bass	2	0.9	0.4	1.5	2.4
Ictalurus natalis	Yellow bullhead	2	0.9	0.2	0.8	2.4
	Subtotals	215	43.5	26.3		259.1
Notropis spilopterus	Spotfin shiner	61	21.9			73.5
Notropis cornutus	Common shiner	20	7.2			24.1
Notropis stramineus	Sand shiner	33	11.8			39.8
Hybognathus hankinsoni	Brassy minnow	92	33.0			110.8
Pimephales notatus	Bluntnose minnow	28	10.0			33.7
Pimephales promelas	Fathead minnow	3	1.1			3.6
Noturus gyrinus	Tadpole madtom	5	1.8			6.0
Etheostoma nigrum	Johnny darter	37	13.3			44.6
	Subtotals	279	56.5			336.1
	TOTALS	494	100.0			595.2

Table 13a - The length frequency distributions of fishes sampled from station #2 of the Crow River

Total Length in Inches	White sucker	Carp	Black bull-head	Yellow bull-head	Yellow perch	Large-mouth bass	Small-mouth bass	Pumpkin-seed	
< 2.9	14		3		1	20			
3.0 - 3.4	9		2		1	1		4	
3.5 - 3.9			17		3				
4.0 - 4.4	1		44		5				
4.5 - 4.9	1		38		1				
5.0 - 5.4	2		20	1					
5.5 - 5.9	3		7	1			1		
6.0 - 6.4	1		3				1		
6.5 - 6.9	1		2						
7.0 - 7.4									
7.5 - 7.9									
8.0 - 8.4									
8.5 - 8.9									
9.0 - 9.4									
9.5 - 9.9									
10.0 - 10.4									
10.5 - 10.9									
11.0 - 11.4									
11.5 - 11.9									
12.0 - 12.9			1						
13.0 - 13.9		1							
14.0 - 14.9									
15.0 - 15.9		1							
16.0 - 16.9		2							
17.0 - 17.9		1							
18.0 - 18.9		1							
19.0 - 19.9									
20.0 - 20.9									
21.0 - 21.9									
22.0 - 22.9									
23.0 - 23.9									
24.0 - 24.9									
25.0 - 25.9									
26.0 - 26.9									
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	32	6	137	2	11	21	2	4	

Table 14 - The species composition and CPE of fishes sampled from station #3 of the Crow River (0.2 miles shocked, 1.67 hours fished)

Species		No.	% of catch	wt.	% by wt.	CPE in fish/hr
Cyprinus carpio	Carp	8	5.8	17.9	41.1	4.8
Ictalurus melas	Black bullhead	68	49.6	7.8	17.9	40.7
Catostomus commersoni	White sucker	10	7.3	2.1	4.8	6.0
Moxostoma macrolepidotum	Northern redhorse	2	1.5	1.3	3.0	1.2
Pomoxis nigromaculatus	Black crappie	31	22.6	10.1	23.2	18.6
Esox lucius	Northern pike	2	1.5	3.0	6.9	1.2
Perca flavescens	Yellow perch	6	4.4	0.3	0.7	3.6
Micropterus dolomieui	Smallmouth bass	3	2.2	0.6	1.4	1.8
Lepomis cyanellus	Green sunfish	6	4.4	0.3	0.7	3.6
Ictalurus natalis	Yellow bullhead	1	0.8	0.2	0.5	0.6
	Subtotals	137	26.4	43.6		82.1
Hybopsis biguttata	Hornyhead chub	56	14.7			33.5
Semotilus atromaculatus	Creek chub	1	0.3			0.6
Notropis spilopterus	Spotfin shiner	52	13.6			31.1
Notropis cornutus	Common shiner	8	2.1			4.8
Notropis stramineus	Sand shiner	4	1.0			2.4
Rhinichthys atratulus	Blacknose dace	9	2.4			5.4
Rhinichthys cataractae	Longnose dace	168	44.0			100.6
Hybognathus hankinsoni	Brassy minnow	10	2.6			6.0
Pimephales notatus	Bluntnose minnow	23	6.0			13.8
Pimephales promelas	Fathead minnow	9	2.4			5.4
Umbra limi	Central mudminnow	1	0.3			0.6
Percina caprodes	Logperch	8	2.1			4.8
Etheostoma nigrum	Johnny darter	33	8.6			19.8
	Subtotals	382	73.6			228.7
	TOTALS	519	100.0			310.8

Table 14a - The length frequency distributions of fishes sampled from station #3 of the Crow River

Total Length in Inches	White sucker	Northern red-horse	Carp	Black bull-head	Yellow bull-head	Northern pike	Yellow perch	Small-mouth bass	Green sun-fish
< 2.9	4						1		1
3.0 - 3.4	1						1		4
3.5 - 3.9				3			1		1
4.0 - 4.4				5			2		
4.5 - 4.9	1			12			1		
5.0 - 5.4				18					
5.5 - 5.9				16	1				
6.0 - 6.4		1		3					
6.5 - 6.9				1				1	
7.0 - 7.4	1			2					
7.5 - 7.9				5				1	
8.0 - 8.4	1			1				1	
8.5 - 8.9	1			2					
9.0 - 9.4									
9.5 - 9.9									
10.0 - 10.4									
10.5 - 10.9									
11.0 - 11.4	1		1						
11.5 - 11.9			2						
12.0 - 12.9									
13.0 - 13.9									
14.0 - 14.9			1						
15.0 - 15.9			1						
16.0 - 16.9		1				1			
17.0 - 17.9			1						
18.0 - 18.9									
19.0 - 19.9			1			1			
20.0 - 20.9									
21.0 - 21.9									
22.0 - 22.9									
23.0 - 23.9			1						
24.0 - 24.9									
25.0 - 25.9									
26.0 - 26.9									
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	10	2	8	68	1	2	6	3	6

Table 14a - The length frequency distributions of fishes sampled from station #3 of the Crow River (cont'd)

Total Length in Inches	Black crappie								
< 2.9									
3.0 - 3.4									
3.5 - 3.9									
4.0 - 4.4	1								
4.5 - 4.9									
5.0 - 5.4									
5.5 - 5.9									
6.0 - 6.4									
6.5 - 6.9									
7.0 - 7.4	7								
7.5 - 7.9	13								
8.0 - 8.4	10								
8.5 - 8.9									
9.0 - 9.4									
9.5 - 9.9									
10.0 - 10.4									
10.5 - 10.9									
11.0 - 11.4									
11.5 - 11.9									
12.0 - 12.9									
13.0 - 13.9									
14.0 - 14.9									
15.0 - 15.9									
16.0 - 16.9									
17.0 - 17.9									
18.0 - 18.9									
19.0 - 19.9									
20.0 - 20.9									
21.0 - 21.9									
22.0 - 22.9									
23.0 - 23.9									
24.0 - 24.9									
25.0 - 25.9									
26.0 - 26.9									
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	31								

