Original: Fish Division
cc: Education-Game
Inst. for Fish. Res.
R. S. Marks
C. T. Yoder
J. A. Scully
K. E. Christensen
D. S. Shetter

INSTITUTE FOR FISHERIES RESEARCH
DIVISION OF FISHERIES
MICHIGAN DEPARTMENT OF CONSERVATION
COOPERATING WITH THE
UNIVERSITY OF MICHIGAN

ALBERT S. HAZZARD, PH.D.
DIRECTOR

ADDRESS
UNIVERSITY MUSEUMS ANNEX
ANN ARBOR, MICHIGAN

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Report No. 1424

AN IMPROVED METHOD OF CENSUSING WINTER SHANTY FISHERMEN ON EXPERIMENTAL REGULATION LAKES

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By

Kenneth E. Christensen

Abstract

The census of winter ice fishermen using shanties, on experimental regulation lakes, has been a difficult task. Each census clerk, during the 1946-1953 census of anglers on the experimental regulation lakes, concentrated his efforts on the "open-ice" anglers and relied on the shanty fishermen to record their fishing trips on seasonal shanty forms left with them at the start of the ice fishing season.

The shanty form type of census has not been entirely satisfactory in most instances. The return of shanty forms has been low, and the fishermen did not keep satisfactory records of the numbers of trips, the hours fished, or the species caught.

The census technique for shanty fishermen was revised for the winter of 1953-54, designed along the lines of a method utilized by Minnesota workers on 12 Minnesota lakes. The method involved actual contacts with as many shanty fishermen as possible during each work day. The clerk recorded most of the desired data on a form card and then left the card with the angler for him to complete at the end of his trip (i.e., quitting

time, and total number of each species of fish caught). The card was later handed to the census clerk or left tacked to the shanty to be picked up by the clerk. Cooperation by the anglers was excellent. The clerks contacted an estimated 20 percent of all angling trips and identified 52 percent of the fish caught by those anglers contacted.

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The census of anglers fishing from shanties on the experimental regulation lakes during the winters of 1946-47 through 1952-53 was taken in the following manner:

Each clerk contacted shanty fishermen as soon as possible after the shanty was placed on the ice. He left with the person a shanty-census form. The angler was requested to record each fishing trip made during the winter season. The data requested were: the date fished, the number and kind of fish caught, the hours fished, and the type of angling employed (spear, or hook and line). The clerk collected as many of the shanty forms as possible when the shanties were removed at the end of the winter season. However, the work schedule was such that any one lake was censused only once or twice a week, and many shanties were removed while the clerk was not at the lake. Some shanty records were therefore missed.

The clerk kept a record of the number of shanties on the lake by recording the name and address marked on each shanty.

For those shanty fishermen who were not contacted when they removed their shanties, a mimeographed form letter was mailed to them requesting that they send the shanty records to the Institute. The letter also requested those anglers who did not have shanty-forms to record on the letter the number of trips spent spearing, the number of each kind of fish speared, the number of trips spent hook-and-line fishing, and the number of each kind of fish caught by hook and line.

The results from the census, as described above, have been somewhat unsatisfactory in many instances. The percentage of returns of the distributed forms has been very low, overall. The ability of the angler to record species of fish, the accuracy of their record of hours spent fishing, their willingness to record numbers of each species correctly, and their interest in recording unsuccessful fishing trips are all open to question. The quality of the reported data has varied from one lake to another, and from one year to another.

The estimates of total shanty fishing were based on the ratio of the total number of shanties on the ice to the total number of shanty forms returned with usable data. The angling records were simply expanded to represent the total number of shanties; e.g., if good records were obtained on 50 percent of the shanties, these records were doubled to give the estimated total.

There was an attempt made during the 1952-1953 winter season to check on whether or not the shanty users were recording all of their fishing trips. The clerks were instructed to count the total number of shanties, and the number of shanties in use, each work day. These counts were used to arrive at an "average use" index. The shanty forms

completed by anglers were used to determine an "average use" index as reported by the anglers. The data from five lakes were sufficient to provide a comparison.

The census clerks counted a total of 4,146 shanty days over the winter season and during the times these counts were made they recorded 1,011 of the shanties as being in use (24.4%). The shanty-census forms which were collected from the same lakes had a total of 888 shanty-fishing trips recorded. The total shanty days available were calculated by counting each day between the first and last entry as one shanty day. The addition of all shanty days available totals 2,742 days. The "shanty use" from the shanty forms is thus 32.4 percent. The method of counting total days as the number of days from the first to the last entry on the shanty-sheets gives a minimum value for total available shanty days, since many shanties were on the ice for short periods before and after the first and last entry. The error introduced by using the minimum number of days caused a higher "use" index than was true. The average length of time a shanty was on the ice was calculated from the shanty counts made by the census clerks. The "minimum" period calculated as described above for the five lakes averaged 33 days while the average period calculated from the clerk's counts was 56 days. The shanty use reported by the anglers becomes 19.4 percent when each shanty is credited with 56 days on the ice. The shanty-use percentage of 24.4 obtained from clerk counts is probably quite accurate because it is based on a large sample, and the lower shanty-use (19.4%) derived from shanty-census forms probably represents a significant error which is due to the failure of fishermen to report all of their trips.

