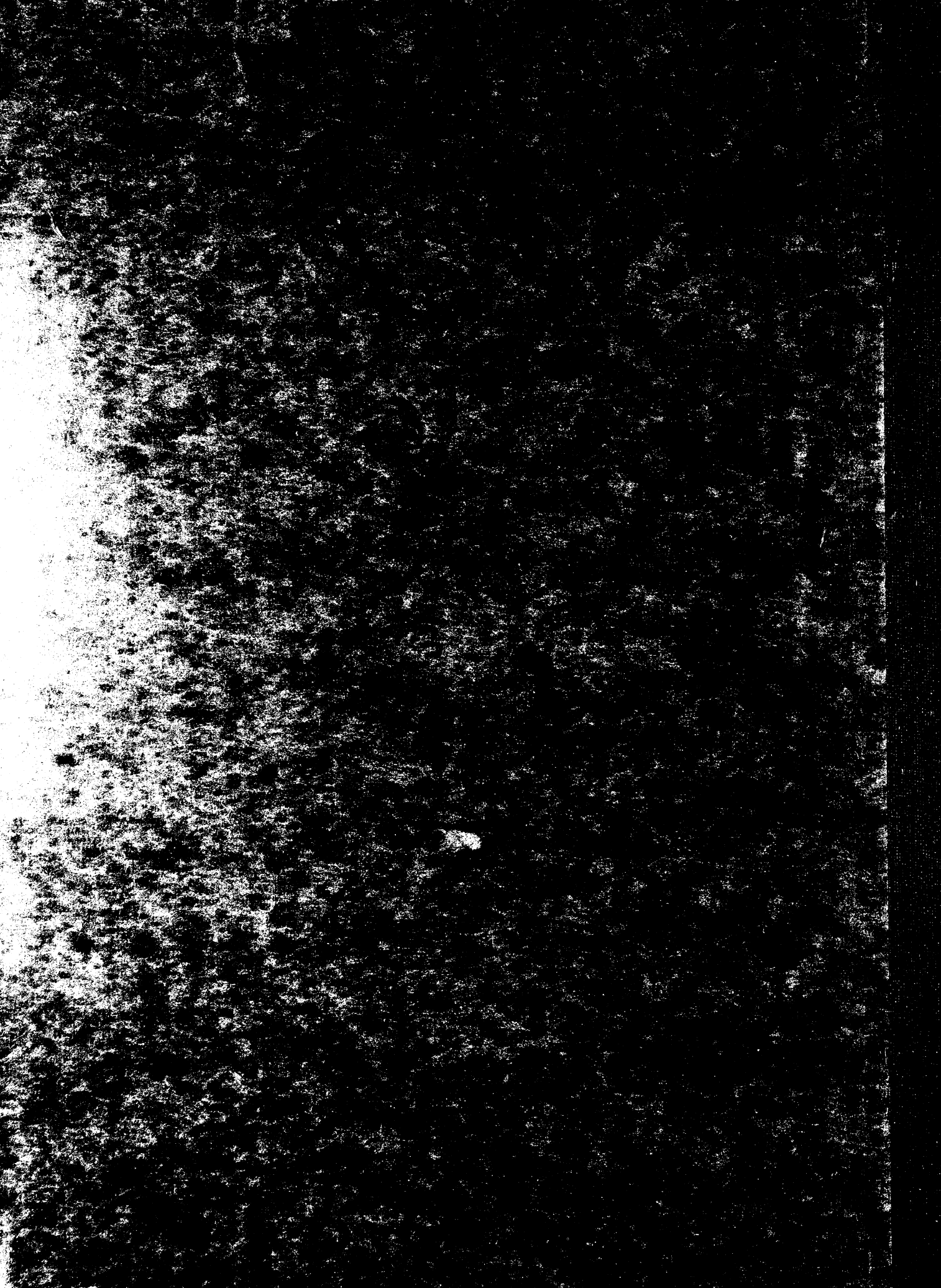


Preliminary Study Of Waterfowl Trap-
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Pond, Washtenaw County, Michigan

By

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And A Plan For Establishing A Duck Banding Station On
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Submitted in partial fulfillment of the
requirements for the degree of Master of
Forestry at the University of Michigan.

Ann Arbor, Michigan

June, 1947

ACKNOWLEDGMENTS.

The writer wishes to extend his sincere gratitude to Dr. Warren W. Chase under whose direction and guidance this study was undertaken; to Dr. Miles D. Firnie and Mr. Frank C. Bellrose for their kindness and numerous helpful suggestions; to Mr. Robert Montgomery, Mr. Herbert Miller and staff members of the Institute for Fisheries Research for supplying much valuable information.

TABLE OF CONTENTS

	Page
Introduction	1
History Of Trapping And Banding	
Early history.	2
Banding in the late nineteenth and early twentieth centuries	2
Banding organizations and banding publications	3
Policy of the U.S. Fish and Wildlife Service	4
Traps And Trapping	
Dabbling duck vs. diving duck traps.	5
General principles to be incorporated in trap construction	5
Types of traps	7
Automatic traps.	7
Non-automatic traps.	9
Placement of traps	10
Means of attracting waterfowl.	11
Time of day to trap.	12
Comparison of trapping success in spring and summer to that in fall and winter.	12
Bands And Banding	
U.S. Fish and Wildlife Service bands	13
Jack Miner bands	15
Tools and equipment needed	16
Handling of captured birds	16
Deciphering worn bands	18
Permanent record sheet	18
Reports to Washington, D.C.	18
Investigations On Geddes Pond	
Description of the area.	19
Object of the field work	20
Field map.	21
Extent of field observations	21
All ducks recorded	21
Explanations of Table II	22
A Plan For The Establishment Of A Duck Banding Station On Geddes Pond	
State and federal permits.	24
The trap	25
Trapping sites	27
Trapping Commencement.	29
Operation of the trap.	29
Summary.	30
Literature Cited	32

INTRODUCTION

The aims of this paper are twofold. First, to discuss, generally, the trapping and banding of waterfowl with special reference to ducks. Second, to present an outline so organized as to act as a guide in the establishment of a duck trapping and banding station on Geddes Pond. Some of the data were obtained from literature, some by means of correspondence with operators and visits to operating stations¹ and the remainder from investigations on Geddes Pond.

The need for more data made available through banding is apparent to those responsible for setting up and maintaining sound waterfowl management policies in the United States and Canada. Banding investigations are valuable in throwing light on the longevity, plumage transitions, diseases and parasites of wild birds, dispersal of the young and the complicated movements of individual birds that go to make up migration. Should the four major flyways be utilized in the future as the basic geographical divisions to be incorporated in the hunting regulations, as proposed by Ira N. Gabrielson and Albert M. Day, the alteration will be a direct result from facts brought together through the efforts of waterfowl trapping and banding cooperators.

¹The means of trapping Canada Geese was studied at the Jack Miner Migratory Bird Sanctuary, Kingsville, Ontario in the fall of 1946, and the methods used by Dr. M.D. Firnie at the W.K. Kellogg Bird Sanctuary, Augusta, Michigan to trap and band ducks were studied in the spring of 1947.

HISTORY OF TRAFFING AND BANDING

Early history. The marking of birds for later identification had its beginning in the early days when flight and tail feathers were streaked with indelible ink or paint. Some naturalists glued thin metal discs to the flight feathers; others mutilated the bird's feet, bill or plumage in a recognizable fashion. Obviously none of these methods was satisfactory.

A Great Gray Heron (Ardea cinerea), captured in Germany in 1710 carrying several metal rings on its tarsus, was the first record of a bird so marked that Lincoln (1921) was able to find. One of the rings had been attached in Turkey several years previously.

Audubon is credited with initiating bird banding in America, when in 1803 he used silver wire to mark a brood of phoebes. Two of the marked birds returned the next year to nest in the same vicinity.

Banding in the late nineteenth and early twentieth centuries. The title, pioneer of scientific bird banding, rightfully belongs to Herr Chr. C. Mortensen of Viborg, Denmark. In 1899 he commenced to band and keep systematic records of storks, teals, starlings, and two or three birds of prey. The work of Dr. Paul Bartsch, who in 1902 and 1903 banded and secured returns from Black-crowned Night Herons (Nycticorax nycticorax), is probably the first deliberate attempt in America to learn something of the movements of birds.

The first complete flight record of a duck banded in North America dates back to August 5, 1909, when a Mallard (Anas p. platyrhynchos) was caught at the Jack Miner Migratory Bird Sanctuary. A piece of aluminum bearing Jack Miner's post office address was wrapped around the bird's tarsus, and it was released. On January 14, 1910 the Mallard was killed by W.E. Bray of Anderson, North Carolina, and subsequently reported to Mr. Miner. Miner (1931) also credits the Sanctuary with the first complete record of a banded Canada Goose (Branta c. canadensis).

Dr. Alexander Wetmore was instrumental in banding ducks in this country in quantity. From 1914 to 1916, while investigating the duck sickness at Bear River Marshes, Utah, he banded about 1,000 ducks using bands stamped with the address of the U. S. Bureau of Biological Survey.

Banding organizations and banding publications. Through the efforts of a few individuals and private bird clubs the American Bird Banding Association was formed in New York City in 1909. This organization, under the guidance of the Linnaean Society of New York, carried on banding in the United States and Canada until 1920. At that time the Biological Survey formally took over the work of the Association.

With the approval and help of the Bureau of Biological Survey four regional bird banding associations were organized. The first to be organized, in 1922, was the New England Bird Banding Association. Two years later

its name was changed to the Northeastern Bird Banding Association. Also founded in 1922 was the Inland Bird Banding Association; and in 1923 the Eastern Bird Banding Association was established. The foregoing Associations have cooperated to publish the quarterly periodical, Bird-Banding. In addition the Inland Bird Banding Association publishes Inland Bird Banding News bi-monthly. The last of the regional organizations, the Western Bird Banding Association, was formed in 1925. It publishes News From Bird-banders quarterly. Bird Banding Notes is published irregularly by the U.S. Fish and Wildlife Service. It disseminates up-to-date bird banding information principally to those cooperators holding federal banding permits.

By far the most important contribution to the literature in this field was made in 1929 by F.O. Lincoln and S.F. Baldwin. The Manual for Bird Banders, although not confined to waterfowl, gives, among other things, excellent illustrations and discussions of waterfowl traps, bands, banding equipment and the means of handling birds for banding. A great deal of the material presented is now obsolete, but even today is the best reference available, since no subsequent publication is as comprehensive in its treatment.

Policy of the U.S. Fish and Wildlife Service. Due to the increase in numbers of national wildlife refuges and the increase in refuge personnel, the Fish and Wildlife

Service in 1941 formulated the following policy: future waterfowl trapping and banding operations will be done chiefly on publicly-owned refuges. Exceptions may be made in favor of privately-owned sanctuaries which are not operated for personal gain or opened to hunting at any time. Each case of this kind will be considered on its own merits. This policy is still in effect today.

TRAPS AND TRAPPING

Dabbling duck vs. diving duck traps. Most of the traps which capture ducks alive can be used for catching dabbling as well as diving ducks. However, it has been found that divers are more difficult to trap; this is probably due to the differences in feeding habits. Dabblers are taken most readily in from six inches to one foot of water, while, when trapping specifically for divers the trap should be placed in from one to three feet of water. Some operators believe that wire mesh on top of a trap set for diving ducks is more of a detriment than an aid, as divers sometimes hesitate to swim under anything. It is felt, however, to be on the safe side all traps should be covered, since dabbling ducks are very likely to be taken in traps set especially for divers. Also the latter, when hard pressed, are able to escape from some types of uncovered traps.

General principles to be incorporated in trap construction. Before describing some of the better traps in use today it seems more appropriate at this time to outline

some of the general principles involved in waterfowl trap construction.

First of all, $1\frac{1}{2}$ or 2 inch hexagonal poultry wire mesh should be used to cover the entire trap. Some injuries in the head and neck regions may be incurred by trapped birds, but ordinarily these injuries will be less severe than those resulting from the use of one inch mesh. Damages to the sides and base of the bill are common where the smaller mesh is used. The mesh must be loosely attached to the superstructure. This precaution provides a less sudden stop with less mutilation to the confused, rushing birds.

At least six inches of the wire netting should be dug into the sand or mud bottom, or a mesh floor may be laid on the bottom and secured to the base of the trap. Diving ducks are notorious in their attempts to escape by digging up the bottom, while dabbling ducks are not guilty of this trait.

A simple entrance for the operator, preferably a door, must be provided. If a means of padlocking the entrance is installed, human intrusions will be held to a minimum. A holding box, constructed in conjunction with the trap, facilitates catching and banding trapped birds. A typical holding box is $1\frac{1}{2}$ feet high, 2 feet wide and 8 feet long. It is covered with $\frac{1}{4}$ inch hardware cloth; this in turn is covered with burlap. A drop door is installed where the ducks enter from the trap.

Types of Traps. Waterfowl traps fall into two broad types; namely, those that capture the birds automatically and those requiring the continual presence of the operator. The chief principle incorporated in the former involves the use of a funnel with or without obstructing wings or leads, while in the latter the waiting operator manipulates the trap in such a way as to capture the birds from a blind.

Automatic traps. One of the most widely used of the automatic variety is the trap utilizing the water lily leaf design or modifications therefrom. Features contributing to its wide use are its ease of construction, relatively low cost for materials and its effectiveness.

A slight modification of the water lily leaf design which has proved very successful is that used by Dr. Miles D. Firnie at the Kellogg Bird Sanctuary. Four $3/4$ inch iron pipes or 2 to $2\frac{1}{2}$ inch saplings $8\frac{1}{2}$ feet long are driven firmly into the lake or river bottom to form a rectangle 5 X 7 feet, the 5 feet sides facing the shore and the center of the lake. Two pieces of pipe or saplings 5 feet long and two 7 feet long are fastened at the top with wire or nails. A door panel, 5 X 6 feet, is hinged on the back. A piece of 2 inch poultry wire, 30 feet long and 7 feet wide, is needed for the sides, back and front. In bringing the mesh forward around the two front poles it is bulged outward and then brought toward the center of the trap until the two ends are about 4 inches

apart. The ends are fastened together to within 8 inches of the water level. To reinforce the entrance two inverted U-shaped pieces of No. 9 wire are weaved through the funnel and set firmly in the bottom. To complete the trap a piece of 2 inch poultry wire is secured over the top.

The trap used by E.A. McIlhenny of Avery Island, Louisiana is a great expansion of the water lily leaf design. It consists of a large outer chamber, 22 X 30 feet, with two entrance funnels, one on each side. Two long funnels lead from the rear of the outer chamber into a pair of receiving chambers, 10 X 10 feet. A long duck lead approaches each entrance funnel to increase the trap's effectiveness. This type of permanent trap is recommended only where the water level and natural food supply remain more or less constant year after year. It has been successful in taking both diving and dabbling ducks.

The raft trap was designed to be used in fluctuating waters and where the feeding areas frequently change. A trap of this kind may measure 36 feet in length and 12 feet in width. A raft is made by bolting planks to two 40 foot logs. To this floor a framework of galvanized iron pipe is secured and covered with 2 inch poultry wire. A funnel is provided in each end as described above. The finished product is towed into position and submerged by piling sand and gravel on the floor.