Table 15 - The species composition and CPE of fishes sampled from station #5 of the Crow River (1.0 miles shocked, 1.33 hours fished)

Species		No.	% of catch	wt.	% by wt.	CPE in fish/hr
Cyprinus carpio	Carp	146	59.6	348.8	80.7	109.8
Ictalurus melas	Black bullhead	24	9.8	3.1	0.7	18.1
Catostomus commersoni	White sucker	33	13.5	11.7	2.7	24.8
Moxostoma macrolepidotum	Northern redhorse	30	12.2	44.0	10.2	22.6
Pomoxis nigromaculatus	Black crappie	4	1.6	1.3	0.3	3.0
Esox lucius	Northern pike	7	2.9	23.1	5.3	5.3
Micropterus dolomieui	Smallmouth bass	1	0.4	0.1		0.8
	Subtotals	245	99.2	432.1		184.2
Percina caprodes	Logperch	2	100.0			1.5
	Subtotals	2	0.8			1.5
	TOTALS	247	100.0			185.7

Table 15a - The length frequency distributions of fishes sampled from station #5 of the Crow River

Total Length in Inches	White sucker	Northern red-horse	Carp	Black bull-head	Northern pike	Small-mouth bass	Black crappie		
3.0 - 3.4									
3.5 - 3.9									
4.0 - 4.4	2			1					
4.5 - 4.9	2			1					
5.0 - 5.4				7					
5.5 - 5.9	1			7					
6.0 - 6.4				1		1			
6.5 - 6.9	1			1					
7.0 - 7.4	5			1					
7.5 - 7.9	4						1		
8.0 - 8.4	2			4			2		
8.5 - 8.9	3						1		
9.0 - 9.4	2								
9.5 - 9.9	2			1					
10.0 - 10.4	3								
10.5 - 10.9			1						
11.0 - 11.4									
11.5 - 11.9		1	1						
12.0 - 12.9	2		5						
13.0 - 13.9	2	1	11						
14.0 - 14.9	1	3	16						
15.0 - 15.9	1	7	27						
16.0 - 16.9		3	18						
17.0 - 17.9		8	11		1				
18.0 - 18.9		5	19						
19.0 - 19.9		2	8						
20.0 - 20.9			8		1				
21.0 - 21.9			6		1				
22.0 - 22.9			6		1				
23.0 - 23.9			4		1				
24.0 - 24.9			1		1				
25.0 - 25.9			2						
26.0 - 26.9			1						
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9			1						
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9					1				
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	33	30	146	24	7	1	4		

Table 16 - The species composition and CPE of fishes sampled from station #6 of the Crow River (1.1 miles shocked, 0.75 hours fished)

Species		No.	% of catch	wt.	% by wt.	CPE in fish/hr
Cyprinus carpio	Carp	129	70.9	316.1	90.2	172.0
Ictalurus melas	Black bullhead	19	10.4	1.8	0.5	25.3
Catostomus commersoni	White sucker	9	4.9	8.2	2.3	12.0
Moxoxtoma macrolepidotum	Northern redhorse	12	6.6	16.3	4.7	16.0
Pomoxis nigromaculata	Black crappie	6	4.7	1.4	0.3	8.0
Perca flavescens	Yellow perch	1	0.5	0.1	-	1.3
Stizostedion vitreum	Walleye	4	2.2	6.3	1.8	5.3
Lepomis macrochirus	Bluegill	1	0.5	0.1	-	1.3
Micropterus dolomieui	Smallmouth bass	1	0.5	0.1	-	1.3
	TOTALS	182	100.0	350.4		225.9

Table 16a - The length frequency distributions of fishes sampled from station #6 of the Crow River

Total Length in Inches	White sucker	Northern red-horse	Carp	Black bull-head	Yellow perch	Walleye	Small-mouth bass	Blue-gill	Black crappie
3.0 - 3.4					1			1	
3.5 - 3.9									
4.0 - 4.4		1		1					
4.5 - 4.9				4					
5.0 - 5.4		1		7					
5.5 - 5.9		1		2			1		
6.0 - 6.4				2					
6.5 - 6.9									
7.0 - 7.4				1					
7.5 - 7.9				2					1
8.0 - 8.4									4
8.5 - 8.9									
9.0 - 9.4									1
9.5 - 9.9	1								
10.0 - 10.4									
10.5 - 10.9	1								
11.0 - 11.4	1								
11.5 - 11.9									
12.0 - 12.9	2	1	2						
13.0 - 13.9	2		4			1			
14.0 - 14.9			29						
15.0 - 15.9	2		24			1			
16.0 - 16.9		2	22						
17.0 - 17.9		3	11			1			
18.0 - 18.9		2	5						
19.0 - 19.9			4			1			
20.0 - 20.9		1	6						
21.0 - 21.9			8						
22.0 - 22.9			2						
23.0 - 23.9			6						
24.0 - 24.9			3						
25.0 - 25.9			1						
26.0 - 26.9									
27.0 - 27.9			1						
28.0 - 28.9									
29.0 - 29.9			1						
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	9	12	129	19	1	4	1	1	6

Table 17 - The species composition and CPE of fishes sampled from station #8 of the Crow River (0.5 miles shocked, 0 66 hours fished)

Species		No.	% of catch	wt.	% by wt.	CPE in fish/hr
Cyprinus carpio	Carp	72	48.3	141.6	83.0	109.1
Ictalurus melas	Black bullhead	43	28.9	2.7	1.6	65.2
Catostomus commersoni	White sucker	12	8.1	10.9	6.4	18.2
Moxostoma macrolepidotum	Northern redhorse	8	5.2	7.4	4.3	12.1
Pomoxis nigromaculata	Black crappie	7	4.7	2.1	1.2	10.6
Esox lucius	Northern pike	3	2.0	2.4	1.4	4.6
Stizostedion vitreum	Walleye	4	2.7	3.5	2.1	6.1
	TOTALS	149	100.0	170.6		242.5

Table 17a - The length frequency distributions of fishes sampled from station #8 of the Crow River

