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MINNESOTA DEPARTMENT OF NATURAL RESOURCES, DIVISION OF FISH  
AND WILDLIFE-- DIVISION OF FISHERIES

Completion Report

Winter Season 2002-03/Open-Water Season 2003 Creel Survey  
Creel Survey of 3 Northern Hennepin County, Minnesota Lakes

by

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## Abstract

Sportfish catch, fishing effort, and non-fishing water recreation were measured for 3 Hennepin County, Minnesota lakes (Medicine, Independence, and Sarah), from December 24, 2002 through October 14, 2003. Sampling was stratified by month and day type. Total angler interviews numbers ranged from 532 to 746. Fishing pressure, fishing pressure density, and fishing trips for Medicine, Independence, and Sarah were: 95,128 angler-hours/107.4 a-h per acre/31,837, 97,881 angler-hours/116.0 a-h per acre/29,093, and 55,833 angler-hours/97.3 a-h per acre/15,742. More open-water fishing than ice fishing occurred on Medicine and Independence; the reverse was true for Lake Sarah. Total fish harvests ranged from 45,282-94,913, with respective yield ranges of 20.1-45.5 lb/acre. Sunfish and crappie were the most-harvested fish. The Lake Independence muskellunge fishery has become well established. Walleye stocked in 1999 into Medicine Lake are now being caught in small numbers. No hiring of a winter-season creel clerk, wet fall 2002 weather, thinner 2002-03 ice cover, and comparatively poor Lake Independence fishing success reduced samples of both fish and anglers, particularly for Lake Independence walleye and Lake Sarah northern pike. Most fishing pressure and catch-related estimates from this survey were higher than comparable estimates from previous surveys and Lake Class 24 estimates.

### **3 Northern Hennepin County Lakes Creel Survey Completion Report**

**December 2002 through October 2003**

#### **Introduction / Study Areas**

Three Schupp-Lake-Class 24 lakes (Medicine Lake, Lake Independence, and Lake Sarah) in northern Hennepin County, Minnesota (Figure 1, Table 1), have received State of Minnesota fish management activities since the late 1940s; records exist of a Lake Independence fish survey in 1927. Medicine and Independence, the largest of the three lakes, have received greater management attention. Both of these waters have large regional parks located on them, with accesses run by Three Rivers Park District. Lake Sarah has only a small, city-maintained access.

All three of these lakes are natural bass-panfish-northern pike waters, with no evidence of naturally reproducing walleye populations. Several attempts to establish walleye have been made in Medicine Lake, and anglers have reported catching yearling and adult fish stocked in 1999. Presently, Medicine Lake is under a MN-DNR study of walleye stocking strategies— fry were stocked in 2001 and “fryling” (small fingerling harvest in early summer) were stocked in 2003. Lake Independence has been consistently stocked with walleye since 1979, with present fingerling stocking of 2 lb/littoral acre biennially.

The lake has been stocked with pure-strain muskellunge since 1971. Lake Sarah, with well-established, quality northern pike and bluegill populations, is not currently stocked with other gamefishes.

All three lakes are popular fishing and recreational lakes, and all have some degree of shoreline development. Of the three, only Medicine Lake has shoreline development other than residential or park buildings. In addition to providing updated, complimentary data for fish management use, MN-DNR West Metro Area Fisheries Office staff wanted more information for potential changes to regulations: adding harvest-restricting northern pike regulations

to either Lake Independence or Lake Sarah, and rescinding the northern pike spearing ban on Lake Independence. Angler and fish-catch information from Medicine Lake would also provide better analysis of the walleye-stocking research study.

## **Results Summaries: Combined Winter and Open-Water Seasons**

### *Medicine Lake*

Five hundred sixty-nine angler parties were interviewed in 2002-03 (Tables 23, 66). Nine percent of interviews (50) were from anglers who had finished their trips. Estimated fishing angler trips numbered 31,837 (Table 2).

Anglers fished an estimated 95,128 angler-hours (a-h); fishing pressure density was 35.9 angler-hours per acre (a-h/acre). Winter fishing represented 42% of total hours (Table 2). Weekend and holiday angling was disproportionately higher than number of days, accounting for 59% of total angling (Appendix C). During the open-water season, fishing (all angler types) accounted for 49% of water recreation user-hours (Tables 73,76).

Numerical fish catch estimate was 186,746 or 211 fish/acre (Table 3). Sunfishes and crappies represented 84% of the total. Seven other fish species or types were also caught (Table 3). Fifty-one percent of fish caught were harvested (kept).

Poundage of sunfish, northern pike, and crappie together formed 95% of the total (Table 4). More fish were harvested in the summer season, with crappie the most notable exception (Table 3). Except for one walleye measured, sizes of most fish caught and harvested were small to moderate (Tables 5,8,11). With the exception of sunfish anglers, few parties went home with one-third or more of allowable bag limits (Table 17).

Anglers sought crappie or northern pike most frequently. Ten to twenty percent of anglers sought sunfish, largemouth bass, or had no species

preference (Table 18). While almost 90% of Medicine Lake anglers were male (Table 19), a few parties made up solely of women or headed by a female while rare, were encountered. Over half of anglers interviewed were age 35-54 (Table 20).

Over 80% of Medicine Lake anglers traveled 10 miles or less. Two percent of those interviewed were out-of-state residents (Table 21). Twenty-eight percent of angler parties were observed to have some sort of electronic equipment on lake ice or aboard boats. Almost all devices seen were the >flasher= type. Low-single-digit percentages of underwater cameras and combinations of >flashers= and cameras were also seen (Table 22). No one was observed using just an underwater camera.

#### *Lake Independence*

Six hundred fifty-seven angler parties were interviewed in 2002-03 (Tables 24, 68). Sixteen percent of interviews (102) were from anglers who had finished their trips. Estimated angler trips numbered 29,093 (Table 2).

Anglers fished an estimated 97,881 angler-hours (a-h); fishing pressure density was 34.5 angler-hours per acre (a-h/acre). Winter fishing represented 40% of total hours (Table 2). Weekend and holiday angling was disproportionately higher than number of days, accounting for 57% of total angling (Appendix C). During the open-water season, fishing (all angler types) accounted for 66% of water recreation user-hours (Tables 74,77).

Numerical fish catch estimate was 143,211 or 170 fish/acre (Table 3). Sunfishes and crappies represented 80% of the total. Seven other fish species or types were also caught (Table 3). Thirty-one percent of fish caught were harvested, reflecting the catch-and-release practices of muskellunge anglers and, overall, less-than-satisfactory angling for several other species. Poundage of sunfish and crappie combined formed 79% of the total (Table 4). More fish were harvested in the winter (Table 3). Sizes of most fish caught and harvested were not particularly noteworthy, though sizes of walleye and

muskellunge caught sparked no negative comments (Tables 6,9,13). Northern pike sizes were more similar to Medicine Lake than to Lake Sarah. Few kept high percentages of allowable limits (Table 17).

Slightly less than one-third of Lake Independence anglers sought crappie, 20% sought muskellunge, and 15% sought walleye (Table 18). Almost 90% of Lake Independence anglers were male (Table 19). Only the very oldest age groups of anglers were not well-represented or evenly represented (Table 20).

Approximately two-thirds of anglers traveled 10-25 miles to fish, reflecting the lake's location relative to the area's population concentrations. Few far-traveling anglers indicate that Lake Independence was not a "destination" lake (Table 21).

Slightly over half of angler parties were observed with electronic equipment on lake ice or aboard boats. Almost all devices seen were the >depth-finder= or >flasher= type, with small numbers of underwater cameras seen (Table 22).

#### *Lake Sarah*

Four hundred seventy-seven angler parties were interviewed in 2002-03 (Tables 25, 70). Seventeen percent of interviews (79) were from anglers who had finished their trips. Estimated angler trips numbered 15,742 (Table 2).

Anglers fished an estimated 55,833 angler-hours (a-h); fishing pressure density was 97.3 angler-hours per acre (a-h/acre). Winter fishing represented 57% of total hours (Table 2). Weekend and holiday angling was disproportionately higher than number of days, accounting for 57% of total angling (Appendix C). During the open-water season, fishing (all angler types) accounted for 63% of water recreation user-hours (Tables 75,78).

Numerical fish catch estimate was 162,019 or 282 fish/acre (Table 3). Sunfishes and crappies represented 89% of the total. Seven other fish species or types were also caught (Table 3). Thirty-seven percent of fish caught were harvested.

Poundage of sunfish and crappie combined formed 83% of the total, and a higher-than-expected largemouth bass harvest (Table 4). Thinner ice conditions and lower spearing effort contributed to a reduced northern pike harvest. Mean sizes of harvested sunfish and crappie were slightly better than results from other lakes in our 3-county area (Tables 7,10,15); mean northern pike size was better than all but small sample from Cedar Lake (Polomis 2000). Fewer angling parties left Lake Sarah with low proportions of allowable limits than Medicine Lake or Lake Independence anglers, and 30% kept 10 or more sunfish (Table 17). Fifteen percent of bass-seeking anglers harvested two or more largemouth bass.

While a value of 65% percent seeking either Lake Sarah crappie or sunfish isn't unexpected, the 9% seeking northern pike is lower than expected. More anglers sought largemouth bass than northern pike during the survey period (Table 18). As with the two larger lakes in this survey, almost 90% of Lake Sarah anglers were male (Table 19). Anglers age 35-44 were the most frequently interviewed (Table 20).

Approximately one-third of anglers lived within 10 miles of the lake, a higher percentage than for nearby Lake Independence. Those living from 10-25 miles represented 55% of Lake Sarah anglers. One percent of anglers were non-Minnesota residents (Table 21).

Slightly over 40% parties were observed with electronic equipment on lake ice or aboard boats. Almost all devices seen were the >depth-finder= or >flasher= type, with small numbers of underwater cameras seen (Table 22).

## **Winter Season Creel Survey**

### **Methods**

A random, stratified, two-stage probability roving creel survey was initiated on three lakes in northwestern Hennepin County, Minnesota: Medicine (MN-DOW ID number 27-0104), Independence (27-0176), and Sarah (27-0191). The proposed sampling period was December 4, 2002 through March 11, 2003.



Sampling methods, practices, and conventions were similar to those of recent local surveys, with the exception that data were not stratified by angler type. Angler types were recorded and summary results by angler type were produced (Appendix D), but because other recent creel surveys (McBride 1996, Polomis 2000, 2002) produced many strata with low or missing samples for some angler types, summary data were calculated without angler-type stratification. This decision reduced strata by a multiple of 3 (from 18 to 6 for each lake).

Sampling dates were changed from those initially proposed to fit the actual period of ice fishing. A full-time survey clerk could not be hired because of unexpected budgetary and personnel difficulties; other DNR Fisheries staff filled in by sampling less frequently than originally proposed. A revised schedule was devised so each lake was sampled at least five weekdays and two weekend days per month (Appendix F). The reduced sampling began December 24, 2002 and ceased for about two weeks in early January because of abnormally warm temperatures and thin ice. On March 21, 2003, lake ice had begun to deteriorate; the last sample date was March 23, 2003.

Each workday was either a randomly pre-determined early shift (0600-1430 hours) or late shift (1300-2130 hours). In our short-staffed situation, eight-hour shifts were optional, but workers were required to make activity counts at scheduled times and obtain a sample of angler interviews.

On each workday, two instantaneous counts of fishing activity for each lake (four total per shift) were assigned at randomly chosen times. In most cases, two counts of a lake were made before leaving the lake for the day. Because of sampling infrequency caused by worker shortage, sometimes all three lakes were visited on a single workday, rather than the originally scheduled two per workday. Six activity counts were thus made; travel between lakes sometimes resulted in smaller-than-desired numbers of angler interviews.

Numbers of occupied fish houses, occupied spear houses, and open-ice

anglers were tallied during each count. Anglers fishing while sitting in cars or trucks were considered open-ice anglers. We could only assume angler types from outside views of occupied fish houses. Adjustments to angler type were made if an interview revealed that fish house occupants were spearers.

Remaining on-lake time was spent seeking anglers and spearers to interview. During interviews, the clerk treated multi-person parties fishing together as a single interview group, unless the group numbered more than 5 (the maximum number of entry lines software provided for anglers= gender, age, and ZIP code). Groups of anglers apparently fishing together-- but using any combination of fish houses, spearing houses, and open ice-- were artificially separated into interview parties based on angler types, since the analysis software program accepted only one angler type per interview group.

Information from interviews and activity counts was recorded on an interview form we created (Appendix G) and on one slightly modified from the standard MN-DNR Fisheries Activity Report form. In addition to typical data collected from interviews, the clerk asked this question to gauge perceptions of fishing success: AOn a scale of 1 to 10, with 1 being poor and 10 being excellent, how would you rate fishing today, based on size and number of fish caught?@ Responses of Azero@ or less were recorded as 1.

The clerk also obtained, whenever possible, sample lengths and weights of captured fish. The clerk also recorded angler-reported sizes of released fish and took scales from harvested predator species (northern pike, walleye, largemouth bass, and muskellunge) when available and permissible.

Clerks were instructed to prioritize Acore data@ (amount of time fished, number and species of fish harvested and released, fish species targeted) during interviews, especially when anglers were ready to leave or barely cooperative. A slight amount of attitudinal, fish-size, and demographic data was missed because of this prioritization and because several different staff, of varied skill and experience, conducted interviews.

Most data were entered and processed with MN-DNR Fisheries' Gencreel Angler Survey Analysis Program (version 2), supplemented by other analyses with Excel software.

## **Results and Discussion**

### *Winter Survey Notes, All Lakes*

The 0600-2200 period chosen matched activity patterns well; only one interview (Medicine Lake, before 0600) had a party's fishing activity outside the anticipated angler-activity period. Lack of a strong walleye bite (and thus overnight fishing) on Lake Independence played a role in angler use patterns. Lake Independence anglers took advantage of a loophole in Three Rivers' Park District user rules and fees; by parking on the lake adjacent to the shore, they avoided paying park use fees and the overnight (sunset-0500 parking fee). During sampling, no vehicles were seen parked on the Baker Regional Park access lot.

There was little Lake Sarah spearing activity because of, according to reports, cloudy water (largely because of a wet fall 2002 and ice conditions thin enough for houses to break through). Fish houses also broke through and froze into Medicine Lake.

For all three lakes, measures related to fishing pressure, total fish catch, and crappie catch were higher than 75<sup>th</sup> percentiles for their Lake Class (all LC 24). Lake Sarah and Medicine Lake had more measures above median than Lake Independence. Lake Independence sunfish catch rate, however, was one of the few measures above the 75<sup>th</sup> percentile (Table A3).

### *Medicine Lake*

Twenty-one percent of the 121-day winter fishing season was sampled. Fifty activity counts were made during the 25 days of sampling. Number of interviews obtained was 133, a mean of 5.3 interviews each day (Table 23). Mean number of people per angler party was 1.58.

Winter fishing pressure in Medicine Lake was 39,644 angler-hours (a-h), with a corresponding density of 44.7 angler-hours per surface acre (a-h/acre).

Use decreased over the season; combined December and January pressure accounted for two-thirds of the season total (Table 26). A slight majority of fishing occurred on weekend days and holidays (Appendix B). An estimated 15,074 fishing trips were made, representing 47% of trips for the entire survey (Table 2).

Six fish species or types were caught, with 57% of the catch harvested (Table 27). Sunfish and crappie represented 90% of the harvest. There was little spearing activity, and no interviewed spearers had fish for survey clerks to measure. Harvest poundage (yield) was highest for, in descending order, northern pike, crappie, and sunfish (Table 36).

Forty-nine percent of Medicine Lake anglers sought crappie, with 27% seeking northern pike and 17% seeking sunfish (Table 54). Only 4% of wintertime anglers were female (Table 55). A majority of anglers were adults age 25-54 (Table 56). Eighty-nine percent of those interviewed lived within 10 miles of Medicine Lake. The top 5 cities of residence, inferred from ZIP codes, were Minneapolis, Plymouth, Brooklyn Center, Golden Valley, and Maple Grove (Table 57).

Interviewees rated overall fishing quality as below average (3.6 on a 1-10 scale), with panfish (sunfish and crappie) anglers expressing higher overall satisfaction than northern pike anglers (Tables 59,60).

#### *Lake Independence*

Twenty-one percent of the 121-day winter fishing season was sampled. Fifty activity counts were made during the 25 days of sampling. Number of interviews obtained was 90, a mean of 1.8 interviews each day (Table 23). Mean number of people per angler party was 1.93.

Winter fishing pressure in Lake Independence was 33,157 angler-hours (a-h), with a corresponding density of 39.3 angler-hours per surface acre (a-h/acre). Use decreased over the season; combined December and January pressure accounted for 71% of the season total (Table 26). A majority of fishing (64%) occurred on weekend days and holidays (Appendix B). An

estimated 11,553 fishing trips were made, representing 40% of trips for the entire survey (Table 2).

Five fish species or types were caught, with 40% of the catch harvested (Table 28). Sunfish and crappie represented 95% of the harvest. Harvest poundage (yield) was highest for, in descending order, crappie, sunfish, and walleye (Table 37).

Two-thirds of Lake Independence anglers sought crappie, with 19% seeking walleye and 10% seeking sunfish (Table 54). Only 3% of wintertime anglers were female (Table 55). Fifty-five percent of anglers were adults age 25-44 (Table 56). Two-thirds of those interviewed lived within 10 miles of Lake Independence, and those living within 25 miles represented 90% of all anglers. The top 5 cities of residence were in northwest Hennepin County or eastern Wright County (Table 57).

Interviewees rated overall fishing quality as below average (3.4 on a 1-10 scale), with panfish (sunfish and crappie) anglers expressing higher overall satisfaction than northern pike anglers (Tables 59,60).

#### *Lake Sarah*

Twenty-two percent of the 121-day winter fishing season was sampled. Fifty-four activity counts were made during the 27 days of sampling. Number of interviews obtained was 129, a mean of 4.7 interviews each day (Table 25). Mean number of people per angler party was 1.64.

Winter fishing pressure in Lake Independence was 27,427 angler-hours (a-h), with a corresponding density of 47.8 angler-hours per surface acre (a-h/acre). Use decreased over the season; combined December and January pressure accounted for 61% of the season total (Table 26). March fishing pressure was only slightly less than in February, unlike the greater declines observed for the other two study lakes. A majority of fishing (62%) occurred on weekend days and holidays (Appendix B). An estimated 8,963 angler trips were made, representing 57% of trips for the entire survey (Table 2).

Five fish species or types were caught, with 48% of the catch harvested

(Table 29). Sunfish and crappie represented 99% of the harvest and 96% of the poundage yield (Table 38).

Two-thirds of Lake Sarah anglers sought crappie, with 21% seeking sunfish (Table 54). Five percent of wintertime anglers were female (Table 55). One-third of anglers were age 35-44 (Table 56). Two-thirds of those interviewed lived within 10 miles of Lake Independence, and those living within 25 miles represented 90% of all anglers. The top 5 cities of residence were in northwest Hennepin County or eastern Wright County, with Cottage Grove being an odd exception (Table 57). Of parties observed with electronic fish-locating devices, only one was an underwater camera (Table 58).

Interviewees rated overall fishing quality as below average (mean of 3.6 on a 1-10 scale). Those seeking northern pike and sunfish, however, rated trip quality nearer to average (Tables 63,64).

## **Open-Water Season Creel Survey**

### **Methods**

The random, stratified, two-stage probability roving creel survey was resumed April 24, 2003 for the open-water season and was sampled through October 14 (Appendix E). Sampling methods, practices, and conventions were similar to those of recent local surveys (Polomis and McBride 1998; Polomis 2000, 2002), with the exception that data were not stratified by angler type.

Results by angler type were recorded and available in Appendix D. Fishing and boating activity was assumed to occur from 0600-2100 hours from April through August (15-hour day), from 0700-1900 in September (12-hour day), and from 1000-2000 in October (10-hour day).

On most days sampled, two of the three lakes were visited, with one lake visited for the first half of the shift and the second lake visited for the second half of the shift. Visitation order and lake combination were randomly chosen. Lake combinations were selected without replacement and scrutinized so each lake-month-day type combination exclusive of April (e.g. Lake Sarah

July weekdays) was scheduled at least six times. In a few instances, all three lakes were scheduled for a single day to increase sample visits (at the expense of interview numbers). The creel clerk worked either a (randomly assigned) early shift or late shift for six of the seven months. To adapt to decreased daylight late in the season, the clerk worked four 10-hour days in October, with a shift of 1000-2030.

Two activity counts per lake were scheduled; time at the lake not making a count was spent interviewing anglers. The activity count form was the same used during the winter season, and the angler interview form was similar to the one used in winter, altered only to reflect open-water angling types (Appendix F).

## **Results and Discussion**

### *Open-Water Survey Notes, All Lakes*

The chosen time frames of assumed activity were off slightly. Eight Medicine Lake parties, 27 Lake Independence parties, and 24 Lake Sarah parties reported fishing outside the bounds of anticipated angler-activity period. (The majority of assumption violations were from anglers starting early.) Despite lower sunfish and crappie possession limits taking effect on May 10, 2003 (Table 17), the creel clerk encountered no over-limit violations.

For all three lakes, measures related to fishing pressure, total fish catch, catches for several species (sunfish, crappie, largemouth bass), overall catch rates, and several sought catch rates (sunfish, crappie, and largemouth bass) were higher than 75<sup>th</sup> percentiles for their Lake Class (all LC 24). Many Lake Sarah values were comparably higher than those of the other two lakes and of Lake Class 24 medians (Table A4).

### *Medicine Lake*

Thirty-six percent of the 214-day survey period was sampled. Number of interviews obtained was 395 (Table 66), a mean of 5.1 interviews per sample day. Mean number of people per angling party was 2.2, and 9% of angling parties had completed their trips (Table 66).

Fishing pressure was 62,957 a-h, with a corresponding density of 71.1 a-h/acre. The high value for April should be considered an anomaly, as values were inflated by a one-day children's fishing event at French Regional Park. Excluding April, fishing pressure built to a peak in June, then declined. Only small amounts of fishing occurred in September and October (Table 71). Two-thirds of angling took place on weekends and holidays (Appendix C). Fifty-three percent of angler trips occurred during the open-water season (Table 2).

The 65,830 estimated user-hours (u-h) of non-fishing recreation was slightly higher than fishing use (Tables 72,73,76). July and August were the months with the highest amounts and proportions of non-fishing water recreation (Table 76). Both fishing and non-fishing recreation use was higher in 2003 than in 1980 (Table 73), even when season lengths are equalized.

Eight fish species or types were caught (Table 79), with 47% of the catch harvested. Sunfish and crappie formed 95% of the harvest. A few walleyes were caught by anglers (Tables 95-97), providing evidence of survival from both the 1999 fingerling-adult stocking and the 2001 fry stocking.

Eighty-four percent of the poundage harvest consisted of sunfish and crappie; largemouth bass and northern pike each represented 7% of the total (Table 88). Species preferences, if any, were spread fairly evenly (18-25%) among crappie, sunfish, and northern pike (Table 106).

Over 80% of anglers were male, and the greatest representation among age groups was those 35-44 (Tables 107, 108). Almost 80% of anglers lived within 10 miles of Medicine Lake; anglers were most frequently from Plymouth, Minneapolis, and cities between them (Table 109). All anglers observed with electronics had depth-finder/flasher types; no underwater cameras or GPS units were seen (Table 110). Anglers considered their trips "average" or slightly below, based on responses to the trip-rating question. There was no discernable difference among all anglers and anglers seeking certain fishes (Tables 111, 112).