The fyke net, designed for trapping fish, can be set out in shallow water, and has been found to produce satisfactory results in trapping ducks along the Illinois River. Its biggest disadvantage lies in the fact that too many ducks may work into the chambers, and result in some being forced under water and drowned.

A portable automatic trap, 2 feet high, 5 feet long and 2 feet wide, can be made from poultry wire without reinforcing corner posts. In a trap this small the stiffness of the wire can be relied upon solely for support. Two sections of mesh, 5 X 2 feet, are used for the top and bottom, and a piece 16 feet long and 2 feet wide is needed for the sides, back and funnel. The funnel is formed by carrying the ends into the chamber, lacing them together at the top and spreading them apart at the bottom. This trap is ideal for small marshes where the anticipated catch is light.

Non-automatic traps. Of all the traps requiring the manipulation and constant vigil of the operator probably the most highly publicized is the one employed by the Jack Miner Sanctuary for trapping Canada Geese. It is approximately 100 feet long, 6 feet high, 25 feet wide at the bottom and 17 feet wide at the top. Two doors, 100 feet long and 7 feet wide, are hinged along the lines formed by the intersections of the top with the sides. When the trap is set, these doors are propped up in a horizontal position by a series of triggers. A pull wire is run under-

ground from the triggers to a well-concealed blind. A similar trap on a much smaller scale can be used successfully for trapping ducks.

A spring-pole trap, one that throws a net, is satisfactory where waterfowl can be enticed on shore. When the trap is set, one end of the net, which is often about 20 feet square, is secured to the ground, while the rest of the net is folded in an orderly manner on top. To the other end a throw wire is fastened, which in turn is made fast to two 40 foot hickory poles bent in such a manner as to throw the net out away from the secured end and flat on the ground when released. The throw wire is held in position by a trigger mechanism which is tripped by a pull wire by the hidden operator.

A comparatively new type of trap is the driving trap. It was designed primarily for trapping flightless adults. Yet it is equally successful in capturing female ducks and geese with their broods. Care must be taken in driving these families, or they are likely to disperse in all directions. The receiving chamber, either square or round in shape, is placed in shallow water. It has a "throat" from $1\frac{1}{2}$ to 3 feet wide facing away from shore. Two leads are strung out from the "throat" at an angle of approximately 135° . The flightless adults or females and broods are rounded up and driven into the trap by a party of field workers.

Placement of traps. As previously stated, diving duck

trapping should be done in from 1 to 3 feet of water, while dabbling ducks are taken most frequently in from 6 inches to 1 foot of water. Now, having decided on the type of trap to construct and the group of ducks on which to concentrate the next step, following construction, is to locate the structure not only in the proper depth, but in a situation where waterfowl tend to congregate. And the most logical place to select is a natural feeding area. Firnie (1941) at Wintergreen Lake found that Mallards are taken chiefly at marshy ponds, while Black Ducks were secured more readily at lake-shore traps.

Whenever possible the trap ought to be placed on a firm, hard bottom, for on a soft, muddy bottom the birds will soon work the mud into a semi-liquid condition which saturates their plumage and causes serious irritation of the eyes. Then too, a muddy bottom is not desirable, as the bait, which has been spread around to attract the birds, sinks into the mud where it can no longer serve its purpose.

Means of attracting waterfowl. Generally speaking, a corn (either cracked or whole) and wheat mixture will be found to be the most effective bait for geese and ducks; divers and dabblers are equally partial to this combination. At times various small grains such as rice, kaffir corn, barley and buckwheat may be used to advantage. Dr. Firnie found that the bait is most effective when a small amount is thrown out in two lines approaching 90° from the funnel. The remainder is spread over the floor of the trap with a

concentration at the mouth of the funnel.

Wooden decoys would be of doubtful value in further attracting waterfowl to the trap. Live decoys, on the other hand, are very likely to enhance the catch. In the installation of a new trap an enclosed pen holding live decoys of the species to be trapped can be counted on to help break down the wild birds' shyness of the structure.

Time of day to trap. Since waterfowl actively engage in feeding in the early morning hours, this is an excellent time to trap for them. Dr. Firnie has been most successful in taking ducks, when the bait is put out and the trap set soon after twilight in the morning. In an hour or two he returns to band any ducks that have been trapped. By evening, if not before, he is certain to return again to band other captives and to leave the operator's entrance open so no ducks will be caught overnight. Leaving birds in the trap throughout the night is a poor practice for several reasons: (1) due to the longer period of captivity the birds are more apt to injure themselves seriously, (2) even if the operator's entrance is kept padlocked, someone is more likely to raid the trap at night than during the day and (3) mink sometimes help themselves to the imprisoned ducks when it's dark, while daytime attacks are rare occurrences.

Comparison of trapping success in spring and summer to that in fall and winter. In the spring when all waterfowl

are beset with the breeding urge to ultimately reach their nesting grounds, ducks and geese are trapped in relatively small numbers. As stated by Lincoln (1922), at times during the summer duck trapping may become the most disheartening kind of work due to the indifference to corn and wheat demonstrated by the birds, when natural food is probably most abundant. The driving trap is successful only during the summer, as opposed to all other types of waterfowl traps.

Waterfowl are more readily taken in the fall and winter, when they no longer exhibit that nervous, restless condition so evident in the spring. Perhaps another reason waterfowl are taken more easily during the fall and winter is that the total population is larger and a big part of that population is comprised of inexperienced, juvenile birds.

BANDS AND BANDING

U. S. Fish and Wildlife Service bands. Those cooperators holding U. S. Fish and Wildlife Service banding permits are expected to use the aluminum bands procured and distributed by the Service. These bands range in size from No. 0, the smallest, to No. 8. For banding waterfowl Nos. 5, 6 and 7 are utilized most frequently, but some No. 8's and a few No. 4's are used. These directions appear on each band (abbreviated on the smallest sizes): "Notify Fish and Wildlife Service, Wash., D.C." The series

designation, a two digit number, is stamped at right angles to the band number, which is usually a 5 or 6 digit number. When reporting a band number to the Washington office for any reason, both the series designation and the band number must be given.

The following table as promulgated by the U.S. Fish and Wildlife Service consists of excerpts from Table 2 in Bird Banding Notes (1941):

Table I

Correct Band Sizes for Various Species of Waterfowl

<u>Species of Waterfowl</u>	<u>Band Size</u>
American Merganser	6
Red-breasted Merganser	6
Hooded Merganser	5
Mallard.	6
Mallard-Black hybrid	7
Black Duck	6
Florida Duck	6
Gadwall.	6
Baldpate	6
Green-winged Teal.	5
Blue-winged Teal	5
Cinnamon Teal.	4
Shoveller.	6
Fintail.	5
Wood Duck.	5
Redhead.	6
Canvasback	6
Greater Scaup.	6
Lesser Scaup	6
Ring-necked Duck	6
American Goldeneye	6
Barrow's Goldeneye	6
Bufflehead	5
Old Squaw.	5
Harlequin Duck	5
American Eider	7
White-winged Scoter.	7
Ruddy Duck	5
Snow Goose	7
Blue Goose	7

Table I (cont'd):

White-fronted Goose	8
Canada Goose	8
Emperor Goose	7
Fulvous Tree Duck	7
Whistling Swan	8

As reported by Dr. Firnie, the present day aluminum bands carried by waterfowl open up and fall off the tarsi in from 3 to 5 years. To his knowledge aluminum bands do not wear through. The old copper bands, formerly used by the U.S. Bureau of Biological Survey, did not open up and drop off. They were lost only after wearing through, in some cases after ten years of use.

Through June 30, 1946, 4,968,599 birds of all species had been banded with Fish and Wildlife Service bands. Figures are available only through June 30, 1945 for the total numbers of waterfowl carrying Fish and Wildlife bands. To that date 737,335 ducks, 14,909 Canada Geese, 1,676 other geese and 101 swans had been marked.

A recent innovation that can boast a considerably longer band retention is the wing band. It, too, is made of aluminum and bears a number and the message to notify the Fish and Wildlife Service. It is adaptable for use on any species of waterfowl. To attach the band a small slit is made in the patagium, or web of the wing; the band is slipped through and crimped with a pair of long-nose pliers.

Jack Miner bands. The aluminum bands used at the Jack Miner Sanctuary are oversimplified to the point that a great

deal of potential scientific data is being lost. In place of a numbering system, as employed by the Fish and Wildlife Service, the letter "S" is used to denote spring banding or the letter "F" is used to designate fall banding and the last two digits of the prevailing year are stamped on the bands. Neither is the exact date of banding obtainable nor any data on the sex of the banded birds, since each band is not assigned a different number. The remainder of the inscription on the Miner band reads: "Write Jack Miner, Kingsville, Ontario, Canada" and a scripture from the Bible is also added.

Tools and equipment needed. In the operation of a waterfowl banding station little in the way of tools and equipment is required. The operator will have to procure a long-nose pliers with a long cutting edge, a pocket magnifying glass, a long-handled net, a safety-pin holder for ring bands and finally a clip-board or tatum holder. Hip boots are almost a necessity, and a boat may prove very useful.

Handling of captured birds. The procedure for handling ducks which has been found very efficient at the Kellogg Sanctuary is here given. The operator enters the trap with a long-handled net and a dry burlap sack. He catches the ducks with upward swings of the net. Transfers to the burlap sack are brought about by grasping the birds around the neck at the shoulders and gently dropping them

into the sack, being careful to keep the sack dry. If it becomes wet, the body heat from the birds will cause the otherwise waterproof plumage to become soaked, and may result in some sick ducks. As each sack is filled, not to the point where the birds are uncomfortable, it is tied and placed on dry ground.

When all the birds have been taken from the trap, it is suggested that before banding, the number of each band be recorded on a banding field sheet. To facilitate the use of the field sheet it should be retained in a clipboard or tatum holder. The banding field sheet used at the Kellogg Sanctuary has been reproduced and included with this paper.

To retrieve the ducks from the sacks the thumb is placed under the leading edge of one wing and the four fingers in a similar position under the other wing. In passing the bird from one hand to the other the free hand is slipped in under the hand holding the bird and a like hold is taken. Held in this way the bird can be examined for injuries, ectoparasites, age, sex, etc. In holding for banding the operator places the back of the duck on his own upper leg with the bird's head and neck under his arm. The operator applies light pressure against the body of the bird with his forearm.

If the correct sized band is too large, a piece of it is cut off with the cutting edge of the longnose pliers,

being careful not to scratch the printing on the band. The band is opened up with the pliers and slipped on either tarsus. It is closed with the pliers and flattened out slightly to conform to the shape of the tarsus. Release is made by standing the bird on the ground away from any obstructions which the frightened bird may fly into.

Deciphering worn bands. Should a band be found already on the bird its number must be noted. A pocket magnifying glass may be of some help in deciphering worn bands. Where this method is not applicable, the numbers may be made legible by the following procedure proposed by Ludwig (1942): A solution is made up of $\frac{1}{2}$ ounce of cupric chloride, one ounce of methyl alcohol, one ounce of distilled water and one ounce of hydrochloric acid, U.S.P. These reagents are mixed in a glass receptacle and stored in a rubber stopped glass bottle. Place two drops of the solution on the number side of the band and repeat until the number is brought out clearly.

Permanent record sheet. Upon returning to the office, the data on the field sheet is transferred to a permanent record sheet. The column headings used by the Kellogg Sanctuary reading from left to right are: number, species, age, sex, date, repeat and return (date, place, how).

Reports to Washington, D.C. During the waterfowl hunting season a Bird Banding Record, furnished by the Washington office, should be filled out and sent to Washing-

ton the same day one or more ducks or geese are banded. Otherwise a Record should be sent in at least every six months.

INVESTIGATIONS ON GEDDES FOND

Description of the area. Geddes Pond was created in 1917 for the production of power by the impoundment of the Huron River at Dixboro Road. The area inundated in addition to the original river channel covers an area of 261 acres. The eastern terminus of the Pond at Geddes Dam is situated 5 miles from the heart of Ann Arbor, Michigan. The area is accessible from Ann Arbor by two hard-surfaced thoroughfares, Geddes Avenue and Geddes Road. Geddes Pond lies in Sections 26, 27, 35 and 36 of Township 2 south and Range 6 east.

Until 1937 the City of Ann Arbor dumped unadulterated sewage into the River below University Hospital. Thus, previous to 1937, Geddes Pond functioned as a huge sewage digestion tank. Little plant and animal life was able to tolerate the toxic condition or compete with the enormous quantities of oxygen-demanding materials present. Soon after the abatement of the sewage problem, the area commenced a rapid biological recovery. And with the proclamation of Geddes Pond and the immediate land area as a state wildlife sanctuary it became exceedingly attractive to many forms of wildlife.

The information to follow was acquired partly in the field and partly from lake survey data compiled and made available to the writer by the Institute for Fisheries Research of the Michigan Department of Conservation

At its deepest, just upstream from Geddes Dam, the Pond reaches a depth of 16 feet. The great majority of the Pond, however, is shoal, not over 5 feet in depth. The bottom consists principally of gravel and sand overlain with muck. The immediate shore varies from a relatively steep gradient to low, gradual slopes. The surrounding country is hilly, wooded, cultivated and grassland. There are no boat liveries and no cottages along the shore. The Detroit Edison Company owns a major portion of the property; small parcels of land, however, are still retained by private ownership.

The generation of power subordinates all other uses of the area. Nevertheless man finds recreation on and around the water in fishing, boating and observing nature.

Object of the field work. It may be well to reiterate that one of the ultimate aims of this investigation is to facilitate the establishment of a duck banding station on Geddes Pond. It is hoped that this paper will eliminate some of the guess-work which might otherwise be encountered. To that end a method was devised to ascertain where the ducks distribute themselves throughout the spring season. From these data trapping sites are suggested which are based on statistical evidence.

Field map. A map of the shoreline was drawn from data obtained in the field by Mr. Lee R. Crail and the author. While ice still covered the Pond, strategic shoreline points were secured by the intersection method employing the use of two plane tables and two alidades. Distances were measured by pacing. A system of grids was drawn on the map so the location of each duck, as initially observed each day, could be recorded in a field notebook. The finished map has been reproduced for inclusion in this paper.

Extent of field observations. Observations were begun the day the River's channel opened up, March 11, 1947, and were continued daily or in some cases every other day until the population fell off sharply; and that occurred April 17. Four subsequent observations were made, the last of these on May 11. In all, 29 field trips were made to Geddes Pond. During the first 19 of these trips the ice recession data required to draw map 1 were obtained.

All ducks recorded. In each case every duck seen was recorded. No attempt was made to distinguish between those individuals which had been present and recorded on previous observations and those that had not been recorded before. For a few species this may have been attempted, but its validity would be highly questionable.