Total Length in Inches	White sucker	Northern red-horse	Carp	Black bull-head	Northern pike	Walleye	Black crappie		
3.0 - 3.4									
3.5 - 3.9									
4.0 - 4.4				2					
4.5 - 4.9				13					
5.0 - 5.4		1		15					
5.5 - 5.9		2		10					
6.0 - 6.4				1					
6.5 - 6.9									
7.0 - 7.4							1		
7.5 - 7.9	1						4		
8.0 - 8.4	1			2			2		
8.5 - 8.9						1			
9.0 - 9.4									
9.5 - 9.9									
10.0 - 10.4									
10.5 - 10.9									
11.0 - 11.4	1								
11.5 - 11.9			1						
12.0 - 12.9	1	1	3						
13.0 - 13.9	3		8		1				
14.0 - 14.9	3		13		1	3			
15.0 - 15.9	1	1	18						
16.0 - 16.9	1	1	7						
17.0 - 17.9		1	6		1				
18.0 - 18.9		1	5						
19.0 - 19.9			5						
20.0 - 20.9			2						
21.0 - 21.9			3						
22.0 - 22.9			1						
23.0 - 23.9									
24.0 - 24.9									
25.0 - 25.9									
26.0 - 26.9									
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	12	8	72	43	3	4	7		

Table 18 - The species composition and CPE of fishes sampled from station #10 of the Crow River (0.5 miles shocked, 0.50 hours fished)

Species		No.	% of catch	wt.	% by wt.	CPE in fish/hr
Cyprinus carpio	Carp	34	35.4	95.0	80.6	68.0
Ictalurus melas	Black bullhead	28	29.2	2.5	2.1	56.0
Catostomus commersoni	White sucker	11	11.5	5.6	4.8	22.0
Moxostoma macrolepidom	Northern redhorse	12	12.5	6.9	5.9	24.0
Pomoxis nigromaculata	Black crappie	7	7.3	1.3	1.1	14.0
Esox lucius	Northern pike	2	2.1	2.5	2.1	4.0
Stizostedion vitreum	Walleye	2	2.1	4.0	3.4	4.0
	Subtotals	96	88.9	117.8		192.0
Notropis spilopterus	Spotfin shiner	6	50.0			12.0
Notropis stramineus	Sand shiner	3	25.0			6.0
Rhinichthys atratulus	Blacknose dace	1	8.3			2.0
Rhinichthys cataratae	Longnose dace	2	16.7			4.0
	Subtotals	12	11.1			24.0
	TOTALS	108	100.0			216.0

Table 18a - The length frequency distributions of fishes sampled from station #10 of the Crow River

Total Length in Inches	White sucker	Northern red-horse	Carp	Black bull-head	Northern pike	Walleye	Black crappie		
3.0 - 3.4									
3.5 - 3.9									
4.0 - 4.4									
4.5 - 4.9	1			3					
5.0 - 5.4	1			9					
5.5 - 5.9	2	3		6					
6.0 - 6.4		3		2					
6.5 - 6.9	1	1		3					
7.0 - 7.4				1			4		
7.5 - 7.9				2					
8.0 - 8.4				1			3		
8.5 - 8.9				1					
9.0 - 9.4									
9.5 - 9.9		1							
10.0 - 10.4									
10.5 - 10.9									
11.0 - 11.4	1								
11.5 - 11.9									
12.0 - 12.9		1							
13.0 - 13.9	5		6			1			
14.0 - 14.9			3						
15.0 - 15.9		1	4						
16.0 - 16.9		1	7		1				
17.0 - 17.9			5						
18.0 - 18.9		1	2		1				
19.0 - 19.9			4			1			
20.0 - 20.9									
21.0 - 21.9			1						
22.0 - 22.9									
23.0 - 23.9			2						
24.0 - 24.9									
25.0 - 25.9									
26.0 - 26.9									
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	11	12	34	28	2	2	7		

Table 19 - The species composition and CPE of fishes sampled from station #12 of the Crow River (0.6 miles shocked, 0.75 hours fished)

Species		No.	% of catch	wt.	% by wt.	CPE in fish/hr
Cyprinus carpio	Carp	74	38.7	195.9	70.5	98.7
Ictalurus melas	Black bullhead	42	22.0	3.6	1.3	56.0
Catostomus commersoni	White sucker	18	9.4	11.9	4.3	24.0
Moxostoma macrolepidotum	Northern redhorse	38	19.9	52.5	18.9	50.7
Pomoxis nigromaculata	Black crappie	5	2.6	1.4	0.5	6.7
Esox lucius	Northern pike	8	4.2	9.3	3.3	10.7
Stizostedion vitreum	Walleye	3	1.6	2.4	0.9	4.0
Lepomis gibbosus	Pumpkinseed	1	0.5	0.1	--	1.3
Ictalurus natalis	Yellow bullhead	2	1.0	0.8	0.3	2.7
	Subtotals	191	71.8	277.9		254.7
Semotilus atromaculatus	Creek chub	1	1.3			1.3
Notropis hudsonius	Spottail shiner	4	5.3			5.3
Notropis spilopterus	Spotfin shiner	32	42.7			42.7
Notropis stramineus	Sand shiner	20	26.7			26.7
Hybognathus hankinsoni	Brassy minnow	1	1.3			1.3
Pimephales notatus	Bluntnose minnow	11	14.7			14.7
Pimephales promelas	Fathead minnow	1	1.3			1.3
Etheostoma nigrum	Johnny darter	5	6.7			6.7
	Subtotals	75	28.2			100.0
	TOTALS	266	100.0			354.7

Table 19a - The length frequency distributions of fishes sampled from station #12 of the Crow River

Total Length in Inches	White sucker	Northern red-horse	Carp	Black bull-head	Yellow bull-head	Northern pike	Walleye	Pumpkin seed	Black crappie
3.0 - 3.4								1	
3.5 - 3.9									
4.0 - 4.4									
4.5 - 4.9	1			5					
5.0 - 5.4	2			9					
5.5 - 5.9	1			14					
6.0 - 6.4	1	3		3		1			
6.5 - 6.9	1	4		3		1			
7.0 - 7.4					1	1			
7.5 - 7.9				3					1
8.0 - 8.4				3	1				2
8.5 - 8.9				1					1
9.0 - 9.4				1			1		1
9.5 - 9.9		3							
10.0 - 10.4	1	2							
10.5 - 10.9		1							
11.0 - 11.4			1						
11.5 - 11.9	2								
12.0 - 12.9	1	1	5						
13.0 - 13.9	5		6						
14.0 - 14.9	2	1	16				1		
15.0 - 15.9	1	3	11			1	1		
16.0 - 16.9		5	19						
17.0 - 17.9		8	7			2			
18.0 - 18.9		4	4						
19.0 - 19.9		2	3						
20.0 - 20.9		1	3			1			
21.0 - 21.9			4						
22.0 - 22.9			1						
23.0 - 23.9									
24.0 - 24.9			3						
25.0 - 25.9						1			
26.0 - 26.9			1						
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	18	38	74	42	2	8	3	1	5

Table 20 - The species composition and CPE of fishes sampled from station #15 of the Crow River (0.6 miles shocked, 0.67 hours fished)