### *Lake Independence*

Thirty-six percent of the 214-day survey period was sampled. Number of interviews obtained was 567 (Table 68), a mean of 7.5 interviews per sample day. Mean number of people per angling party was 2.2, and 13% of angling parties had completed their trips (Table 68).

Fishing pressure was 64,724 a-h, with a corresponding density of 76.7 a-h/acre. Fishing use increased from ice-out until attaining a peak in June, followed by an overall pattern of decrease from late summer into fall (Table 71). Fifty-four percent of angling took place on weekends and holidays (Appendix C). Fifty-seven percent of angler trips occurred during the open-water season (Table 2).

The 33,388 estimated user-hours (u-h) of non-fishing recreation was one-third of the amount of fishing use (Tables 72,74,77). July was the month with the highest amount and proportion of non-fishing water recreation (Table 77).

2003 non-fishing recreation use was closer to the 1981 estimate than the 1986 estimate, but because fishing pressure increased an even greater amount, proportion of fishing as total recreation in 2003 was the highest value observed (Table 74).

Nine fish species or types were caught (Table 80), with only 29% of the catch harvested— a value influenced by catch-and-release ethics for largemouth bass and muskellunge. Sunfish and crappie formed 95% of the harvest. Slightly over half of poundage harvested was crappie (Table 89). Few of the walleye harvested were larger than 16 inches (Table 100).

Thirty-one percent of angler parties sought muskellunge (Table 106); muskellunge anglers were the majority of those interviewed after September 1.

Comparatively low percentages of open-water-season anglers sought sunfish (Table 106). Eighty-six percent of anglers were male, and 28% of anglers were age 35-44 (Tables 107, 108). Two-thirds of anglers traveled 10-25 miles to fish Lake Independence (Table 109). Slightly over half of anglers' fishing boats were equipped with electronics, but no hand-held GPS units or underwater

cameras were seen (Table 110).

Anglers considered their trips slightly below "average;" anglers fishing for crappie or sunfish tended to give noticeably higher ratings. Muskellunge anglers did not give the lake ratings higher than anglers on the whole (Tables 113, 114).

#### *Lake Sarah*

Thirty-six percent of the 214-day survey period was sampled. Number of interviews obtained was 348 (Table 70), a mean of 4.6 interviews per sample day. Mean number of people per angling party was 2.2, and 16% of angling parties had completed their trips (Table 68).

Fishing pressure was 28,406 a-h, with a corresponding density of 49.5 a-h/acre. Fishing use increased until June, followed by an overall pattern of decrease from late summer into fall (Table 71). Fifty-two percent of angling took place on weekends and holidays (Appendix C). Forty-three percent of angler trips occurred during the open-water season (Table 2).

The 45,217 estimated user-hours (u-h) of non-fishing recreation represented a greater percentage of on-water recreation than it in 1981, despite being lower in value (Tables 72,75,77). Amounts of July and August non-fishing recreation were similar, but only in July was boating more common than fishing (Table 77).

Eight fish species or types were caught (Table 81), with 32% of the catch harvested. Sunfish represented 80% of the harvest. Sunfish formed 56% of poundage harvested. Surprisingly, both numbers and poundage of largemouth bass harvested were greater than those of northern pike (Tables 81 and 90). Sizes of harvested northern pike and sunfish (Tables 95, 96, 103) appear to be slightly larger than those typically observed.

Thirty-four percent of Lake Sarah anglers sought largemouth bass (Table 106), a value higher than expected in a lake with a reputation more for northern pike, sunfish, and crappie. Of the three lakes surveyed, Sarah had the highest percentage of female anglers, though still less than 20% ((Table

107). Forty-eight percent of anglers were age 35-54 (Tables 106, 108). Eighty-nine percent of anglers traveled up to 25 miles to fish Lake Sarah (Table 109). Anglers considered their trips slightly above "average;" sunfish and crappie anglers gave higher trip satisfaction ratings than those seeking other species or having no preference (Tables 115, 116).

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F-29-R(P)-23  
Area F314  
Study 4  
Job 663  
March 2003

MINNESOTA DEPARTMENT OF NATURAL RESOURCES, DIVISION OF FISH AND  
WILDLIFE-- DIVISION OF FISHERIES

Completion Report

Winter Season 2002-03/Open-Water Season 2003 Creel Survey  
Creel Survey of 3 Northern Hennepin County, Minnesota Lakes

**Approved by:**

**AREA FISHERIES SUPERVISOR**

**DATE**

**REGIONAL FISHERIES SUPERVISOR**

**DATE**

Figure 1. Locations of Medicine Lake, Lake Independence, and Lake Sarah within Hennepin County, Minnesota.

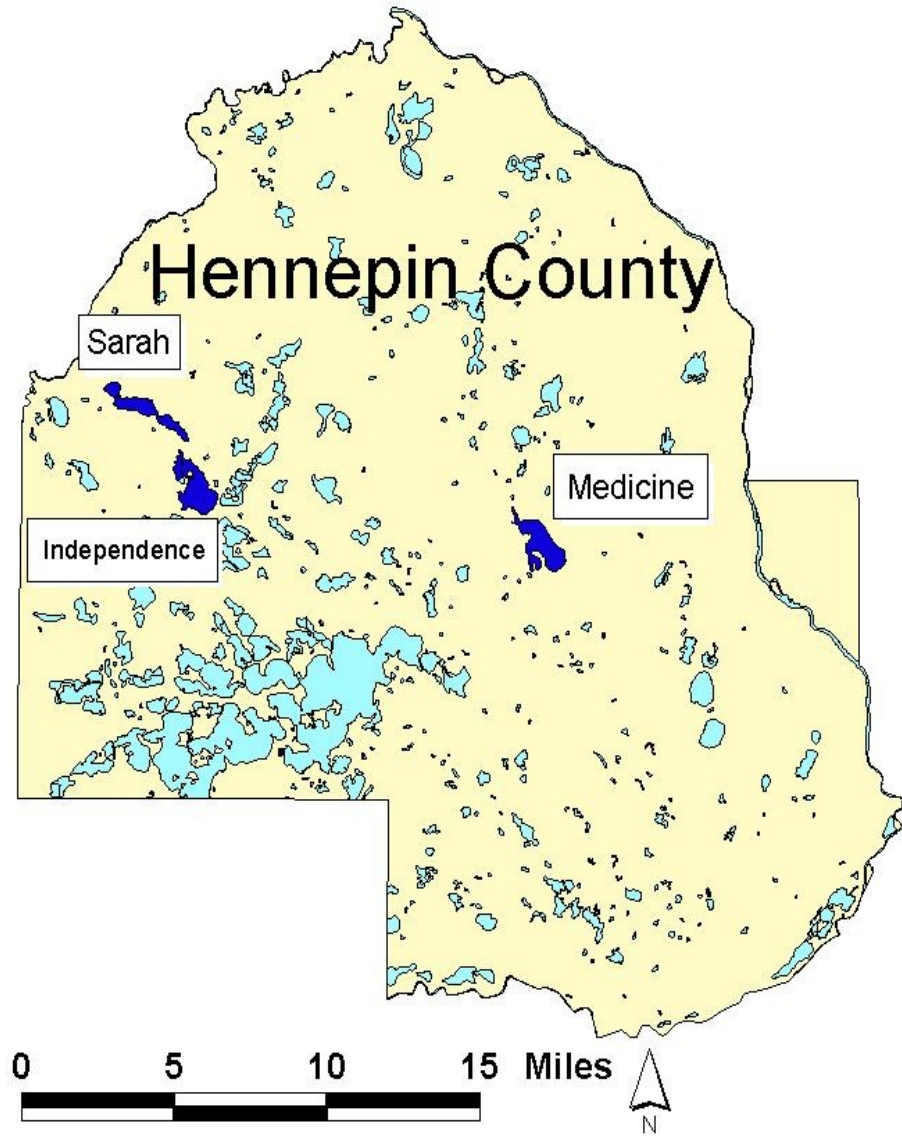


Table 1. Selected characteristics of the 3 northern Hennepin County, Minnesota lakes surveyed in 2002-03. (Values are most recently available data from Minnesota DNR.)

Characteristic	Medicine	Independence	Sarah
DOW ID Number	27-0104	27-0176	10-0191
(DNR Fisheries) Lake Class	24	24	24
Surface Acres	886	844	574
Percent Littoral ( $\leq 15$ ft)	45	50	65
Maximum Depth (ft)	49	58	59
Shoreline Development Factor	2.6	5.0	2.4
Secchi Disk Depth (ft)	5.4	2.6	3.8
Total Alkalinity-- ppm	115	141	121
Year of Lake Survey	1997	1994	2003
Year of Population Assessment	2000	2003	1996
Year Depth-Contour Map Made	1959	1957	1982

Table 2. Estimates of total fishing pressure in angler-hours (A-H), fishing pressure density in angler-hours per acre (A-H/A), and angler trips for 3 Hennepin County, Minnesota lakes, combined winter 2002-03 and open-water 2003 seasons.

	Medicine		Independence		Sarah	
	A-H	A-H/A	A-H	A-H/A	A-H	A-H/A
	95,128	107.4	97,881	116.0	55,833	97.3
% of total angling in:						
winter season	42		34		51	
open-water season	58		66		49	
Angler trips made:	# trips	%	# trips	%	# trips	%
winter season	15,074	47	11,553	40	8,963	57
open-water season	16,763	53	17,540	60	6,779	43
Total trips	31,837		29,093		15,742	
Trips per acre	35.9		34.5		27.4	



Table 3. Total harvest, release, and catch numbers by fish species/type, 3 Hennepin County, Minnesota, lakes, combined winter 2002-03 and open-water 2003 seasons. Listing is in descending order of numbers harvested. SE = 1 standard error.

Species/Type	Harvest	#/Ac	Number Fish		Catch	#/Ac	% of total harvest / catch		% taken in winter harvested
			Release	#/Ac					
<b>Medicine Lake</b>									
Crappie	60,202.9	67.9	14,961.9	16.9	75,164.8	84.8	34% / 35%	80%	
Sunfish	28,952.3	32.7	53,277.9	60.1	82,230.2	92.8	48% / 34%	35%	
Northern pike	2,692.0	3.0	6,647.7	7.5	9,339.7	10.5	85% / 58%	29%	
Yellow perch	1,672.4	1.9	6,734.8	7.6	8,407.2	9.5	<1% / 4%	2%	
Largemouth bass	904.4	1.0	9,455.5	10.7	10,359.9	11.7	8% / 2%	9%	
Bullhead	450.4	0.5	317.6	0.4	768.0	0.9	0% / 22%	59%	
Walleye	38.4	0.04	105.7	0.1	144.1	0.2	0% / 0%	27%	
Bowfin	-0-	-0-	332.5	0.4	332.5	0.4	na / 0%	-0-	
Total	94,912.7	107.1	91,833.6	103.6	186,746.3	210.8	40% / 36%	51%	
<b>Lake Independence</b>									
Crappie	26,371.6	31.2	38,399.0	45.5	64,770.7	76.7	35% / 29%	41%	
Sunfish	16,664.8	19.8	33,708.4	39.4	50,373.2	59.7	31% / 18%	33%	
Walleye	822.3	1.0	1,324.0	1.6	2,146.3	2.5	33% / 29%	38%	
Largemouth bass	793.5	0.9	9,863.8	11.7	10,657.3	12.6	0% / 0%	7%	
Yellow perch	472.8	0.6	10,474.8	12.4	10,947.6	13.0	93% / 83%	4%	
Northern pike	156.8	0.2	2,943.0	3.5	3,099.8	3.7	0% / 12%	5%	
Bowfin	-0-	-0-	167.1	0.2	167.1	0.2	na / 0%	-0-	
Carp	-0-	-0-	25.4	0.2	25.4	0.2	na / 0%	-0-	
Muskellunge	-0-	-0-	332.5	0.4	332.5	0.4	na / 0%	-0-	
Total	45,281.8	53.7	97,929.6	116.0	143,211.5	169.7	33% / 27%	31%	
<b>Lake Sarah</b>									
Sunfish	39,602.7	69.0	71,074.6	123.8	110,677.3	192.8	32% / 30%	36%	
Crappie	19,054.3	33.2	14,422.6	25.1	33,476.9	58.3	73% / 66%	57%	
Largemouth bass	1,712.6	3.0	14,345.3	25.0	16,057.9	28.0	11% / 1%	11%	
Northern pike	160.1	0.3	621.4	1.1	781.5	1.4	0% / 0%	20%	
Yellow perch	24.5	0.04	841.0	1.5	865.5	1.5	0% / 71%	3%	
Bullhead	-0-	-0-	65.3	0.1	65.3	0.1	na / 0%	-0-	
Bowfin	-0-	-0-	88.6	0.2	88.6	0.2	na / 0%	-0-	
Walleye	-0-	-0-	6.3	0.01	6.3	0.01	na / 0%	-0-	
Total	60,554.2	105.5	101,465.0	176.8	162,019.3	282.3	44% / 34%	37%	

Table 4. Yield, in pounds (lb) and pounds per acre (lb/acre), 3 Hennepin County, Minnesota lakes, combined winter 2002-03 and open-water 2003 seasons.

**Medicine Lake**

Species/ <u>Type</u>	Yield:		% of total
	lb	lb/Acre	
Crappie	18,882.6	21.3	48
Northern pike	11,909.0	13.4	30
Sunfish	6,652.1	7.5	17
Largemouth bass	1,455.7	1.6	4
Bullhead	225.2	0.3	1
Yellow perch	201.3	0.2	1
Walleye	122.4	0.1	<1
Total	19,541.1	44.5	

**Lake Independence**

Species/ <u>Type</u>	Yield:		% of total
	lb	lb/Acre	
Crappie	9,774.9	11.6	58
Sunfish	3,575.5	4.2	21
Walleye	1,506.2	1.8	9
Largemouth bass	1,482.4	1.8	9
Northern pike	529.7	0.6	3
Yellow perch	56.8	0.1	<1
Total	16,925.4	20.1	

**Lake Sarah**

Species/ <u>Type</u>	Yield:		% of total
	lb	lb/Acre	
Sunfish	10,947.4	19.1	46
Crappie	8,723.1	15.2	37
Largemouth bass	3,099.3	5.4	13
Northern pike	795.9	1.4	3
Yellow perch	4.4	<0.1	<1
Total	23,570.1	41.1	

Table 5. Mean lengths (inches) and weights (lb) of harvested and released fishes, Medicine Lake, combined winter 2002-03 and open-water 2003 seasons. (Values are unweighted means of seasonal estimates; missing values were not used; --- represents missing value.)

Species	Harvested Fish		Released Fish	
	Length (in)	Weight (lb)	Length (in)	Weight (lb)
Bowfin	---	/ ---	20.0	/ 2.65
Bullhead*	9.7	/ 0.50	11.7	/ 0.98
Crappie*	7.8	/ 0.32	6.2	/ 0.14
Largemouth bass	14.4	/ 1.90	8.8	/ 0.83
Northern pike	24.3	/ 3.81	21.2	/ 2.81
Sunfish*	6.9	/ 0.25	5.4	/ 0.10
Walleye	20.2	/ 3.13	15.0	/ 1.89
Yellow perch	6.4	/ 0.11	5.9	/ 0.09

\* categories are combinations of related individual species-- black bullhead/yellow bullhead/brown bullhead, white crappie/black crappie, and hybrid sunfish/green sunfish/pumpkinseed/bluegill, respectively

Table 6. Mean lengths (inches) and weights (lb) of harvested and released fishes, Lake Independence, combined winter 2002-03 and open-water 2003 seasons. (Values are unweighted means of seasonal estimates; missing values were not used; --- represents missing value.)

Species	Harvested Fish		Released Fish	
	Length (in)	Weight (lb)	Length (in)	Weight (lb)
Bowfin	---	/ ---	24.0	/ 4.36
Carp	---	/ ---	25.6	/ 8.30
Crappie*	8.5	/ 0.39	7.4	/ 0.27
Largemouth bass	11.8	/ 1.28	13.6	/ 1.64
Muskellunge	---	/ ---	35.5	/ 11.90
Northern pike	24.3	/ 3.26	18.2	/ 1.79
Sunfish*	6.9	/ 0.24	5.1	/ 0.09
Walleye	16.3	/ 1.60	12.0	/ 0.74
Yellow perch	6.8	/ 0.12	5.6	/ 0.08

\* categories are combinations of related individual species-- black bullhead/yellow bullhead/brown bullhead, white crappie/black crappie, and hybrid sunfish/green sunfish/pumpkinseed/bluegill, respectively

Table 7. Mean lengths (inches) and weights (lb) of harvested and released fishes, Lake Sarah, combined winter 2002-03 and open-water 2003 seasons. (Values are unweighted means of seasonal estimates; missing values were not used; --- represents missing value.)

Species	Harvested Fish		Released Fish	
	Length (in)/Weight (lb)		Length (in)/Weight (lb)	
Bowfin	---	/ ---	26.8	/ 7.00
Bullhead*	---	/ ---	13.2	/ 1.33
Crappie*	8.9	/ 0.45	6.7	/ 0.19
Largemouth bass	14.3	/ 1.99	14.1	/ 1.72
Northern pike	26.1	/ 4.42	24.2	/ 3.59
Sunfish*	7.1	/ 0.27	4.7	/ 0.09
Walleye	---	/ ---	10.0	/ 0.28
Yellow perch	7.4	/ 0.18	6.1	/ 0.10

\* categories are combinations of related individual species-- black bullhead/yellow bullhead/brown bullhead, white crappie/black crappie, and hybrid sunfish/green sunfish/pumpkinseed/bluegill, respectively

Table 8. Age distributions of sampled harvested fish, Medicine Lake, combined winter 2002-03 and open-water 2003 seasons. (Rounding error might result in total percentages not equaling 100.)

Age	White Crappie		Walleye		Northern Pike		Largemouth Bass	
	#	%	#	%	#	%	#	%
3					2	8		
	Length range (inches)				18.5-20.3			
4					8	33	8	62
	Length range (inches)				21.2-25.0		13.5-16.0	
5			1	100	3	13	3	23
	Length range (inches)		20.5		22.0-25.0		14.5-15.0	
6					6	25	2	15
	Length range (inches)				26.0-29.6		17.0-18.0	
7	1	100			3	13		
	Length range (inches)		13.3		28.5-30.0			
8					2	8		
	Length range (inches)				32.0-33.0			
Total Number in Sample		1	1		24		13	
Median Age		n/a	n/a		5		4	

Table 9. Age distributions of sampled harvested fish, Lake Independence, combined winter 2002-03 and open-water 2003 seasons. (Rounding error might result in total percentages not equaling 100.)

Age	Black Crappie		Walleye		Northern Pike		Largemouth Bass	
	#	%	#	%	#	%	#	%
2			3	60				
	Length range (inches)		12.0-14.5					
3					1	25	3	43
	Length range (inches)				21.0		10.2-10.5	
4	1	100	2	40	2	50	2	29
	Length range (inches)		8.5		17.5		24.0-25.5	
5							2	29
	Length range (inches)						16.2-16.5	
6					1	25	1	14
	Length range (inches)				26.5		16.5	
8							1	14
	Length range (inches)						18.0	
<u>Total Number in Sample</u>		1	5	4	7			
Median Age		n/a	2	4	5			

Table 10. Age distributions of sampled harvested fish, Lake Independence, combined winter 2002-03 and open-water 2003 seasons. (Rounding error might result in total percentages not equaling 100.)

Age	White Crappie		Black Crappie		Northern Pike		Largemouth Bass	
	#	%	#	%	#	%	#	%
3	1	50					3	11
	Length range (inches)		7.0				9.0-10.5	
4			1	50	2	50	5	18
	Length range (inches)		9.0		23.5-26.5		11.7-12.5	
5	1	50	1	50			6	21
	Length range (inches)		10.5		10.5		12.7-14.1	
6							8	29
	Length range (inches)						13.5-14.8	
7					1	25	3	11
	Length range (inches)				29.2		16.0-16.8	
8					1	25	2	7
	Length range (inches)				34.5		17.0	
9							1	4
	Length range (inches)						18.3	
<u>Total Number in Sample</u>		2	2	4	28			
Median Age		4	4.5	6.5	5.5			

Table 11. Length-frequency distributions of harvested fish, Medicine Lake, combined winter 2002-03 and open-water 2003 seasons. Fish species/type codes: BLH=bullhead, CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch.

Length Category	BLH	CRP	LMB	NOP	SUN	WAE	YEP
[0.0, 3.0)	---	---	---	---	---	---	---
[3.0, 3.5)	---	---	---	---	---	---	---
[3.5, 4.0)	---	---	---	---	---	---	---
[4.0, 4.5)	---	---	---	---	---	---	---
[4.5, 5.0)	---	---	---	---	---	---	1
[5.0, 5.5)	---	---	---	---	---	---	---
[5.5, 6.0)	---	---	---	---	---	---	1
[6.0, 6.5)	---	---	---	---	---	---	6
[6.5, 7.0)	---	13	---	---	---	---	6
[7.0, 7.5)	---	72	---	---	---	---	3
[7.5, 8.0)	---	136	---	---	---	---	2
[8.0, 8.5)	---	227	---	---	---	---	2
[8.5, 9.0)	---	69	---	1	---	---	---
[9.0, 9.5)	---	24	---	---	---	---	---
[9.5, 10.0)	---	8	---	---	---	---	---
[10.0, 10.5)	---	5	---	1	---	---	---
[10.5, 11.0)	---	5	---	---	---	---	---
[11.0, 11.5)	3	4	---	1	---	---	---
[11.5, 12.0)	---	5	---	---	---	---	---
[12.0, 13.0)	---	2	---	1	---	---	---
[13.0, 14.0)	1	1	---	---	---	---	---
[14.0, 15.0)	---	---	---	1	---	---	---
[15.0, 16.0)	---	---	---	---	---	---	---
[16.0, 17.0)	---	---	1	1	---	---	---
[17.0, 18.0)	---	---	4	---	---	---	---
[18.0, 19.0)	---	---	3	---	---	---	---
[19.0, 20.0)	---	---	---	---	---	---	---
[20.0, 21.0)	---	---	1	---	---	2	---
[21.0, 22.0)	---	---	---	---	---	---	---
[22.0, 23.0)	---	---	---	---	---	---	---
[23.0, 24.0)	---	---	---	---	---	---	---
[24.0, 25.0)	---	---	---	---	---	---	---
[25.0, 26.0)	---	---	---	---	---	---	---
[26.0, 27.0)	---	---	---	---	---	---	---
[27.0, 28.0)	---	---	---	---	---	---	---
[28.0, 29.0)	---	---	---	---	---	---	---
[29.0, 30.0)	---	---	---	---	---	---	---
[30.0, 31.0)	---	---	---	---	---	---	---
[31.0, 32.0)	---	---	---	---	---	---	---
[32.0, 33.0)	---	---	---	---	---	---	---
[33.0, 34.0)	---	---	---	---	---	---	---
[34.0, 35.0)	---	---	---	---	---	---	---
[35.0, 36.0)	---	---	---	---	---	---	---
[36.0+ )	---	---	---	---	---	---	---
Total	3	288	33	42	232	2	21

Table 12. Length-frequency distributions of released fish, Medicine Lake, combined winter 2002-03 and open-water 2003 seasons. Fish species/type codes: BOF=bowfin, CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch.