The significant data acquired through observations at Geddes Pond, which lend themselves to compilation in table form for comparisons, follow:

Table II

Compilation of Geddes Pond Field Data for the Spring of 1947

<u>Species</u>	<u>Total No. Observed</u>	<u>Sex Ratio</u>	<u>First Observed</u>	<u>Largest No. & Date (in 1 Day)</u>	<u>Last Obsvd.</u>
American Goldeneye	240	6.13:1*	March 11	35 March 31	April 5
American Merganser	604	1.51:1*	" 12	100 " 31	" 27
Black Duck	478	-	" 12	48 " 26	May 11
Baldpate	27	3.50:1	" 13	8 " 26	Apr. 21
Scaup	865	2.31:1	" 15	132 April 3	May 11
Hooded Merganser	55	1.29:1*	" 20	11 March 31	Apr. 23
Mallard	12	1.00:1	" 20	3 " 26	" 5
Ruddy Duck	71	1.37:1	" 21	10 April 7	" 21
Ring-necked Duck	221	3.51:1	" 21	70 March 30	" 13
Canvasback	28	0.47:1	" 23	14 " 31	" 3
Redhead	10	9.00:1	" 23	3 " 31	" 9
Shoveller	26	0.73:1	" 26	5 " 30	" 5
Gadwall	6	1.00:1	" 27	2 " 30	Mar. 31
Green-winged Teal	2	0.00:1	" 27	1 " 31	" 31
Blue-winged Teal	2	2.00:0.00	" 30	2 " 30	" 30
Red-breasted Merganser	20	1.50:1*	" 30	4 " 31	May 11
Bufflehead	11	2.67:1 *	" 30	5 " 30	Apr. 7

* In this computation the immature males are included with the females.

Explanations of Table II. No attempt was made to distinguish between Greater Scaup and Lesser Scaup Ducks. Under ideal conditions differentiations could be made, but these conditions occurred too seldom to warrant the inclusion of that data in this paper.

Under the heading "Total No. Observed" the figure given for each species represents the summation of all the ducks of that species seen over the season; a single individual may be represented 2 or 3 times in the total number. This number is not to be construed to mean the total number of migrating birds using Geddes Pond on their northward flights.

To this observer Black Duck males and females are in-

separable on the water, except during courting activities; and then only a few birds in a group revealed their sexes at a time. Therefore the Black Duck sex ratio was indeterminate.

The sex ratios for the remainder of the species listed were computed from the total numbers of individuals seen. The discounting of "repeats" did not seem feasible. Obviously where less than fifty birds of any one species were noted, the ratio has practically no significance. Even where more than fifty birds of a species were seen, the computed sex ratios will rarely be indicative of the ratios for the whole population of that species. However they are significant inasmuch as they approximate the sex ratios of the various species of ducks finding this impoundment inviting enough to stop over.

American, Red-breasted and Hooded Mergansers, American Goldeneye and Bufflehead sex ratios were asterisked to show that immature males were included with the females. Admittedly, this does confuse the issue somewhat, but the writer found the process of separating these two groups in the field insurmountable.

The column headed "First Observed" must be accompanied with some elucidation. March 11 marked the beginning of the ice break-up on Geddes Pond. As promulgated by the U.S. Weather Bureau at the end of March, the advance of spring in this region in 1947 had been delayed three weeks compared to the last 25 year average. It can be inferred

therefrom that under weather conditions approaching the average the "First Observed" date would be considerably earlier for some species. This is sure to occur for at least three species; namely, Black Duck, American Merganser and American Goldeneye, all of which had representatives wintering on the Huron River below the Ann Arbor Sewage Disposal Plant through the 1946-1947 season.

The last three columns in Table II seem not to require any explanation, except perhaps to state that on the last visit made to the area on May 11 five Scaups, two Black Ducks and a pair of Red-breasted Mergansers were still on the Pond. At least one pair of Black Ducks, from all indications, has nested in the marsh area west of Geddes Bridge. No nest could be located, however.

In preparing the 16 maps representing 17 species observed on the area a dot was used to delineate each duck. Its position is shown as the bird first appeared on the water. It follows that the total number of dots on each map is equal to the "Total No. Observed" for each species in Table II. No differentiation between sexes was recorded on the maps.

A PLAN FOR THE ESTABLISHMENT OF A DUCK BANDING STATION ON GEDDES POND

State and federal permits. Requisite for any banding operations in Michigan is the procurement of a State permit, application for which can be made by writing to the

Director, Department of Conservation, Lansing, Michigan.

In addition a federal permit is required under terms of the migratory bird treaty act. Application for such a permit should be addressed to the Chief, Distribution and Migration of Birds, Division of Wildlife Research, Fish and Wildlife Service, Washington 25, D.C.

The trap. The automatic trap sought for should combine portability, low expense, ease of construction and a means of regulation under conditions of fluctuating water levels. Of all the traps studied the one most nearly incorporating all the above qualifications was submitted by F. C. Bellrose of the Illinois State Natural History Survey Division. This trap was evolved through several years of use along the Illinois River. Dabblers primarily were caught, but some divers, especially Ring-necked Ducks were also taken.

The trap, modified slightly, is 8 feet long by 8 feet wide by 6 feet high, and is made in sections. Two side panels, each 6x8 feet, are used, one with a door 18 inches wide and four feet high. The back and top panels are 8x6 feet and 8x8 feet respectively. A "throat" is formed in front by two panels, each 5x6 feet, set in the form of a "V", as viewed from above. For the wooden frame 2x4 inch material is used on the bottom; all other pieces are 2x2 inch, except those making up the top panel which are 2x1 inch.

TRAP FOR GEDDES POND

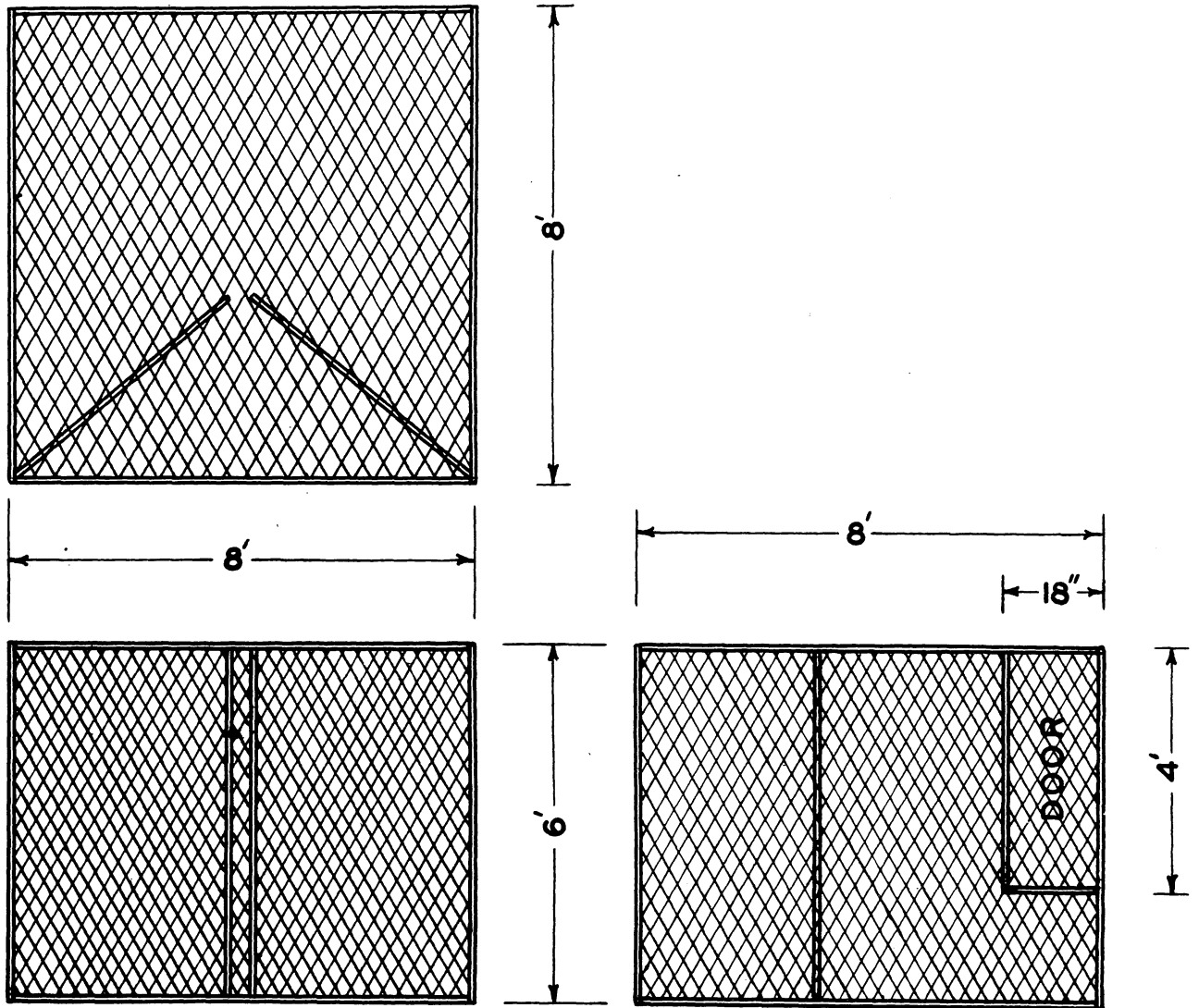


FIGURE 1

One and one half inch, No. 8 gauge mesh is loosely stapled to the panels. Subsequently the panels are secured together with heavy wire; care is taken not to allow sharp ends to project into the chamber. Following the panel assembly a reinforcing 2x4 crosspiece is nailed in position across the base of the trap in front as illustrated in Figure 1. The ends of the mesh at the mouth of the "throat" are allowed to protrude. These ends are laced together down to about 8 inches above the water level. As the water level fluctuates, the mouth of the funnel can be shifted up and down by unlacing and lacing the protruding wires. A piece of wire mesh slightly larger than the trap base is placed on the bottom of the Pond and the trap is set on top of it.

The completed structure can be temporarily secured in position by driving four 2x4 inch stakes into the bottom along the sides of the trap. To these stakes the trap is securely fastened. When it is desired to move the trap, it is easily taken apart in sections and reassembled in a new location.

Trapping sites. Interpretation of the data on Maps 2 to 18 led to the following selections which are based on the assumption that the ice on Geddes Pond will break up in a similar pattern year after year.

One site which became free of ice soon after the River's channel opened up and was used extensively by Black Ducks and Scaups and to a lesser extent by American Goldeneyes

and Ring-necked Ducks is shown on Map 1 as trapping site 1. The bottom here is sand and gravel overlain with some muck and silt. To be sure this kind of bottom is poor, but this site seems to be the best choice that can be made at this time. The trap should be assembled in one foot of water facing away from the island. This site is accessible by boat only; consequently, human raids on the trap's contents would be held to a minimum.

If site 1 cannot be reached, site 2 offers an early season possibility; that is, if a strip of ice separating the shoreline from open water (refer to map 2) can be broken. Assuming it can be, then the operator's success will depend somewhat on his ability to entice birds into the immediate vicinity of the trap with corn and wheat. Live decoys would provide a special inducement to the wild ducks. Black Ducks, Scaups and American Goldeneyes particularly inhabit this region. The trap, again, should be staked in about one foot of water. The bottom here is like that found at site 1.

The best site, as evaluated from Maps 3 to 18, appears to be the one designated as trapping site 3. Even though the ducks were unable to use this area until 12 days after site 1 became available (see Map 2), the maps clearly demonstrate this as the territory used mostly by the ducks. The bottom approaches that termed ideal, since it consists almost wholly of sand and gravel. This site is located away from the prying eyes of passers-by, which may be an

advantage. Most prominent in their use of this area are Black Ducks, Ring-necked Ducks, Scaups, American Goldeneyes, American Mergansers, Hooded Mergansers and Ruddy Ducks.

If possible two traps should be constructed and put on the Pond in the spring. One could be successfully operated at trapping site 1 and the other would be located at trapping site 3. If only one trap is available, however, the early migrants could be taken at sites 1 or 2 and the later migrants would be trapped at site 3, as soon as it opened up. This is assuming, of course, that the portable type trap recommended for Geddes Pond is used.

Trapping commencement. The time to commence trapping in the spring is naturally as soon as the ducks become abundant enough to make it profitable. On March 14, just three days after the river channel opened up, Black Ducks, American Mergansers and American Goldeneyes appeared in these numbers: 13, 11 and 7 respectively. It seems logical therefore to say, preparations should be made to set the first trap out within a day or two after the ice starts receding. Ducks may not be caught immediately, but they will have an opportunity to become acclimated to the trap.

Operation of the trap. The best time of day to visit the trap, the tools and equipment to be taken, the handling of captured birds for banding and the keeping of records have been discussed elsewhere in detail; therefore, it is deemed unnecessary to repeat their substance here.

In conclusion, if it is found unfeasible to commence trapping and banding in the ensuing fall, it is hoped a similar investigation of the fall flight will be made and the information here presented expanded and amended where inaccuracies are found to occur.

SUMMARY

1. Jack Miner is credited with securing the first complete flight record of a banded duck in North America. The bird, a Mallard, was banded in 1909 and shot in 1910.
2. The Manual for Bird Banders by F. C. Lincoln and S. P. Baldwin published in 1929 is still the best waterfowl trapping and banding reference.
3. Trapping for dabbling ducks is most successful in 6 to 12 inches of water, while diving ducks are taken more readily in from 1 to 3 feet of water.
4. Corn and wheat comprise the best bait for ducks and geese.
5. In general trapping during the fall and winter is more productive than during the spring and summer.
6. Jack Miner bands are stamped with an "S" or "F" for spring or fall and the last two digits of the prevailing year.
7. A Bird Banding Record must be sent to Washington at least every six months, except during the open season

on waterfowl. At that time a Record must be sent the same day birds are banded.

8. Geddes Pond is an excellent location for a duck banding station. It is closed to hunting at all times; it is used by a large number of ducks during spring migration (the extent of fall use is not known); it has at least one very promising trapping site; and it is easily accessible by automobile.
9. Field observations were begun March 11 and were continued through May 11.
10. Scaups were observed in greater numbers than any other species of duck; they were followed by American Mergansers, Black Ducks, Ring-necked Ducks and American Goldeneyes in order of numbers seen.
11. The trap suggested for use on Geddes Pond is similar to the ones employed by F. C. Bellrose on the Illinois River.
12. As the ice recedes in the spring, Trapping Sites 1 or 2 will probably produce the most ducks, while after the ice recession makes it available, Trapping Site 3 is likely to give more ducks.

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ITEMIZED LIST OF COSTS OF ESTABLISHING AND OPERATING
A ONE TRAP BANDING STATION ON GEDDES POND FOR SPRING OF 1947.