Species		No.	% of catch	wt.	% by wt.	CPE in fish/hr
Cyprinus carpio	Carp	126	56.0	283.6	85.1	188.1
Ictalurus melas	Black bullhead	30	13.3	4.0	1.2	44.8
Catostomus commersoni	White sucker	25	11.1	13.9	4.2	37.3
Moxostoma macrolepidotum	Northern redhorse	24	10.7	27.0	8.1	35.8
Pomoxis nigromaculata	Black crappie	11	4.9	1.9	0.6	16.4
Esox lucius	Northern pike	2	0.9	0.2	-	3.0
Stizostedion vitreum	Walleye	2	0.9	1.6	0.5	3.0
Pomoxis annularis	White crappie	5	2.2	0.9	0.3	7.5
	Subtotal	225	70.1	333.1		335.8
Notropis hudsonius	Spottail shiner	3	3.1			4.5
Notropis spilopterus	Spotfin shiner	28	29.2			41.8
Notropis stramineus	Sand shiner	43	44.8			64.2
Rhinichthys cataractae	Longnose dace	19	19.8			28.3
Hybognathus hankinsoni	Brassy minnow	1	1.0			1.5
Pimephales notatus	Bluntnose minnow	1	1.0			1.5
Etheostoma nigrum	Johnny darter	1	1.0			1.5
	Subtotals	96	29.9			143.3
	TOTALS	321	100.0			479.1

Table 20a - The length frequency distributions of fishes sampled from station #15 of the Crow River

Total Length in Inches	White sucker	Northern red-horse	Carp	Black bull-head	Northern pike	Walleye	Black crappie	White crappie	
< 2.9	1								
3.0 - 3.4									
3.5 - 3.9									
4.0 - 4.4				1					
4.5 - 4.9				2					
5.0 - 5.4				8					
5.5 - 5.9	1			7				1	
6.0 - 6.4	3	2		2	1			2	
6.5 - 6.9	4	3		1			1		
7.0 - 7.4	1	1		1	1		4		
7.5 - 7.9				1			2	1	
8.0 - 8.4	1			5			1		
8.5 - 8.9	1			1			2		
9.0 - 9.4	1			1		1	1		
9.5 - 9.9		2						1	
10.0 - 10.4		3	3						
10.5 - 10.9		1	1						
11.0 - 11.4									
11.5 - 11.9			2						
12.0 - 12.9	2		5						
13.0 - 13.9	4		14						
14.0 - 14.9	2	1	20						
15.0 - 15.9	4	1	22			1			
16.0 - 16.9		2	18						
17.0 - 17.9		2	5						
18.0 - 18.9		5	13						
19.0 - 19.9		1	5						
20.0 - 20.9			8						
21.0 - 21.9			3						
22.0 - 22.9			4						
23.0 - 23.9			2						
24.0 - 24.9									
25.0 - 25.9			1						
26.0 - 26.9									
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	25	24	126	30	2	2	11	5	

Table 21 - The species composition and CPE of fishes sampled from station #17 of the Crow River (0.6 miles shocked, 0.58 hours fished)

Species		No.	% of catch	wt.	% by wt.	CPE in fish/hr
Cyprinus carpio	Carp	98	52.1	212.1	82.5	169.0
Ictalurus melas	Black bullhead	37	16.7	4.0	1.6	63.8
Catostomus commersoni	White sucker	11	5.9	4.4	1.7	19.0
Moxostoma macrolepidotum	Northern redhorse	10	5.3	12.2	4.7	17.2
Pomoxis nigromaculata	Black crappie	11	5.9	2.3	0.9	19.0
Esox lucius	Northern pike	13	6.9	16.0	6.2	22.4
Stizostedion vitreum	Walleye	5	2.7	6.0	2.3	8.6
Pomoxis annularis	White crappie	2	1.1	0.1	--	3.5
Lepomis cyanellus	Green sunfish	1	0.5	0.1	--	1.7
	Subtotals	188	67.1	257.2		324.2
Notropis hudsonius	Spottail shiner	1	1.1			1.7
Notropis spilopterus	Spotfin shiner	52	56.5			89.7
Notropis stramneus	Sand shiner	25	27.2			43.1
Rhinichtys cataractae	Longnose dace	3	3.3			5.2
Hybognathus hankinsoni	Brassy minnow	2	2.2			3.4
Pimephales promelas	Fathead minnow	3	3.3			5.2
Etheostoma nigrum	Johnny darter	6	6.5			10.3
	Subtotals	92	32.9			158.6
	TOTALS	280	100.0			482.8

Table 21a - The length frequency distributions of fishes sampled from station #17 of the Crow River

Total Length in Inches	White sucker	Northern red-horse	Carp	Black bull-head	Northern pike	Walleye	Black crappie	White crappie	Green sun-fish
< 2.9	2								1
3.0 - 3.4				6					
3.5 - 3.9				6					
4.0 - 4.4				4					
4.5 - 4.9	1			2					
5.0 - 5.4	1			3					
5.5 - 5.9	1	1		3					
6.0 - 6.4		2		1			1	2	
6.5 - 6.9				2					
7.0 - 7.4	1			5		1	2		
7.5 - 7.9				1			4		
8.0 - 8.4				3			3		
8.5 - 8.9	1			1			1		
9.0 - 9.4						1			
9.5 - 9.9									
10.0 - 10.4	1		1						
10.5 - 10.9									
11.0 - 11.4									
11.5 - 11.9			2						
12.0 - 12.9	1	1	3		1				
13.0 - 13.9	2		13						
14.0 - 14.9		2	24		5	1			
15.0 - 15.9			19						
16.0 - 16.9			8		2	1			
17.0 - 17.9		2	4						
18.0 - 18.9		2	5		1				
19.0 - 19.9			8		1				
20.0 - 20.9			6		1	1			
21.0 - 21.9			2						
22.0 - 22.9			1						
23.0 - 23.9			1						
24.0 - 24.9					1				
25.0 - 25.9			1						
26.0 - 26.9					1				
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	11	10	98	37	13	5	11	2	1

Table 22 - The species composition and CPE of fishes sampled from station #20 of the Crow River (0.5 miles shocked, 0.50 hours fished)

Species		No.	% of catch	wt.	% by wt.	CPE in fish/hr
Cyprinus carpio	Carp	51	45.9	102.6	73.2	102.0
Ictalurus melas	Black bullhead	35	31.5	5.2	3.7	70.0
Catostomus commersoni	White sucker	6	5.4	7.2	5.1	12.0
Moxostoma macrolepidotum	Northern redhorse	9	8.1	17.5	12.5	18.0
Esox lucius	Northern pike	1	0.9	0.1	--	2.0
Stizostedion vitreum	Walleye	2	1.8	0.4	0.3	4.0
Lepomis gibbosus	Pumpkinseed	1	0.9	0.1	--	2.0
Moxostoma anisurum	Silver redhorse	3	2.7	6.6	4.7	6.0
Lepomis macrochirus	Bluegill	1	0.9	0.1	--	2.0
Pomoxis annularis	White crappie	2	1.8	0.3	0.2	4.0
	Subtotals	111	49.8	140.1		222.0
Notropis spilopterus	Spotfin shiner	101	90.2			202.0
Notropis stramineus	Sand Shiner	4	3.6			8.0
Rhinichthys cataractae	Longnose dace	4	3.6			8.0
Pimephales notatus	Bluntnose minnow	2	1.8			4.0
Percina caprodes	Logperch	1	0.9			2.0
	Subtotals	112	50.2			224.0
	TOTALS	223	100.0			446.0