Length Category	BOF	CRP	LMB	NOP	SUN	WAE	YEP
[0.0, 3.0)	---	1	---	---	---	---	---
[3.0, 3.5)	---	---	---	---	---	---	---
[3.5, 4.0)	---	---	---	---	---	---	---
[4.0, 4.5)	---	2	1	---	1	---	4
[4.5, 5.0)	---	---	---	---	4	---	4
[5.0, 5.5)	---	8	1	---	17	---	9
[5.5, 6.0)	---	2	---	---	19	---	2
[6.0, 6.5)	---	12	---	---	12	---	17
[6.5, 7.0)	---	---	---	---	---	---	---
[7.0, 7.5)	---	7	---	---	1	---	15
[7.5, 8.0)	---	---	---	---	1	---	---
[8.0, 8.5)	---	4	8	---	---	1	1
[8.5, 9.0)	---	---	---	---	---	---	---
[9.0, 9.5)	---	---	1	1	---	---	---
[9.5, 10.0)	---	---	---	---	---	---	---
[10.0, 10.5)	---	---	42	1	1	---	---
[10.5, 11.0)	---	---	---	---	---	---	---
[11.0, 11.5)	---	---	---	1	---	---	---
[11.5, 12.0)	---	---	---	---	---	---	---
[12.0, 13.0)	---	---	27	17	---	---	---
[13.0, 14.0)	---	---	12	2	---	---	---
[14.0, 15.0)	---	---	24	3	---	---	---
[15.0, 16.0)	---	---	35	9	---	---	---
[16.0, 17.0)	---	---	14	9	---	---	---
[17.0, 18.0)	---	---	10	5	---	---	---
[18.0, 19.0)	---	---	12	19	---	---	---
[19.0, 20.0)	---	---	5	9	---	---	---
[20.0, 21.0)	1	---	3	6	---	---	---
[21.0, 22.0)	---	---	1	8	---	---	---
[22.0, 23.0)	---	---	---	7	---	1	---
[23.0, 24.0)	---	---	1	5	---	---	---
[24.0, 25.0)	---	---	---	10	---	---	---
[25.0, 26.0)	---	---	---	3	---	---	---
[26.0, 27.0)	---	---	---	3	---	---	---
[27.0, 28.0)	---	---	---	3	---	---	---
[28.0, 29.0)	---	---	---	5	---	---	---
[29.0, 30.0)	---	---	---	1	---	---	---
[30.0, 31.0)	---	---	---	1	---	---	---
[31.0, 32.0)	---	---	---	3	---	---	---
[32.0, 33.0)	---	---	---	2	---	---	---
[33.0, 34.0)	---	---	---	6	---	---	---
[34.0, 35.0)	---	---	---	2	---	---	---
[35.0, 36.0)	---	---	---	---	---	---	---
[36.0, 37.0)	---	---	---	4	---	---	---
[37.0, 38.0)	---	---	---	1	---	---	---
[38.0, 39.0)	---	---	---	---	---	---	---
[39.0, 40.0)	---	---	---	---	---	---	---
[40.0+ )	---	---	---	---	---	---	---
Total	1	36	197	144	56	2	52

Table 13. Length-frequency distributions of harvested fish, Lake Independence, combined winter 2002-03 and open-water 2003 seasons. Fish species/type codes: CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch.

Length Category	CRP	LMB	NOP	SUN	WAE	YEP
[0.0, 4.0)	---	---	---	---	---	---
[4.0, 4.5)	---	---	---	---	---	---
[4.5, 5.0)	---	---	---	---	---	---
[5.0, 5.5)	---	---	---	---	---	---
[5.5, 6.0)	---	---	---	4	---	---
[6.0, 6.5)	---	---	---	15	---	---
[6.5, 7.0)	2	---	---	50	---	3
[7.0, 7.5)	13	---	---	47	---	2
[7.5, 8.0)	41	---	---	27	---	---
[8.0, 8.5)	67	3	---	3	---	---
[8.5, 9.0)	71	1	---	---	---	---
[9.0, 9.5)	74	1	---	---	---	---
[9.5, 10.0)	14	2	---	---	---	---
[10.0, 10.5)	1	4	---	---	---	---
[10.5, 11.0)	---	4	---	---	---	---
[11.0, 11.5)	1	1	---	---	---	---
[11.5, 12.0)	---	---	---	---	1	---
[12.0, 13.0)	---	---	---	---	3	---
[13.0, 14.0)	---	---	---	---	5	---
[14.0, 15.0)	---	---	---	---	10	---
[15.0, 16.0)	---	---	---	---	2	---
[16.0, 17.0)	---	4	---	---	1	---
[17.0, 18.0)	---	2	---	---	2	---
[18.0, 19.0)	---	1	---	---	3	---
[19.0, 20.0)	---	---	---	---	---	---
[20.0, 21.0)	---	---	---	---	---	---
[21.0, 22.0)	---	---	2	---	---	---
[22.0, 23.0)	---	---	---	---	---	---
[23.0, 24.0)	---	---	1	---	---	---
[24.0, 25.0)	---	---	---	---	1	---
[25.0, 26.0)	---	---	2	---	---	---
[26.0, 27.0)	---	---	1	---	---	---
[27.0, 28.0)	---	---	1	---	---	---
[28.0, 29.0)	---	---	---	---	---	---
[29.0, 30.0)	---	---	---	---	---	---
[30.0, 31.0)	---	---	---	---	---	---
[31.0, 32.0)	---	---	---	---	---	---
[32.0, 33.0)	---	---	---	---	---	---
[33.0, 34.0)	---	---	---	---	---	---
[34.0, 35.0)	---	---	---	---	---	---
[35.0, 36.0)	---	---	---	---	---	---
[36.0, 37.0)	---	---	---	---	---	---
[37.0, 38.0)	---	---	---	---	---	---
[38.0, 39.0)	---	---	---	---	---	---
[39.0, 40.0)	---	---	---	---	---	---
[40.0, 41.0)	---	---	---	---	---	---
[41.0, 42.0)	---	---	---	---	---	---
[42.0, 43.0)	---	---	---	1	---	---
Total	284	23	7	146	28	5



Table 14. Length-frequency distributions of released fish, Lake Independence, combined winter 2002-03 and open-water 2003 seasons. Fish species/type codes: BOF=bowfin, CRP=crappie, LMB=largemouth bass, MUE=muskellunge, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch.

Length Category	BOF	CRP	LMB	MUE	NOP	SUN	WAE	YEP
[0.0, 4.0)	---	---	---	---	---	---	---	---
[4.0, 4.5)	---	6	1	---	---	1	---	1
[4.5, 5.0)	---	3	---	---	---	4	---	2
[5.0, 5.5)	---	8	---	---	---	17	---	32
[5.5, 6.0)	---	---	---	---	---	19	---	---
[6.0, 6.5)	---	3	10	---	---	12	---	7
[6.5, 7.0)	---	13	---	---	---	---	---	7
[7.0, 7.5)	---	21	1	---	---	1	---	11
[7.5, 8.0)	---	12	---	---	---	1	---	---
[8.0, 8.5)	---	42	6	---	---	---	3	1
[8.5, 9.0)	---	4	---	---	---	---	---	---
[9.0, 9.5)	---	---	---	---	---	---	---	---
[9.5, 10.0)	---	---	---	---	---	---	---	---
[10.0, 10.5)	---	---	6	---	---	1	3	---
[10.5, 11.0)	---	---	---	---	1	---	---	---
[11.0, 11.5)	---	---	2	---	---	---	---	---
[11.5, 12.0)	---	---	---	---	---	---	1	---
[12.0, 13.0)	---	---	18	1	5	---	---	---
[13.0, 14.0)	---	---	10	---	3	---	---	---
[14.0, 15.0)	---	---	15	---	1	---	1	---
[15.0, 16.0)	---	---	22	---	1	---	2	---
[16.0, 17.0)	---	---	11	---	12	---	---	---
[17.0, 18.0)	---	---	8	---	5	---	---	---
[18.0, 19.0)	---	---	10	---	10	---	2	---
[19.0, 20.0)	---	---	2	---	5	---	1	---
[20.0, 21.0)	---	---	2	3	11	---	---	---
[21.0, 22.0)	---	---	1	---	9	---	2	---
[22.0, 23.0)	---	---	---	===	4	---	---	---
[23.0, 24.0)	---	---	---	===	2	---	---	---
[24.0, 25.0)	1	---	---	---	7	---	---	---
[25.0, 26.0)	---	---	---	---	2	---	---	---
[26.0, 27.0)	---	---	---	---	3	---	---	---
[27.0, 28.0)	---	---	---	1	2	---	---	---
[28.0, 29.0)	---	---	---	1	6	---	---	---
[29.0, 30.0)	---	---	---	2	1	---	---	---
[30.0, 31.0)	---	---	---	1	4	---	---	---
[31.0, 32.0)	---	---	---	3	1	---	---	---
[32.0, 33.0)	---	---	---	1	1	---	---	---
[33.0, 34.0)	---	---	---	1	1	---	---	---
[34.0, 35.0)	---	---	---	3	3	---	---	---
[35.0, 36.0)	---	---	---	7	1	---	---	---
[36.0, 37.0)	---	---	---	4	---	---	---	---
[37.0, 38.0)	---	---	---	---	---	---	---	---
[38.0, 39.0)	---	---	---	6	---	---	---	---
[39.0, 40.0)	---	---	---	6	---	---	---	---
[40.0+ )	---	---	---	15*	---	---	---	---
Total	1	71	125	55	101	10	15	71

\* largest muskellunge reported: 47 inches

Table 15. Length-frequency distributions of harvested fish, Lake Sarah, combined winter 2002-03 and open-water 2003 seasons. Fish species/ type codes: CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish.

Length Category	CRP	LMB	NOP	SUN
[0.0, 3.0)	---	---	---	---
[3.0, 3.5)	---	---	---	---
[3.5, 4.0)	---	---	---	---
[4.0, 4.5)	---	---	---	---
[4.5, 5.0)	---	---	---	---
[5.0, 5.5)	---	---	---	---
[5.5, 6.0)	---	---	---	---
[6.0, 6.5)	---	---	---	24
[6.5, 7.0)	2	---	---	136
[7.0, 7.5)	8	---	---	225
[7.5, 8.0)	17	---	---	112
[8.0, 8.5)	67	---	---	11
[8.5, 9.0)	77	---	---	2
[9.0, 9.5)	68	2	---	---
[9.5, 10.0)	36	1	---	---
[10.0, 10.5)	15	1	---	---
[10.5, 11.0)	9	2	---	---
[11.0, 11.5)	---	3	---	---
[11.5, 12.0)	3	3	---	---
[12.0, 13.0)	3	14	---	---
[13.0, 14.0)	2	8	---	---
[14.0, 15.0)	1	15	---	---
[15.0, 16.0)	---	5	---	---
[16.0, 17.0)	---	10	---	---
[17.0, 18.0)	---	9	---	---
[18.0, 19.0)	---	5	1	---
[19.0, 20.0)	---	1	---	---
[20.0, 21.0)	---	1	1	---
[21.0, 22.0)	---	1	1	---
[22.0, 23.0)	---	---	---	---
[23.0, 24.0)	---	---	1	---
[24.0, 25.0)	---	---	1	---
[25.0, 26.0)	---	---	---	---
[26.0, 27.0)	---	---	2	---
[27.0, 28.0)	---	---	1	---
[28.0, 29.0)	---	---	1	---
[29.0, 30.0)	---	---	2	---
[30.0, 31.0)	---	---	---	---
[31.0, 32.0)	---	---	---	---
[32.0, 33.0)	---	---	1	---
[33.0, 34.0)	---	---	---	---
[34.0, 35.0)	---	---	1	---
[35.0, 36.0)	---	---	---	---
[36.0, 37.0)	---	---	---	---
[37.0, 38.0)	---	---	---	---
[38.0, 39.0)	---	---	---	---
[39.0, 40.0)	---	---	---	---
[40.0+ )	---	---	---	---
Total	308	81	13	510

Table 16. Length-frequency distributions of released fish, Lake Sarah, combined winter 2002-03 and open-water 2003 seasons. Fish species/ type codes: BOF=bowfin, CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch.

Length Category	BOF	CRP	LMB	NOP	SUN	WAE	YEP
[0.0, 3.0)	---	---	---	---	---	---	---
[3.0, 3.5)	---	---	---	---	---	---	---
[3.5, 4.0)	---	---	---	---	---	---	---
[4.0, 4.5)	---	3	---	---	2	---	---
[4.5, 5.0)	---	---	---	---	33	---	---
[5.0, 5.5)	---	2	---	---	22	---	1
[5.5, 6.0)	---	2	---	---	51	---	3
[6.0, 6.5)	---	15	2	---	21	---	4
[6.5, 7.0)	---	39	---	---	---	---	---
[7.0, 7.5)	---	37	---	---	---	---	2
[7.5, 8.0)	---	13	---	---	---	---	---
[8.0, 8.5)	---	3	10	---	---	---	---
[8.5, 9.0)	---	2	---	---	---	---	---
[9.0, 9.5)	---	---	2	---	---	---	---
[9.5, 10.0)	---	---	---	---	---	---	---
[10.0, 10.5)	---	---	20	---	---	1	---
[10.5, 11.0)	---	---	---	---	---	---	---
[11.0, 11.5)	---	---	3	---	---	---	---
[11.5, 12.0)	---	---	12	---	---	---	---
[12.0, 13.0)	---	---	102	---	---	---	---
[13.0, 14.0)	---	---	34	---	---	---	---
[14.0, 15.0)	---	---	45	---	---	---	---
[15.0, 16.0)	---	---	78	2	---	---	---
[16.0, 17.0)	---	---	46	---	---	---	---
[17.0, 18.0)	---	---	29	1	---	---	---
[18.0, 19.0)	---	---	37	4	---	---	---
[19.0, 20.0)	---	---	4	1	---	---	---
[20.0, 21.0)	---	---	2	1	---	---	---
[21.0, 22.0)	---	---	---	---	---	---	---
[22.0, 23.0)	---	---	---	1	---	---	---
[23.0, 24.0)	---	---	---	3	---	---	---
[24.0, 25.0)	---	---	---	3	---	---	---
[25.0, 26.0)	---	---	---	4	---	---	---
[26.0, 27.0)	1	---	---	2	---	---	---
[27.0, 28.0)	---	---	---	2	---	---	---
[28.0, 29.0)	---	---	---	1	---	---	---
[29.0, 30.0)	---	---	---	2	---	---	---
[30.0, 31.0)	---	---	---	2	---	---	---
[31.0, 32.0)	---	---	---	---	---	---	---
[32.0, 33.0)	---	---	---	---	---	---	---
[33.0, 34.0)	---	---	---	---	---	---	---
[34.0, 35.0)	---	---	---	---	---	---	---
[35.0, 36.0)	---	---	---	---	---	---	---
[36.0, 37.0)	---	---	---	2	---	---	---
[37.0, 38.0)	---	---	---	---	---	---	---
[38.0, 39.0)	---	---	---	---	---	---	---
[39.0, 40.0)	---	---	---	---	---	---	---
[40.0+ )	---	---	---	---	---	---	---
Total	1	116	426	31	129	1	10

Table 17. Percentages of anglers harvesting given numbers of fish, anglers seeking specific species/types, 3 Hennepin County, Minnesota lakes, combined winter 2002-03 and open-water 2003 seasons. (From interviews where anglers completed trips; values in parentheses are number of parties who harvested that fish species/type.)

<b>Medicine Lake</b>									
Fish Species/Type	Number Fish Harvested per Angler <sup>a,b</sup>								
	-0-	0.1-0.9	1-1.9	2-2.9	3-3.9	4-4.9	5-5.9	6	
Northern pike (15)	66	20	7	7	-0-	N/A <sup>c</sup>	N/A	N/A	
Largemouth bass (14)	100	-0-	-0-	-0-	-0-	-0-	-0-	-0-	
	-0-	0.1-4.9	5-9.9	10-14.9	15-19.9	20-24.9	25-29.9	30	
Crappie <sup>d</sup> (27)	63	26	7	4	-0-	N/A <sup>c</sup>	N/A	N/A	
Sunfish <sup>d</sup> (22)	32	9	18	18	-0-	23	-0-	-0-	
<b>Lake Independence<sup>e</sup></b>									
Fish Species/Type	Number Fish Harvested per Angler <sup>a,b</sup>								
	-0-	0.1-0.9	1-1.9	2-2.9	3-3.9	4-4.9	5-5.9	6	
Walleye (34)	76	12	3	3	3	-0-	3	-0-	
Largemouth bass (11)	100	-0-	-0-	-0-	-0-	-0-	-0-	-0-	
Northern pike (9)	88	8	4	-0-	-0-	N/A <sup>c</sup>	N/A	N/A	
	-0-	0.1-4.9	5-9.9	10-14.9	15-19.9	20-24.9	25-29.9	30	
Crappie <sup>d</sup> (20)	40	45	10	5	-x-	N/A <sup>c</sup>	N/A	N/A	
Sunfish <sup>d</sup> (8)	64	12	12	-0-	12	x	x	-x-	
<b>Lake Sarah</b>									
Fish Species/Type	Number Fish Harvested per Angler <sup>a,b</sup>								
	-0-	0.1-0.9	1-1.9	2-2.9	3-3.9	4-4.9	5-5.9	6	
Northern pike (13)	70	15	15	-0-	-0-	N/A <sup>c</sup>	N/A	N/A	
Largemouth bass (27)	71	7	7	11	4	-0-	-0-	-0-	
	-0-	0.1-4.9	5-9.9	10-14.9	15-19.9	20-24.9	25-29.9	30	
Crappie <sup>d</sup> (34)	32	41	18	-0-	9	N/A <sup>c</sup>	N/A	N/A	
Sunfish <sup>d</sup> (36)	25	28	17	8	11	11	-0-	-0-	

<sup>a</sup> Determined by dividing, for each completed-trip interview, total number of fish species/type harvested by number of anglers in interviewed party

<sup>b</sup> Daily harvest (bag) limits during survey: 6 largemouth bass, 6 walleye (only 1 >24 inches) 3 northern pike (only 1 >30 inches); 30 sunfish until May 10, 2003, then 20; 15 crappie until May 10, 2003, then 10

<sup>c</sup> N/A-- not applicable because category exceeds bag limit and no over-limit violations observed

<sup>d</sup> includes anglers seeking "panfish"

<sup>e</sup> Of 35 muskellunge-seeking parties who completed their trips, none harvested muskellunge

Table 18. Estimated percent (%) of angler parties seeking selected fishes or combinations<sup>1</sup> based on seasonal percentages and estimated angler-hours<sup>2</sup>, 3 Hennepin County, Minnesota lakes, combined winter 2002-03 and open-water 2003 seasons.

Fish Sought	Medicine %	Independence %	Sarah %
Crappie	31	31	43
Northern pike	22	5	9
Bluegill/Sunfish	18	9	22
No Preference/=Anything=	13	12	8
Largemouth bass	14	6	17
Walleye	-0-	15	-0-
Yellow perch	2	2	1
Muskellunge	-0-	20	-0-
Carp	-0-	<1	-0-

1 Responses for multiple preferences were split equally among fish species/type stated, then added to respective single-species totals; e.g. a response of seeking "northerns and walleyes" was entered as 0.5 northern pike and 0.5 walleye. A "panfish" preference was separated as 0.4 each for bluegill/sunfish and crappie, and 0.2 for yellow perch.

2 calculated as: (% of angler parties seeking species winter season \* winter season angler-hours) + (% of angler parties seeking species open-water season \* open-water season angler-hours) / angler-hours for both winter and open-water seasons.

Table 19. Percentages of each gender fishing 3 Hennepin County, Minnesota lakes, combined winter 2002-03 and open-water 2003 seasons.

Lake	Male %	Female %
Medicine (1,056 anglers)	86	14
Independence (1,400 anglers)	88	12
Sarah (963 anglers)	85	15

Table 20. Age distributions of anglers fishing 3 Hennepin County, Minnesota lakes, combined winter 2002-03 and open-water 2003 seasons.

		AGE GROUP							
		under 16	16-24	25-34	35-44	45-54	55-64	65 & older	Total
<b>Medicine</b>	%	15	9	17	28	25	19	7	100
	# surveyed	148	91	177	262	195	76	84	1,038
<b>Independence</b>	%	15	12	19	28	16	6	4	100
	# surveyed	211	169	264	378	225	84	58	1,384
<b>Sarah</b>	%	14	9	13	31	17	6	10	100
	# surveyed	132	87	120	293	159	62	91	944

Table 21. Percentages of anglers traveling different distances to fish 3 Hennepin County, Minnesota lakes, combined winter 2002-03 and open-water 2003 seasons.

Lake	Distance Traveled to Lake (Miles)						Number ZIPs given	% non-MN
	<10	10-25	26-50	51-75	76-150	151+		
Medicine	81	15	1	1	<1	2	1,042	2
Independence	21	64	11	1	1	2	1,380	1
Sarah	33	55	9	<1	1	1	958	1

Table 22. Percent of angler parties using various electronic location devices while fishing, 3 Hennepin County, Minnesota lakes, combined winter 2002-03 and open-water 2003 seasons. Shore anglers excluded.

Electronic Device	Medicine %	Independence %	Sarah %
No Info Given/Recorded or Not Applic.	71	48	57
Depthfinder / Flasher	28	51	43
GPS	-0-	-0-	-0-
Underwater Video Camera	<1	<1	<1
Multiple Devices (Camera + Flasher)	<1	-0-	-0-

Table 23. Summary of strata statistics for Medicine Lake, Minnesota creel survey, winter 2002-03. Values in parentheses represent 1 standard error; -- value not available or applicable.

<b>Value</b>	<b>Season Stratum (Month)</b>			<b>Total</b>
	<b>December-January</b>	<b>February</b>	<b>March</b>	
Start date	12/1/02	2/1/03	3/1/03	12/1/02
End date	1/31/03	2/28/03	3/31/03	3/31/03
Fishing-day length, hours	16	16	16	16
Number of days in stratum	62	28	31	121
" weekdays sampled	8	5	4	17
" weekend days/holidays sampled	1	3	4	8
Number of activity counts	18	16	16	50
Number of interviews-- All	50	55	28	133
" Fish-house anglers	29	36	10	75
" Open-ice anglers	17	18	18	53
" (Darkhouse) Spearers	4	1	--	5
Mean number / Occupied fish houses	8.8 (4.4)	8.9 (1.9)	1.9 (0.4)	6.6 (0.9)
activ. count: Occupied spear houses	0.4 (0.2)	0.1 (0.1)	--	0.3 (0.1)
Open-ice anglers	7.9 (1.5)	5.5 (1.7)	3.1 (0.2)	5.6 (0.9)
Mean number anglers / party	1.46 (0.20)	1.67 (0.26)	1.61 (0.51)	1.58 (0.18)
<b>Completed-trip information</b>				
Number/% complete-trip interviews	12 / 24%	9 / 16%	2 / 7%	23 / 17%
Mean trip length (hours)	2.35 (0.61)	2.99 (0.87)	2.75 (0.75)	2.63 (0.46)

Table 24. Summary of strata statistics for Lake Independence, Minnesota creel survey, winter 2002-03. Values in parentheses represent 1 standard error; -- value not available or applicable.