Materials for trap construction:

1 - 150' roll 4' high of 1½" mesh poultry wire.	\$5.40
2 - 14' yellow pine 2"x4" @ \$.98 ea.	1.96
2 - 16' " " 2"x4" @ 1.10½ ea.	2.21
9 - 14' " " 2"x2" @ 5¢ per running ft.	6.30
2 - 16' " " 1"x2" @ 2½¢ " " "80
1 pr. - 3" butt hinges.75
1 - hinge hasp.20
1 lb. - 1" staples.10
15' No. 14 galvanized wire.50

Tools and equipment required for station operation:

1 pr. - longnose pliers	1.75
1 - 10X pocket magnifying glass75
1 - clipboard75
6' No. 12 galvanized wire (for 3 ring band holders)25
1 - long-handled net.	4.00
1 pr. - hip boots	10.00
2 - bu. wheat @ \$2.50 per bu.	5.00
2 - 100 lb. sacks shelled feeding corn	6.90
	<u>\$47.52</u>
3% Michigan Sales Tax.	1.43
	<u>\$48.95</u>

Labor for trap construction:

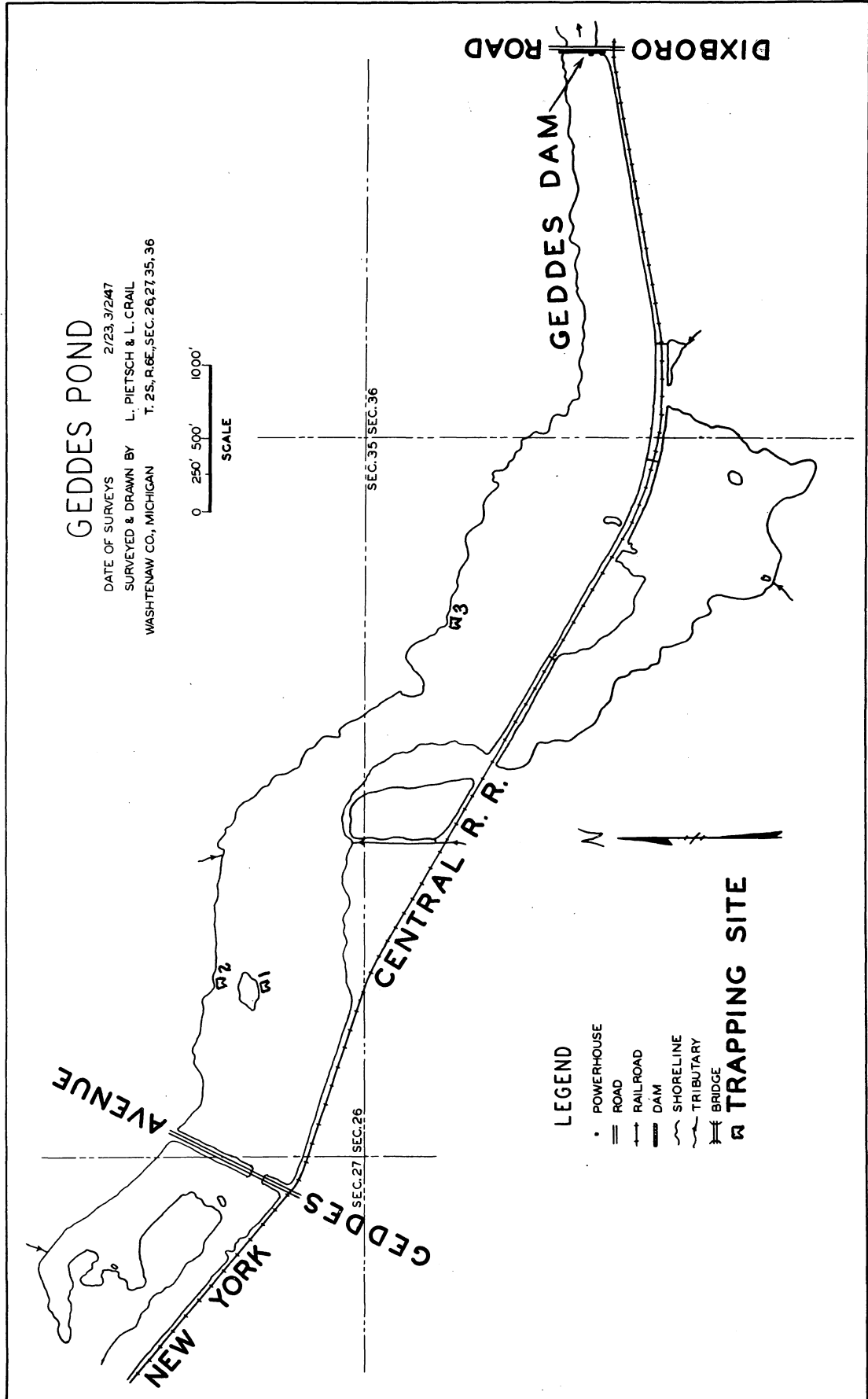
16 hours @ \$1.00 per hour	16.00
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Transportation to and from Geddes Pond for March
and April:

2 round trips daily @ 10 miles per trip @ 5¢ per mile for 60 days	<u>60.00</u>
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TOTAL COST \$124.95

TRAPPING SITES



GEDDES POND

DATE OF SURVEYS 2/23, 3/24/7
 SURVEYED & DRAWN BY L. PIETSCH & L. CRAIL
 WASHTENAW CO., MICHIGAN T. 2S., R. 6E., SEC. 26, 27, 35, 36



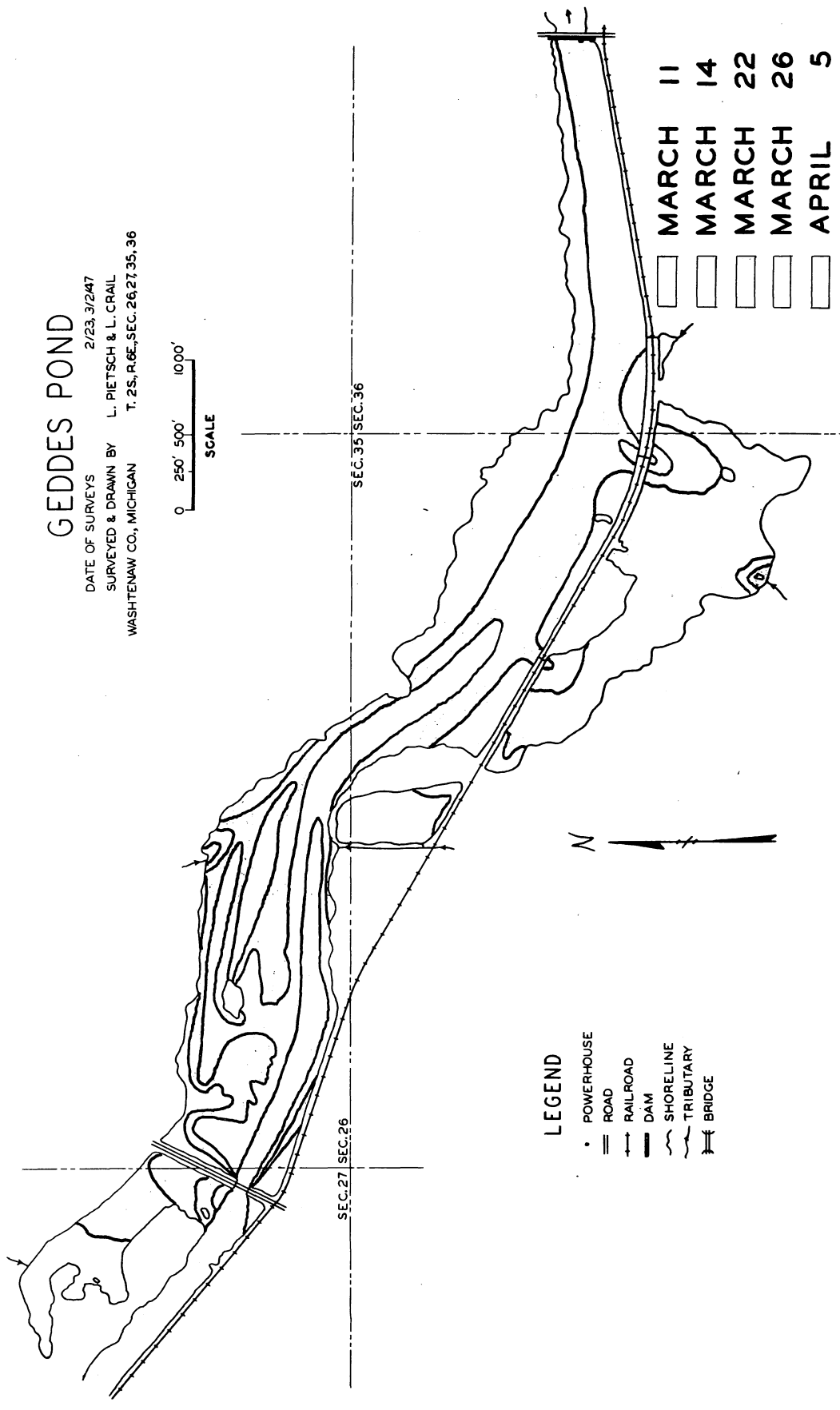
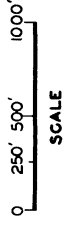
LEGEND

- POWERHOUSE
- == ROAD
- +— RAILROAD
- DAM
- ~ SHORELINE
- - - TRIBUTARY
- ≡ BRIDGE
- M TRAPPING SITE

ICE RECESSION

GEDDES POND

DATE OF SURVEYS 2/23, 3/24/17
 SURVEYED & DRAWN BY L. PIETSCH & L. CRAIL
 WASHTENAW CO., MICHIGAN T. 25., R. 6E., SEC. 26, 27, 35, 36



- MARCH 11
- MARCH 14
- MARCH 22
- MARCH 26
- APRIL 5

- LEGEND**
- POWERHOUSE
 - ≡ ROAD
 - +— RAILROAD
 - DAM
 - ~ SHORELINE
 - ~ TRIBUTARY
 - ≡ BRIDGE

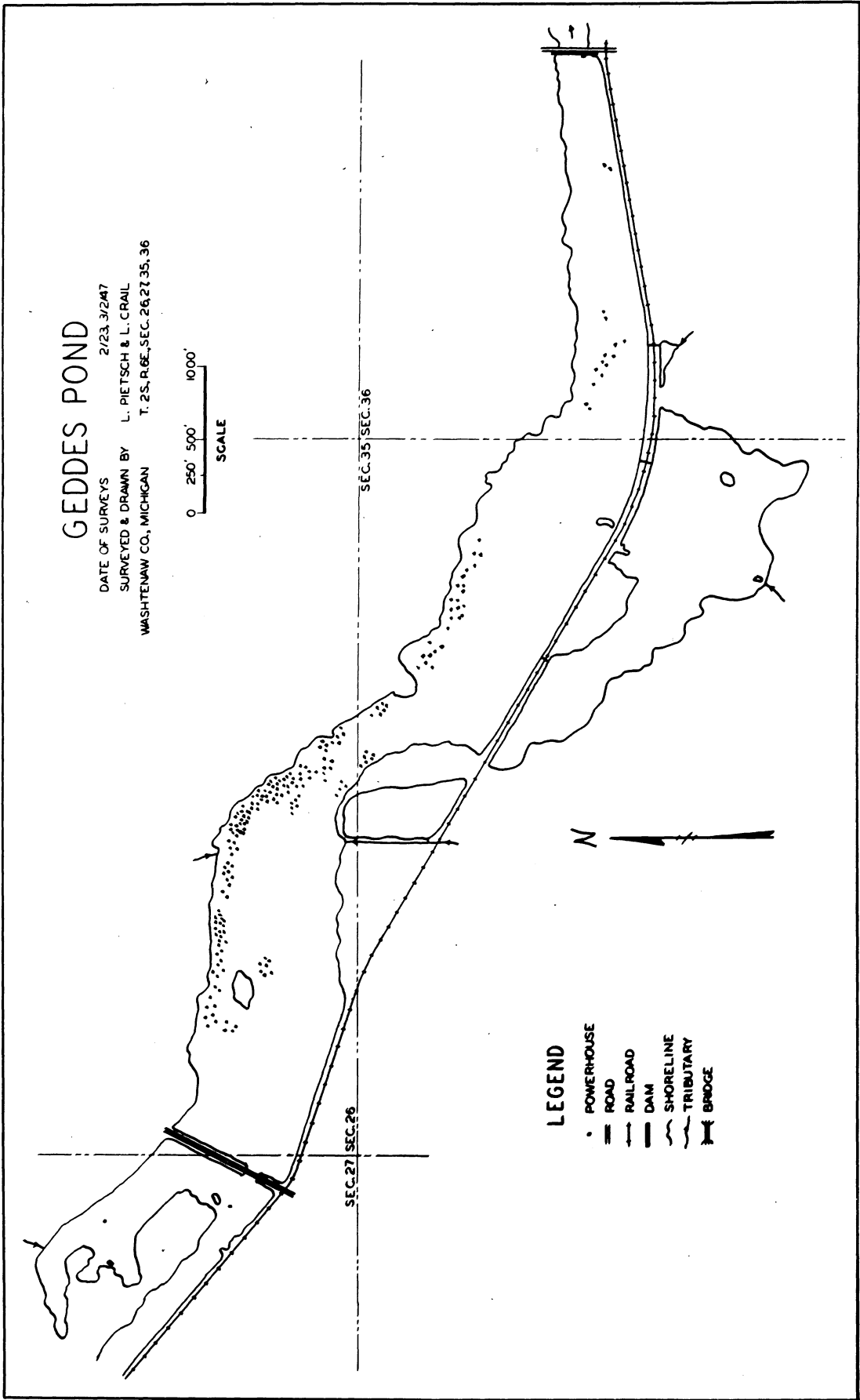
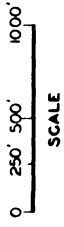
SEC. 27 SEC. 26

SEC. 35 SEC. 36

Glaucionetta clangula americana, American Goldeneye

GEDDES POND

DATE OF SURVEYS 2/23, 3/24/17
SURVEYED & DRAWN BY L. PIETSCH & L. CRAIL
WASHTENAW CO., MICHIGAN T. 2S., R. 6E., SEC. 26, 27, 35, 36



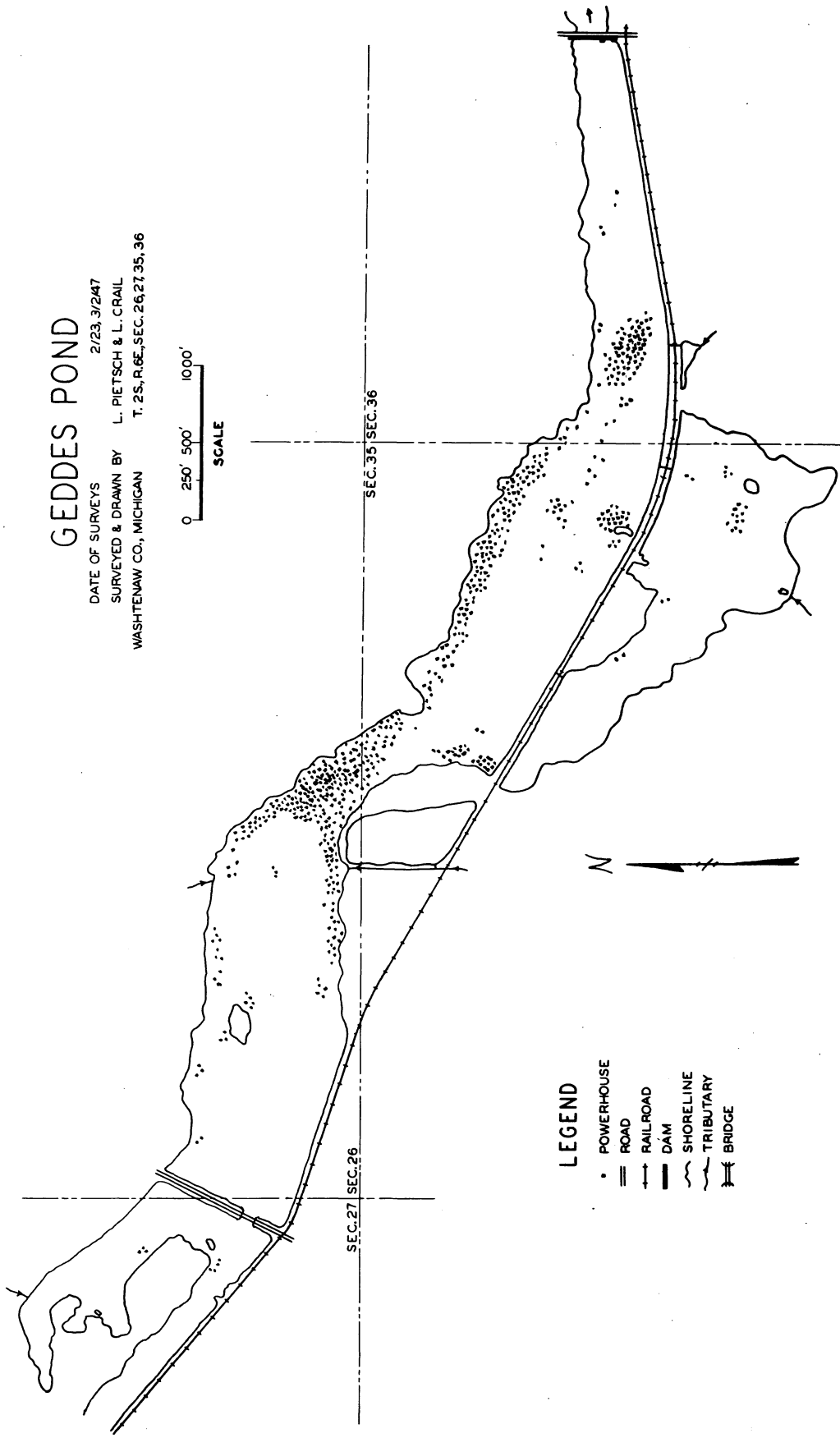
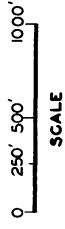
LEGEND

