Food habits, movements and nesting of gulls on a waterfowl area, Freezout Lake, Teton County, Montana
by Robert A Rothweiler

A THESIS Submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree of Master of Science in Fish and Wildlife Management
Montana State University

Abstract:
Freezout lake, Teton County, Montana is the site of a waterfowl management area developed by the Montana Fish and Game Department.

Three species of gulls, California gull, Larus californicus. ring-billed gull, L. delawarensis, and Franklin's gull, L. pipixcan. have nesting colonies on the Freezout Lake Project. A study of the gull populations, was conducted during the summer of 1958 and spring and summer of 1959, in an attempt to determine food habits, movements and nesting. Two hundred twenty-nine gulls were trapped and color-marked to facilitate observation On and off the Freezout Lake Project. Two hundred four gulls were collected to analyse stomach contents. The effect of gull activity on the waterfowl population of Freezout Lake is discussed.

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TABLE OF CONTENTS

ABSTRACT

Freezout Lake, Teton County, Montana is the site of a waterfowl management area developed by the Montana Fish and Game Department. Three species of gulls, California gull, Larus californicus, ring-billed gull, L. delawarensis, and Franklin's gull, L. pipixcan, have nesting colonies on the Freezout Lake Project. A study of the gull populations was conducted during the summer of 1958 and spring and summer of 1959, in an attempt to determine food habits, movements and nesting. Two hundred twenty-nine gulls were trapped and color-marked to facilitate observation on and off the Freezout Lake Project. Two hundred four gulls were collected to analyse stomach contents. The effect of gull activity on the waterfowl population of Freezout Lake is discussed.

INTRODUCTION

The Montana Fish and Game Department is developing Freezout Lake, Teton County, Montana into a waterfowl management area. Marsh habitat is being created and islands are being constructed. This development has resulted in more potential habitat for breeding gulls.

Many grain farmers in the area believe gulls reduce and even prevent insect losses to crops. Cottam (1935), Cottam and Williams (1939) and Greenhalgh (1952) have reported California gulls feeding on insects in Utah. Knowlton (1941) indicated California gulls reduced grasshopper numbers by 90 percent on an area in the same state. York (1949) observed gulls, believed to be California gulls, reduce grasshoppers on an area in Montana 80 percent in a five day period.

An increase of gulls may have a detrimental effect on the waterfowl population. Odin (1957) found that California gulls were responsible for destruction of 30 percent of the waterfowl produced on his study area on the Farmington Bay Bird Refuge in Utah. Twomey (1948) observed instances of adult gulls regurgitating eggs of ducks..... He also observed gulls killing the young of Canada geese, Branta canadensis. Ellig (1955) indicated that gulls may have been responsible for destroying some waterfowl nests on Freezout Lake. Greenhalgh (op. cit.) stated that gulls nesting on waterfowl refuges were accused of predation on ducks.

An ecological study of the gulls on Freezout Lake Project was conducted with special emphasis on food habits, movements and nesting.

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THE STUDY AREA

Freezout Lake is located in northcentral Montana approximately two miles northwest of Fairfield. The water source is waste and seepage from an irrigation project located east and south and considerable runoff from higher elevations around the lake (Montana Fish and Game Dept., 1956). The lake had no outlet and the water area steadily increased for a number of years. In 1952 and 1953, adjacent private property, a railroad line and a highway were flooded. Ellig (op. cit.) reported the size of the lake in 1952 as 4,100 acres; by 1953, this area had increased to well over 6,000 acres (Anon., 1955). At this time the Montana Fish and Game Department took control in order to develop the lake as a waterfowl area and reduce the flood conditions (Montana Fish and Game Dept., op. cit.). An outlet was constructed during 1953 and 1954 and drainage began in September 1954 (Salinas and Trueblood, 1954). Water impoundments to maintain a stable water level for marsh habitat was planned for the areas drained. Dike construction for this purpose began in 1955 and by 1959

three impoundments were completed.

In 1959, the Freezout Lake Waterfowl Management Area consisted of 9,650 acres, most of which was open water or marsh habitat (Fig. 1). Over 6,000 acres of this area is leased federal land, while the rest is owned by the State.

Davis Lake, a small lake adjacent to Freezout Lake was included in the study area (Fig. 1). Both lakes are relatively shallow with considerable aquatic vegetation, however Freezout Lake lacked marsh habitat of aquatic emergents. This may be due to wave action and water level fluctuation. Most of the shoreline consists of mud flats. Davis Lake has marsh habitat located almost entirely around the edges and also near the middle. The vegetation is described in the papers of Ellig (op. cit.) and Knight (1960).

METHODS

Gull observations were made on Freezout Lake Project and adjacent areas during the periods, June 11, 1958 to September 24, 1958 and March 23, 1959 to September 23, 1959.