<b>Value</b>	<b>Season Stratum (Month)</b>			<b>Total</b>
	<b>December-January</b>	<b>February</b>	<b>March</b>	
Start date	12/1/02	2/1/03	3/1/03	12/1/02
End date	1/31/03	2/28/03	3/31/03	3/31/03
Fishing-day length, hours	16	16	16	16
Number of days in stratum	62	28	31	121
" weekdays sampled	7	5	4	16
" weekend days/holidays sampled	3	3	3	9
Number of activity counts	20	16	14	50
Number of interviews-- All	43	38	9	90
" Fish-house anglers	29	36	10	70
" Open-ice anglers	17	18	18	20
Mean number / Occupied fish houses	11.2 (2.8)	5.8 (1.7)	0.6 (0.2)	6.5 (1.1)
activ. count: Open-ice anglers	1.0 (0.6)	2.8 (1.4)	1.0 (0.4)	1.6 (0.5)
Mean number anglers / party	1.81 (0.39)	2.16 (0.72)	1.56 (0.37)	1.93 (0.38)
<b>Completed-trip information</b>				
Number/% complete-trip interviews	11 / 26%	3 / 8%	0 / 0%	14 / 16%
Mean trip length (hours)	3.04 (0.93)	2.25 (--)	--	2.87 (0.74)



Table 25. Summary of strata statistics for Lake Sarah, Minnesota creel survey, winter 2002-03. Values in parentheses represent 1 standard error; -- value not available or applicable.

<b>Value</b>	<b>Season Stratum (Month)</b>			<b>Total</b>
	<b>December-January</b>	<b>February</b>	<b>March</b>	
Start date	12/1/02	2/1/03	3/1/03	12/1/02
End date	1/31/03	2/28/03	3/31/03	3/31/03
Fishing-day length, hours	16	16	16	16
Number of days in stratum	62	28	31	121
" weekdays sampled	8	5	4	17
" weekend days/holidays sampled	2	4	4	10
Number of activity counts	20	18	16	54
Number of interviews-- All	44	58	27	129
" Fish-house anglers	33	46	10	89
" Open-ice anglers	9	11	17	37
" (Darkhouse) Spearers	2	1	--	3
Mean number / Occupied fish houses	5.7 (1.1)	7.6 (1.4)	2.4 (1.2)	5.3 (0.5)
activ. count: Occupied spear houses	0.4 (0.2)	0.1 (0.1)	--	0.2 (0.1)
Open-ice anglers	2.7 (0.6)	2.3 (0.7)	4.8 (1.6)	3.2 (0.4)
Mean number anglers / party	1.50 (0.24)	1.64 (0.29)	1.85 (0.72)	1.64 (0.22)
<b>Completed-trip information</b>				
Number/% complete-trip interviews	5 / 11%	3 / 8%	4 / 15%	22 / 17%
Mean trip length (hours)	2.35 (1.08)	3.54 (1.46)	2.42 (0.60)	3.06 (0.98)

Table 26. Monthly and total fishing pressure estimates in angler-hours (a-h) and fishing pressure density in angler-hours per acre (a-h/acre), 3 Hennepin County, Minnesota lakes, winter 2002-03. Value of 1 standard error in parentheses. (Sums of monthly values might differ slightly from listed totals because of rounding error.)

	<b>Medicine</b>		<b>Independence</b>	
	a-h	a-h/acre	a-h	a-h/acre
Dec.-Jan.	26,664 (3,471)	30.1 (3.9)	23,501 (5,170)	27.8 (6.1)
% of Total	67%		71%	
February	9,649 (1,606)	10.9 (1.8)	8,408 (2,687)	10.0 (3.2)
% of Total	24%		25%	
March	3,331 (1,187)	3.8 (1.3)	1,248 (526)	1.5 (0.6)
% of Total	9%		4%	
<b>Season Total</b>	<b>39,644 (5,567)</b>	<b>44.7 (6.3)</b>	<b>33,157 (5,850)</b>	<b>39.3 (6.9)</b>

	<b>Sarah</b>	
	a-h	a-h/acre
Dec.-Jan.	16,713 (2,430)	29.1 (1.6)
% of Total	61%	
February	5,742 (544)	10.0 (1.0)
% of Total	21%	
March	4,972 (1,902)	8.7 (3.3)
% of Total	18%	
<b>Season Total</b>	<b>27,427 (9,685)</b>	<b>47.8 (5.5)</b>

Table 27. Harvest, release, and catch (harvested + released) numbers by fish species/type, plus percentage of caught fish that were harvested, Medicine Lake, winter 2002-03. SE = 1 standard error. (BLH=bullhead, CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, YEP=yellow perch)

Spp	Harvest	SE	Har per Acre	SE	Release	SE	Rel per Acre	SE	Catch	SE	Cat per Acre	SE
BLH	0.0	0.0	0.00	0.00	165.8	173.0	0.19	0.20	165.8	173.0	0.19	0.20
CRP	20402.3	3863.7	23.03	4.36	6149.1	1657.2	6.94	1.87	26551.4	4927.5	29.97	5.56
LMB	74.9	81.3	0.08	0.09	165.8	166.2	0.19	0.19	240.7	185.0	0.27	0.21
NOP	2313.0	574.0	2.61	0.65	3115.4	898.7	3.52	1.01	5428.3	1161.1	6.13	1.31
SUN	13951.6	5742.1	15.75	6.48	14299.3	9793.0	16.14	11.05	28250.9	14346.2	31.89	16.19
YEP	1641.7	840.2	1.85	0.95	5322.0	1583.6	6.01	1.79	6963.8	1845.6	7.86	2.08
<b>ALL</b>	<b>38383.5</b>	<b>7164.3</b>	<b>43.32</b>	<b>8.09</b>	<b>29217.4</b>	<b>10332.9</b>	<b>32.98</b>	<b>11.66</b>	<b>67600.9</b>	<b>15624.5</b>	<b>76.30</b>	<b>17.63</b>

Table 28. Harvest, release, and catch (harvested + released) numbers by fish species/type, plus percentage of caught fish that were harvested, Lake Independence, winter 2002-03. SE = 1 standard error. (CRP= crappie, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

Spp	Harvest	Har per		Release	Rel per		Catch	Cat per				
		SE	Acre		SE	Acre		SE	Acre			
CRP	9294.7	4858.0	11.01	5.76	9532.7	2541.1	11.29	3.01	18827.5	7079.3	22.31	8.39
NOP	0.0	0.0	0.00	0.00	357.2	221.2	0.42	0.26	357.2	221.2	0.42	0.26
SUN	5116.7	5462.3	6.06	6.47	4011.5	4233.7	4.75	5.02	9128.2	9536.3	10.82	11.30
WAE	273.0	225.0	0.32	0.27	357.2	247.2	0.42	0.29	630.2	443.0	0.75	0.52
YEP	439.0	2215.3	0.52	2.62	8696.3	2667.1	10.30	3.16	9135.3	4539.1	10.82	5.38
ALL	15123.5	7639.2	17.92	9.05	22954.8	5615.8	27.20	6.65	38078.3	12717.1	45.12	15.07

Table 29. Harvest, release, and catch (harvested + released) numbers by fish species/type, plus percentage of caught fish that were harvested, Lake Sarah, winter 2002-03. SE = 1 standard error. (CRP= crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, YEP=yellow perch)

Spp	Harvest	Har per		Release	Rel per		Catch	Cat per				
		SE	Acre		SE	Acre		SE	Acre			
CRP	13876.7	2419.2	24.18	4.21	8340.6	1969.0	14.53	3.43	22217.2	3909.4	38.71	6.81
LMB	192.9	132.0	0.34	0.23	0.0	0.0	0.00	0.00	192.9	132.0	0.34	0.23
NOP	0.0	0.0	0.00	0.00	0.0	0.0	0.00	0.00	0.0	0.0	0.00	0.00
SUN	12830.7	5075.3	22.35	8.84	19898.2	14280.2	34.67	24.88	32728.9	18983.7	57.02	33.07
YEP	0.0	0.0	0.00	0.00	620.7	221.2	1.08	0.39	620.7	221.2	1.08	0.39
ALL	26900.3	5624.0	46.86	9.80	28859.5	14417.0	50.28	25.12	55759.7	19383.7	97.14	33.77

Table 30. Overall harvest, release, and catch rates (number fish per angler-hour), Medicine Lake, winter 2002-03. SE = 1 standard error.

	Har/ AnHr	SE	Rel/ AnHr	SE	Cat/ AnHr	SE
Bullhead	0.0000	0.0000	0.0042	0.0044	0.0042	0.0044
Crappie	0.5146	0.0959	0.1551	0.0396	0.6698	0.1160
Largemouth bass	0.0019	0.0038	0.0042	0.0070	0.0061	0.0052
Northern pike	0.0583	0.0210	0.0786	0.0279	0.1369	0.0417
Sunfish	0.3519	0.1471	0.3607	0.2871	0.7126	0.4040
Yellow perch	0.0414	0.0473	0.1342	0.0187	0.1757	0.0431
All fishes	0.9682	0.1831	0.7370	0.2917	1.7052	0.4246

Table 31. Sought harvest, release, and catch rates (number fish per angler-hour for those targeting specific fish[es]), Medicine Lake, winter 2002-03. SE = 1 standard error.

	Har/ AnHr	SE	Rel/ AnHr	SE	Cat/ AnHr	SE	Number of seekers
Crappie	0.9407	0.4697	0.2118	0.0831	1.1525	0.5286	77
Largemouth bass	0.3636	---	0.0000	---	0.3636	---	2
Northern pike	0.1900	0.0480	0.2263	0.1251	0.4163	0.1172	43
Sunfish	1.4462	0.5313	2.5898	1.0881	4.0359	1.3832	30
Yellow perch	1.7340	1.0661	1.1586	1.4807	2.8926	1.8183	9

Table 32. Overall harvest, release, and catch rates (number fish per angler-hour), Lake Independence, winter 2002-03. SE = 1 standard error.

	Har/ AnHr	SE	Rel/ AnHr	SE	Cat/ AnHr	SE
Crappie	0.2803	0.1437	0.2875	0.1081	0.5678	0.1604
Northern pike	0.0000	0.0000	0.0108	0.0069	0.0108	0.0069
Sunfish	0.1543	0.1709	0.1210	0.1267	0.2753	0.3209
Walleye	0.0082	0.0060	0.0108	0.0072	0.0190	0.0121
Yellow perch	0.0132	0.0764	0.2623	0.0877	0.2755	0.1563
All fishes	0.4561	0.2361	0.6923	0.2142	1.1484	0.3981

Table 33. Sought harvest, release, and catch rates (number fish per angler-hour for those targeting specific fish[es]), Lake Independence, winter 2002-03. SE = 1 standard error.

	Har/ AnHr	SE	Rel/ AnHr	SE	Cat/ AnHr	SE	Number of seekers
Crappie	0.5008	0.1612	0.3082	0.0670	0.8090	0.2094	69
Northern pike	0.0000	0.0000	0.2622	0.0788	0.2622	0.0788	4
Sunfish	2.6370	1.3117	2.1348	0.9910	4.7718	2.2001	14
Walleye	0.0175	0.0109	0.0175	0.0138	0.0350	0.0206	22
Yellow perch	0.0000	---	1.0000	---	1.0000	---	1

Table 34. Overall harvest, release, and catch rates (number fish per angler-hour), Lake Sarah, winter 2002-03. SE = 1 standard error.

	Har/ AnHr	SE	Rel/ AnHr	SE	Cat/ AnHr	SE
Crappie	0.5060	0.0514	0.3041	0.0597	0.8101	0.0886
Largemouth bass	0.0070	0.0049	0.0000	0.0000	0.0070	0.0049
Northern pike	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sunfish	0.4678	0.1950	0.7255	0.5370	1.1933	0.7192
Yellow perch	0.0000	0.0000	0.0226	0.0024	0.0226	0.0024
All fishes	0.9808	0.2018	1.0522	0.5403	2.0330	0.7246

Table 35. Sought harvest, release, and catch rates (number fish per angler-hour for those targeting specific fish[es]), Lake Sarah, winter 2002-03. SE = 1 standard error.

	Har/ AnHr	SE	Rel/ AnHr	SE	Cat/ AnHr	SE	Number of seekers
Crappie	0.7648	0.1537	0.6013	0.1405	1.3661	0.2822	97
Largemouth bass	0.0000	---	0.0000	---	0.0000	---	1
Northern pike	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	14
Sunfish	3.4158	0.6280	1.9140	1.6243	5.3299	2.1819	40
Yellow perch	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	5

Table 36. Yield, in pounds (lb) and pounds per acre (lb/acre), and percent of total represented, Medicine Lake, winter 2002-03. SE = 1 standard error.

Spp	Harvest Lbs	SE	Har Lbs per Acre	SE	% of total
Crappie	7845.0	2036.9	8.85	2.30	35
Largemouth bass	185.4	201.5	0.21	0.23	1
Northern pike	10761.1	5748.8	12.15	6.49	48
Sunfish	3218.9	2029.1	3.63	2.29	15
Yellow perch	197.7	104.9	0.22	0.12	1
Total	22208.1	6449.9	25.07	7.28	

Table 37. Yield, in pounds (lb) and pounds per acre (lb/acre), and percent of total represented, Lake Independence, winter 2002-03. SE = 1 standard error.

Spp	Harvest Lbs	SE	Har Lbs per Acre	SE	% of total
Crappie	3768.7	2988.4	4.47	3.54	70
Sunfish	1046.9	2100.3	1.24	2.49	19
Walleye	535.5	434.7	0.63	0.52	10
Yellow perch	52.7	---	0.06	--	1
Total	5403.8	---	6.40	--	

Table 38. Yield, in pounds (lb) and pounds per acre (lb/acre), and percent of total represented, Lake Sarah, winter 2002-03. SE = 1 standard error.

Spp	Harvest		Har Lbs per Acre		% of total
	Lbs	SE	SE	SE	
Crappie	6586.9	2184.4	11.48	3.81	66
Largemouth Bass	405.0	278.9	0.71	0.49	4
Sunfish	3062.8	1915.2	5.34	3.34	30
Total	10054.8	2918.4	17.52	5.08	

Table 39. Mean length (in inches) of fish harvested and released by anglers, Medicine Lake, Minnesota, winter 2002-03. SE = 1 standard error. (BLH=bullhead, CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, YEP=yellow perch)

	Targeting Anglers						All Anglers					
	Har AvLn	SE	Rel AvLn	SE	Cat AvLn	SE	Har AvLn	SE	Rel AvLn	SE	Cat AvLn	SE
BLH	---	---	---	---	---	---	---	---	11.70	17.13	11.70	17.13
CRP	7.91	1.20	5.94	1.45	7.54	1.19	7.92	3.72	5.94	3.19	7.50	3.33
LMB	15.75	---	---	---	15.75	---	15.75	22.42	4.00	5.85	11.83	19.55
NOP	25.20	5.36	22.07	6.60	23.86	3.46	25.20	18.71	21.61	15.61	23.55	11.13
SUN	6.80	2.39	5.31	1.45	6.27	1.62	6.81	5.18	5.38	4.07	6.30	4.26
YEP	6.53	1.23	6.42	5.70	6.45	3.86	6.70	7.64	5.87	7.45	6.10	6.31

Table 40. Mean weight (in pounds) of fish harvested and released by anglers, Medicine Lake, Minnesota, winter 2002-03. SE = 1 standard error. (BLH=bullhead, CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, YEP=yellow perch)

Spp	Targeting Anglers						All Anglers					
	Har AvWt	SE	Rel AvWt	SE	Cat AvWt	SE	Har AvWt	SE	Rel AvWt	SE	Cat AvWt	SE
BLH	---	---	---	---	---	---	---	---	0.98	1.44	0.98	1.44
CRP	0.36	0.06	0.17	0.05	0.32	0.06	0.36	0.17	0.16	0.06	0.32	0.14
LMB	2.48	---	---	---	2.48	---	2.48	3.53	0.03	0.08	1.66	3.06
NOP	4.63	1.25	3.15	1.34	3.99	0.75	4.63	3.76	2.94	2.48	3.85	1.91
SUN	0.23	0.08	0.10	0.03	0.18	0.05	0.23	0.17	0.10	0.08	0.18	0.13
YEP	0.12	0.02	0.11	0.10	0.11	0.07	0.13	0.14	0.09	0.12	0.10	0.11

Table 41. Mean length (in inches) of fish harvested and released by anglers, Lake Independence, Minnesota, winter 2002-03. (CRP=crappie, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

Spp	Targeting Anglers						All Anglers					
	Har AvLn	SE	Rel AvLn	SE	Cat AvLn	SE	Har AvLn	SE	Rel AvLn	SE	Cat AvLn	SE
CRP	8.57	2.40	6.38	1.20	7.78	1.81	8.57	5.87	6.37	3.71	7.76	4.72
NOP	---	---	11.00	---	11.00	---	---	---	15.00	37.76	15.00	37.88
SUN	6.77	2.61	4.80	1.36	6.50	2.39	6.77	9.76	4.80	5.28	6.50	8.59
WAE	17.75	0.25	10.00	---	15.17	2.59	17.75	19.71	10.00	8.74	15.17	0.74
YEP	---	---	5.00	---	5.00	---	6.83	9.04	5.64	3.63	5.72	4.71

Table 42. Mean weight (in pounds) of fish harvested and released by anglers, Lake Independence, Minnesota, winter 2002-03. (CRP=crappie, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

Spp	Targeting Anglers						All Anglers					
	Har AvWt	SE	Rel AvWt	SE	Cat AvWt	SE	Har AvWt	SE	Rel AvWt	SE	Cat AvWt	SE
CRP	0.43	0.13	0.19	0.04	0.34	0.09	0.43	0.29	0.19	0.10	0.34	0.20
NOP	---	---	0.26	---	0.26	---	---	---	0.88	3.51	0.88	3.51
SUN	0.21	0.08	0.07	0.02	0.19	0.07	0.21	0.30	0.07	0.08	0.19	0.25
WAE	2.00	0.10	0.28	---	1.43	0.58	2.00	---	0.28	0.25	1.43	2.46
YEP	---	---	0.05	---	0.05	---	0.12	0.16	0.08	0.05	0.08	0.07

Table 43. Mean length (in inches) of fish harvested and released by anglers, Lake Sarah, Minnesota, winter 2002-03. (CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, YEP=yellow perch)

Spp	Targeting Anglers						All Anglers					
	Har AvLn	SE	Rel AvLn	SE	Cat AvLn	SE	Har AvLn	SE	Rel AvLn	SE	Cat AvLn	SE
CRP	8.80	1.49	6.69	2.02	8.01	1.72	8.80	4.00	6.67	4.58	7.99	3.82
LMB	---	---	---	---	---	---	14.10	20.19	---	---	14.10	20.19
NOP	---	---	---	---	---	---	---	---	---	---	---	---
SUN	6.89	1.45	5.22	1.13	6.17	0.92	6.94	4.89	5.23	4.77	6.25	5.05
YEP	---	---	---	---	---	---	---	---	5.95	4.22	5.95	4.22

Table 44. Mean weight (in pounds) of fish harvested and released by anglers, Lake Sarah, Minnesota, winter 2002-03. (CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, YEP=yellow perch)

Spp	Targeting Anglers						All Anglers					
	Har AvWt	SE	Rel AvWt	SE	Cat AvWt	SE	Har AvWt	SE	Rel AvWt	SE	Cat AvWt	SE
CRP	0.48	0.08	0.21	0.06	0.37	0.08	0.48	0.22	0.21	0.14	0.37	0.18
LMB	---	---	---	---	---	---	2.10	3.01	---	---	2.10	3.01
NOP	---	---	---	---	---	---	---	---	---	---	---	---
SUN	0.23	0.04	0.10	0.02	0.17	0.02	0.24	0.17	0.10	0.09	0.18	0.15
YEP	---	---	---	---	---	---	---	---	0.09	0.06	0.09	0.06

Table 45. Length-frequency distributions of harvested fish, Medicine Lake, winter 2002-03. (CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, YEP=yellow perch)

Length Category	CRP	LMB	NOP	SUN	YEP
[0.0, 4.0)	---	---	---	---	---
[4.0, 4.5)	---	---	---	---	---
[4.5, 5.0)	---	---	---	---	1
[5.0, 5.5)	---	---	---	---	---
[5.5, 6.0)	---	---	---	1	1
[6.0, 6.5)	1	---	---	17	5
[6.5, 7.0)	6	---	---	44	6
[7.0, 7.5)	29	---	---	27	3
[7.5, 8.0)	48	---	---	6	2
[8.0, 8.5)	31	---	---	1	2
[8.5, 9.0)	10	---	---	---	---
[9.0, 9.5)	2	---	---	---	---
[9.5, 10.0)	1	---	---	---	---
[10.0, 10.5)	---	---	---	---	---
[10.5, 11.0)	1	---	---	---	---
[11.0, 11.5)	1	---	---	---	---
[11.5, 12.0)	1	---	---	---	---
[12.0, 13.0)	---	---	---	---	---
[13.0, 14.0)	2	---	---	---	---
[14.0, 15.0)	---	1	---	---	---
[15.0, 16.0)	---	---	---	---	---
[16.0, 17.0)	---	---	---	---	---
[17.0, 18.0)	---	1	---	---	---
[18.0, 19.0)	---	---	---	---	---
[19.0, 20.0)	---	---	---	---	---
[20.0, 21.0)	---	---	---	---	---
[21.0, 22.0)	---	---	3	---	---
[22.0, 23.0)	---	---	3	---	---
[23.0, 24.0)	---	---	2	---	---
[24.0, 25.0)	---	---	---	---	---
[25.0, 26.0)	---	---	5	---	---
[26.0, 27.0)	---	---	1	---	---
[27.0, 28.0)	---	---	2	---	---
[28.0, 29.0)	---	---	1	---	---
[29.0, 30.0)	---	---	1	---	---
[30.0, 31.0)	---	---	---	---	---
[31.0, 32.0)	---	---	---	---	---
[32.0, 33.0)	---	---	1	---	---
[33.0, 34.0)	---	---	1	---	---
[34.0, 35.0)	---	---	---	---	---
[35.0, 36.0)	---	---	---	---	---
[36.0, 37.0)	---	---	---	---	---
[37.0, 38.0)	---	---	---	---	---
[38.0, 39.0)	---	---	---	---	---
[39.0, 40.0)	---	---	---	---	---
[40.0+ )	---	---	---	---	---
Total	133	2	20	96	20
Min. Length	6.00	14.00	21.00	5.90	4.80
Max. Length	13.25	17.50	33.00	8.00	8.10
Mean Length	7.92	15.75	25.20	6.81	6.70



Table 46. Length-frequency distributions of released fish, Medicine Lake, winter 2002-03. (CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, YEP=yellow perch)