- POWERHOUSE
- ROAD
- - - RAILROAD
- DAM
- ~ SHORELINE
- ~ TRIBUTARY
- BRIDGE

Mergus merganser americanus, American Merganser

GEDDES POND

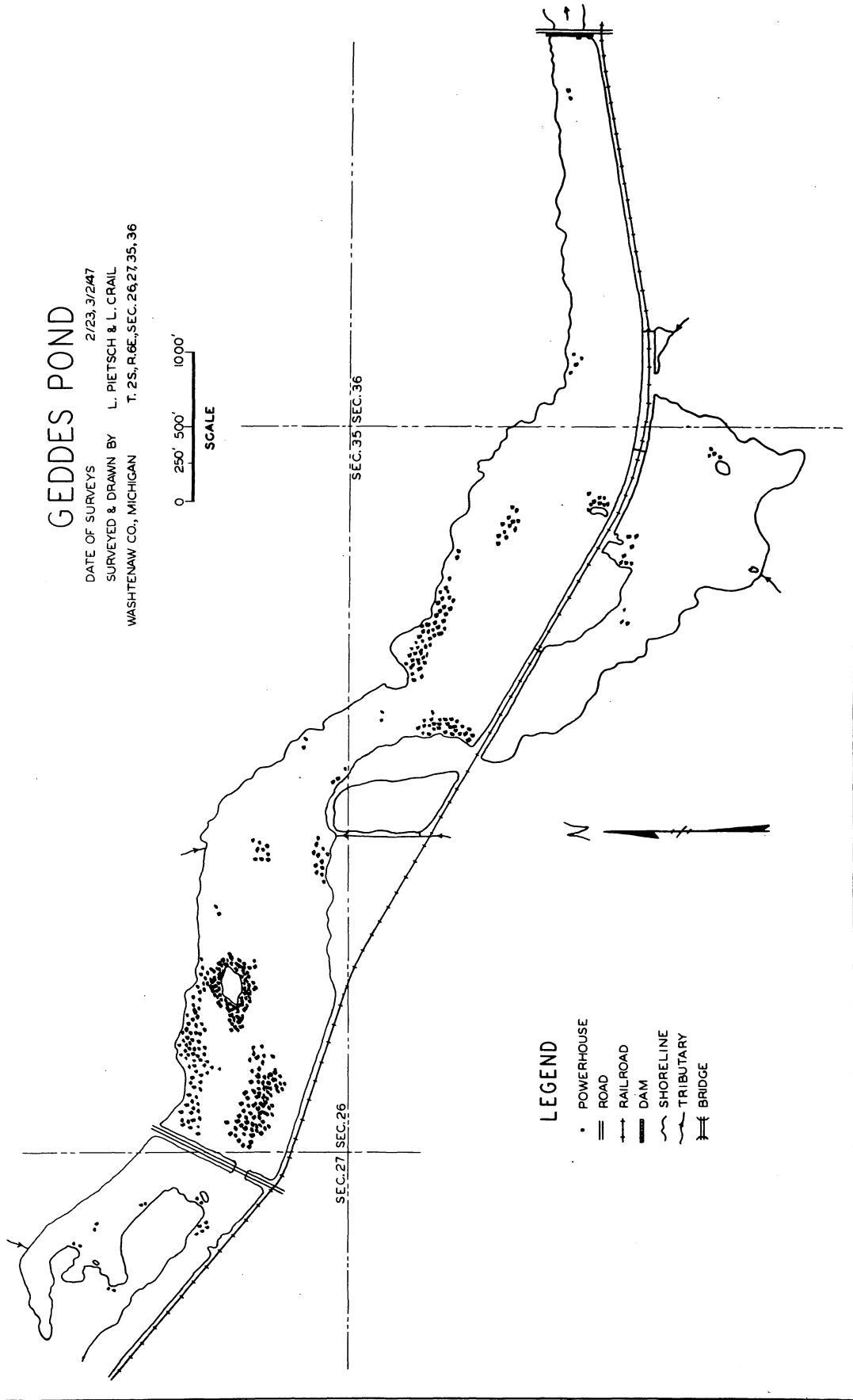
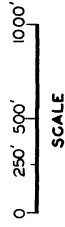
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WASHTENAW CO., MICHIGAN T. 2S., R. 6E., SEC. 26, 27, 35, 36



Anas rubripes tristis, Black Duck

GEDDES POND

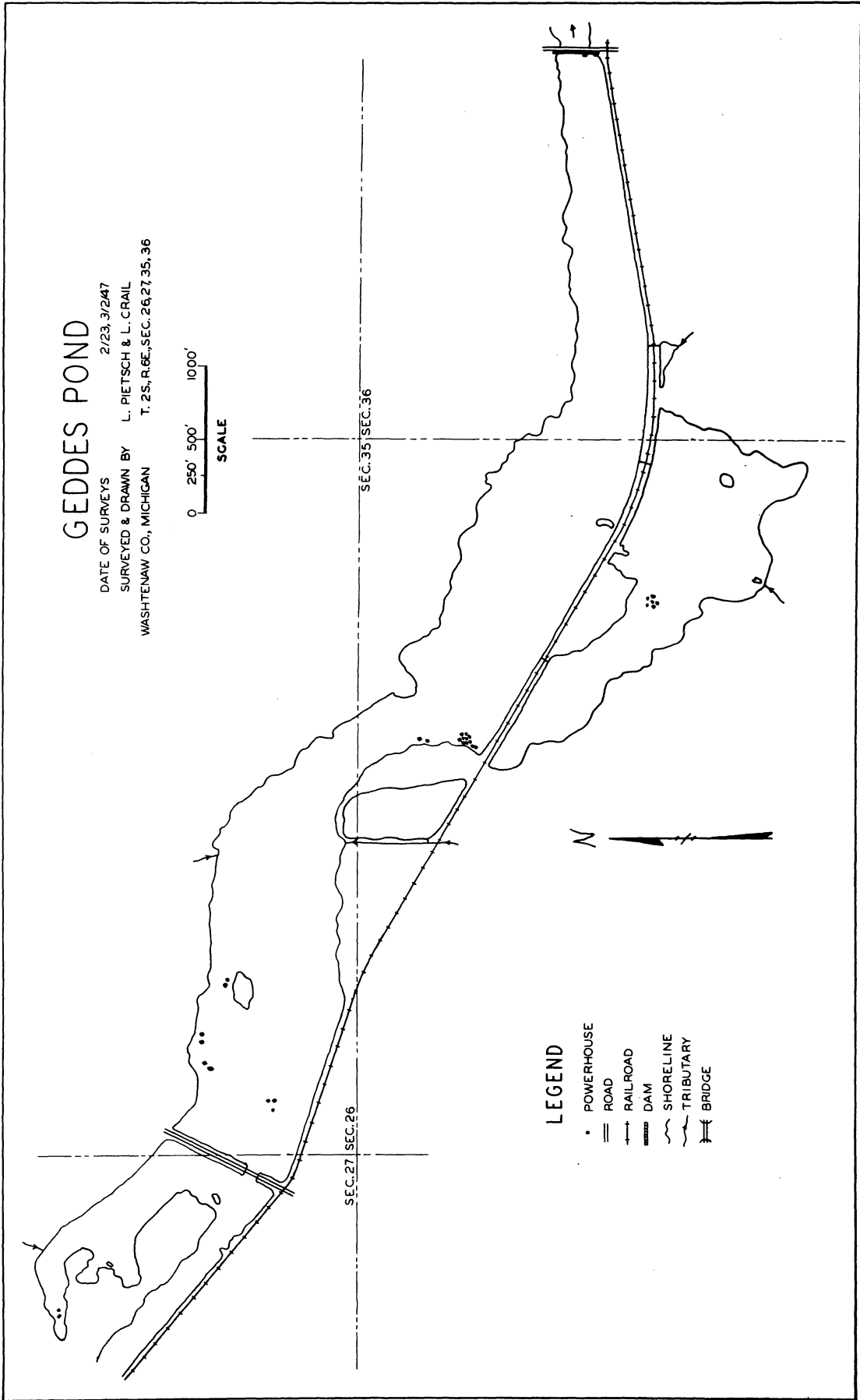
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SURVEYED & DRAWN BY L. PIETSCH & L. CRAIL
WASHTENAW CO., MICHIGAN T. 25., R. 6E., SEC. 26, 27, 35, 36



LEGEND

- POWERHOUSE
- == ROAD
- + RAILROAD
- ▬ DAM
- ~ SHORELINE
- TRIBUTARY
- ⊥ BRIDGE

Mareca americana, Baldpate



GEDDES POND

DATE OF SURVEYS 2/23, 3/24/7
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WASHTENAW CO., MICHIGAN T. 2S., R. 6E., SEC. 26, 27, 35, 36

0 250' 500' 1000'
SCALE

LEGEND

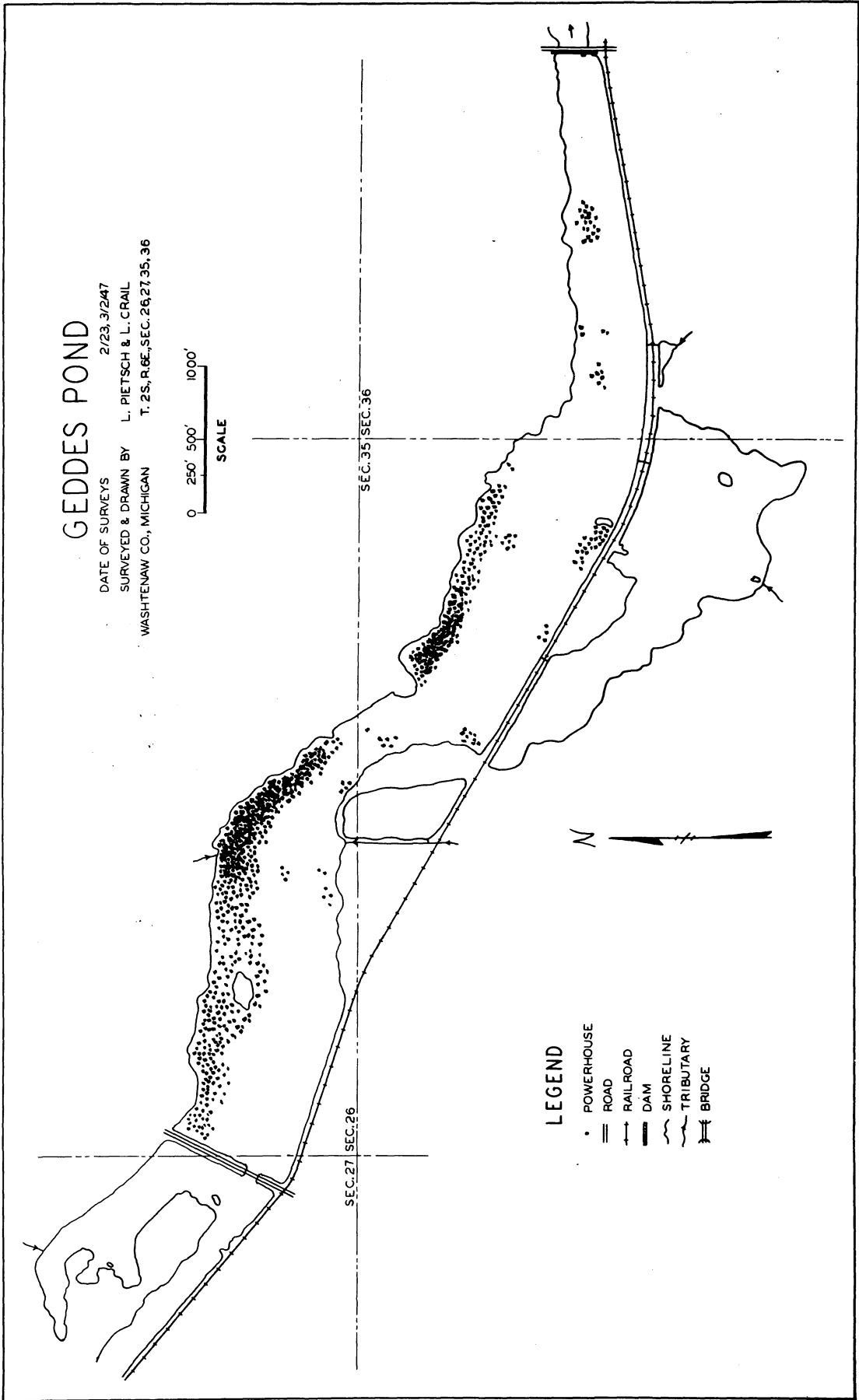
- POWERHOUSE
- == ROAD
- +— RAILROAD
- DAM
- ~ SHORELINE
- ~ TRIBUTARY
- BRIDGE

Nyroca affinis, Lesser Scaup) Scaup
Nyroca marila, Greater Scaup)

GEDDES POND

DATE OF SURVEYS 2/23, 3/24/7
SURVEYED & DRAWN BY L. PIETSCH & L. CRAIL
WASHTENAW CO., MICHIGAN T. 2S., R. 6E., SEC. 26, 27, 35, 36