Table 22a - The length frequency distributions of fishes sampled from station #20 of the Crow River

Total Length in Inches	White sucker	Northern red-horse	Silver red-horse	Carp	Black bull-head	Northern pike	Walleye	Blue-gill	Pumpkin-seed
< 2.9				1					
3.0 - 3.4								1	
3.5 - 3.9					2				
4.0 - 4.4					1				
4.5 - 4.9					4				1
5.0 - 5.4					4				
5.5 - 5.9					6				
6.0 - 6.4		2			4	1			
6.5 - 6.9			1		1				
7.0 - 7.4					4				
7.5 - 7.9					3				
8.0 - 8.4					2		1		
8.5 - 8.9					4		1		
9.0 - 9.4									
9.5 - 9.9									
10.0 - 10.4				1					
10.5 - 10.9				2					
11.0 - 11.4				2					
11.5 - 11.9				2					
12.0 - 12.9	3	1		1					
13.0 - 13.9	2			4					
14.0 - 14.9	1			10					
15.0 - 15.9				6					
16.0 - 16.9				9					
17.0 - 17.9		1		1					
18.0 - 18.9		2	1	4					
19.0 - 19.9		1		6					
20.0 - 20.9		1		1					
21.0 - 21.9		1	1	1					
22.0 - 22.9									
23.0 - 23.9									
24.0 - 24.9									
25.0 - 25.9									
26.0 - 26.9									
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	6	9	3	51	35	1	2	1	1

Table 22a - The length frequency distributions of fishes sampled from station #20 of the Crow River (continued)

Total Length in Inches	White crappie								
3.0 - 3.4									
3.5 - 3.9									
4.0 - 4.4									
4.5 - 4.9									
5.0 - 5.4									
5.5 - 5.9									
6.0 - 6.4	1								
6.5 - 6.9									
7.0 - 7.4									
7.5 - 7.9	1								
8.0 - 8.4									
8.5 - 8.9									
9.0 - 9.4									
9.5 - 9.9									
10.0 - 10.4									
10.5 - 10.9									
11.0 - 11.4									
11.5 - 11.9									
12.0 - 12.9									
13.0 - 13.9									
14.0 - 14.9									
15.0 - 15.9									
16.0 - 16.9									
17.0 - 17.9									
18.0 - 18.9									
19.0 - 19.9									
20.0 - 20.9									
21.0 - 21.9									
22.0 - 22.9									
23.0 - 23.9									
24.0 - 24.9									
25.0 - 25.9									
26.0 - 26.9									
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	2								

Table 23 - The species composition and CPE of species sampled from station #22 of the Crow River (0.4 miles shocked, 0.58 hours fished)

Species		No.	% of catch	wt.	% by wt.	CPE in fish/hr
Cyprinus carpio	Carp	62	56.9	119.4	78.2	106.9
Ictalurus melas	Black bullhead	12	11.0	1.2	0.8	20.7
Catostomus commersoni	White sucker	8	7.3	6.2	4.1	13.8
Moxostoma macrolepidotum	Northern redhorse	8	7.3	17.0	11.1	13.8
Pomoxis nigromaculata	Black crappie	5	4.6	1.5	1.0	8.6
Esox lucius	Northern pike	3	2.6	3.6	2.4	5.2
Stizostedion vitreum	Walleye	1	0.9	2.6	1.7	1.7
Lepomis gibbosus	Pumpkinseed	1	0.9	0.1	0.1	1.7
Lepomis macrochirus	Bluegill	7	6.4	0.4	0.3	12.1
Pomoxis annularis	White crappie	1	0.9	0.3	0.2	1.7
Ictalurus natalis	Yellow bullhead	1	0.9	0.3	0.2	1.7
	TOTALS	109	100.0	152.6		186.2

Table 23a - The length frequency distributions of fishes sampled from station #22 of the Crow River

Total Length in Inches	White sucker	Northern red-horse	Carp	Black bull-head	Yellow bull-head	Northern pike	Walleye	Pumpkin-seed	Blue-gill
< 2.9				1					
3.0 - 3.4				1				1	5
3.5 - 3.9				1					2
4.0 - 4.4				1					
4.5 - 4.9				1					
5.0 - 5.4				2					
5.5 - 5.9									
6.0 - 6.4				2					
6.5 - 6.9									
7.0 - 7.4									
7.5 - 7.9				3					
8.0 - 8.4					1				
8.5 - 8.9									
9.0 - 9.4									
9.5 - 9.9									
10.0 - 10.4									
10.5 - 10.9									
11.0 - 11.4									
11.5 - 11.9									
12.0 - 12.9	3		1						
13.0 - 13.9	4		17						
14.0 - 14.9	1		17						
15.0 - 15.9			5						
16.0 - 16.9		2	7			1			
17.0 - 17.9		3	4			1			
18.0 - 18.9		3	4				1		
19.0 - 19.9			2			1			
20.0 - 20.9			3						
21.0 - 21.9			1						
22.0 - 22.9									
23.0 - 23.9			1						
24.0 - 24.9									
25.0 - 25.9									
26.0 - 26.9									
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	8	8	62	12	1	3	1	1	7

Table 23a - The length frequency distributions of fishes sampled from station #22 of the Crow River (continued)

Total Length in Inches	Black crappie	White crappie							
3.0 - 3.4									
3.5 - 3.9									
4.0 - 4.4									
4.5 - 4.9									
5.0 - 5.4									
5.5 - 5.9									
6.0 - 6.4		1							
6.5 - 6.9									
7.0 - 7.4	1								
7.5 - 7.9	3								
8.0 - 8.4									
8.5 - 8.9	1								
9.0 - 9.4									
9.5 - 9.9									
10.0 - 10.4									
10.5 - 10.9									
11.0 - 11.4									
11.5 - 11.9									
12.0 - 12.9									
13.0 - 13.9									
14.0 - 14.9									
15.0 - 15.9									
16.0 - 16.9									
17.0 - 17.9									
18.0 - 18.9									
19.0 - 19.9									
20.0 - 20.9									
21.0 - 21.9									
22.0 - 22.9									
23.0 - 23.9									
24.0 - 24.9									
25.0 - 25.9									
26.0 - 26.9									
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	5	1							