Length Category	CRP	LMB	NOP	SUN	YEP
[0.0, 4.0)	1	----	----	----	----
[4.0, 4.5)	2	1	----	1	4
[4.5, 5.0)	----	----	----	4	4
[5.0, 5.5)	8	----	----	17	9
[5.5, 6.0)	2	----	----	19	2
[6.0, 6.5)	12	----	----	12	17
[6.5, 7.0)	----	----	----	----	----
[7.0, 7.5)	7	----	----	1	15
[7.5, 8.0)	----	----	----	----	----
[8.0, 8.5)	4	----	----	----	1
[8.5, 9.0)	----	----	----	----	----
[9.0, 9.5)	----	----	1	----	----
[9.5, 10.0)	----	----	----	----	----
[10.0, 10.5)	----	----	----	----	----
[10.5, 11.0)	----	----	----	----	----
[11.0, 11.5)	----	----	----	----	----
[11.5, 12.0)	----	----	----	----	----
[12.0, 13.0)	----	----	----	----	----
[13.0, 14.0)	----	----	----	----	----
[14.0, 15.0)	----	----	----	----	----
[15.0, 16.0)	----	----	2	----	----
[16.0, 17.0)	----	----	----	----	----
[17.0, 18.0)	----	----	1	----	----
[18.0, 19.0)	----	----	3	----	----
[19.0, 20.0)	----	----	----	----	----
[20.0, 21.0)	----	----	1	----	----
[21.0, 22.0)	----	----	----	----	----
[22.0, 23.0)	----	----	4	----	----
[23.0, 24.0)	----	----	----	----	----
[24.0, 25.0)	----	----	1	----	----
[25.0, 26.0)	----	----	----	----	----
[26.0, 27.0)	----	----	----	----	----
[27.0, 28.0)	----	----	----	----	----
[28.0, 29.0)	----	----	1	----	----
[29.0, 30.0)	----	----	----	----	----
[30.0, 31.0)	----	----	----	----	----
[31.0, 32.0)	----	----	1	----	----
[32.0, 33.0)	----	----	1	----	----
[33.0, 34.0)	----	----	1	----	----
[34.0, 35.0)	----	----	----	----	----
[35.0, 36.0)	----	----	----	----	----
[36.0, 37.0)	----	----	----	----	----
[37.0, 38.0)	----	----	----	----	----
[38.0, 39.0)	----	----	----	----	----
[39.0, 40.0)	----	----	----	----	----
[40.0+ )	----	----	----	----	----
Total	36	1	17	54	52
Min. Length	2.00	4.00	9.00	4.20	4.00
Max. Length	8.00	4.00	33.00	7.00	8.00
Mean Length	5.94	4.00	21.61	5.38	5.87

Table 47. Length-frequency distributions of harvested and released fish, Medicine Lake, winter 2002-03. (CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, YEP=yellow perch)

Length Category	CRP	LMB	NOP	SUN	YEP
[0.0, 4.0)	1	---	---	---	---
[4.0, 4.5)	2	1	---	1	4
[4.5, 5.0)	---	---	---	4	5
[5.0, 5.5)	8	---	---	17	9
[5.5, 6.0)	2	---	---	20	3
[6.0, 6.5)	13	---	---	29	22
[6.5, 7.0)	6	---	---	44	6
[7.0, 7.5)	36	---	---	28	18
[7.5, 8.0)	48	---	---	6	2
[8.0, 8.5)	35	---	---	1	3
[8.5, 9.0)	10	---	---	---	---
[9.0, 9.5)	2	---	1	---	---
[9.5, 10.0)	1	---	---	---	---
[10.0, 10.5)	---	---	---	---	---
[10.5, 11.0)	1	---	---	---	---
[11.0, 11.5)	1	---	---	---	---
[11.5, 12.0)	1	---	---	---	---
[12.0, 13.0)	---	---	---	---	---
[13.0, 14.0)	2	---	---	---	---
[14.0, 15.0)	---	1	---	---	---
[15.0, 16.0)	---	---	2	---	---
[16.0, 17.0)	---	---	---	---	---
[17.0, 18.0)	---	1	1	---	---
[18.0, 19.0)	---	---	3	---	---
[19.0, 20.0)	---	---	---	---	---
[20.0, 21.0)	---	---	1	---	---
[21.0, 22.0)	---	---	3	---	---
[22.0, 23.0)	---	---	7	---	---
[23.0, 24.0)	---	---	2	---	---
[24.0, 25.0)	---	---	1	---	---
[25.0, 26.0)	---	---	5	---	---
[26.0, 27.0)	---	---	1	---	---
[27.0, 28.0)	---	---	2	---	---
[28.0, 29.0)	---	---	2	---	---
[29.0, 30.0)	---	---	1	---	---
[30.0, 31.0)	---	---	---	---	---
[31.0, 32.0)	---	---	1	---	---
[32.0, 33.0)	---	---	2	---	---
[33.0, 34.0)	---	---	2	---	---
[34.0, 35.0)	---	---	---	---	---
[35.0, 36.0)	---	---	---	---	---
[36.0, 37.0)	---	---	---	---	---
[37.0, 38.0)	---	---	---	---	---
[38.0, 39.0)	---	---	---	---	---
[39.0, 40.0)	---	---	---	---	---
[40.0, and up)	---	---	---	---	---
Total	169	3	37	150	72
Min. Length	2.00	4.00	9.00	4.20	4.00
Max. Length	13.25	17.50	33.00	8.00	8.10
Mean Length	7.50	11.83	23.55	6.30	6.10

Table 48. Length-frequency distributions of harvested and released fish, Lake Independence, winter 2002-03. (CRP=crappie, SUN=sunfish, WAE=walleye, YEP=yellow perch)

Length Category	CRP	SUN	WAE	YEP
[0.0, 4.0)	----	----	----	----
[4.0, 4.5)	----	----	----	----
[4.5, 5.0)	----	----	----	----
[5.0, 5.5)	----	----	----	----
[5.5, 6.0)	----	2	----	----
[6.0, 6.5)	----	9	----	----
[6.5, 7.0)	---	31	----	2
[7.0, 7.5)	3	15	----	2
[7.5, 8.0)	17	4	----	----
[8.0, 8.5)	26	2	----	----
[8.5, 9.0)	28	----	----	----
[9.0, 9.5)	34	----	----	----
[9.5, 10.0)	7	----	----	----
[10.0, 10.5)	1	----	----	----
[10.5, 11.0)	----	----	----	----
[11.0, 11.5)	----	----	----	----
[11.5, 12.0)	----	----	----	----
[12.0, 13.0)	----	----	----	----
[13.0, 14.0)	----	----	----	----
[14.0, 15.0)	----	----	----	----
[15.0, 16.0)	----	----	----	----
[16.0, 17.0)	----	----	----	----
[17.0, 18.0)	----	----	1	----
[18.0, 19.0)	----	----	1	----
[19.0, 20.0)	----	----	----	----
[20.0, 21.0)	----	----	----	----
[21.0, 22.0)	----	----	----	----
[22.0, 23.0)	----	----	----	----
[23.0, 24.0)	----	----	----	----
[24.0, 25.0)	----	----	----	----
[25.0, 26.0)	----	----	----	----
[26.0, 27.0)	----	----	----	----
[27.0, 28.0)	----	----	----	----
[28.0, 29.0)	----	----	----	----
[29.0, 30.0)	----	----	----	----
[30.0, 31.0)	----	----	----	----
[31.0, 32.0)	----	----	----	----
[32.0, 33.0)	----	----	----	----
[33.0, 34.0)	----	----	----	----
[34.0, 35.0)	----	----	----	----
[35.0, 36.0)	----	----	----	----
[36.0, 37.0)	----	----	----	----
[37.0, 38.0)	----	----	----	----
[38.0, 39.0)	----	----	----	----
[39.0, 40.0)	----	----	----	----
[40.0, and up)	----	----	----	----
Total	116	63	2	4
Min. Length	7.00	5.70	17.50	6.60
Max. Length	10.00	8.00	18.00	7.10
Mean Length	8.57	6.77	17.75	6.83

Table 49. Length-frequency distributions of released fish, Lake Independence, winter 2002-03. (CRP=crappie, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

Length Category	CRP	NOP	SUN	WAE	YEP
[0.0, 4.0)	---	---	---	---	---
[4.0, 4.5)	6	---	2	---	1
[4.5, 5.0)	3	---	---	---	2
[5.0, 5.5)	8	---	8	---	32
[5.5, 6.0)	---	---	---	---	---
[6.0, 6.5)	3	---	---	---	7
[6.5, 7.0)	13	---	---	---	7
[7.0, 7.5)	21	---	---	---	10
[7.5, 8.0)	12	---	---	---	---
[8.0, 8.5)	2	---	---	---	1
[8.5, 9.0)	---	---	---	---	---
[9.0, 9.5)	---	---	---	---	---
[9.5, 10.0)	---	---	---	---	---
[10.0, 10.5)	---	---	---	1	---
[10.5, 11.0)	---	---	---	---	---
[11.0, 11.5)	---	1	---	---	---
[11.5, 12.0)	---	---	---	---	---
[12.0, 13.0)	---	---	---	---	---
[13.0, 14.0)	---	---	---	---	---
[14.0, 15.0)	---	---	---	---	---
[15.0, 16.0)	---	---	---	---	---
[16.0, 17.0)	---	---	---	---	---
[17.0, 18.0)	---	---	---	---	---
[18.0, 19.0)	---	---	---	---	---
[19.0, 20.0)	---	1	---	---	---
[20.0, 21.0)	---	---	---	---	---
[21.0, 22.0)	---	---	---	---	---
[22.0, 23.0)	---	---	---	---	---
[23.0, 24.0)	---	---	---	---	---
[24.0, 25.0)	---	---	---	---	---
[25.0, 26.0)	---	---	---	---	---
[26.0, 27.0)	---	---	---	---	---
[27.0, 28.0)	---	---	---	---	---
[28.0, 29.0)	---	---	---	---	---
[29.0, 30.0)	---	---	---	---	---
[30.0, 31.0)	---	---	---	---	---
[31.0, 32.0)	---	---	---	---	---
[32.0, 33.0)	---	---	---	---	---
[33.0, 34.0)	---	---	---	---	---
[34.0, 35.0)	---	---	---	---	---
[35.0, 36.0)	---	---	---	---	---
[36.0, 37.0)	---	---	---	---	---
[37.0, 38.0)	---	---	---	---	---
[38.0, 39.0)	---	---	---	---	---
[39.0, 40.0)	---	---	---	---	---
[40.0, and up)	---	---	---	---	---
Total	68	2	10	1	60
Min. Length	4.00	11.00	4.00	10.00	4.00
Max. Length	8.00	19.00	5.00	10.00	8.00
Mean Length	6.37	15.00	4.80	10.00	5.64

Table 50. Length-frequency distributions of harvested and released fish, Lake Independence, winter 2002-03. (CRP=crappie, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

Length Category	CRP	NOP	SUN	WAE	YEP
[0.0, 4.0)	---	---	---	---	---
[4.0, 4.5)	6	---	2	---	1
[4.5, 5.0)	3	---	---	---	2
[5.0, 5.5)	8	---	8	---	32
[5.5, 6.0)	---	---	2	---	---
[6.0, 6.5)	3	---	9	---	7
[6.5, 7.0)	13	---	31	---	9
[7.0, 7.5)	24	---	15	---	12
[7.5, 8.0)	29	---	4	---	---
[8.0, 8.5)	28	---	2	---	1
[8.5, 9.0)	28	---	---	---	---
[9.0, 9.5)	34	---	---	---	---
[9.5, 10.0)	7	---	---	---	---
[10.0, 10.5)	1	---	---	1	---
[10.5, 11.0)	---	---	---	---	---
[11.0, 11.5)	---	1	---	---	---
[11.5, 12.0)	---	---	---	---	---
[12.0, 13.0)	---	---	---	---	---
[13.0, 14.0)	---	---	---	---	---
[14.0, 15.0)	---	---	---	---	---
[15.0, 16.0)	---	---	---	---	---
[16.0, 17.0)	---	---	---	---	---
[17.0, 18.0)	---	---	---	1	---
[18.0, 19.0)	---	---	---	1	---
[19.0, 20.0)	---	1	---	---	---
[20.0, 21.0)	---	---	---	---	---
[21.0, 22.0)	---	---	---	---	---
[22.0, 23.0)	---	---	---	---	---
[23.0, 24.0)	---	---	---	---	---
[24.0, 25.0)	---	---	---	---	---
[25.0, 26.0)	---	---	---	---	---
[26.0, 27.0)	---	---	---	---	---
[27.0, 28.0)	---	---	---	---	---
[28.0, 29.0)	---	---	---	---	---
[29.0, 30.0)	---	---	---	---	---
[30.0, 31.0)	---	---	---	---	---
[31.0, 32.0)	---	---	---	---	---
[32.0, 33.0)	---	---	---	---	---
[33.0, 34.0)	---	---	---	---	---
[34.0, 35.0)	---	---	---	---	---
[35.0, 36.0)	---	---	---	---	---
[36.0, 37.0)	---	---	---	---	---
[37.0, 38.0)	---	---	---	---	---
[38.0, 39.0)	---	---	---	---	---
[39.0, 40.0)	---	---	---	---	---
[40.0, and up)	---	---	---	---	---
Total	184	2	73	3	64
Min. Length	4.00	11.00	4.00	10.00	4.00
Max. Length	10.00	19.00	8.00	18.00	8.00
Mean Length	7.76	15.00	6.50	15.17	5.72

Table 51. Length-frequency distributions of harvested fish, Lake Sarah, winter 2002-03. (CRP=crappie, LMB=largemouth bass, SUN=sunfish)

Length Category	CRP	LMB	SUN
[0.0, 4.0)	---	---	---
[4.0, 4.5)	---	---	---
[4.5, 5.0)	---	---	---
[5.0, 5.5)	---	---	---
[5.5, 6.0)	---	---	---
[6.0, 6.5)	---	---	13
[6.5, 7.0)	2	---	80
[7.0, 7.5)	6	---	78
[7.5, 8.0)	5	---	14
[8.0, 8.5)	42	---	5
[8.5, 9.0)	49	---	---
[9.0, 9.5)	50	---	---
[9.5, 10.0)	22	---	---
[10.0, 10.5)	7	---	---
[10.5, 11.0)	3	---	---
[11.0, 11.5)	---	---	---
[11.5, 12.0)	1	---	---
[12.0, 13.0)	1	---	---
[13.0, 14.0)	---	---	---
[14.0, 15.0)	---	1	---
[15.0, 16.0)	---	---	---
[16.0, 17.0)	---	---	---
[17.0, 18.0)	---	---	---
[18.0, 19.0)	---	---	---
[19.0, 20.0)	---	---	---
[20.0, 21.0)	---	---	---
[21.0, 22.0)	---	---	---
[22.0, 23.0)	---	---	---
[23.0, 24.0)	---	---	---
[24.0, 25.0)	---	---	---
[25.0, 26.0)	---	---	---
[26.0, 27.0)	---	---	---
[27.0, 28.0)	---	---	---
[28.0, 29.0)	---	---	---
[29.0, 30.0)	---	---	---
[30.0, 31.0)	---	---	---
[31.0, 32.0)	---	---	---
[32.0, 33.0)	---	---	---
[33.0, 34.0)	---	---	---
[34.0, 35.0)	---	---	---
[35.0, 36.0)	---	---	---
[36.0, 37.0)	---	---	---
[37.0, 38.0)	---	---	---
[38.0, 39.0)	---	---	---
[39.0, 40.0)	---	---	---
[40.0, and up)	---	---	---
Total	188	1	190
Min. Length	6.80	14.10	6.00
Max. Length	12.90	14.10	8.10
Mean Length	8.80	14.10	6.94

Table 52. Length-frequency distributions of released fish, Lake Sarah, winter 2002-03. (CRP=crappie, SUN=sunfish, YEP=yellow perch)

---

Length Category	CRP	SUN	YEP
[0.0, 4.0)	---	---	---
[4.0, 4.5)	3	2	---
[4.5, 5.0)	---	33	---
[5.0, 5.5)	2	22	1
[5.5, 6.0)	2	51	3
[6.0, 6.5)	15	21	4
[6.5, 7.0)	39	---	---
[7.0, 7.5)	37	---	2
[7.5, 8.0)	13	---	---
[8.0, 8.5)	3	---	---
[8.5, 9.0)	2	---	---
[9.0, 9.5)	---	---	---
[9.5, 10.0)	---	---	---
[10.0, 10.5)	---	---	---
[10.5, 11.0)	---	---	---
[11.0, 11.5)	---	---	---
[11.5, 12.0)	---	---	---
[12.0, 13.0)	---	---	---
[13.0, 14.0)	---	---	---
[14.0, 15.0)	---	---	---
[15.0, 16.0)	---	---	---
[16.0, 17.0)	---	---	---
[17.0, 18.0)	---	---	---
[18.0, 19.0)	---	---	---
[19.0, 20.0)	---	---	---
[20.0, 21.0)	---	---	---
[21.0, 22.0)	---	---	---
[22.0, 23.0)	---	---	---
[23.0, 24.0)	---	---	---
[24.0, 25.0)	---	---	---
[25.0, 26.0)	---	---	---
[26.0, 27.0)	---	---	---
[27.0, 28.0)	---	---	---
[28.0, 29.0)	---	---	---
[29.0, 30.0)	---	---	---
[30.0, 31.0)	---	---	---
[31.0, 32.0)	---	---	---
[32.0, 33.0)	---	---	---
[33.0, 34.0)	---	---	---
[34.0, 35.0)	---	---	---
[35.0, 36.0)	---	---	---
[36.0, 37.0)	---	---	---
[37.0, 38.0)	---	---	---
[38.0, 39.0)	---	---	---
[39.0, 40.0)	---	---	---
[40.0, and up)	---	---	---
Total	116	129	10
Min. Length	4.00	4.40	5.00
Max. Length	8.50	6.00	7.00
Mean Length	6.67	5.23	5.95

Table 53. Length-frequency distributions of harvested and released fish, Lake Sarah, winter 2002-03. (CRP=crappie, LMB=largemouth bass, SUN=sunfish, YEP=yellow perch)

Length Category	CRP	LMB	SUN	YEP
[0.0, 4.0)	---	---	---	---
[4.0, 4.5)	3	---	2	---
[4.5, 5.0)	---	---	33	---
[5.0, 5.5)	2	---	22	1
[5.5, 6.0)	2	---	51	3
[6.0, 6.5)	15	---	34	4
[6.5, 7.0)	41	---	80	---
[7.0, 7.5)	43	---	78	2
[7.5, 8.0)	18	---	14	---
[8.0, 8.5)	45	---	5	---
[8.5, 9.0)	51	---	---	---
[9.0, 9.5)	50	---	---	---
[9.5, 10.0)	22	---	---	---
[10.0, 10.5)	7	---	---	---
[10.5, 11.0)	3	---	---	---
[11.0, 11.5)	---	---	---	---
[11.5, 12.0)	1	---	---	---
[12.0, 13.0)	1	---	---	---
[13.0, 14.0)	---	---	---	---
[14.0, 15.0)	---	1	---	---
[15.0, 16.0)	---	---	---	---
[16.0, 17.0)	---	---	---	---
[17.0, 18.0)	---	---	---	---
[18.0, 19.0)	---	---	---	---
[19.0, 20.0)	---	---	---	---
[20.0, 21.0)	---	---	---	---
[21.0, 22.0)	---	---	---	---
[22.0, 23.0)	---	---	---	---
[23.0, 24.0)	---	---	---	---
[24.0, 25.0)	---	---	---	---
[25.0, 26.0)	---	---	---	---
[26.0, 27.0)	---	---	---	---
[27.0, 28.0)	---	---	---	---
[28.0, 29.0)	---	---	---	---
[29.0, 30.0)	---	---	---	---
[30.0, 31.0)	---	---	---	---
[31.0, 32.0)	---	---	---	---
[32.0, 33.0)	---	---	---	---
[33.0, 34.0)	---	---	---	---
[34.0, 35.0)	---	---	---	---
[35.0, 36.0)	---	---	---	---
[36.0, 37.0)	---	---	---	---
[37.0, 38.0)	---	---	---	---
[38.0, 39.0)	---	---	---	---
[39.0, 40.0)	---	---	---	---
[40.0, and up)	---	---	---	---
Total	304	1	319	10
Min. Length	4.00	14.10	4.40	5.00
Max. Length	12.90	14.10	8.10	7.00
Mean Length	7.99	14.10	6.25	5.95



Table 54. Percent of angler parties seeking specific fish species or types\*, 3 Hennepin County, Minnesota lakes, winter 2002-03.

Species/Type Fish Sought	Medicine %	Independence %	Sarah %
Crappie	49	66	67
Bluegill/Sunfish	17	10	21
Northern Pike	27	2	9
Walleye	-0-	19	-0-
No Preference/"Anything"	3	2	2
Yellow Perch	4	1	1
Largemouth bass	<1	-0-	<1
(Total # of interviews)	(133)	(90)	(129)

\* Responses for multi-fish preferences were split equally among species/type stated, then added to respective single-species totals; e.g. a party's response of seeking "northerns and walleyes" was entered as 0.5 each for northern pike and walleye. The "panfish" preference was separated as 0.4 each for bluegill/sunfish and crappie and 0.2 for yellow perch.

Table 55. Percentages of each gender fishing 3 Hennepin County, Minnesota lakes, winter 2002-03.

Gender	Medicine %	Independence %	Sarah %
Male	96	97	95
Female	4	3	5
(# anglers)	(208)	(172)	(211)

Table 56. Age distributions of anglers fishing 3 Hennepin County, Minnesota lakes, winter 2002-03.

		AGE GROUP							
		under						65 &	
		16	16-24	25-34	35-44	45-54	55-64	older	Total
<b>Medicine</b>	%	4	11	22	29	18	10	5	100
	# surveyed	9	23	43	59	36	21	10	201
<b>Independence</b>	%	5	19	33	22	10	9	1	100
	# surveyed	9	38	56	38	17	15	11	169
<b>Sarah</b>	%	5	18	19	35	14	8	1	100
	# surveyed	11	36	38	71	29	16	3	204

Table 57. Percentages of anglers traveling different distances to fish 3 Hennepin County, Minnesota lakes, winter 2002-03.

<b>Distance Traveled to Lake (Miles)</b>							
<b>Lake</b>	<10	10-25	26-50	51-75	76-150	151+	# Anglers
Medicine	89	9	-0-	2	<1	-0-	196
Independence	67	23	8	-0-	<1	1	160
Sarah	46	40	10	<1	1	2	206

The 5 most frequent cities of residence (derived from ZIP codes):

<b>Medicine:</b>		<b>Independence:</b>	
Minneapolis	21% / 41 responses	Maple Pl./Indep.	13% / 21 responses
Plymouth	19% / 37 responses	Plymouth	8% / 12 responses
Brooklyn Center	15% / 29 responses	Delano	6% / 11 responses
Golden Valley	13% / 25 responses	Rockford	5% / 9 responses
Maple Grove	7% / 14 responses	Maple Grove	4% / 9 responses
<b>Sarah:</b>			
	Rockford	17% / 34 responses	
	Delano	7% / 14 responses	
	Maple Grove	6% / 12 responses	
	Cottage Grove	6% / 12 responses	
	Buffalo	5% / 11 responses	

Table 58. Percent of angler parties using various electronic location devices while fishing, 3 Hennepin County, Minnesota lakes, winter 2002-03.

<u>Electronic Device</u>	Medicine %	Independence %	Sarah %
No Info Given or Recorded / Not Applic.	68	50	48
Depthfinder / Flasher	28	48	51
GPS	-0-	-0-	-0-
Underwater Video Camera	2	2	1
Multiple Devices (Camera + Flasher)	2	-0-	-0-
Number Parties Surveyed	133	90	129

Table 59. Mean ratings, on a 10-point scale, of the day's fishing quality, as rated by participating angler parties, Medicine Lake, winter 2002-03. N = number of angler parties responding. Sums of species values exceeded total number of interviews because of multiple responses within a party. SE = 1 standard error.

Angler Group	Mean Rating	SE	N
All Respondents	3.6	0.29	64
Parties Seeking Sunfish	3.8	0.69	13
" " Crappie	3.6	0.41	46
" " Northern pike	2.6	0.84	7

From responses to the questions "On a 1 to 10 scale, with 1 being poor and 10 being excellent, how would you rate your fishing today, based on size and number of fish caught?"