0 250' 500' 1000'
SCALE



LEGEND

- POWERHOUSE
- == ROAD
- +— RAILROAD
- DAM
- ~ SHORELINE
- ~ TRIBUTARY
- +— BRIDGE

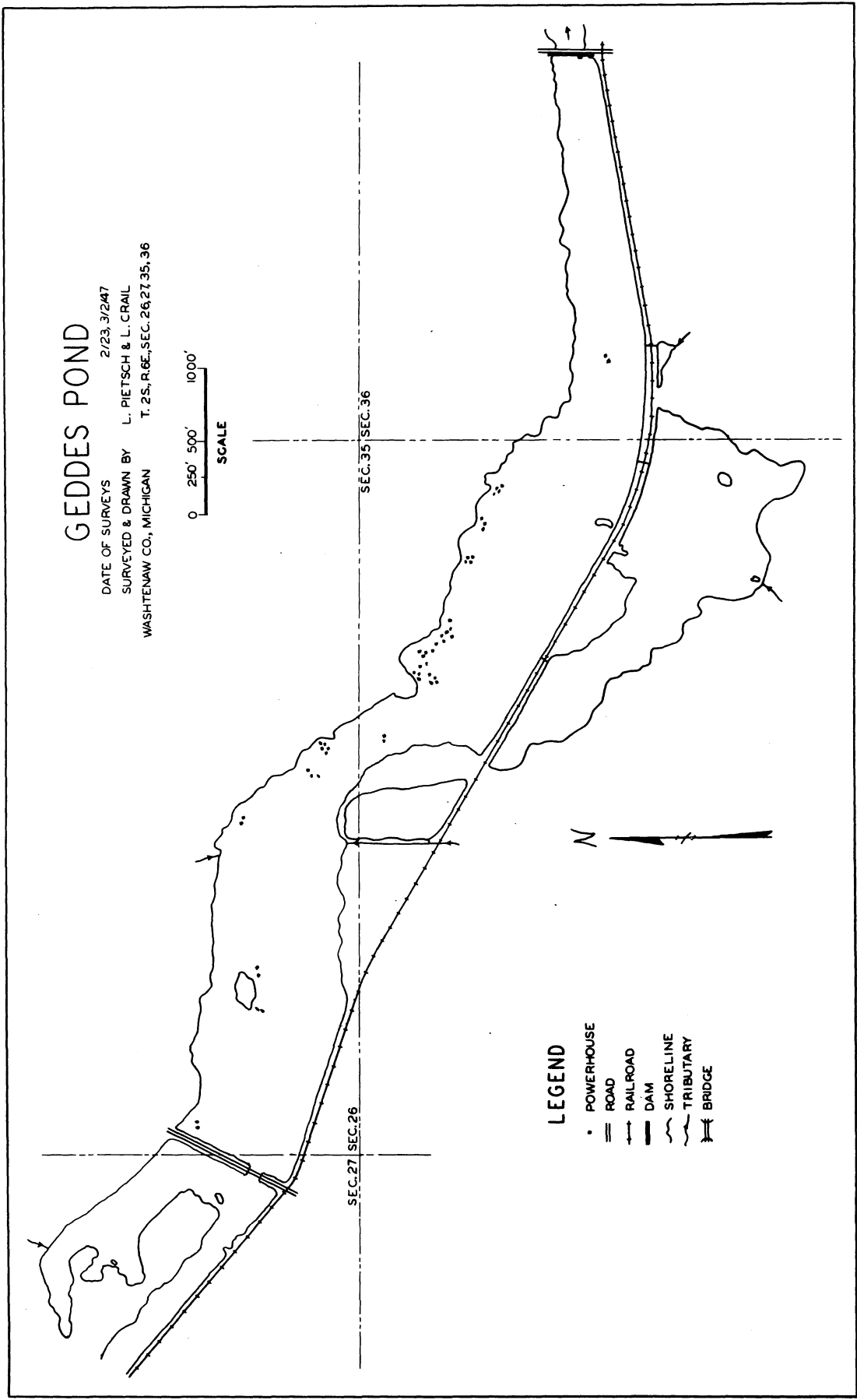
Lophodytes cucullatus, Hooded Merganser

GEDDES POND

DATE OF SURVEYS 2/23, 3/24/7

SURVEYED & DRAWN BY L. PIETSCH & L. CRAIL

WASHTENAW CO., MICHIGAN T. 2S., R. 6E., SEC. 26, 27, 35, 36



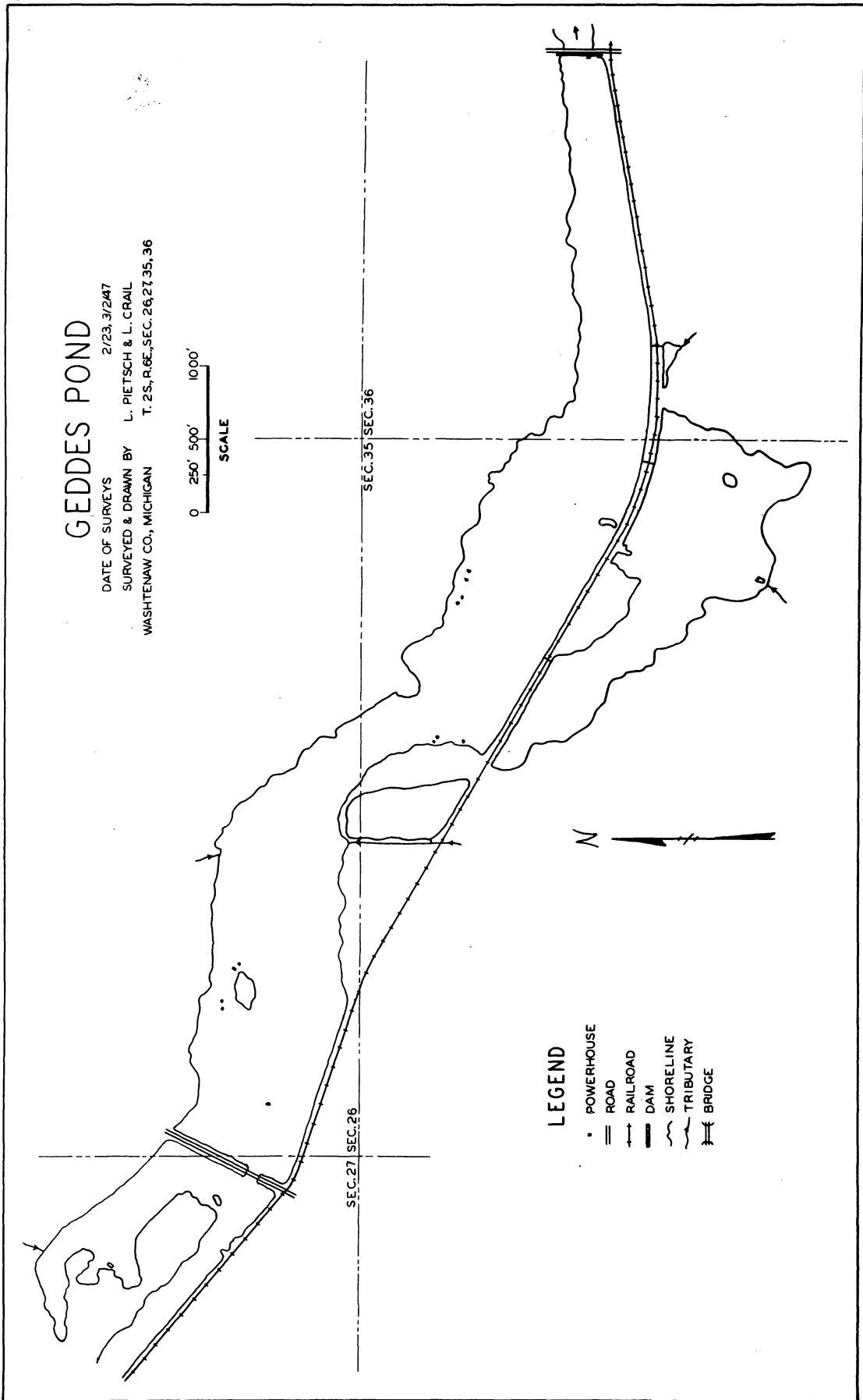
LEGEND

- POWERHOUSE
- == ROAD
- + RAILROAD
- DAM
- ~ SHORELINE
- ~ TRIBUTARY
- ≡ BRIDGE

Anas p. platyrhynchos, Common Mallard

GEDDES POND

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WASHTENAW CO., MICHIGAN T. 2S., R. 6E., SEC. 26, 27, 35, 36



LEGEND

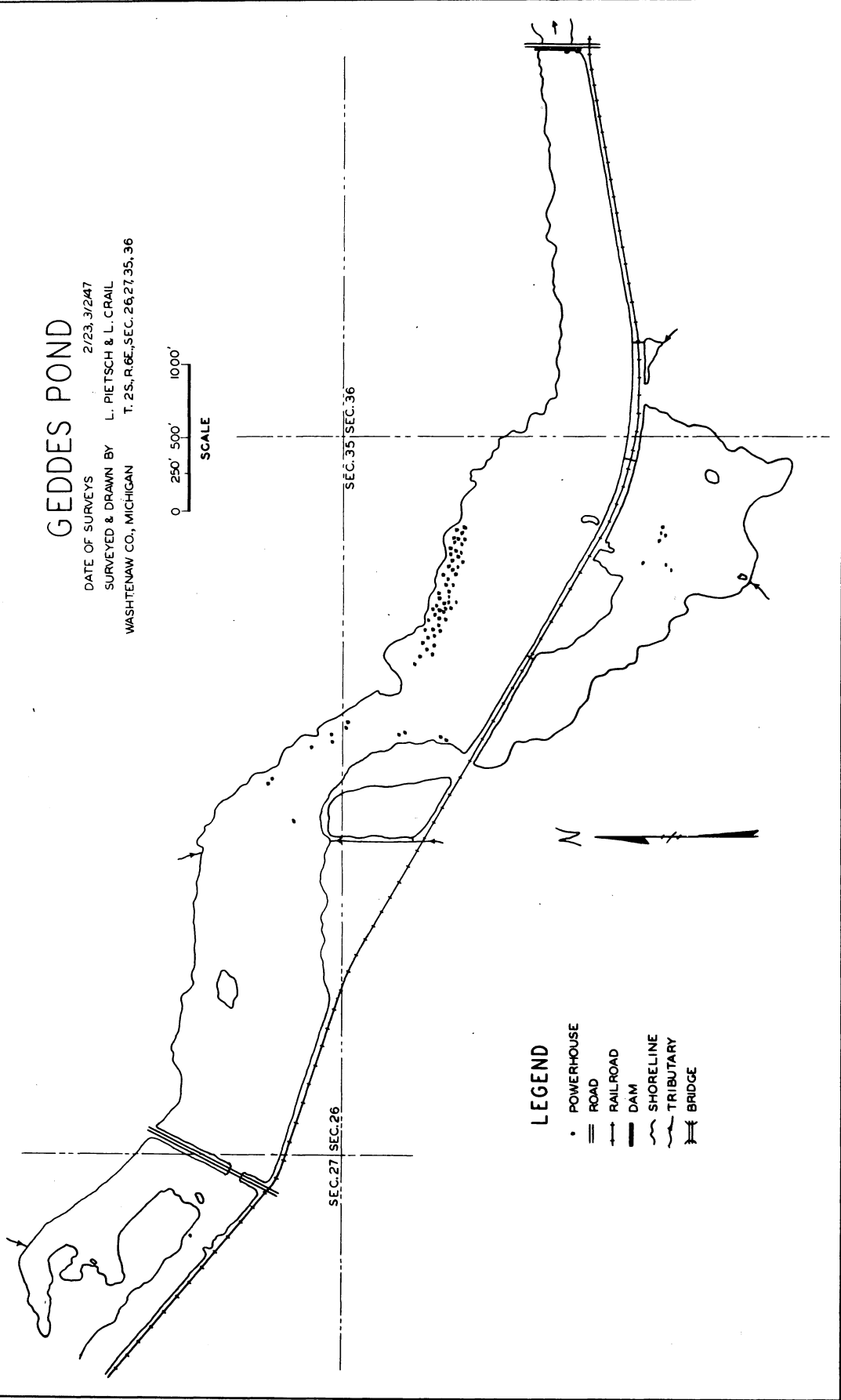
- POWERHOUSE
- == ROAD
- +— RAILROAD
- DAM
- ~ SHORELINE
- ~ TRIBUTARY
- ≡ BRIDGE

MAP 10

Erismatura jamaicensis rubida, Ruddy Duck

GEDDES POND

DATE OF SURVEYS 2/23, 3/24/7
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WASHTENAW CO., MICHIGAN T. 25, R. 6E., SEC. 26, 27, 35, 36



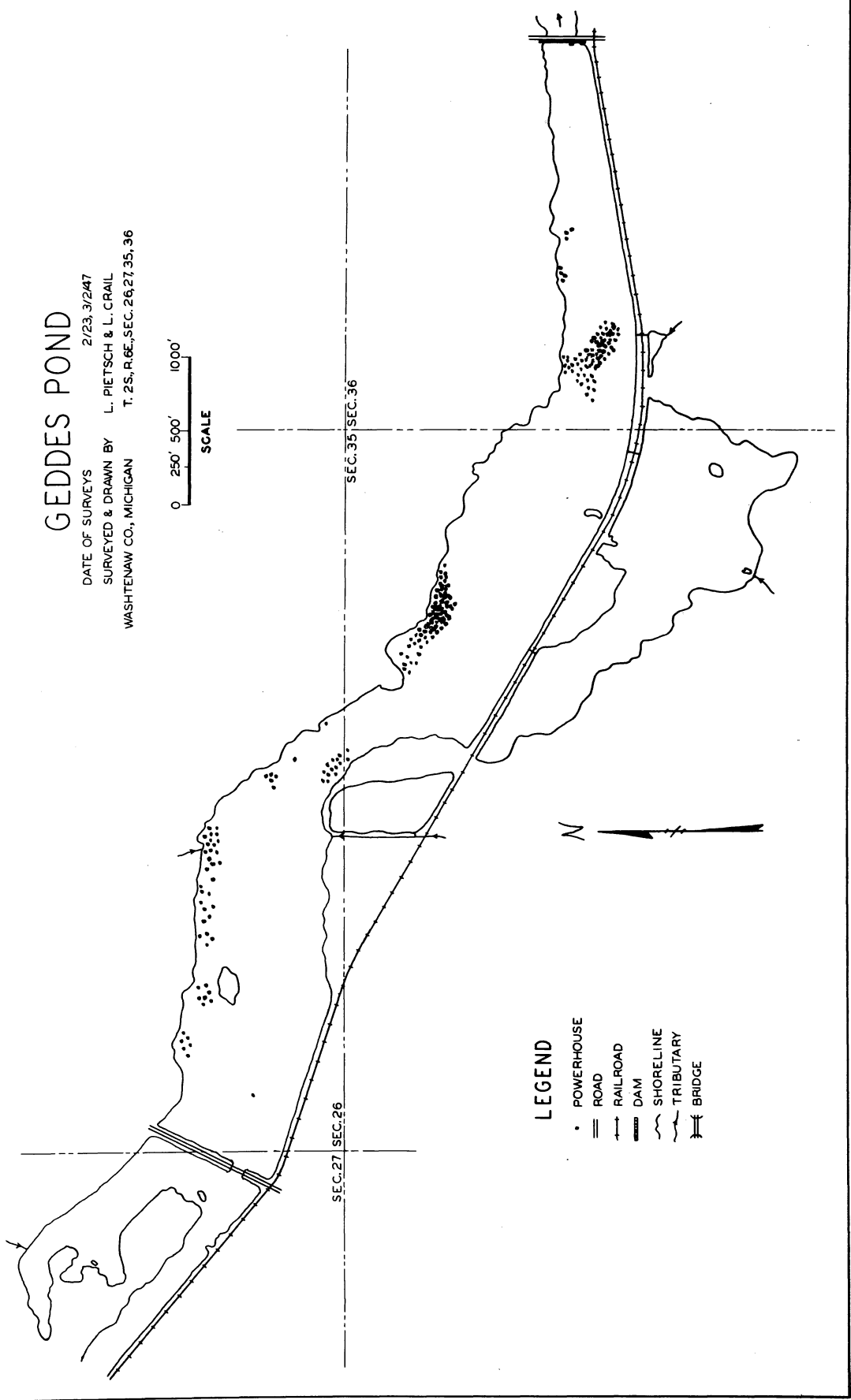
LEGEND

- POWERHOUSE
- == ROAD
- + RAILROAD
- DAM
- ~ SHORELINE
- ~ TRIBUTARY
- ≡ BRIDGE

Aythya collaris, Ring-necked Duck

GEDDES POND

DATE OF SURVEYS 2/23, 3/2/47
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WASHTENAW CO., MICHIGAN T. 25, R. 6E, SEC. 26, 27, 35, 36