Table 24 - The species composition and CPE of fishes sampled from station #24 of the Crow River (0.5 miles shocked, 0.60 hours fished)

Species		No.	% of catch	wt.	% by wt.	CPE in fish/hr
Cyprinus carpio	Carp	128	73.6	226.9	86.9	213.3
Ictalurus melas	Black bullhead	20	11.5	3.2	1.2	33.3
Catostomus commersoni	White sucker	5	2.9	5.3	2.0	8.3
Moxostoma macrolepidotum	Northern redhorse	9	5.2	20.2	7.7	15.0
Pomoxis nigromaculate	Black crappie	3	1.7	0.8	0.3	5.0
Esox lucius	Northern pike	2	1.1	1.2	0.5	3.3
Stizostedion vitreum	Walleye	1	0.6	0.7	0.3	1.7
Moxostoma anisurum	Silver redhorse	1	0.6	2.1	0.8	1.7
Lepomis macrochirus	Bluegill	3	1.7	0.1	-	5.0
Pomoxis annularis	White crappie	2	1.1	0.5	0.2	3.3
	Subtotals	174	99.4	261.0		290.0
Etheostoma nigrum	Johnny darter	1	100.0			1.7
	Subtotals	1	0.6			1.7
	TOTALS	175	100.0			291.7

Table 24a - The length frequency distributions of fishes sampled from station #24 of the Crow River

Total Length in Inches	White sucker	Northern red-horse	Silver red-horse	Carp	Black bull-head	Northern pike	Walleye	Blue-gill	Black crappie
< 2.9								1	
3.0 - 3.4									
3.5 - 3.9					1				
4.0 - 4.4								1	
4.5 - 4.9								1	
5.0 - 5.4					2				
5.5 - 5.9					2	1			
6.0 - 6.4					6				
6.5 - 6.9					5				
7.0 - 7.4					1				1
7.5 - 7.9					2				1
8.0 - 8.4					1				1
8.5 - 8.9									
9.0 - 9.4									
9.5 - 9.9									
10.0 - 10.4									
10.5 - 10.9				2					
11.0 - 11.4				2			1		
11.5 - 11.9				1					
12.0 - 12.9	2			10					
13.0 - 13.9	1			19					
14.0 - 14.9	2			33					
15.0 - 15.9		1		19					
16.0 - 16.9				17					
17.0 - 17.9		2	1	12					
18.0 - 18.9		5		5		1			
19.0 - 19.9				2					
20.0 - 20.9				1					
21.0 - 21.9		1		4					
22.0 - 22.9									
23.0 - 23.9									
24.0 - 24.9				1					
25.0 - 25.9									
26.0 - 26.9									
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	5	9	1	128	20	2	1	3	3

Table 24a - The length frequency distributions of fishes sampled from station #24 of the Crow River (continued)

Total Length in Inches	White crappie								
3.0 - 3.4									
3.5 - 3.9									
4.0 - 4.4									
4.5 - 4.9									
5.0 - 5.4									
5.5 - 5.9									
6.0 - 6.4									
6.5 - 6.9									
7.0 - 7.4									
7.5 - 7.9	1								
8.0 - 8.4									
8.5 - 8.9	1								
9.0 - 9.4									
9.5 - 9.9									
10.0 - 10.4									
10.5 - 10.9									
11.0 - 11.4									
11.5 - 11.9									
12.0 - 12.9									
13.0 - 13.9									
14.0 - 14.9									
15.0 - 15.9									
16.0 - 16.9									
17.0 - 17.9									
18.0 - 18.9									
19.0 - 19.9									
20.0 - 20.9									
21.0 - 21.9									
22.0 - 22.9									
23.0 - 23.9									
24.0 - 24.9									
25.0 - 25.9									
26.0 - 26.9									
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	2								

Table 25 - The species composition and CPE of fishes sampled from station #25 of the Crow River (1.2 miles shocked, 0.73 hours fished)

Species		No.	% of catch	wt.	% by wt.	CPE in fish/hr
Cyprinus carpio	Carp	102	93.6	201.0	95.6	139.7
Ictalurus melas	Black bullhead	1	0.9	0.1	--	1.4
Catostomus commersoni	White sucker	2	1.8	2.7	1.3	2.7
Pomoxis Nigromaculata	Black crappie	2	1.8	0.4	0.2	2.7
Esox lucius	Northern pike	1	0.9	5.0	2.4	1.4
Stizostedion vitreum	Walleye	1	0.9	1.1	0.5	1.4
	Subtotals	109	96.5	210.3		149.3
Notropis spilopterus	Spotfin shiner	4	100.0			5.5
	Subtotals	4	3.5			5.5
	TOTALS	113	100.0			154.8

Table 25a - The length frequency distributions of fishes sampled from station #25 of the Crow River

Total Length in Inches	White sucker	Carp	Black bull-head	Northern pike	Walleye	Black crappie			
3.0 - 3.4									
3.5 - 3.9									
4.0 - 4.4									
4.5 - 4.9									
5.0 - 5.4									
5.5 - 5.9									
6.0 - 6.4									
6.5 - 6.9									
7.0 - 7.4									
7.5 - 7.9						1			
8.0 - 8.4						1			
8.5 - 8.9			1						
9.0 - 9.4									
9.5 - 9.9									
10.0 - 10.4									
10.5 - 10.9									
11.0 - 11.4									
11.5 - 11.9		2							
12.0 - 12.9		10							
13.0 - 13.9		11							
14.0 - 14.9	1	25			1				
15.0 - 15.9	1	21							
16.0 - 16.9		12							
17.0 - 17.9		5							
18.0 - 18.9		3							
19.0 - 19.9		5							
20.0 - 20.9		3							
21.0 - 21.9		3							
22.0 - 22.9		1							
23.0 - 23.9		1							
24.0 - 24.9									
25.0 - 25.9									
26.0 - 26.9									
27.0 - 27.9				1					
28.0 - 28.9		1							
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	2	102	1	1	1	2			

Table 26 - The species composition and CPE of fishes sampled from station #26 of the Crow River (1.3 miles shocked, 0.57 hours fished)

Species		No.	% of catch	wt.	% by wt.	CPE in fish/hr
Cyprinus carpio	Carp	33	38.8	58.3	40.3	57.9
Ictalurus melas	Black bullhead	1	1.8	0.5	0.3	1.8
Catotomus commersoni	White sucker	12	14.1	11.4	7.9	21.1
Moxostoma macrolepidotum	Northern redhorse	24	28.2	39.4	27.2	42.1
Pomoxis nigromaculata	Black crappie	1	1.8	0.3	0.2	1.8
Moxostoma anisurum	Silver redhorse	12	14.1	34.5	23.9	21.1
Lepomis macrochirus	Bluegill	1	1.8	0.1	0.1	1.8
Micropterus dolomieui	Smallmouth bass	1	1.8	0.1	0.1	1.8
	Subtotals	85	94.5	144.6		149.1
Notropis dorsalis	Bigmouth shiner	1	20.0			1.7
Notropis spilopterus	Spotfin shiner	2	40.0			3.5
Rhinichthys cataractae	Longnose dace	1	20.0			1.7
Pimephales notatus	Bluntnose minnow	1	20.0			1.7
	Subtotals	5	5.5			8.8
	TOTALS	90	100.0			157.9