Table 60. Frequencies of response ratings for fishing trip quality, participating angler parties, Medicine Lake, winter 2002-03. Value sums can exceed total number of interviews because ratings were applied to all fish species/types sought.

Angler Type	Rating-- Lake Fishing Quality										Total
	1	2	3	4	5	6	7	8	9	10	
All Respondents	12	13	12	7	7	3	5	3	1	1	64
Those Seeking SUN	2	4	2	-0-	1	-0-	3	1	-0-	-0-	13
" " CRP	17	2	5	7	6	2	1	2	1	3	46
" " NOP	3	2	-0-	1	-0-	-0-	1	-0-	-0-	-0-	7

# From responses to the questions "On a 1 to 10 scale, with 1 being poor and 10 excellent, how would you rate your fishing today, based on size and number of fish caught?"

SUN = sunfish      CRP = crappie      NOP = northern pike

Table 61. Mean ratings, on a 10-point scale, of the day's fishing quality, as rated by participating angler parties, Lake Independence, winter 2002-03. N = number of angler parties responding. Sums of species values exceeded total number of interviews because of multiple responses within a party. SE = 1 standard error.

Angler Group	Mean Rating	SE	N
All Respondents	3.4	0.37	43
Parties Seeking Crappie	3.5	0.43	31
" " Walleye	2.9	0.64	15

From responses to the questions "On a 1 to 10 scale, with 1 being poor and 10 being excellent, how would you rate your fishing today, based on size and number of fish caught?"

Table 62. Frequencies of response ratings for fishing trip quality, participating angler parties, Lake Independence, winter 2002-03. Value sums can exceed total number of interviews because ratings were applied to all fish species/types sought.

Angler Type	Rating-- Lake Fishing Quality										Total
	1	2	3	4	5	6	7	8	9	10	
All Respondents	15	5	5	3	6	5	2	-0-	1	1	43
Those Seeking CRP	10	3	4	3	4	4	2	-0-	-0-	1	31
" " WAE	6	4	1	-0-	1	2	-0-	-0-	1	-0-	15

# From responses to the questions "On a 1 to 10 scale, with 1 being poor and 10 excellent, how would you rate your fishing today, based on size and number of fish caught?"

CRP = crappie                      WAE = walleye

Table 63. Mean ratings, on a 10-point scale, of the day's fishing quality, as rated by participating angler parties, Lake Sarah, winter 2002-03. N = number of angler parties responding. Sums of species values exceeded total number of interviews because of multiple responses within a party. SE = 1 standard error.

Angler Group	Mean Rating	SE	N
All Respondents	3.6	0.29	64
Parties Seeking Sunfish	5.2	0.59	21
" " Northern pike	4.5	0.51	25
" " Crappie	3.6	0.41	45

From responses to the questions "On a 1 to 10 scale, with 1 being poor and 10 being excellent, how would you rate your fishing today, based on size and number of of fish caught?"

Table 64. Frequencies of response ratings for fishing trip quality, participating angler parties, Lake Sarah, winter 2002-03. Value sums can exceed total number of interviews because ratings were applied to all fish species/types sought.

Angler Type	Rating-- Lake Fishing Quality										Total
	1	2	3	4	5	6	7	8	9	10	
All Respondents	22	4	6	9	7	3	2	4	1	4	62
Those Seeking SUN	2	2	2	3	3	1	2	4	1	1	21
" " NOP	3	2	6	3	3	2	2	2	1	1	25
" " CRP	17	2	5	7	6	2	1	2	1	3	45

# From responses to the questions "On a 1 to 10 scale, with 1 being poor and 10 excellent, how would you rate your fishing today, based on size and number of fish caught?"

SUN = sunfish                      CRP = crappie                      NOP = northern pike

Table 65. Summary of strata statistics for Medicine Lake, Minnesota creel survey, April-July 2003. Values in parentheses represent 1 standard error; -- value not available or applicable.

	Season Stratum (Month)			
	April	May	June	July
Start date	4/1/03	5/1/03	6/1/03	7/1/03
End date	4/30/03	5/31/03	6/30/03	7/31/03
Fishing-day length, hours	15	15	15	15
Number of days in stratum	30	31	30	31
"    weekdays sampled	4	7	7	6
"    weekend days/holidays sampled	3	6	6	6
Number of activity counts	15	26	26	24
Number of interviews-- All	40	56	78	76
"    Boat anglers	8	44	67	28
"    Shore-based anglers	32	12	11	48
Mean number /				
Fishing boats	2.6 (0.9)	4.6 (1.1)	7.0 (0.8)	6.4 (0.9)
activ. count:				
Shore-based anglers	2.6 (0.8)	7.0 (1.6)	3.4 (0.6)	2.3 (0.4)
% Shore-based anglers using pier	12	34	20	50
Non-fishing boats & craft	2.1 (0.7)	4.2 (1.3)	11.2 (2.3)	19.8 (3.7)
Mean number anglers / party	1.46 (0.20)	1.67 (0.26)	1.61 (0.51)	1.58 (0.18)
<b>Completed-trip information</b>				
Number/% complete-trip interviews	12 / 24%	9 / 16%	2 / 7%	23 / 17%
Mean trip length (hours)	2.35 (0.61)	2.99 (0.87)	2.75 (0.75)	2.63 (0.46)

Table 66. Summary of strata statistics for Medicine Lake, Minnesota creel survey, August-October 2003. Values in parentheses represent 1 standard error; -- value not available or applicable.

	Season Stratum (Month)			Entire Season
	August	September	October	
Start date	8/1/03	9/1/03	10/1/03	4/1/03
End date	8/31/03	9/30/03	10/31/03	10/31/03
Fishing-day length, hours	15	12	10	10-15
Number of days in stratum	31	30	31	214
"    weekdays sampled	6	8	3	41
"    weekend days/holidays sampled	7	5	4	37
Number of activity counts	26	25	13	155
Number of interviews-- All	80	73	22	395
"    Boat anglers	73	67	21	317
"    Shore-based anglers	7	6	1	78
Mean number / Fishing boats	5.8 (0.6)	1.9 (0.7)	3.2 (0.9)	4.7 (0.4)
activ. count: Shore-based anglers	1.4 (0.2)	0.5 (0.2)	0.2 (0.2)	4.0 (0.9)
% Shore-based anglers using pier	67	44	-0-	
Non-fishing boats & craft	21.0 (2.9)	3.1 (1.2)	1.5 (0.9)	10.0 (1.1)
Mean number anglers / party	2.20 (0.26)	1.79 (0.55)	1.86 (0.63)	2.15 (0.18)
<b>Completed-trip information</b>				
Number/% complete-trip interviews	3 / 4%	10 / 23%	8 / 35%	37 / 9%
Mean trip length (hours)	4.08 (0.55)	3.48 (0.69)	3.43 (1.16)	3.31 (0.44)

Table 67. Summary of strata statistics for Lake Independence, Minnesota creel survey, April-July 2003. Values in parentheses represent 1 standard error; -- value not available or applicable.

	Season Stratum (Month)			
	April	May	June	July
Start date	4/1/03	5/1/03	6/1/03	7/1/03
End date	4/30/03	5/31/03	6/30/03	7/31/03
Fishing-day length, hours	15	15	15	15
Number of days in stratum	30	31	30	31
"    weekdays sampled	4	6	5	6
"    weekend days/holidays sampled	3	7	6	6
Number of activity counts	13	26	22	24
Number of interviews-- All	38	71	116	89
"    Boat anglers	29	58	97	75
"    Shore-based anglers	9	13	9	14
Mean number /				
Fishing boats	5.8 (1.4)	10.2 (2.2)	18.4 (3.4)	7.5 (0.9)
Shore-based anglers	1.8 (0.5)	4.0 (1.0)	3.3 (0.9)	3.6 (0.7)
% Shore-based anglers using pier	-0-	37	77	87
Non-fishing boats & craft	1.6 (0.7)	3.0 (0.9)	3.7 (1.0)	11.8 (2.6)
Mean number anglers / party	2.16 (0.65)	2.53 (0.58)	2.14 (0.53)	2.38 (0.32)
<b>Completed-trip information</b>				
Number/% complete-trip interviews	3 / 8%	14 / 20%	6 / 5%	7 / 8%
Mean trip length (hours)	2.68 (0.30)	3.98 (2.26)	2.63 (0.40)	3.46 (1.19)

Table 68. Summary of strata statistics for Lake Independence, Minnesota creel survey, August-October 2003. Values in parentheses represent 1 standard error; -- value not available or applicable.

	Season Stratum (Month)			Entire Season
	August	September	October	
Start date	8/1/03	9/1/03	10/1/03	4/1/03
End date	8/31/03	9/30/03	10/31/03	10/31/03
Fishing-day length, hours	15	12	10	10-15
Number of days in stratum	31	30	31	214
"    weekdays sampled	6	8	3	38
"    weekend days/holidays sampled	7	6	3	38
Number of activity counts	26	28	11	150
Number of interviews-- All	119	81	53	567
"    Boat anglers	107	81	53	502
"    Shore-based anglers	12	-0-	-0-	61
Mean number /				
Fishing boats	9.1 (1.1)	6.2 (0.9)	3.7 (1.0)	9.4 (0.8)
Shore-based anglers	3.7 (0.7)	0.2 (0.1)	0.3 (0.2)	2.6 (0.3)
% Shore-based anglers using pier	44	-0-	--	53
Non-fishing boats & craft	8.3 (1.6)	1.0 (0.5)	0.7 (0.3)	0.8 (0.1)
Mean number anglers / party	2.24 (0.31)	1.86 (0.34)	1.89 (0.58)	2.19 (0.18)
<b>Completed-trip information</b>				
Number/% complete-trip interviews	2 / 2%	20 / 25%	36 / 38%	88 / 13%
Mean trip length (hours)	1.75 (0.25)	5.01 (1.47)	3.26 (1.13)	3.69 (0.78)



Table 69. Summary of strata statistics for Lake Sarah, Minnesota creel survey, April-July 2003. Values in parentheses represent 1 standard error; -- value not available or applicable.

	Season Stratum (Month)			
	April	May	June	July
Start date	4/1/03	5/1/03	6/1/03	7/1/03
End date	4/30/03	5/31/03	6/30/03	7/31/03
Fishing-day length, hours	15	15	15	15
Number of days in stratum	30	31	30	31
"    weekdays sampled	4	6	6	8
"    weekend days/holidays sampled	2	7	6	6
Number of activity counts	11	26	24	28
Number of interviews-- All	2	67	66	55
"    Boat anglers	-0-	55	56	50
"    Shore-based anglers	2	12	10	5
Mean number /				
Fishing boats	-0-	5.6 (1.3)	6.2 (0.7)	4.0 (0.5)
activ. count:				
Shore-based anglers	0.6 (0.5)	1.8 (0.4)	3.0 (0.7)	0.1 (0.3)
Non-fishing boats & craft	0.1 (0.1)	1.4 (0.4)	4.2 (1.4)	3.5 (0.8)
Mean number anglers / party	2.50 (--)	2.55 (0.70)	2.27 (0.39)	2.07 (0.27)
<b>Completed-trip information</b>				
Number/% complete-trip interviews	0 / 0%	7 / 10%	11 / 17%	6 / 11%
Mean trip length (hours)	--	4.04 (1.30)	4.45 (3.06)	4.17 (1.71)

Table 70. Summary of strata statistics for Lake Sarah, Minnesota creel survey, August-October 2003. Values in parentheses represent 1 standard error; -- value not available or applicable.

	Season Stratum (Month)			Entire Season
	August	September	October	
Start date	8/1/03	9/1/03	10/1/03	4/1/03
End date	8/31/03	9/30/03	10/31/03	10/31/03
Fishing-day length, hours	15	12	10	10-15
Number of days in stratum	31	30	31	214
"    weekdays sampled	7	8	4	38
"    weekend days/holidays sampled	6	5	3	38
Number of activity counts	26	27	13	155
Number of interviews-- All	72	67	19	348
"    Boat anglers	69	63	19	312
"    Shore-based anglers	3	4	-0-	36
Mean number / Fishing boats	4.9 (0.6)	9.3 (0.7)	2.3 (0.6)	4.3 (0.4)
activ. count: Shore-based anglers	0.5 (0.2)	0.4 (0.2)	-0-	1.1 (0.2)
Non-fishing boats & craft	3.6 (0.6)	1.6 (0.5)	0.5 (0.2)	2.5 (0.3)
Mean number anglers / party	2.25 (0.31)	1.78 (0.33)	1.95 (0.74)	2.18 (0.19)
<b>Completed-trip information</b>				
Number/% complete-trip interviews	8 / 11%	14 / 21%	11 / 58%	57 / 16%
Mean trip length (hours)	3.56 (0.58)	3.32 (0.99)	5.61 (2.48)	4.19 (0.86)

Table 71. Monthly fishing pressure (in angler-hours [A-H]) and fishing pressure density (angler-hours per acre [A-H/A]), 3 Hennepin County, Minnesota lakes, open-water season 2003. Value of 1 standard error in parentheses.

	<b>Medicine</b>				<b>Independence</b>			
	A-H	(SE)	A-H/A	(SE) % of total	A-H	(SE)	A-H/A	(SE) % of total
April	30,159.5	(9,193)	34.0	(10.4) 48	5,535.3	(1,364)	6.6	(1.6) 9
May	6,965.6	(1,848)	7.9	(2.1) 11	12,627.3	(3,631)	15.0	(4.3) 19
June	8,981.4	(1,403)	10.1	(1.6) 14	16,794.5	(4,077)	19.9	(4.8) 26
July	7,533.2	(1,574)	8.5	(1.8) 12	10,746.4	(2,054)	12.7	(2.4) 17
August	6,279.5	(844)	7.1	(1.0) 10	11,902.3	(1,612)	14.1	(1.9) 18
September	1,476.5	(498)	1.7	(0.6) 2	3,879.7	(790)	4.6	(0.9) 6
October	1,561.4	(779)	1.8	(0.9) 3	3,238.8	(915)	3.8	(1.1) 5
<b>Total</b>	<b>62,957.1</b>	<b>(9,992)</b>	<b>71.1</b>	<b>(10.9)</b>	<b>64,724.3</b>	<b>(6,320)</b>	<b>76.7</b>	<b>(7.5)</b>

		<b>Sarah</b>		<b>% of total</b>
	A-H	(SE)	A-H/A (SE)	
April	721.9	(722)	1.3 (1.3)	3
May	6,638.3	(1,748)	11.6 (3.0)	23
June	7,843.1	(1,479)	13.7 (2.6)	28
July	4,405.2	(611)	7.7 (1.1)	15
August	5,054.9	(899)	8.8 (1.6)	18
September	2,600.9	(578)	4.5 (1.0)	9
October	1,141.8	(352)	2.0 (0.6)	4
<b>Total</b>	<b>28,406.1</b>	<b>(2,720)</b>	<b>49.5 (4.7)</b>	

Table 72. Types, amounts and percentages of non-fishing recreational use (in user-hours, u-h), 3 Hennepin County, Minnesota lakes, open-water season 2003. Categorical value sums might differ from totals because of rounding error.

	Medicine			Independence			Sarah		
	u-h	u-h/acre	%	u-h	u-h/acre	%	u-h	u-h/acre	%
Non-fishing motorboats (1 SE)	53,423 (6,259)	60.3 (7.1)	81	28,306 (4,048)	33.5 (4.8)	85	15,943 (2,235)	27.8 (3.9)	95
Non-motorized craft (1 SE)	10,229 (1,526)	11.5 (1.7)	15	3,170 (796)	3.7 (0.4)	9	501 (796)	0.9 (0.2)	3
Personal watercraft (1 SE)	2,178 (370)	2.5 (0.4)	4	1,911 (337)	2.5 (0.4)	6	367 (116)	0.6 (0.2)	2
Total non-fishing Craft (1 SE)	65,830 (6,453)	74.3 (7.3)		33,388 (4,139)	39.6 (4.9)		16,811 (2,243)	29.3 (3.9)	

Values used to convert craft-hours to user-hours (directly or derived from Scott County creel surveys 1999: 3.09 people/motorboat, 1.25 people/personal watercraft, and 1.67 people/all non-motorized craft.

Table 73. Comparisons of select water recreation use and fishing estimates from 1980 and 2003 surveys during open-water (>summer=) season, Medicine Lake. (u-h=user-hours; a-h=angler-hours; N/A-- not available)

Sum or Estimate	Survey Year	
	1980	2003 (1 SE)
Survey Period (days)	127	214
Total Recreation Pressure (u-h)	58,596	128,787
Rec. Press. Density (u-h/acre)	66.1	145.4
Non-Fishing Rec. Pressure@ (u-h)	17,652	65,830 (6,453)
Non-Fish. Press. Density(u-h/acre)	19.9	74.3 (7.3)
Fishing-- % of All Recreation	70%	49%
Fishing Pressure (a-h)	40,944	62,957 (9,992)
Fishing Press. Density (a-h/acre)	46.2	71.1 (10.9)

@ "active on-water craft"; those away from docking or storage, not battened or beached, with people on them or in close vicinity.

Table 74. Comparisons of select water recreation use and fishing estimates from 1981, 1986, and 2003 surveys during open-water (>summer=) season, Lake Independence. (u-h=user-hours; a-h=angler-hours; N/A-- not available)

Sum or Estimate	Survey Year		
	1981	1986	2003 (1 SE)
Survey Period (days)	127	126	214
Total Recreation Pressure (u-h)	65,584	43,802	98,111
Rec. Press. Density (u-h/acre)	77.7	51.9	116.2
Non-Fishing Rec. Pressure@ (u-h)	38,029	21,934	33,388 (4,139)
Non-Fish. Press. Density(u-h/acre)	45.1	26.0	39.6 (4.9)
Fishing-- % of All Recreation	42%	50%	66%
Fishing Pressure (a-h)	27,555	21,868	64,724 (6,320)
Fishing Press. Density (a-h/acre)	32.6	25.9	76.7 (7.5)

@ "active on-water craft"; those away from docking or storage, not battened or beached, with people on them or in close vicinity.

Table 75. Comparisons of select water recreation use and fishing estimates from 1981 and 2003 surveys during open-water (>summer=) season, Lake Sarah (u-h=user-hours; a-h=angler-hours; N/A-- not available).

Sum or Estimate	Survey Year	
	1981	2003 (1 SE)
Survey Period (days)	127	214
Total Recreation Pressure (u-h)	49,894	45,217
Rec. Press. Density (u-h/acre)	86.9	78.8
Non-Fishing Rec. Pressure@ (u-h)	7,114	16,811 (2,243)
Non-Fish. Press. Density(u-h/acre)	12.4	29.3 (3.9)
Fishing-- % of All Recreation	86%	63%
Fishing Pressure (a-h)	42,780	28,406 (2,720)
Fishing Press. Density (a-h/acre)	74.5	49.5 (4.7)

@ "active on-water craft"; those away from docking or storage, not battened or beached, with people on them or in close vicinity.

Table 76. Recreational water surface use, in user-hours, Medicine Lake, open-water season 2003. Values in parentheses represent 1 standard error. Some total value might differ from categorical sums because of rounding error.

<i>Water Activity Type</i>	<i>April</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>August</i>	<i>September</i>	<i>October</i>	<b>Total</b>
Fishing (angler-hr)	30,160 (9,193)	6,966 (1,848)	8,981 (1,403)	7,533 (1,574)	6,280 (844)	1,476 (498)	1,561 (779)	62,957 (9,992)
Non-fishing recreation (user-hr)	2,133 (1,251)	4,252 (1,769)	13,159 (3,498)	21,200 (5,921)	21,859 (3,225)	2,494 (1,298)	733 (573)	65,830 (6,453)
Total hrs	32,293	11,218	22,140	28,733	28,139	3,970	2,294	128,787
Fishing-- % of total	93	62	41	26	22	37	68	49
Fishing (angler-hr/acre)	34.0 (10.4)	7.9 (2.1)	10.1 (1.6)	8.5 (1.8)	7.1 (1.0)	1.7 (0.6)	1.8 (0.9)	71.1 (10.9)
Non-fishing rec. (user-hr/acre)	2.5 (1.4)	4.9 (2.0)	15.2 (4.0)	24.5 (6.7)	25.2 (3.6)	2.9 (1.5)	0.8 (0.6)	74.3 (7.3)
Total hrs/acre	36.4	12.7	25.0	32.4	31.8	4.5	2.6	145.4

Table 77. Recreational water surface use, in user-hours, Lake Independence, open-water season 2003. Values in parentheses represent 1 standard error. Some total values might differ from categorical sums because of rounding error.

<i>Water Activity Type</i>	<i>April</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>August</i>	<i>September</i>	<i>October</i>	<b>Total</b>
Fishing (angler-hr)	5,535 (1,364)	12,627 (3,631)	16,794 (4,077)	10,746 (2,054)	11,902 (1,612)	3,880 (790)	3,239 (915)	64,724 (6,320)
Non-fishing recreation (user-hr)	1,586 (823)	3,023 (1,060)	4,973 (2,234)	12,939 (2,476)	9,507 (1,977)	853 (481)	507 (268)	33,388 (4,139)
Total hrs	7,121	15,651	21,767	23,685	21,409	4,733	3,746	98,111
Fishing-- % of total	78	81	77	45	56	82	86	66
Fishing (angler-hr/acre)	6.6 (1.6)	15.0 (4.3)	19.9 (4.8)	12.7 (2.4)	14.1 (1.9)	4.6 (0.9)	3.8 (1.1)	76.7 (7.5)
Non-fishing rec. (user-hr/acre)	1.9 (1.0)	3.6 (1.3)	5.9 (2.6)	15.3 (2.9)	11.3 (2.3)	1.0 (0.6)	0.6 (0.3)	39.6 (4.9)
Total hrs/acre	8.4	18.5	25.8	28.1	25.4	5.6	4.4	116.2

Table 78. Recreational water surface use, in user-hours, Lake Sarah, open-water season 2003. Values in parentheses represent 1 standard error. Some total values might differ from categorical sums because of rounding error.