LEGEND

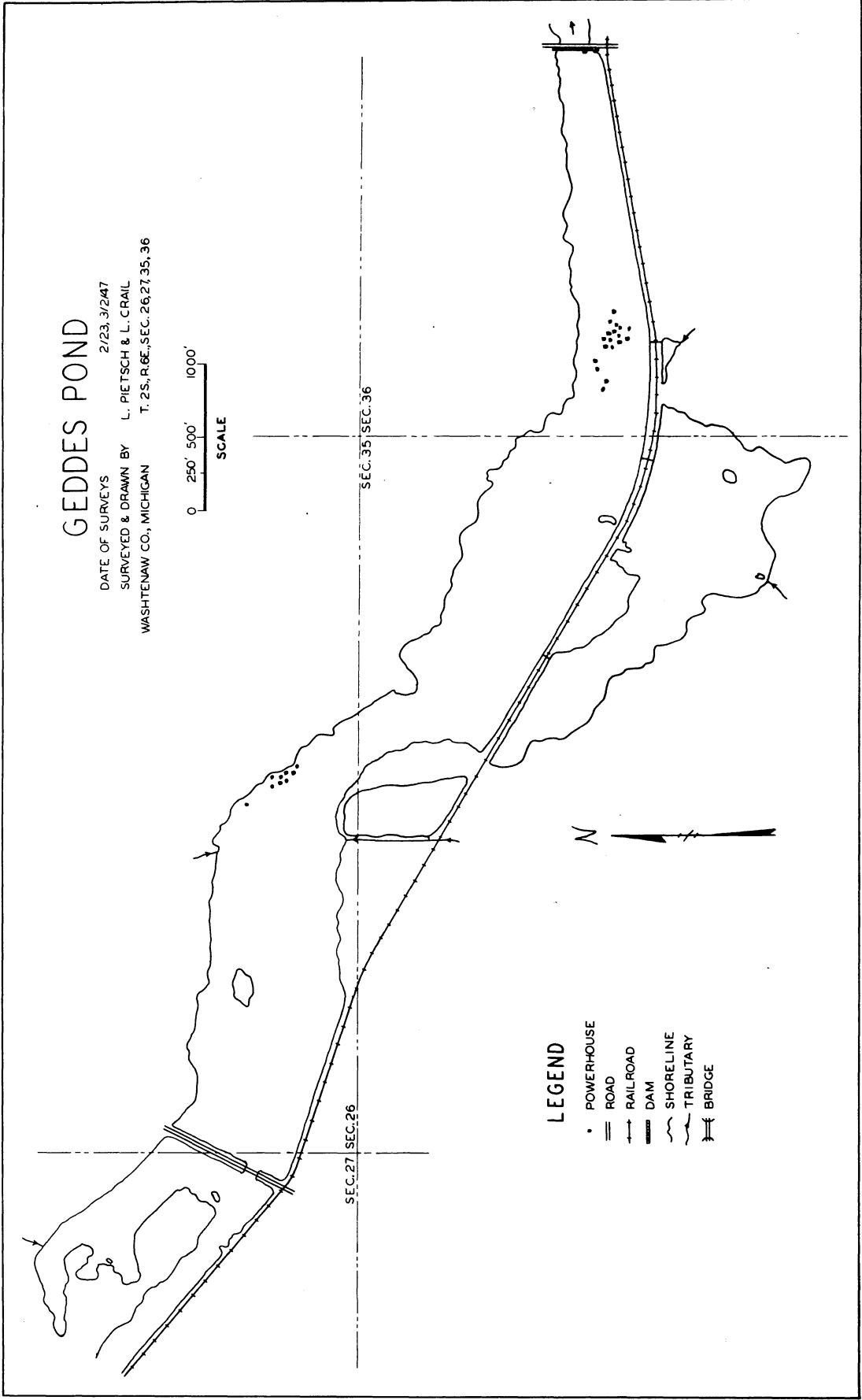
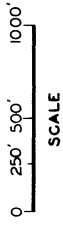
- POWERHOUSE
- == ROAD
- +— RAILROAD
- ▬ DAM
- ~ SHORELINE
- ~ TRIBUTARY
- ≡ BRIDGE

MAP 12

Nyroca valisineria, Canvasback

GEDDES POND

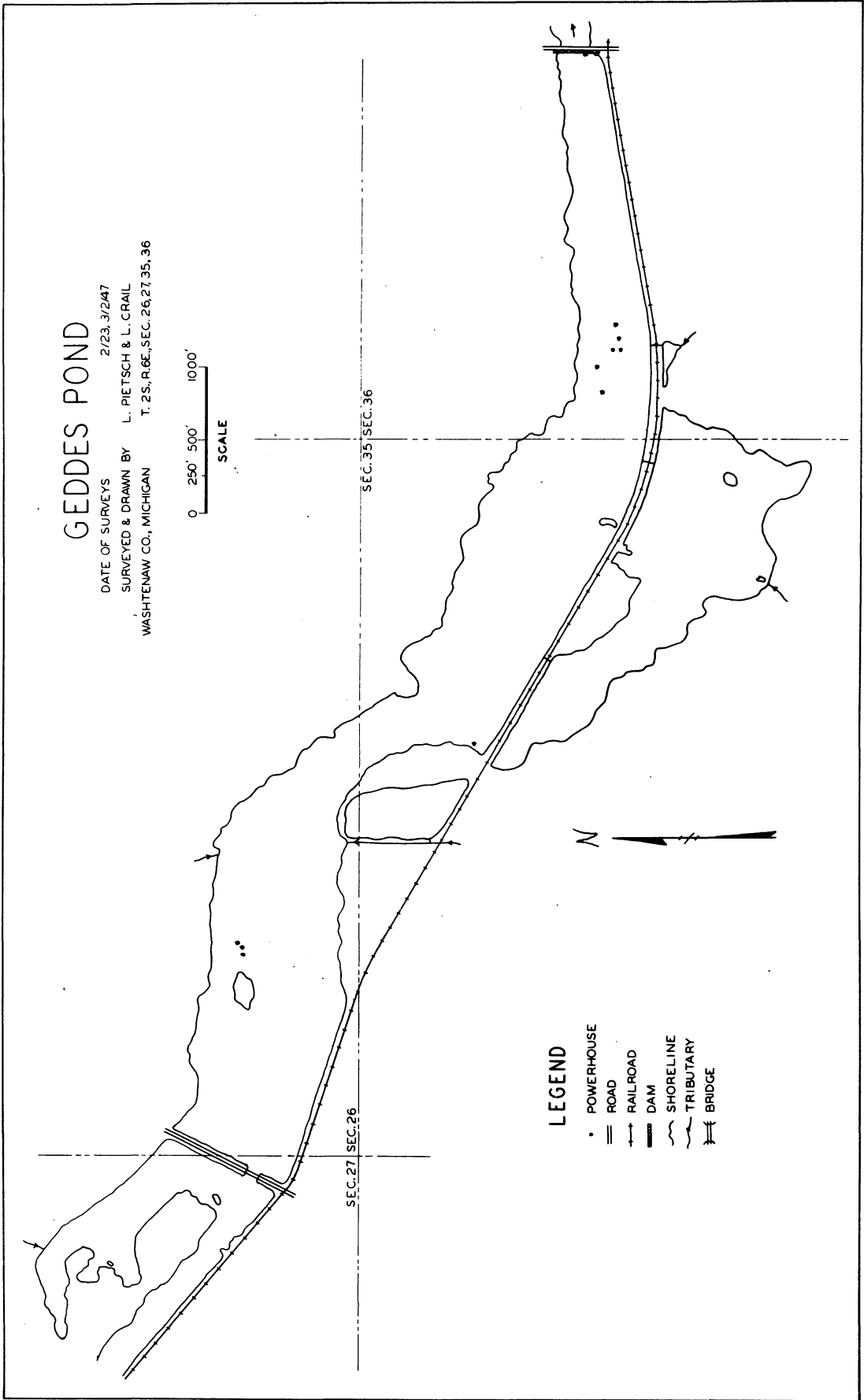
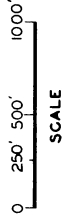
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SURVEYED & DRAWN BY L. PIETSCH & L. CRAIL
WASHTENAW CO., MICHIGAN T. 2S., R. 6E., SEC. 26, 27, 35, 36



Nyroca americana, Redhead

GEDDES POND

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LEGEND

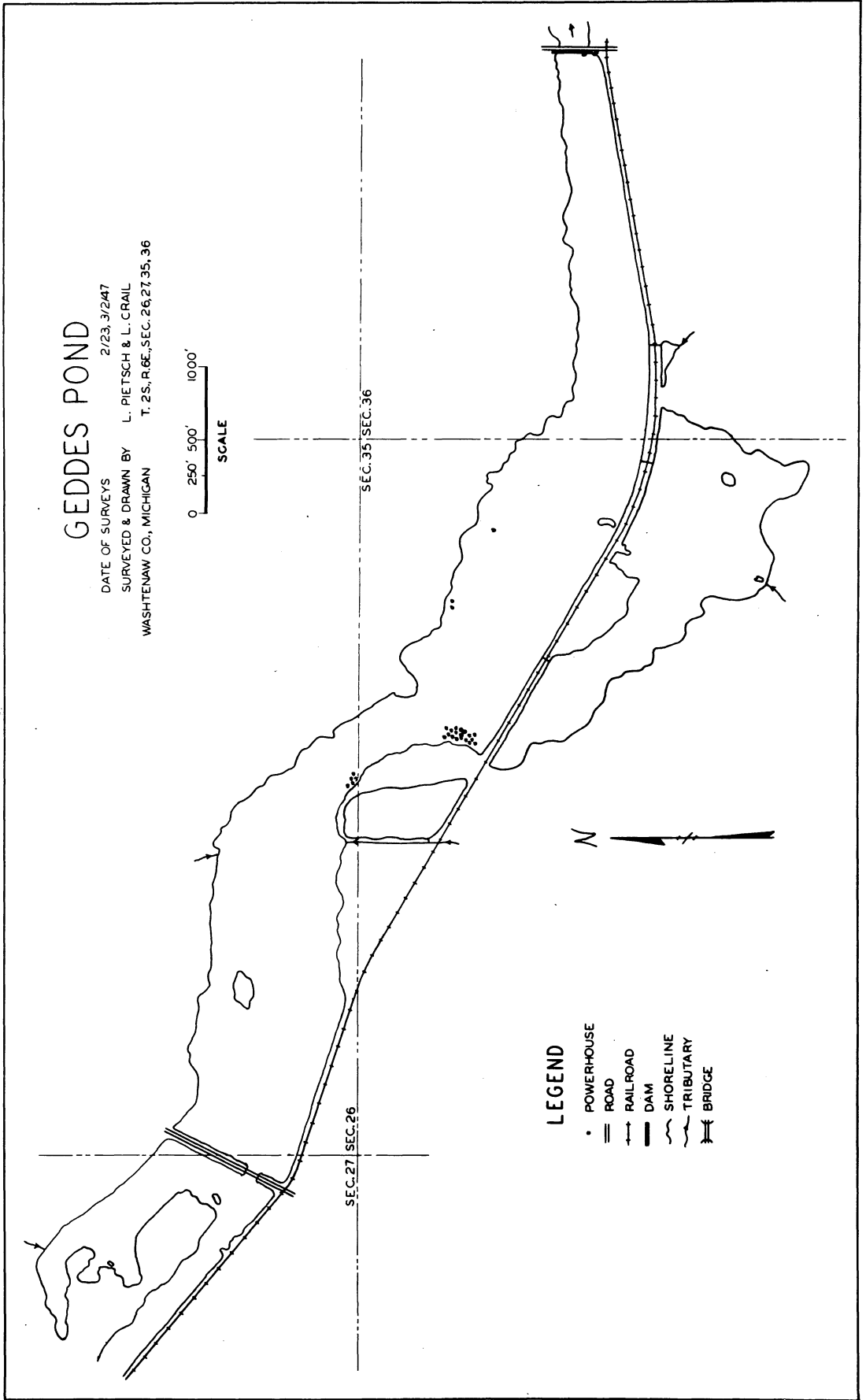
- POWERHOUSE
- == ROAD
- + RAILROAD
- DAM
- ~ SHORELINE
- ~ TRIBUTARY
- ≡ BRIDGE