Experimental trapping of gulls was attempted during the summer of 1958, but with little success. Two types of traps were used in the spring of 1959 when gulls moved onto the nests. Spring-operated traps (Atwater, 1958) were used to take single gulls for the purpose of obtaining individual nest data (Fig. 2). A cannon trap (Dill and Thornsberry, 1950) was used to take large numbers of gulls in concentrated nesting

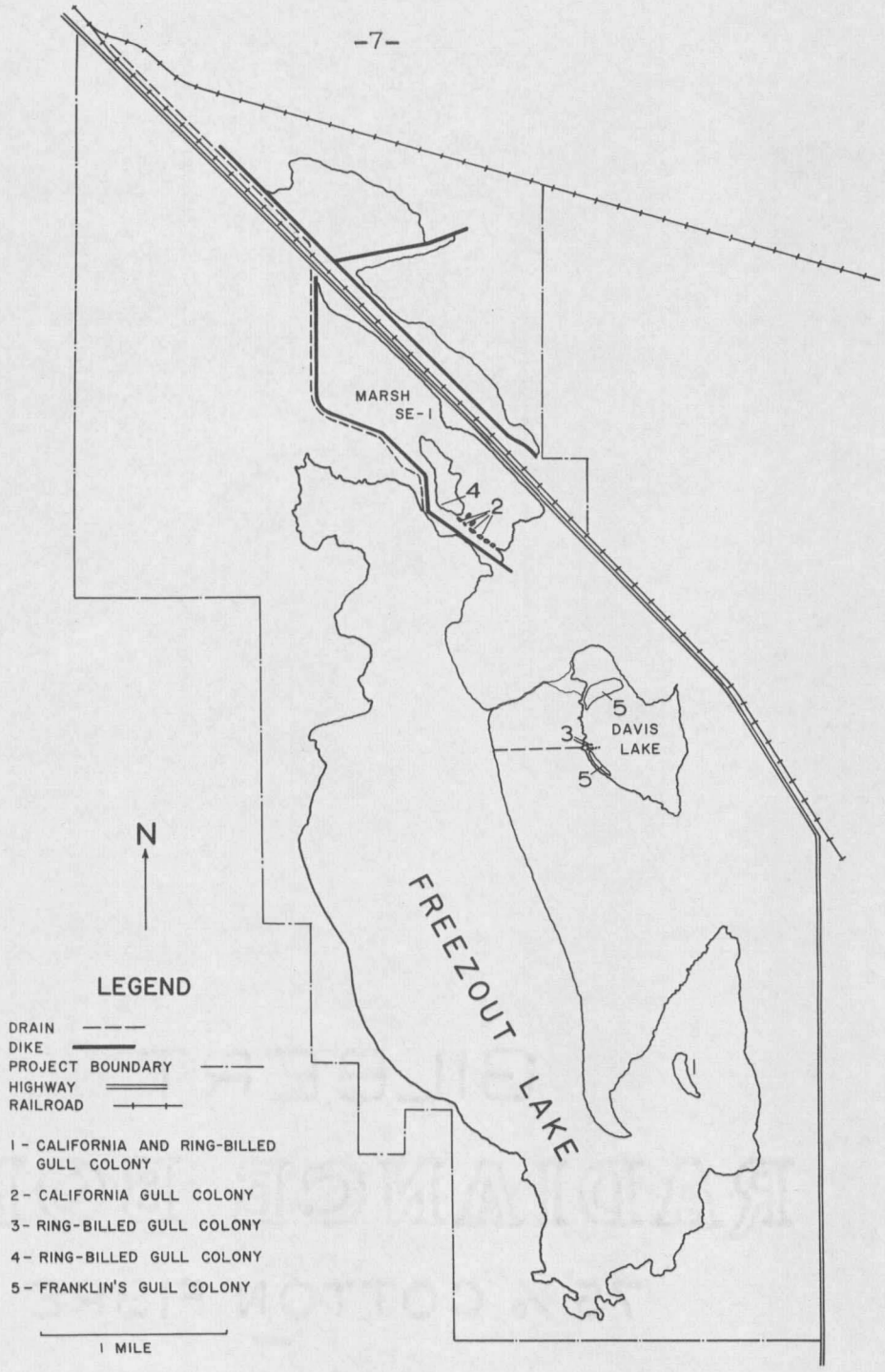

Fig. 1. Freezout Lake waterfowl management area showing water areas and location of gull colonies.

areas for movement data (Fig. 3). Gulls were taken to the Project headquarters for banding and color-marking, after which they were released directly or transported to the capture site and released.

Since gulls have a predominantly white plumage, many of the techniques used by Kozlik, Miller and Rienecker (1959) for marking white geese could be adapted to color-mark gulls. Only California and ring-billed gulls were color-marked due to the difficulties of capturing Franklin's gulls by the trapping methods used. The four basic colors used were basic fuchsin (red), gentian violet (blue), malachite green (green), and picric acid (yellow). These colors were tested for visibility at distances up to 500 yards and were found to be satisfactory using a 20x spotting scope and 8x binoculars. Yellow was found to be the most visible and was also the most permanent. Gulls taken by the spring-operated trap were marked individually with color combinations of head, tail, right and left wings; for example, red head and green tail, blue head and yellow tail. Gulls taken in the cannon trap were marked according to species and location where trapped; the markings were a single color over the entire body. A summary of trapping and color-marking activities is given in Table I.

Banding techniques followed those recommended by the United States Fish and Wildlife Service and Fish and Wildlife Service bands were used.

This study was given publicity by the Information and Education Division of the Montana Fish and Game Department. The public was urged to report any sightings of marked gulls.