<i>Water Activity Type</i>	<i>April</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>August</i>	<i>September</i>	<i>October</i>	<b>Total</b>
Fishing (angler-hr)	723 (722)	6,638 (1,748)	7,843 (1,479)	4,405 (611)	5,055 (899)	2,601 (578)	1,142 (352)	28,406 (2,720)
Non-fishing recreation (user-hr)	128 (128)	1,488 (612)	3,680 (1,370)	4,996 (1,288)	4,442 (830)	1,610 (573)	467 (290)	16,811 (2,243)
Total hrs	849	8,126	11,523	9,402	9,497	4,210	1,609	45,217
Fishing-- % of total	85	82	68	47	53	62	71	63
Fishing (angler-hr/acre)	1.3 (1.3)	11.6 (3.0)	13.7 (2.6)	7.7 (1.1)	8.8 (1.6)	4.5 (1.0)	2.0 (0.6)	49.5 (4.7)
Non-fishing rec. (user-hr/acre)	0.2 (0.2)	2.6 (1.1)	6.4 (2.4)	8.7 (2.2)	7.7 (1.4)	2.8 (1.0)	0.8 (0.5)	29.3 (3.9)
Total hrs/acre	1.5	14.2	20.0	16.4	16.5	7.3	2.8	78.8



Table 79. Harvest, release, and catch (harvested + released) numbers by fish species/type, plus percentage of caught fish that were harvested, Medicine Lake, open-water season 2003. SE = 1 standard error. (BLH=bullhead, BOF=bowfin, CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

Spp	Harvest		Har per Acre		Release		Rel per Acre		Catch	Cat per Acre		SE
	Harvest	SE	Har per Acre	SE	Release	SE	Rel per Acre	SE		SE	SE	
BLH	450.4	461.3	0.51	0.52	151.8	87.4	0.17	0.10	602.2	469.5	0.68	0.53
BOF	0.0	0.0	0.00	0.00	332.5	195.2	0.38	0.22	332.5	195.2	0.38	0.22
CRP	39800.6	17930.2	44.92	20.24	8812.8	2581.7	9.95	2.91	48613.4	19780.5	54.87	22.33
LMB	829.5	315.0	0.94	0.36	9289.7	1477.1	10.48	1.67	10119.2	1603.1	11.42	1.81
NOP	379.0	124.4	0.43	0.14	3532.3	618.3	3.99	0.70	3911.3	647.4	4.41	0.73
SUN	15000.7	3384.0	16.93	3.82	38978.6	8169.4	43.99	9.22	53979.3	10390.3	60.92	11.73
WAE	38.4	30.9	0.04	0.03	105.7	52.1	0.12	0.06	144.0	72.6	0.16	0.08
YEP	30.7	22.7	0.03	0.03	1412.8	394.1	1.59	0.44	1443.5	401.1	1.63	0.45
ALL	56529.2	18255.7	63.80	20.60	62616.2	8727.7	70.67	9.85	119145.4	22419.6	134.48	25.30

Table 80. Harvest, release, and catch (harvested + released) numbers by fish species/type, plus percentage of caught fish that were harvested, Lake Independence, open-water season 2003. SE = 1 standard error. (BOF=bowfin, CAP=carp, CRP=crappie, LMB=largemouth bass, MUE=muskie, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

Spp	Harvest		Har per Acre		Release		Rel per Acre		Catch	Cat per Acre		SE
	Harvest	SE	Har per Acre	SE	Release	SE	Rel per Acre	SE		SE	SE	
BOF	0.0	0.0	0.00	0.00	167.1	67.1	0.20	0.08	167.1	67.1	0.20	0.08
CAP	0.0	0.0	0.00	0.00	161.5	121.0	0.19	0.14	161.5	121.0	0.19	0.14
CRP	17076.9	3964.5	20.23	4.70	28866.3	6410.1	34.20	7.59	45943.2	9715.7	54.44	11.51
LMB	793.5	236.5	0.94	0.28	9863.8	1680.0	11.69	1.99	10657.3	1743.3	12.63	2.07
MUE	0.0	0.0	0.00	0.00	888.0	156.3	1.05	0.19	888.0	156.3	1.05	0.19
NOP	156.8	59.9	0.19	0.07	2585.8	542.8	3.06	0.64	2742.6	556.0	3.25	0.66
SUN	11548.1	2705.9	13.68	3.21	29696.9	5816.7	35.19	6.89	41245.0	8024.2	48.87	9.51
WAE	549.3	233.8	0.65	0.28	966.8	494.7	1.15	0.59	1516.0	576.3	1.80	0.68
YEP	33.8	35.4	0.04	0.04	1778.5	484.6	2.11	0.57	1812.3	487.3	2.15	0.58
ALL	30158.4	4811.9	35.73	5.70	74974.7	8863.6	88.83	10.50	105133.1	12757.1	124.57	15.12

Table 81. Harvest, release, and catch (harvested + released) numbers by fish species/type, plus percentage of caught fish that were harvested, Lake Sarah, open-water season 2003. SE = 1 standard error. (BLH= bullhead, BOF=bowfin, CAP=carp, CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

Spp	Harvest		Har per Acre		Release		Rel per Acre		Catch	Cat per Acre		SE
	Harvest	SE	Har per Acre	SE	Release	SE	Rel per Acre	SE		SE	SE	
BLH	0.0	0.0	0.00	0.00	65.3	38.6	0.11	0.07	65.3	38.6	0.11	0.07
BOF	0.0	0.0	0.00	0.00	88.6	40.7	0.15	0.07	88.6	40.7	0.15	0.07
CRP	5177.6	1502.2	9.02	2.62	6082.0	1500.8	10.60	2.61	11259.6	2760.1	19.62	4.81
LMB	1519.7	415.5	2.65	0.72	14345.3	2028.8	24.99	3.53	15865.0	2114.5	27.64	3.68
NOP	160.1	51.9	0.28	0.09	621.4	148.2	1.08	0.26	781.5	154.8	1.36	0.27
SUN	26772.0	5473.2	46.64	9.54	51176.4	9465.0	89.16	16.49	77948.4	14415.0	135.80	25.11
WAE	0.0	0.0	0.00	0.00	6.3	6.1	0.01	0.01	6.3	6.1	0.01	0.01
YEP	24.5	26.2	0.04	0.05	220.3	55.2	0.38	0.10	244.9	61.1	0.43	0.11
ALL	33653.9	5695.9	58.63	9.92	72605.7	9986.2	126.49	17.40	106259.6	14976.0	185.12	26.09

Table 82. Overall harvest, release, and catch rates (number fish per angler-hour), Medicine Lake, open-water season 2003. SE = 1 standard error.

	Har/ AnHr	SE	Rel/ AnHr	SE	Cat/ AnHr	SE
Bullhead	0.0081	0.0084	0.0027	0.0013	0.0109	0.0084
Bowfin	0.0000	0.0000	0.0060	0.0037	0.0060	0.0037
Crappie	0.7173	0.2820	0.1588	0.0550	0.8762	0.3185
Largemouth bass	0.0149	0.0064	0.1674	0.0379	0.1824	0.0416
Northern pike	0.0068	0.0025	0.0637	0.0132	0.0705	0.0143
Sunfish	0.2704	0.0720	0.7025	0.1997	0.9729	0.2560
Walleye	0.0007	0.0005	0.0019	0.0010	0.0026	0.0012
Yellow perch	0.0006	0.0004	0.0255	0.0079	0.0260	0.0080
All fishes	1.0188	0.2913	1.1285	0.2111	2.1474	0.4112

Table 83. Sought harvest, release, and catch rates (number fish per angler-hour for those targeting specific fish[es]), Medicine Lake, open-water season 2003. SE = 1 standard error.

	Har/ AnHr	SE	Rel/ AnHr	SE	Cat/ AnHr	SE	Number of seekers
Crappie	0.4462	0.1612	0.2938	0.0632	0.7401	0.1813	134
Largemouth bass	0.2227	0.0163	0.6303	0.0999	0.8530	0.1057	121
Northern pike	0.0391	0.0143	0.2912	0.0563	0.3302	0.0576	91
Sunfish	1.3434	0.1547	1.9023	0.2185	3.2458	0.3265	140
Walleye	0.0000	---	0.0000	---	0.0000	---	1
Yellow perch	0.0575	0.0135	0.0974	0.0905	0.1549	0.1000	18

Table 84. Overall harvest, release, and catch rates (number fish per angler-hour), Lake Independence, open-water season 2003. SE = 1 standard error.

	Har/ AnHr	SE	Rel/ AnHr	SE	Cat/ AnHr	SE
Bowfin	0.0000	0.0000	0.0026	0.0011	0.0026	0.0011
Carp	0.0000	0.0000	0.0025	0.0019	0.0025	0.0019
Crappie	0.2638	0.0445	0.4460	0.0967	0.7098	0.1305
Largemouth bass	0.0123	0.0032	0.1524	0.0327	0.1647	0.0334
Muskellunge	0.0000	0.0000	0.0137	0.0016	0.0137	0.0016
Northern pike	0.0024	0.0010	0.0400	0.0086	0.0424	0.0089
Sunfish	0.1784	0.0261	0.4588	0.0732	0.6372	0.0882
Walleye	0.0085	0.0035	0.0149	0.0079	0.0234	0.0092
Yellow perch	0.0005	0.0005	0.0275	0.0084	0.0280	0.0084
All fishes	0.4660	0.0518	1.1584	0.1264	1.6243	0.1617

Table 85. Sought harvest, release, and catch rates (number fish per angler-hour for those targeting specific fish(es)), Lake Independence, open-water season 2003. SE = 1 standard error.

	Har/ AnHr	SE	Rel/ AnHr	SE	Cat/ AnHr	SE	Number of seekers
Carp	0.0000	---	0.0000	---	0.0000	---	1
Crappie	0.5916	0.1511	1.2439	0.3066	1.8355	0.4312	120
Largemouth bass	0.0289	0.0131	0.3045	0.0965	0.3335	0.1000	80
Muskellunge	0.0000	0.0000	0.0436	0.0122	0.0436	0.0122	192
Northern pike	0.0230	0.0084	0.1197	0.0454	0.1427	0.0457	52
Sunfish	0.4877	0.1145	1.4707	1.8923	1.9584	0.3332	93
Walleye	0.0707	0.0276	0.0415	0.1452	0.1122	0.0571	90
Yellow perch	0.0000	0.0000	0.0184	0.0305	0.0184	0.0175	16

Table 86. Overall harvest, release, and catch rates (number fish per angler-hour), Lake Sarah, open-water season 2003. SE = 1 standard error.

	Har/ AnHr	SE	Rel/ AnHr	SE	Cat/ AnHr	SE
Bullhead	0.0000	0.0000	0.0023	0.0041	0.0023	0.0041
Bowfin	0.0000	0.0000	0.0031	0.0012	0.0031	0.0015
Crappie	0.1823	0.0330	0.2141	0.0197	0.3964	0.0452
Largemouth bass	0.0535	0.0136	0.5050	0.0352	0.5585	0.0309
Northern pike	0.0056	0.0024	0.0219	0.0048	0.0275	0.0060
Sunfish	0.9425	0.1020	1.8016	0.1106	2.7441	0.1946
Walleye	0.0000	0.0000	0.0002	0.0002	0.0002	0.0002
Yellow perch	0.0009	0.0009	0.0078	0.0017	0.0086	0.0019
All fishes	1.1847	0.1075	2.5560	0.1254	3.7407	0.2064

Table 87. Sought harvest, release, and catch rates (number fish per angler-hour for those targeting specific fish(es)), Lake Sarah, open-water season 2003. SE = 1 standard error.

	Har/ AnHr	SE	Rel/ AnHr	SE	Cat/ AnHr	SE	Number of seekers
Crappie	0.4043	0.0777	0.4553	0.0623	0.8597	0.1209	134
Largemouth bass	0.0609	0.0239	1.1998	0.1082	1.2607	0.0988	130
Northern pike	0.1185	0.0147	0.1353	0.0407	0.2538	0.0415	38
Sunfish	1.9979	0.2300	4.2338	0.3547	6.2317	0.5413	152
Yellow perch	0.0000	0.0000	0.0504	0.0270	0.0504	0.0270	16

Table 88. Yield, in pounds (lb) and pounds per acre (lb/acre), and percent of total represented, Medicine Lake, open-water season 2003. SE = 1 standard error.

Spp	Harvest Lbs	SE	pounds per Acre	SE	% of total
Bullhead	225.2	235.0	0.25	0.27	1
Crappie	11037.6	5006.6	12.46	5.65	64
Largemouth bass	1270.3	732.7	1.43	0.83	7
Northern pike	1147.9	368.4	1.30	0.42	7
Sunfish	3438.2	1281.3	3.88	1.45	20
Walleye	122.4	99.9	0.14	0.11	1
Yellow perch	3.6	2.6	<0.01	<0.01	<1
Total	17245.3	5400.7	19.46	6.10	

Table 89. Yield, in pounds (lb) and pounds per acre (lb/acre), and percent of total represented, Lake Independence, open-water season 2003. SE = 1 standard error.

Spp	Harvest Lbs	SE	pounds per Acre	SE	% of total
Crappie	6006.2	2869.3	7.12	3.40	52
Largemouth bass	1482.4	499.9	1.76	0.59	13
Northern pike	529.7	241.0	0.63	0.29	5
Sunfish	2528.6	790.7	3.00	0.94	22
Walleye	970.7	467.4	1.15	0.55	8
Yellow perch	4.1	4.3	0.00	0.01	<1
ALL	11521.6	3063.4	13.65	3.63	

Table 90. Yield, in pounds (lb) and pounds per acre (lb/acre), and percent of total represented, Lake Sarah, open-water season 2003. SE = 1 standard error.

Spp	Harvest Lbs	SE	pounds per Acre	SE	% of total
Crappie	2815.5	1422.7	4.91	2.48	16
Largemouth bass	3647.5	1538.5	6.35	2.68	21
Northern pike	1275.5	864.2	2.22	1.51	7
Sunfish	9778.2	2302.7	17.04	4.01	56
Yellow perch	6.5	6.5	0.01	0.01	<1
ALL	17523.1	3231.1	30.53	5.63	

Table 91. Mean length (in inches) of fish harvested and released by anglers, Medicine Lake, Minnesota, open-water season 2003. SE = 1 standard error. (BLH=bullhead, BOF=bowfin, CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

	Targeting Anglers						All Anglers					
	Har AvLn	SE	Rel AvLn	SE	Cat AvLn	SE	Har AvLn	SE	Rel AvLn	SE	Cat AvLn	SE
BLH	---	---	---	---	---	---	9.70	13.92	11.70	9.34	9.70	6.91
BOF	---	---	---	---	---	---	---	---	20.00	11.94	20.00	11.94
CRP	7.58	2.22	---	---	7.58	2.22	7.75	12.49	6.40	2.41	7.75	10.48
LMB	14.33	3.94	13.98	3.06	14.02	2.82	13.09	11.05	13.68	5.78	13.60	5.29
NOP	23.55	4.14	21.62	4.24	21.98	3.48	23.49	13.68	20.78	9.06	21.18	8.33
SUN	6.90	1.41	8.75	---	6.93	1.41	6.90	2.45	8.75	2.54	6.93	2.42
WAE	---	---	---	---	---	---	20.25	22.37	15.00	61.72	17.63	23.61
YEP	6.00	---	---	---	6.00	---	6.00	6.03	6.00	2.72	6.00	2.75

Table 92. Mean weight (in pounds) of fish harvested and released by anglers, Medicine Lake, Minnesota, open-water season 2003. SE = 1 standard error. (BLH=bullhead, BOF=bowfin, CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

Spp	Targeting Anglers						All Anglers					
	Har AvWt	SE	Rel AvWt	SE	Cat AvWt	SE	Har AvWt	SE	Rel AvWt	SE	Cat AvWt	SE
BLH	---	---	---	---	---	---	0.50	0.72	0.98	0.79	0.50	0.37
BOF	---	---	---	---	---	---	---	---	2.65	1.61	2.65	1.61
CRP	0.26	0.08	---	---	0.26	0.08	0.28	0.44	0.12	0.05	0.28	0.37
LMB	1.61	0.42	1.69	0.43	1.69	0.39	1.31	1.12	1.62	0.72	1.58	0.65
NOP	3.04	0.52	3.01	0.65	3.02	0.53	2.99	1.69	2.68	1.23	2.73	1.11
SUN	0.26	0.06	0.52	---	0.26	0.06	0.26	0.09	0.52	0.15	0.26	0.09
WAE	---	---	---	---	---	---	3.13	4.00	1.89	10.97	2.51	4.30
YEP	0.09	---	---	---	0.09	---	0.09	0.09	0.09	0.04	0.09	0.04

Table 93. Mean length (in inches) of fish harvested and released by anglers, Lake Independence, Minnesota, open-water season 2003. SE = 1 standard error. (BOF=bowfin, CAP=carp, CRP=crappie, LMB=largemouth bass, MUE=muskellunge, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

	Targeting Anglers						All Anglers					
	Har AvLn	SE	Rel AvLn	SE	Cat AvLn	SE	Har AvLn	SE	Rel AvLn	SE	Cat AvLn	SE
BOF	---	---	---	---	---	---	---	---	24.00	11.66	24.00	11.66
CAP	---	---	---	---	---	---	---	---	25.60	29.14	25.60	29.14
CRP	8.56	2.33	9.00	---	8.56	2.34	8.42	4.42	8.33	2.32	8.42	3.79
LMB	16.46	4.80	14.56	2.16	14.70	2.13	11.79	16.59	13.55	4.69	13.28	4.92
MUE	---	---	35.98	5.28	35.98	5.28	---	---	35.48	14.87	35.48	14.88
NOP	24.08	1.06	20.58	4.94	21.10	4.29	24.29	14.78	21.32	8.88	21.52	8.54
SUN	7.06	2.80	---	---	7.06	2.80	7.06	3.82	4.90	1.36	7.06	3.24
WAE	14.82	4.47	16.30	5.93	15.06	3.98	14.82	14.11	14.06	12.52	14.55	9.43
YEP	---	---	---	---	---	---	6.75	9.68	7.25	2.59	7.00	2.48

Table 94. Mean weight (in pounds) of fish harvested and released by anglers, Lake Independence, Minnesota, open-water season 2003. SE = 1 standard error. (BOF=bowfin, CAP=carp, CRP=crappie, LMB=largemouth bass, MUE=muskellunge, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

BOF	---	---	---	---	---	---	---	---	4.36	2.15	4.36	2.15
CAP	---	---	---	---	---	---	---	---	8.30	9.50	8.30	9.50
CRP	0.36	0.10	0.53	---	0.36	0.10	0.34	0.18	0.34	0.25	0.34	0.16
LMB	2.73	0.83	1.89	0.27	1.95	0.28	1.28	0.89	1.64	0.56	1.59	0.55
MUE	---	---	12.14	2.06	12.14	2.06	---	---	11.87	5.23	11.87	5.23
NOP	3.18	0.58	2.37	0.73	2.49	0.62	3.26	2.58	2.69	1.08	2.73	1.05
SUN	0.26	0.10	---	---	0.26	0.10	0.26	0.14	0.10	0.03	0.26	0.12
WAE	1.20	0.33	1.79	1.11	1.29	0.32	1.19	1.01	1.20	1.16	1.20	0.76
YEP	---	---	---	---	---	---	0.12	0.17	0.16	0.06	0.14	0.05

Table 95. Mean length (in inches) of fish harvested and released by anglers, Lake Sarah, Minnesota, open-water season 2003. SE = 1 standard error. (BLH=bullhead, BOF=bowfin, CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

Spp	Targeting Anglers						All Anglers					
	Har AvLn	SE	Rel AvLn	SE	Cat AvLn	SE	Har AvLn	SE	Rel AvLn	SE	Cat AvLn	SE
BLH	---	---	---	---	---	---	---	---	13.20	9.78	13.20	9.78
BOF	---	---	---	---	---	---	---	---	26.80	13.84	26.80	13.84
CRP	8.92	2.04	---	---	8.92	2.04	9.00	5.13	6.80	2.08	9.00	4.65
LMB	14.70	3.24	14.26	2.75	14.32	2.46	14.46	6.85	14.10	4.64	14.16	4.21
NOP	27.50	5.55	22.81	6.04	24.77	4.98	26.12	18.62	24.15	11.97	24.73	9.87
SUN	7.19	1.21	---	---	7.19	1.21	7.17	1.99	4.20	0.93	7.17	1.86
WAE	---	---	---	---	---	---	---	---	10.00	13.95	10.00	13.96
YEP	---	---	---	---	---	---	7.40	10.54	6.30	2.60	7.00	2.77

Table 96. Mean weight (in pounds) of fish harvested and released by anglers, Lake Sarah, Minnesota, open-water season 2003. SE = 1 standard error. (BLH=bullhead, BOF=bowfin, CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

Spp	Targeting Anglers						All Anglers					
	Har AvWt	SE	Rel AvWt	SE	Cat AvWt	SE	Har AvWt	SE	Rel AvWt	SE	Cat AvWt	SE
BLH	---	---	---	---	---	---	---	---	1.33	0.99	1.33	0.99
BOF	---	---	---	---	---	---	---	---	7.00	3.63	7.00	3.63
CRP	0.41	0.09	---	---	0.41	0.09	0.42	0.23	0.17	0.05	0.42	0.21
LMB	1.97	0.41	1.77	0.37	1.79	0.33	1.87	0.91	1.72	0.60	1.74	0.54
NOP	5.07	1.32	2.92	0.92	3.82	0.83	4.42	3.32	3.59	1.62	3.83	1.46
SUN	0.30	0.05	---	---	0.30	0.05	0.29	0.08	0.08	0.02	0.29	0.08
WAE	---	---	---	---	---	---	---	---	0.28	0.39	0.28	0.44
YEP	---	---	---	---	---	---	0.18	0.26	0.11	0.05	0.16	0.06

Table 97. Length-frequency distributions of harvested fish, Medicine Lake, open-water season 2003. (BLH=bullhead, CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

Length Category	BLH	CRP	LMB	NOP	SUN	WAE	YEP
[0.0, 3.0)	---	---	---	---	---	---	---
[3.0, 3.5)	---	---	---	---	---	---	---
[3.5, 4.0)	---	---	---	---	---	---	---
[4.0, 4.5)	---	---	---	---	---	---	---
[4.5, 5.0)	---	---	---	---	---	---	---
[5.0, 5.5)	---	---	---	---	---	---	---
[5.5, 6.0)	---	---	---	---	1	---	---
[6.0, 6.5)	---	2	---	---	13	---	1
[6.5, 7.0)	---	1	---	---	45	---	---
[7.0, 7.5)	---	43	---	---	58	---	---
[7.5, 8.0)	---	62	---	---	17	---	---
[8.0, 8.5)	---	24	---	---	2	---	---
[8.5, 9.0)	---	6	1	---	---	---	---
[9.0, 9.5)	---	16	3	---	---	---	---
[9.5, 10.0)	3	---	2	---	---	---	---
[10.0, 10.5)	---	---	---	---	---	---	---
[10.5, 11.0)	---	---	---	---	---	---	---
[11.0, 11.5)	---	---	1	---	---	---	---
[11.5, 12.0)	---	---	1	---	---	---	---
[12.0, 13.0)	---	---	3	---	---	---	---
[13.0, 14.0)	---	---	7	---	---	---	---
[14.0, 15.0)	---	1	7	---	---	---	---
[15.0, 16.0)	---	---	3	---	---	---	---
[16.0, 17.0)	---	---	1	---	---	---	---
[17.0, 18.0)	---	---	1	---	---	---	---
[18.0, 19.0)	---	---	1	1	---	---	---
[19.0, 20.0)	---	---	---	1	---	---	---
[20.0, 21.0)	---	---	---	3	---	2	---
[21.0, 22.0)	---	---	---	1	---	---	---
[22.0, 23.0)	---	---	---	4	---	---	---
[23.0, 24.0)	---	---	---	2	---	---	---
[24.0, 25.0)	---	---	---	2	---	---	---
[25.0, 26.0)	---	---	---	3	---	---	---
[26.0, 27.0)	---	---	---	1	---	---	---
[27.0, 28.0)	---	---	---	1	---	---	---
[28.0, 29.0)	---	---	---	3	---	---	---
[29.0, 30.0)	---	---	---	---	---	---	---
[30.0, 31.0)	---	---	---	---	---	---	---
[31.0, 32.0)	---	---	---	---	---	---	---
[32.0, 33.0)	---	---	---	---	---	---	---
[33.0, 34.0)	---	---	---	---	---	---	---
[34.0, 35.0)	---	---	---	---	---	---	---
[35.0, 36.0)	---	---	---	---	---	---	---
[36.0, 37.0)	---	---	---	---	---	---	---
[37.0, 38.0)	---	---	---	---	---	---	---
[38.0, 39.0)	---	---	---	---	---	---	---
[39.0, 40.0)	---	---	---	---	---	---	---
[40.0, and up)	---	---	---	---	---	---	---
Total	3	155	31	22	136	2	1
Min. Length	9.70	6.00	8.50	18.50	5.75	20.00	6.00
Max. Length	9.70	14.00	18.50	28.50	8.25	20.50	6.00
Mean Length	9.70	7.75	13.09	23.49	6.90	20.25	6.00