Table 26a - The length frequency distributions of fishes sampled from station #26 of the Crow River

Total Length in Inches	White sucker	Northern red-horse	Silver red-horse	Carp	Black bull-head	Small-mouth bass	Blue-gill	Black crappie	
3.0 - 3.4							1		
3.5 - 3.9									
4.0 - 4.4									
4.5 - 4.9		1				1			
5.0 - 5.4		1							
5.5 - 5.9		1							
6.0 - 6.4		2							
6.5 - 6.9									
7.0 - 7.4									
7.5 - 7.9									
8.0 - 8.4								1	
8.5 - 8.9									
9.0 - 9.4	1	1			1				
9.5 - 9.9				1					
10.0 - 10.4		1							
10.5 - 10.9									
11.0 - 11.4				1					
11.5 - 11.9				4					
12.0 - 12.9	2			8					
13.0 - 13.9	6			5					
14.0 - 14.9	2			2					
15.0 - 15.9	1	4	3						
16.0 - 16.9		6	2	3					
17.0 - 17.9				5					
18.0 - 18.9		2		3					
19.0 - 19.9		2	1						
20.0 - 20.9		2	1						
21.0 - 21.9		1	5						
22.0 - 22.9									
23.0 - 23.9									
24.0 - 24.9									
25.0 - 25.9									
26.0 - 26.9				1					
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	12	24	12	33	1	1	1	1	

Table - 27 - The species composition and CPE of fishes sampled from station 27 of the Crow River (0.5 miles shocked, 0.57 hours fished)

Species		No.	% of catch	wt.	% by wt.	CPE in fish/hr
Cyprinus carpio	Carp	28	35.9	95.7	73.5	49.1
Ictalurus melas	Black bullhead	21	26.9	3.6	2.8	36.8
Catostomus commersoni	White sucker	3	3.8	3.7	2.8	5.3
Moxostoma macrolepidotum	Northern redhorse	1	1.3	0.2	0.2	1.8
Pomoxis nigromaculata	Black crappie	3	3.8	0.7	0.5	5.3
Stizostedion vitreum	Walleye	5	6.4	3.3	2.5	8.8
Moxostoma anisurum	Silver redhorse	9	11.5	17.8	13.7	15.8
Lepomis macrochirus	Bluegill	2	2.6	0.3	0.2	3.6
Micropterus dolomieui	Smallmouth bass	5	6.4	4.5	3.5	8.8
Pomoxis annularis	White crappie	1	1.3	0.4	0.3	1.8
	Subtotals	78	91.8	130.2		136.8
Percopsis omiscomaycus	Troutperch	7	100.0			12.3
	Subtotals	7	8.2			12.3
	TOTALS	85	100.0			149.1

Table 27a - The length frequency distributions of fishes sampled from station #27 of the Crow River

Total Length in Inches	White sucker	Northern red-horse	Silver red-horse	Carp	Black bull-head	Walleye	Small-mouth bass	Black crappie	White crappie
3.0 - 3.4									
3.5 - 3.9									
4.0 - 4.4									
4.5 - 4.9									
5.0 - 5.4									
5.5 - 5.9					3				
6.0 - 6.4					5				
6.5 - 6.9		1			7				
7.0 - 7.4					4				
7.5 - 7.9									
8.0 - 8.4					2			3	
8.5 - 8.9									
9.0 - 9.4						2			1
9.5 - 9.9									
10.0 - 10.4									
10.5 - 10.9						1	1		
11.0 - 11.4				1			2		
11.5 - 11.9				1			1		
12.0 - 12.9			2				1		
13.0 - 13.9				1					
14.0 - 14.9	2		2	2		1			
15.0 - 15.9	1		2	1		1			
16.0 - 16.9			1	2					
17.0 - 17.9				3					
18.0 - 18.9				7					
19.0 - 19.9				4					
20.0 - 20.9			1	4					
21.0 - 21.9				1					
22.0 - 22.9			1						
23.0 - 23.9									
24.0 - 24.9									
25.0 - 25.9				1					
26.0 - 26.9									
27.0 - 27.9									
28.0 - 28.9									
29.0 - 29.9									
30.0 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
33.0 - 33.9									
34.0 - 34.9									
35.0 - 35.9									
36.0 - 36.9									
TOTALS	3	1	9	28	21	5	5	3	1

Table 28 - Records of fish stocking in, and removal from the Crow River

FISH STOCKING

Year	Species	Size	Number
1971	Channel catfish	fingerling	5,000
1972	Channel catfish	fingerling	8,100
1973	Channel catfish	adult	31
1974	Channel catfish	adult	3
1974	Channel catfish	adult	48
1974	Channel catfish	adult	20
1974	Flathead catfish	adult	1
1973	Walleye	fingerling	29,900
1974	Walleye	fingerling	2,307

FISH REMOVAL

Year	Species	Size	Pounds
1966-67	Northern pike	adult	133 (Meeker Co.)
1966-67	Northern pike	yearling	206 (Meeker Co.)
1966-67	Walleye	adult	66 (Meeker Co.)
1966-67	Crappie	yearling	210 (Meeker Co.)
1966-67	Sunfish	yearling	5 (Meeker Co.)
1974-75	Suckers		500 (behind Koronis Dam)

Table 29 - The common and scientific names of flora and fauna species noted during the 1974 Crow River survey

Aquatic Plants	
Common Name	Scientific Name
Alternateleaf pondweed	Potamogeton spp.
Narrowleaf pondweed	Potamogeton spp.
Floatingleaf burreed	Sparganium fluctuans
Water milfoil	Myriophyllum exalbescens
Coontail	Ceratophyllum demersum
Water cress	Nasturtium spp.
Water horehound	Lycopus americanus
Lesser duckweed	Lemna minor
Water meal	Wolffia columbiana
Common cattail	Typha latifolia
Sedge	Carex spp.
Cane grass	Phragmites communis
Reed canary grass	Phalaris arundinacea
River bulrush	Scirpus fluviatilis
Giant burreed	Sparganium eurycarpum
Blue flag	Iris versicolor
Sweet flag	Acorus Calamus
Rush	Juncus spp.
Spikerush	Eleocharis palustris
Horsetail	Equisetum spp.
Arrowhead	Sagittaria spp.
Yellow water buttercup	Ranunculus flabellaris