MAP 14

Spatula clypeata, Shoveller

GEDDES POND

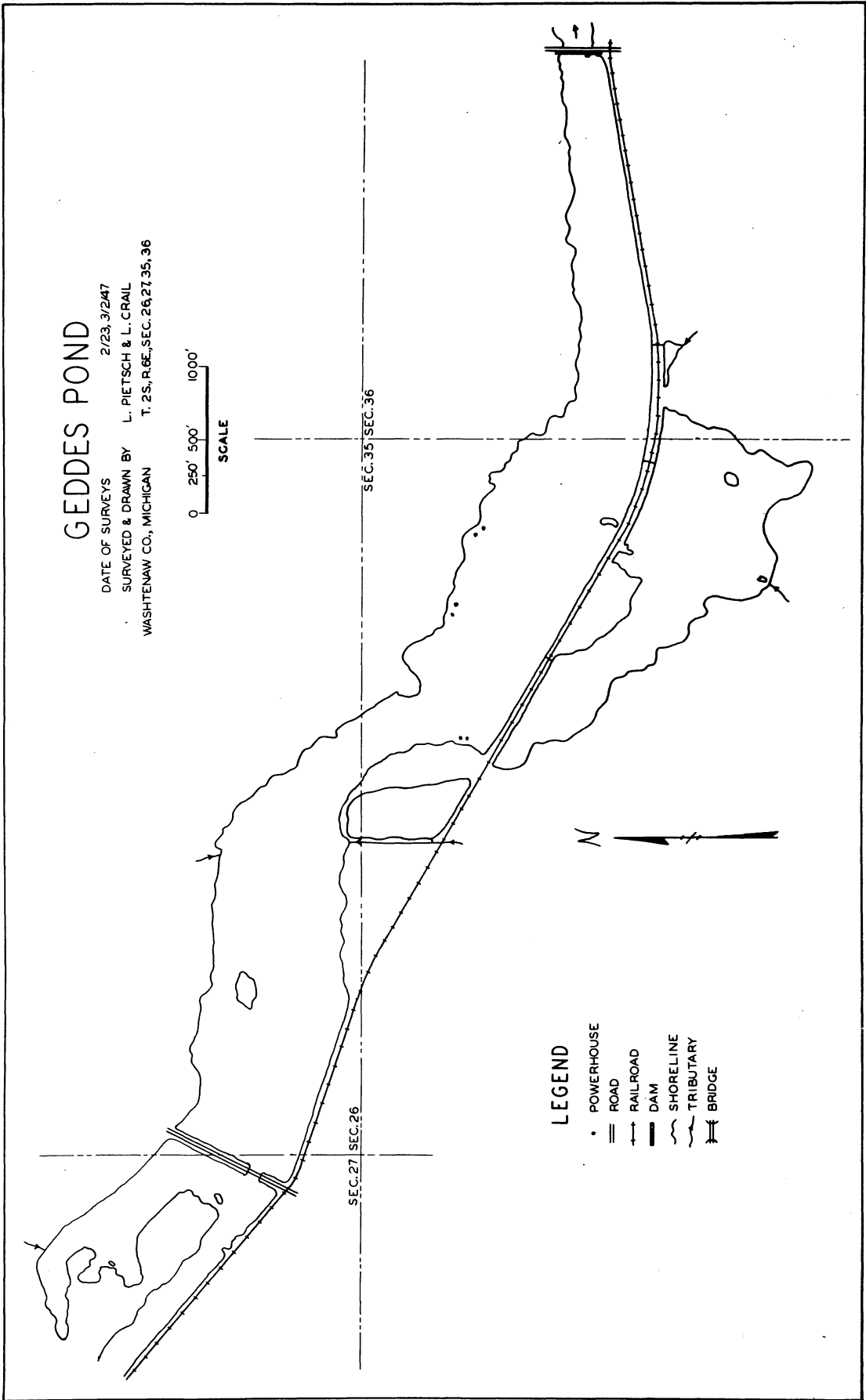
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Chaulelasmus streperus, Gadwall

GEDDES POND

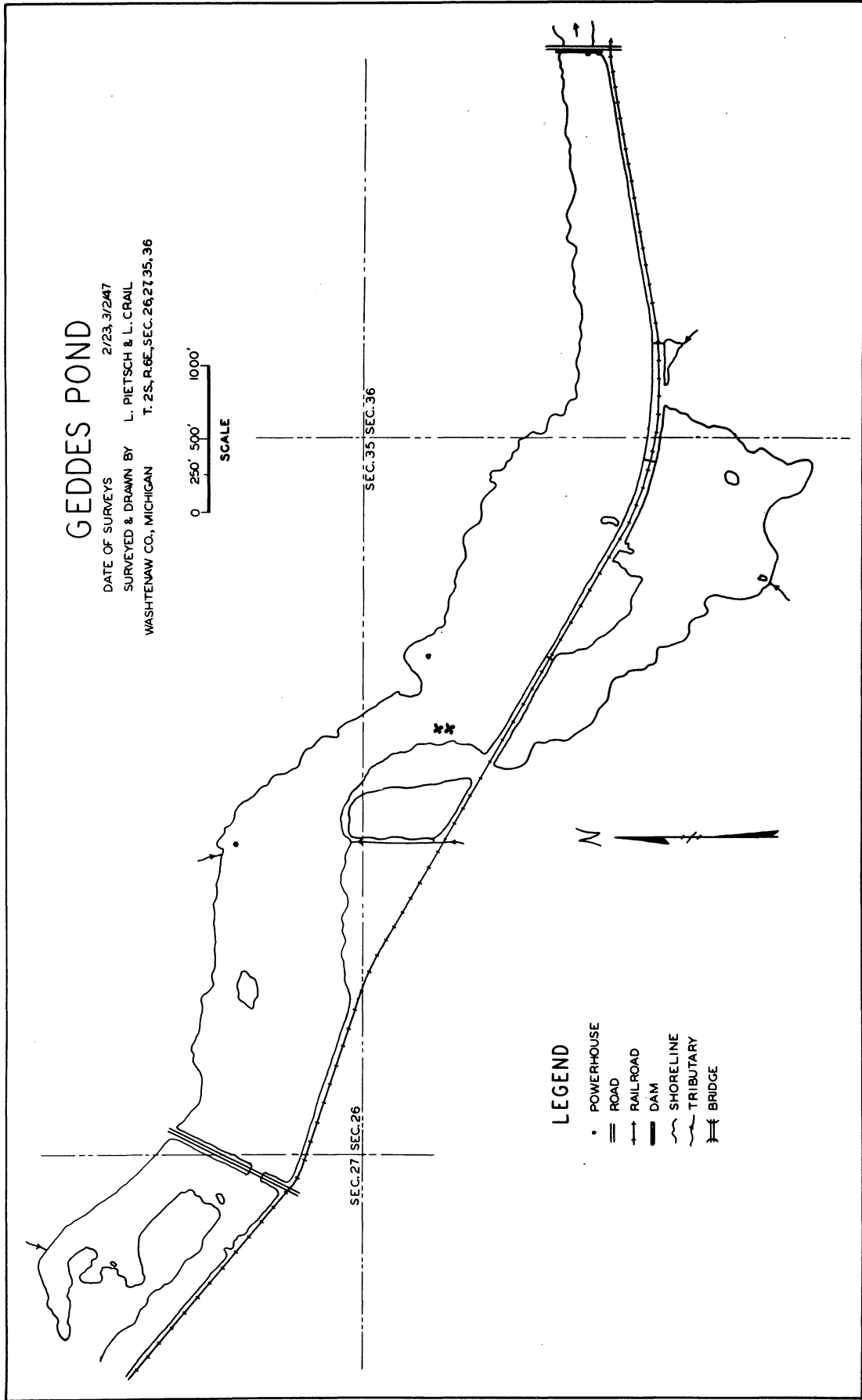
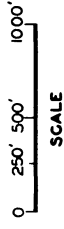
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SURVEYED & DRAWN BY L. PIETSCH & L. CRAIL
WASHTENAW CO., MICHIGAN T. 2S., R. 6E., SEC. 26, 27, 35, 36



Nettion carolinense, Green-winged Teal •
Querquedula discors, Blue-winged Teal *

GEDDES POND

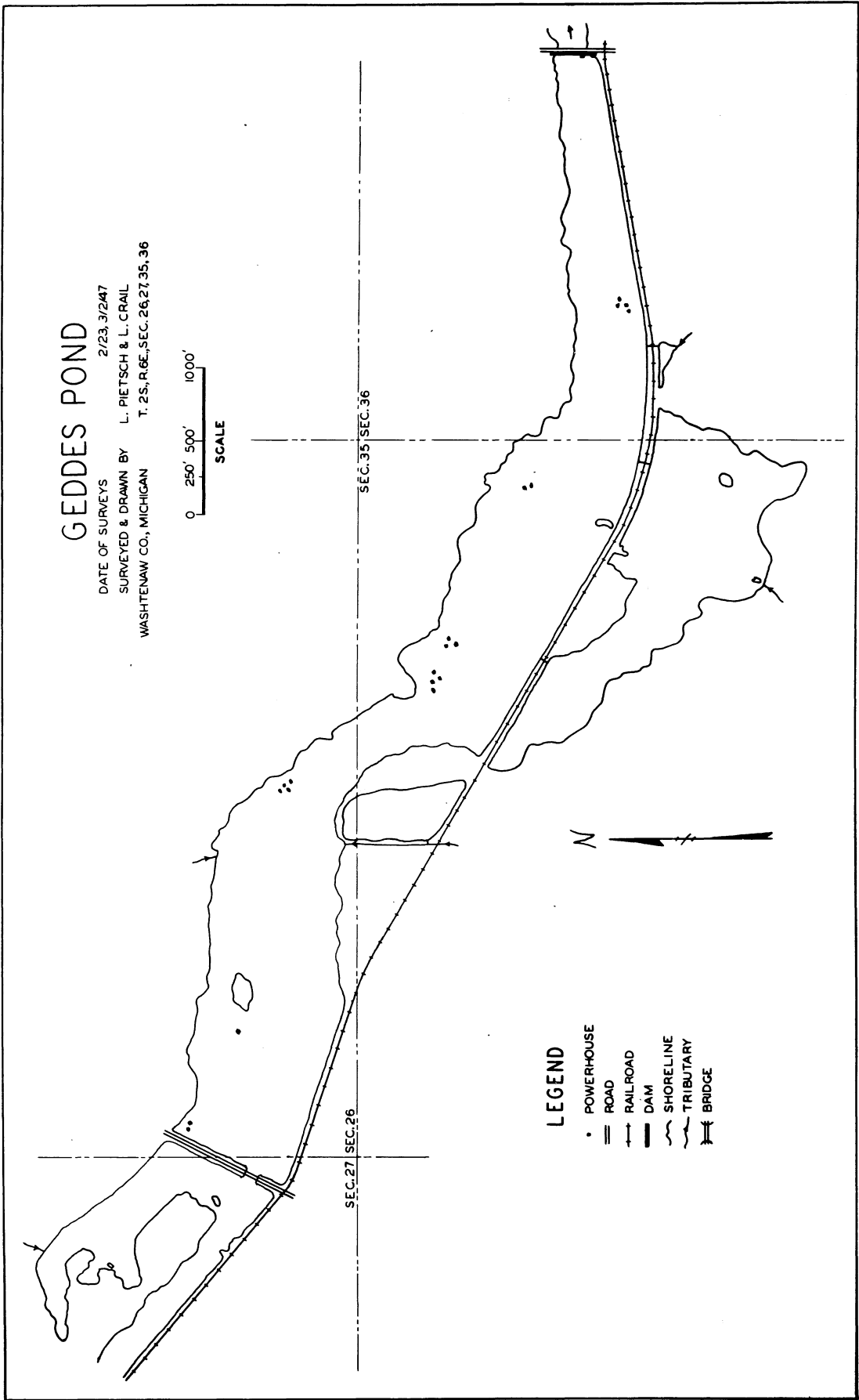
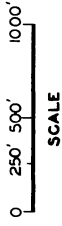
DATE OF SURVEYS 2/23, 3/24/7
SURVEYED & DRAWN BY L. PIETSCH & L. CRAIL
WASHTENAW CO., MICHIGAN T. 2S., R. 6E., SEC. 26, 27, 35, 36



Mergus serrator, red-breasted Merganser

GEDDES POND

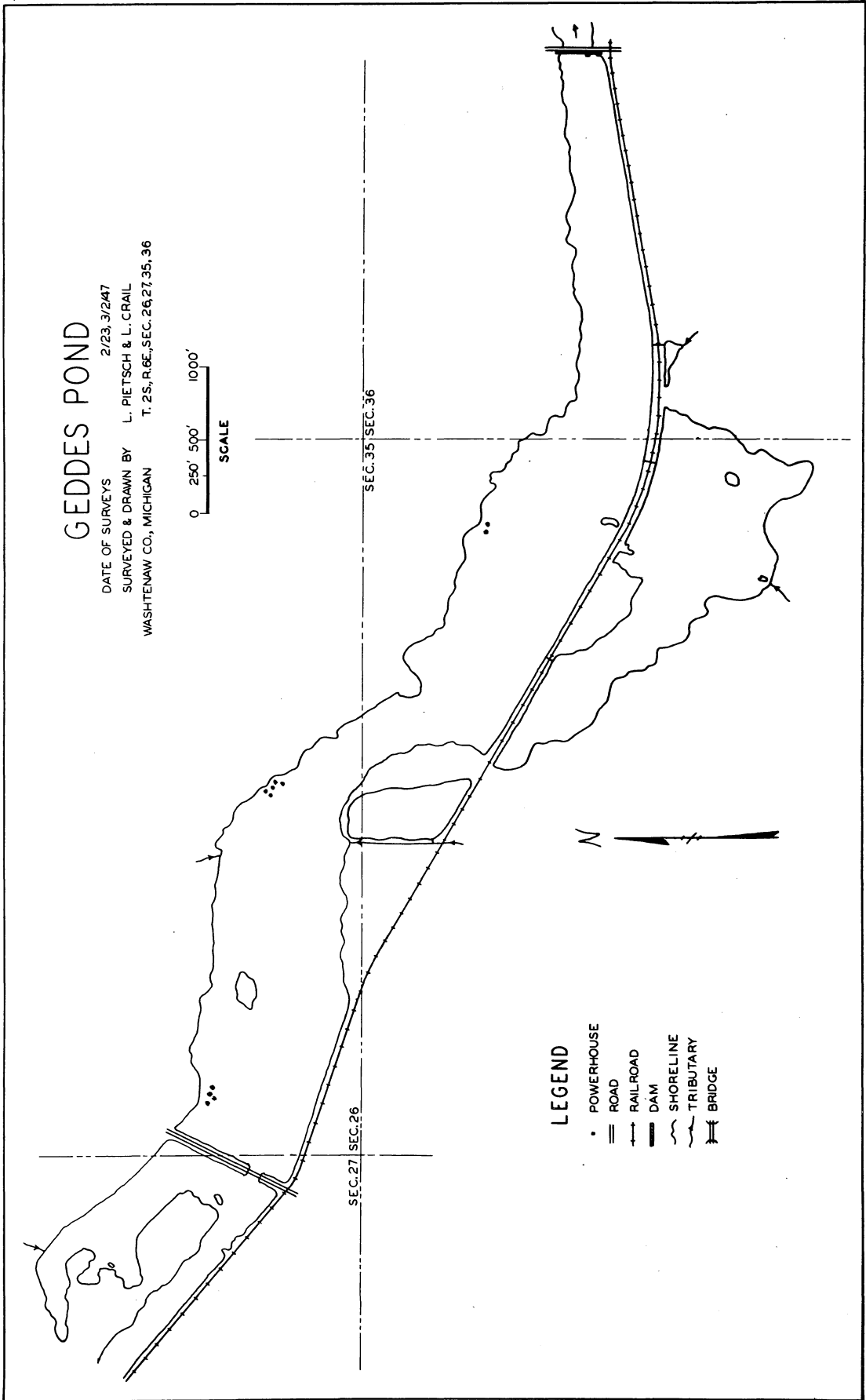
DATE OF SURVEYS 2/23, 3/24/47
SURVEYED & DRAWN BY L. PIETSCH & L. CRAIL
WASHTENAW CO., MICHIGAN T. 2S., R. 6E., SEC. 26, 27, 35, 36



Charitonetta albeola, Bufflehead

GEDDES POND

DATE OF SURVEYS 2/23, 3/24/7
SURVEYED & DRAWN BY L. PIETSCH & L. CRAIL
WASHTENAW CO., MICHIGAN T. 25, R. 6E, SEC. 26, 27, 35, 36



LEGEND

- POWERHOUSE
- == ROAD
- RAILROAD
- DAM
- ~ SHORELINE
- TRIBUTARY
- ≡ BRIDGE

UNIVERSITY OF MICHIGAN



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