The new method

The shanty census was revised in 1953-1954 to do away with many of the objectionable features listed above. Each clerk made counts of the total number of shanties each work day and the number in use each day, as was done on some lakes in 1952-1953. The clerk was instructed to contact every shanty user, as far as possible, during the work day and record on a census card the following: name of lake, date, number of anglers in shanty, residence of anglers, method of fishing (spear or hook and line), time that contact is made, the starting time for the anglers, and the number of each species of fish taken up to the time of contact. The angler was requested to leave the card attached to the outside of the shanty after he filled in his quitting time and the total number of each species of fish caught. The clerk picked the cards up that same day or the next day he worked that lake.

The advantages of the actual-contact method of censusing shanty anglers are sufficient to warrant a change to this type of census in preference to the use of season shanty forms. The actual-contact method presumably gives the more accurate census because it eliminates sources of bias which were inherent in the use of seasonal shanty forms. There is no chance for unsuccessful trips to be entered less frequently than successful trips; the time spent fishing is recorded more accurately; and a portion of the fish are identified by the census clerk instead of depending on the angler to identify all fish.

The census clerks counted shanties on nine lakes during the winter of 1953-54. The estimated total for shanty days for the nine lakes was 16,904. The estimated "total use" of these shanty days was 5,492 or 32.49 percent. The clerks contacted 1,112 fishing parties representing

1,388 anglers (1.25 anglers per party). This is an actual contact of 20.25 percent of the estimated total of anglers using the shanties. The percentage of contacts varied from a low of 4.68 percent on Devils Lake to a high of 35 percent on Fine Lake. The percentage contacted of "estimated use" is 30.64 percent if Devils Lake is omitted.

The clerks identified 52 percent of the fish taken by those anglers contacted, and the anglers identified the remaining 48 percent. The fish identified by anglers were, in many cases, fish that they caught after the clerk had identified a portion of their catch. Their identifications thus were based on previous identifications made by the census clerks.

Estimates of total shanty fishing were made by calculating the daily average number of shanties present, the average number of shanties in use from counts made by the clerks on their work days, and the average percentage of shanties in use. The total shanty days were found by multiplying the average shanties present per day by the number of days between the day the first shanty appeared on the ice and the day the last shanty was seen on the ice. Total shanty days multiplied by average percentage of shanty use gave total shanty fishing in terms of shanty days (a shanty in use sometime during the course of the day). Shanties were used about 32 percent of the time they were on the ice, during the winter of 1953-54, on the nine lakes studied.

The winter-shanty census method, started in 1953-54, is based on the techniques described by Dr. John B. Moyle and Donald R. Franklin, Minnesota Department of Conservation, Division of Game and Fish, Bureau of Fisheries, Fisheries Research Investigational Report No. 146 (Creel census of 12 Minnesota lakes December 1, 1952 to December 1, 1953) published March 10, 1954.

1.--Winter fishing contacts on nine experimental regulation lakes, 1953-1954

Total shanty used	Shanty days contacted		Catch identification									
			Pike		Bluegill		Perch		Misc.		Total	
% of total	Number	% of est. use	Angler	Clerk	Angler	Clerk	Angler	Clerk	Angler	Clerk	Angler	Clerk
32.08	96	26.09	25	20	...	...	8	m 5	8	8	41	33
24.45	10	22.22	...	1	1	...	...	...	...	...	1	1
40.89	103	4.68	4	20	22	24	81	82	...	...	107	126
41.62	209	33.66	20	10	119	18	162	108	6	6	307	142
27.10	344	30.52	56	83	157	59	201	104	10	9	424	255
23.75	70	35.00	18	8	50	22	23	12	6	7	97	49
29.15	118	27.90	5	46	8	272	0	61	25	2	38	381
39.30	78	30.12	37	10	78	29	77	75	2	1	194	115
15.68	84	33.60	3	30	0	138	0	59	1	1	4	228
32.49	1,112	20.25	168 (42%)	228 (58%)	435 (44%)	562 (56%)	552 (52%)	506 (48%)	58 (63%)	34 (37%)	1,213 (48%)	1,330 (52%)

INSTITUTE FOR FISHERIES RESEARCH

Kenneth E. Christensen

Approved by: A. S. Hazzard

Typed by: P. R. Darling