Table 29 - The common and scientific names of flora and fauna species noted during the 1974 Crow River survey (continued)

Terrestrial Plants	
Common Name	Scientific Name
American elm	Ulmus americana
Green ash	Fraxinus pennsylvanica
Basswood	Tilia americana
Willow	Salix spp.
Box elder	Acer negunudo
Silver maple	Acer saccharinum
Sugar maple	Acer saccharum
Bur oak	Quercus macrocarpa
Pin oak	Quercus palustris
Cottonwood	Populus deltoides
Quaking aspen	Populus tremuloides
Paper birch	Betula papyrifera
Red cedar	Juniperus virginiana
Ironwood	Ostraya virginiana
Wild plum	Prunus americana
Chokecherry	Prunus virginiana
American hackberry	Celtis occidentalis
Red-osier dogwood	Cornus stolonifera
Panicle dogwood	Cornus racemosa
Northern prickly ash	Xanthoxylum americanum
Wild rose	Rosa spp.
Wild grape	Vitis spp.
Currant	Ribies spp.

Table 29 - The common and scientific names of flora and fauna species noted during the 1974 Crow River survey (continued)

Terrestrial Plants	
Common Name	Scientific Name
Honeysuckle	Lonicera spp.
Sumac	Rhus spp.
Snowberry	Symphoricarpos albus
Rasberry	Rubus spp.
Elderberry	Sambucus canadensis
Poison ivy	Rhus radicans
Juniper	Juniperus communis
Large flowered bellflower	Campanula spp.
Carrion flower	Smilax herbacea
Flase lily of the valley	Mianthemum canadense
Asters	Aster spp.
Wild geranium	Geranium maculatum
Wild ginger	Asarum canadense
Nodding trillium	Trillium cernnum
Bloodroot	Sanguinaria canadensis
Wild sarsaparilla	Aralia nudicaulis
Cow parsnip	Heracleum maximum
Sweet clover	Melilotus spp.
Perfoliate bellwort	Uvularia perfoliata
Columbine	Aquilegia canadensis
Solomon's seal	Polygonatum spp.
Fern	Polypodiaceae (fern Family)
Violet	Viola spp.
Early meadow rue	Thalictrum dioicum

Table 29 - The common and scientific names of flora and fauna species noted during the 1974 Crow River survey (continued)

Terrestrial Plants	
Common Name	Scientific Name
Jack in the pulpit	Arisaema atrorubens
Canada anemone	Anemone canadensis

Birds	
Great blue heron	Ardea herodias
Green heron	Butorides virescens
Common egret	Casmerodius albus
Mallard	Anas platyrhynchos
Black duck	Anas rubripes
Blue-winged teal	Anas discors
Wood duck	Aix sponsa
Red-tailed hawk	Buteo jamaicensis
Sparrow hawk	Falco sparverius
Ring-necked pheasant	Phasianus colchicus
Killdeer	Charadrius vociferus
Common snipe	Capella gallinago
Spotted sandpiper	Actitis macularia
Black tern	Chlidonias niger
Mourning dove	Zenaida macroura
Yellow-billed cuckoo	Coccyzus americanus
Great-horned owl	Bubo virginianus
Chimney swift	Chaetura pelagica
Belted kingfisher	Megaceryle alcyon
Common flicker	Colaptes auratus

Table 29 - The common and scientific names of flora and fauna species noted during the 1974 Crow River survey (continued)

Birds	
Common Name	Scientific Name
Red-bellied woodpecker	Centurus carolinus
Red-headed woodpecker	Melanerpes erythrocephalus
Hairy woodpecker	Dendrocopos villosus
Downy woodpecker	Dendrocopos pubescens
Eastern kingibrd	Tyrannus tyrannus
Great-crested flycatcher	Myiarchus crinitus
Eastern phoebe	Sayornis phoebe
Eastern wood pewee	Contopus virens
Tree swallow	Iridoprocne bicolor
Bank swallow	Riparia riparia
Blue jay	Cyanocitta cristata
Common crow	Corvus brachyrhynchos
Black-capped chickadee	Parus atricapillus
White-breasted nuthatch	Sitta carolinensis
House wren	Troglodytes aedon
Gray catbird	Dumetella carolinensis
Brown thrasher	Toxostoma rufum
American robin	Turdus migratorius
Hermit thrush	Catharus guttatus
Cedar waxwing	Bombycilla cedorum
Red-eyed vireo	Vireo olivaceus
Black and white warbler	Mniotilta varia
Yellow warbler	Dendroica petechia
Yellow-rumped warbler	Dendroica coronata
Blackpoll warbler	Dendroica striata

Table 29 - The common and scientific names of flora and fauna species noted during the 1974 Crow River survey (continued)

Birds	
Common Name	Scientific Name
Ovenbird	Seiurus aurocapillus
Common yellowthroat	Geothlypis trichas
Wilson's warbler	Wilsonia pusilla
American redstart	Setophaga ruticilla
Meadowlark (spp.)	Sturnella spp.
Yellow-headed blackbird	Xanthocephalus xanthocephalus
Red-winged blackbird	Agelaius phoeniceus
Northern oriole	Icterus galbula
Brewer's blackbird	Euphagus cyanocephalus
Common grackle	Quiscalus quiscula
Brown-headed cowbird	Molothrus ater
Scarlet tanager	Piranga olivacea
Cardinal	Cardinalis cardinalis
Rose-breasted grossbeak	Pheucticus ludovicianus
Indigo bunting	Passerina cyanea
American goldfinch	Spinus tristis
Harris' sparrow	Zonotrichia guerula
White-throated sparrow	Zonotrichia albicollis
Song sparrow	Melosoiza melodia

Mammals	
Cottontail rabbit	Sylvilagus floridanus
Woodchuck	Marmota monax
Striped ground squirrel	Citellus tridecemlineatus
Eastern chipmunk	Tamias striatus
Red squirrel	Tamiasciurus hudsonicus

Table 29 - The common and scientific names of flora and fauna species noted during the 1974 Crow River survey (continued)

Mammals	
Common Name	Scientific Name
Gray squirrel	Sciurus carolinensis
Fox squirrel	Sciurus niger
Beaver	Castor canadensis
Muskrat	Ondatra zibethica
Raccoon	Procyon lotor
Mink	Mustela vison
Striped skunk	Mephitis mephitis
Red fox	Vulpes fulva
White-tailed deer	Odocoileus virginianus

Amphibians and Reptiles	
Snapping turtle	Chelydra serpentina
Western painted turtle	Chrysemys bellii
Western spiny softshell turtle	Trionyx spinifera
Garter snake	Thamnophis spp.
Northern leopard frog	Rana pipiens