Table 98. Length-frequency distributions of released fish, Medicine Lake, open-water season 2003. (BOF=bowfin, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, WAE=walleye)

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Length Category	BOF	LMB	NOP	SUN	WAE
[0.0, 3.0)	---	---	---	---	---
[3.0, 3.5)	---	---	---	---	---
[3.5, 4.0)	---	---	---	---	---
[4.0, 4.5)	---	---	---	---	---
[4.5, 5.0)	---	---	---	---	---
[5.0, 5.5)	---	1	---	---	---
[5.5, 6.0)	---	---	---	---	---
[6.0, 6.5)	---	---	---	---	---
[6.5, 7.0)	---	---	---	---	---
[7.0, 7.5)	---	---	---	---	---
[7.5, 8.0)	---	---	---	1	---
[8.0, 8.5)	---	8	---	---	1
[8.5, 9.0)	---	---	---	---	---
[9.0, 9.5)	---	1	---	---	---
[9.5, 10.0)	---	---	---	---	---
[10.0, 10.5)	---	42	---	1	---
[10.5, 11.0)	---	---	---	---	---
[11.0, 11.5)	---	---	---	---	---
[11.5, 12.0)	---	---	---	---	---
[12.0, 13.0)	---	27	17	---	---
[13.0, 14.0)	---	12	2	---	---
[14.0, 15.0)	---	24	3	---	---
[15.0, 16.0)	---	35	7	---	---
[16.0, 17.0)	---	14	9	---	---
[17.0, 18.0)	---	10	4	---	---
[18.0, 19.0)	---	12	16	---	---
[19.0, 20.0)	---	5	9	---	---
[20.0, 21.0)	1	3	5	---	---
[21.0, 22.0)	---	1	8	---	---
[22.0, 23.0)	---	---	3	---	1
[23.0, 24.0)	---	1	5	---	---
[24.0, 25.0)	---	---	9	---	---
[25.0, 26.0)	---	---	3	---	---
[26.0, 27.0)	---	---	3	---	---
[27.0, 28.0)	---	---	3	---	---
[28.0, 29.0)	---	---	4	---	---
[29.0, 30.0)	---	---	1	---	---
[30.0, 31.0)	---	---	1	---	---
[31.0, 32.0)	---	---	2	---	---
[32.0, 33.0)	---	---	1	---	---
[33.0, 34.0)	---	---	5	---	---
[34.0, 35.0)	---	---	2	---	---
[35.0, 36.0)	---	---	---	---	---
[36.0, 37.0)	---	---	4	---	---
[37.0, 38.0)	---	---	1	---	---
[38.0, 39.0)	---	---	---	---	---
[39.0, 40.0)	---	---	---	---	---
[40.0, and up)	---	---	---	---	---
Total	1	196	127	2	2
Min. Length	20.00	5.00	12.00	7.50	8.00
Max. Length	20.00	23.00	37.00	10.00	22.00
Mean Length	20.00	13.68	20.78	8.75	15.00



Table 99. Length-frequency distributions of harvested and released fish, Medicine Lake, open-water season 2003. (BLH=black bullhead, BOF=bowfin, CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

Length Category	BLH	BOF	CRP	LMB	NOP	SUN	WAE	YEP
[0.0, 3.0)	---	---	---	---	---	---	---	---
[3.0, 3.5)	---	---	---	---	---	---	---	---
[3.5, 4.0)	---	---	---	---	---	---	---	---
[4.0, 4.5)	---	---	---	---	---	---	---	---
[4.5, 5.0)	---	---	---	---	---	---	---	---
[5.0, 5.5)	---	---	---	1	---	---	---	---
[5.5, 6.0)	---	---	---	---	---	1	---	---
[6.0, 6.5)	---	---	2	---	---	13	---	1
[6.5, 7.0)	---	---	1	---	---	45	---	---
[7.0, 7.5)	---	---	43	---	---	58	---	---
[7.5, 8.0)	---	---	62	---	---	18	---	---
[8.0, 8.5)	---	---	24	8	---	2	1	---
[8.5, 9.0)	---	---	6	1	---	---	---	---
[9.0, 9.5)	---	---	16	4	---	---	---	---
[9.5, 10.0)	3	---	---	2	---	---	---	---
[10.0, 10.5)	---	---	---	42	---	1	---	---
[10.5, 11.0)	---	---	---	---	---	---	---	---
[11.0, 11.5)	---	---	---	1	---	---	---	---
[11.5, 12.0)	---	---	---	1	---	---	---	---
[12.0, 13.0)	---	---	---	30	17	---	---	---
[13.0, 14.0)	---	---	---	19	2	---	---	---
[14.0, 15.0)	---	---	1	31	3	---	---	---
[15.0, 16.0)	---	---	---	38	7	---	---	---
[16.0, 17.0)	---	---	---	15	9	---	---	---
[17.0, 18.0)	---	---	---	11	4	---	---	---
[18.0, 19.0)	---	---	---	13	17	---	---	---
[19.0, 20.0)	---	---	---	5	10	---	---	---
[20.0, 21.0)	---	1	---	3	8	---	2	---
[21.0, 22.0)	---	---	---	1	9	---	---	---
[22.0, 23.0)	---	---	---	---	7	---	1	---
[23.0, 24.0)	---	---	---	1	7	---	---	---
[24.0, 25.0)	---	---	---	---	11	---	---	---
[25.0, 26.0)	---	---	---	---	6	---	---	---
[26.0, 27.0)	---	---	---	---	4	---	---	---
[27.0, 28.0)	---	---	---	---	4	---	---	---
[28.0, 29.0)	---	---	---	---	7	---	---	---
[29.0, 30.0)	---	---	---	---	1	---	---	---
[30.0, 31.0)	---	---	---	---	1	---	---	---
[31.0, 32.0)	---	---	---	---	2	---	---	---
[32.0, 33.0)	---	---	---	---	1	---	---	---
[33.0, 34.0)	---	---	---	---	5	---	---	---
[34.0, 35.0)	---	---	---	---	2	---	---	---
[35.0, 36.0)	---	---	---	---	---	---	---	---
[36.0, 37.0)	---	---	---	---	4	---	---	---
[37.0, 38.0)	---	---	---	---	1	---	---	---
[38.0, 39.0)	---	---	---	---	---	---	---	---
[39.0, 40.0)	---	---	---	---	---	---	---	---
[40.0, and up)	---	---	---	---	---	---	---	---
Total	3	1	155	227	149	138	4	1
Min. Length	9.70	20.00	6.00	5.00	12.00	5.75	8.00	6.00
Max. Length	9.70	20.00	14.00	23.00	37.00	10.00	22.00	6.00
Mean Length	9.70	20.00	7.75	13.60	21.18	6.93	17.63	6.00

Table 100. Length-frequency distributions of harvested fish, Lake Independence, open-water season 2003. (CRP=crappie, LMB=largemouth bass, NOP= northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

Length Category	CRP	LMB	NOP	SUN	WAE	YEP
[0.0, 4.0)	---	---	---	---	---	---
[4.0, 4.5)	---	---	---	---	---	---
[4.5, 5.0)	---	---	---	---	---	---
[5.0, 5.5)	---	---	---	---	---	---
[5.5, 6.0)	---	---	---	2	---	---
[6.0, 6.5)	---	---	---	6	---	---
[6.5, 7.0)	2	---	---	19	---	1
[7.0, 7.5)	10	---	---	32	---	---
[7.5, 8.0)	24	---	---	23	---	---
[8.0, 8.5)	41	3	---	1	---	---
[8.5, 9.0)	43	1	---	---	---	---
[9.0, 9.5)	40	1	---	---	---	---
[9.5, 10.0)	7	2	---	---	---	---
[10.0, 10.5)	---	4	---	---	---	---
[10.5, 11.0)	---	4	---	---	---	---
[11.0, 11.5)	1	1	---	---	---	---
[11.5, 12.0)	---	---	---	---	1	---
[12.0, 13.0)	---	---	---	---	3	---
[13.0, 14.0)	---	---	---	---	5	---
[14.0, 15.0)	---	---	---	---	10	---
[15.0, 16.0)	---	---	---	---	2	---
[16.0, 17.0)	---	4	---	---	1	---
[17.0, 18.0)	---	2	---	---	1	---
[18.0, 19.0)	---	1	---	---	2	---
[19.0, 20.0)	---	---	---	---	---	---
[20.0, 21.0)	---	---	---	---	---	---
[21.0, 22.0)	---	---	2	---	---	---
[22.0, 23.0)	---	---	---	---	---	---
[23.0, 24.0)	---	---	1	---	---	---
[24.0, 25.0)	---	---	---	---	1	---
[25.0, 26.0)	---	---	2	---	---	---
[26.0, 27.0)	---	---	1	---	---	---
[27.0, 28.0)	---	---	1	---	---	---
[28.0, 29.0)	---	---	---	---	---	---
[29.0, 30.0)	---	---	---	---	---	---
[30.0, 31.0)	---	---	---	---	---	---
[31.0, 32.0)	---	---	---	---	---	---
[32.0, 33.0)	---	---	---	---	---	---
[33.0, 34.0)	---	---	---	---	---	---
[34.0, 35.0)	---	---	---	---	---	---
[35.0, 36.0)	---	---	---	---	---	---
[36.0, 37.0)	---	---	---	---	---	---
[37.0, 38.0)	---	---	---	---	---	---
[38.0, 39.0)	---	---	---	---	---	---
[39.0, 40.0)	---	---	---	---	---	---
[40.0, and up)	---	---	---	---	---	---
Total	168	23	7	83	26	1
Min. Length	6.75	8.00	21.00	5.50	11.50	6.75
Max. Length	11.25	18.00	27.00	8.00	24.50	6.75
Mean Length	8.42	11.79	24.29	7.06	14.82	6.75

Table 101. Length-frequency distributions of released fish, Lake Independence, open-water season 2003. (BOF=bowfin, CRP=crappie, LMB=largemouth bass, MUE=muskellunge, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

Length Category	BOF	CRP	LMB	MUE	NOP	WAE	YEP
[0.0, 5.0)	---	---	1	---	---	---	---
[5.0, 5.5)	---	---	---	---	---	---	---
[5.5, 6.0)	---	---	---	---	---	---	---
[6.0, 6.5)	---	---	10	---	---	---	---
[6.5, 7.0)	---	---	---	---	---	---	---
[7.0, 7.5)	---	---	1	---	---	---	1
[7.5, 8.0)	---	---	---	---	---	---	---
[8.0, 8.5)	---	2	6	---	---	3	---
[8.5, 9.0)	---	---	---	---	---	---	---
[9.0, 9.5)	---	1	---	---	---	---	---
[9.5, 10.0)	---	---	---	---	---	---	---
[10.0, 10.5)	---	---	6	---	---	2	---
[10.5, 11.0)	---	---	---	---	---	---	---
[11.0, 11.5)	---	---	2	---	---	---	---
[11.5, 12.0)	---	---	---	---	---	1	---
[12.0, 13.0)	---	---	18	1	5	---	---
[13.0, 14.0)	---	---	10	---	3	---	---
[14.0, 15.0)	---	---	15	---	1	1	---
[15.0, 16.0)	---	---	22	---	1	2	---
[16.0, 17.0)	---	---	11	---	12	---	---
[17.0, 18.0)	---	---	8	---	5	---	---
[18.0, 19.0)	---	---	10	---	10	2	---
[19.0, 20.0)	---	---	2	---	4	1	---
[20.0, 21.0)	---	---	2	3	11	---	---
[21.0, 22.0)	---	---	1	---	9	2	---
[22.0, 23.0)	---	---	---	---	4	---	---
[23.0, 24.0)	---	---	---	---	2	---	---
[24.0, 25.0)	1	---	---	---	7	---	---
[25.0, 26.0)	---	---	---	---	2	---	---
[26.0, 27.0)	---	---	---	---	3	---	---
[27.0, 28.0)	---	---	---	1	2	---	---
[28.0, 29.0)	---	---	---	1	6	---	---
[29.0, 30.0)	---	---	---	2	1	---	---
[30.0, 31.0)	---	---	---	1	4	---	---
[31.0, 32.0)	---	---	---	3	1	---	---
[32.0, 33.0)	---	---	---	1	1	---	---
[33.0, 34.0)	---	---	---	1	1	---	---
[34.0, 35.0)	---	---	---	3	3	---	---
[35.0, 36.0)	---	---	---	7	1	---	---
[36.0, 37.0)	---	---	---	4	---	---	---
[37.0, 38.0)	---	---	---	---	---	---	---
[38.0, 39.0)	---	---	---	6	---	---	---
[39.0, 40.0)	---	---	---	6	---	---	---
[40.0, and up)	---	---	---	15	---	---	---
Total	1	3	125	55	99	14	1
Min. Length	24.00	8.00	4.00	12.00	12.00	8.00	7.25
Max. Length	24.00	9.00	21.00	47.00	35.00	21.00	7.25
Mean Length	24.00	8.33	13.55	35.48	21.32	14.06	7.25

Table 102. Length-frequency distributions of harvested and released fish, Lake Independence, open-water season 2003. (BOF=bowfin, CRP=crappie, LMB=largemouth bass, MUE=muskellunge, NOP=northern pike, SUN=sunfish, WAE=walleye, YEP=yellow perch)

Length Category	BOF	CRP	LMB	MUE	NOP	SUN	WAE	YEP
[0.0, 4.0)	---	---	---	---	---	---	---	---
[4.0, 4.5)	---	---	1	---	---	---	---	---
[4.5, 5.0)	---	---	---	---	---	---	---	---
[5.0, 5.5)	---	---	---	---	---	---	---	---
[5.5, 6.0)	---	---	---	---	---	2	---	---
[6.0, 6.5)	---	---	10	---	---	6	---	---
[6.5, 7.0)	---	2	---	---	---	19	---	1
[7.0, 7.5)	---	10	1	---	---	32	---	1
[7.5, 8.0)	---	24	---	---	---	23	---	---
[8.0, 8.5)	---	43	9	---	---	1	3	---
[8.5, 9.0)	---	43	1	---	---	---	---	---
[9.0, 9.5)	---	41	1	---	---	---	---	---
[9.5, 10.0)	---	7	2	---	---	---	---	---
[10.0, 10.5)	---	---	10	---	---	---	2	---
[10.5, 11.0)	---	---	4	---	---	---	---	---
[11.0, 11.5)	---	1	3	---	---	---	---	---
[11.5, 12.0)	---	---	---	---	---	---	2	---
[12.0, 13.0)	---	---	18	1	5	---	3	---
[13.0, 14.0)	---	---	10	---	3	---	5	---
[14.0, 15.0)	---	---	15	---	1	---	11	---
[15.0, 16.0)	---	---	22	---	1	---	4	---
[16.0, 17.0)	---	---	15	---	12	---	1	---
[17.0, 18.0)	---	---	10	---	5	---	1	---
[18.0, 19.0)	---	---	11	---	10	---	4	---
[19.0, 20.0)	---	---	2	---	4	---	1	---
[20.0, 21.0)	---	---	2	3	11	---	---	---
[21.0, 22.0)	---	---	1	---	11	---	2	---
[22.0, 23.0)	---	---	---	---	4	---	---	---
[23.0, 24.0)	---	---	---	---	3	---	---	---
[24.0, 25.0)	1	---	---	---	7	---	1	---
[25.0, 26.0)	---	---	---	---	4	---	---	---
[26.0, 27.0)	---	---	---	---	4	---	---	---
[27.0, 28.0)	---	---	---	1	3	---	---	---
[28.0, 29.0)	---	---	---	1	6	---	---	---
[29.0, 30.0)	---	---	---	2	1	---	---	---
[30.0, 31.0)	---	---	---	1	4	---	---	---
[31.0, 32.0)	---	---	---	3	1	---	---	---
[32.0, 33.0)	---	---	---	1	1	---	---	---
[33.0, 34.0)	---	---	---	1	1	---	---	---
[34.0, 35.0)	---	---	---	3	3	---	---	---
[35.0, 36.0)	---	---	---	7	1	---	---	---
[36.0, 37.0)	---	---	---	4	---	---	---	---
[37.0, 38.0)	---	---	---	---	---	---	---	---
[38.0, 39.0)	---	---	---	6	---	---	---	---
[39.0, 40.0)	---	---	---	6	---	---	---	---
[40.0, and up)	---	---	---	15	---	---	---	---
Total	1	171	148	55	106	83	40	2
Min. Length	24.00	6.75	4.00	12.00	12.00	5.50	8.00	6.75
Max. Length	24.00	11.25	21.00	47.00	35.00	8.00	24.50	7.25

Table 103. Length-frequency distributions of harvested fish, Lake Sarah, open-water season 2003. (CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish)

Length Category	CRP	LMB	NOP	SUN
[0.0, 4.0)	---	---	---	---
[4.0, 4.5)	---	---	---	---
[4.5, 5.0)	---	---	---	---
[5.0, 5.5)	---	---	---	---
[5.5, 6.0)	---	---	---	---
[6.0, 6.5)	---	---	---	11
[6.5, 7.0)	---	---	---	56
[7.0, 7.5)	2	---	---	147
[7.5, 8.0)	12	---	---	98
[8.0, 8.5)	25	---	---	6
[8.5, 9.0)	28	---	---	2
[9.0, 9.5)	18	2	---	---
[9.5, 10.0)	14	1	---	---
[10.0, 10.5)	8	1	---	---
[10.5, 11.0)	6	2	---	---
[11.0, 11.5)	---	3	---	---
[11.5, 12.0)	2	3	---	---
[12.0, 13.0)	2	14	---	---
[13.0, 14.0)	2	8	---	---
[14.0, 15.0)	1	14	---	---
[15.0, 16.0)	---	5	---	---
[16.0, 17.0)	---	10	---	---
[17.0, 18.0)	---	9	---	---
[18.0, 19.0)	---	5	1	---
[19.0, 20.0)	---	1	---	---
[20.0, 21.0)	---	1	1	---
[21.0, 22.0)	---	1	1	---
[22.0, 23.0)	---	---	---	---
[23.0, 24.0)	---	---	1	---
[24.0, 25.0)	---	---	1	---
[25.0, 26.0)	---	---	---	---
[26.0, 27.0)	---	---	2	---
[27.0, 28.0)	---	---	1	---
[28.0, 29.0)	---	---	1	---
[29.0, 30.0)	---	---	2	---
[30.0, 31.0)	---	---	---	---
[31.0, 32.0)	---	---	---	---
[32.0, 33.0)	---	---	1	---
[33.0, 34.0)	---	---	---	---
[34.0, 35.0)	---	---	1	---
[35.0, 36.0)	---	---	---	---
[36.0, 37.0)	---	---	---	---
[37.0, 38.0)	---	---	---	---
[38.0, 39.0)	---	---	---	---
[39.0, 40.0)	---	---	---	---
[40.0, and up)	---	---	---	---
Total	120	80	13	320
Min. Length	7.00	9.00	18.00	6.00
Max. Length	14.50	21.50	34.50	8.50
Mean Length	9.00	14.46	26.12	7.17

Table 104. Length-frequency distributions of released fish, Lake Sarah, open-water season 2003. (BOF=bowfin, CRP=crappie, LMB=large-mouth bass, MUE=muskellunge, NOP=northern pike, WAE=walleye)

---

Length Category	BOF	LMB	NOP	WAE
[0.0, 4.0)	---	---	---	---
[4.0, 4.5)	---	---	---	---
[4.5, 5.0)	---	---	---	---
[5.0, 5.5)	---	---	---	---
[5.5, 6.0)	---	---	---	---
[6.0, 6.5)	---	2	---	---
[6.5, 7.0)	---	---	---	---
[7.0, 7.5)	---	---	---	---
[7.5, 8.0)	---	---	---	---
[8.0, 8.5)	---	10	---	---
[8.5, 9.0)	---	---	---	---
[9.0, 9.5)	---	2	---	---
[9.5, 10.0)	---	---	---	---
[10.0, 10.5)	---	20	---	1
[10.5, 11.0)	---	---	---	---
[11.0, 11.5)	---	3	---	---
[11.5, 12.0)	---	12	---	---
[12.0, 13.0)	---	102	---	---
[13.0, 14.0)	---	34	---	---
[14.0, 15.0)	---	45	---	---
[15.0, 16.0)	---	78	2	---
[16.0, 17.0)	---	46	---	---
[17.0, 18.0)	---	29	1	---
[18.0, 19.0)	---	37	4	---
[19.0, 20.0)	---	4	1	---
[20.0, 21.0)	---	2	1	---
[21.0, 22.0)	---	---	---	---
[22.0, 23.0)	---	---	1	---
[23.0, 24.0)	---	---	3	---
[24.0, 25.0)	---	---	3	---
[25.0, 26.0)	---	---	4	---
[26.0, 27.0)	1	---	2	---
[27.0, 28.0)	---	---	2	---
[28.0, 29.0)	---	---	1	---
[29.0, 30.0)	---	---	2	---
[30.0, 31.0)	---	---	2	---
[31.0, 32.0)	---	---	---	---
[32.0, 33.0)	---	---	---	---
[33.0, 34.0)	---	---	---	---
[34.0, 35.0)	---	---	---	---
[35.0, 36.0)	---	---	---	---
[36.0, 37.0)	---	---	2	---
[37.0, 38.0)	---	---	---	---
[38.0, 39.0)	---	---	---	---
[39.0, 40.0)	---	---	---	---
[40.0, and up)	---	---	---	---
Total	1	426	31	1
Min. Length	26.80	6.00	15.00	10.00
Max. Length	26.80	20.00	36.50	10.00
Mean Length	26.80	14.10	24.15	10.00

Table 105. Length-frequency distributions of harvested and released fish, Lake Sarah, open-water season 2003. (BOF=bowfin, CRP=crappie, LMB=largemouth bass, NOP=northern pike, SUN=sunfish, WAE=walleye)

Length Category	BOF	CRP	LMB	NOP	SUN	WAE
[0.0, 4.0)	---	---	---	---	---	---
[4.0, 4.5)	---	---	---	---	---	---
[4.5, 5.0)	---	---	---	---	---	---
[5.0, 5.5)	---	---	---	---	---	---
[5.5, 6.0)	---	---	---	---	---	---
[6.0, 6.5)	---	---	2	---	11	---
[6.5, 7.0)	---	---	---	---	56	---
[7.0, 7.5)	---	2	---	---	147	---
[7.5, 8.0)	---	12	---	---	98	---
[8.0, 8.5)	---	25	10	---	6	---
[8.5, 9.0)	---	28	---	---	2	---
[9.0, 9.5)	---	18	4	---	---	---
[9.5, 10.0)	---	14	1	---	---	---
[10.0, 10.5)	---	8	21	---	---	1
[10.5, 11.0)	---	6	2	---	---	---
[11.0, 11.5)	---	---	6	---	---	---
[11.5, 12.0)	---	2	15	---	---	---
[12.0, 13.0)	---	2	116	---	---	---
[13.0, 14.0)	---	2	42	---	---	---
[14.0, 15.0)	---	1	59	---	---	---
[15.0, 16.0)	---	---	83	2	---	---
[16.0, 17.0)	---	---	56	---	---	---
[17.0, 18.0)	---	---	38	1	---	---
[18.0, 19.0)	---	---	42	5	---	---
[19.0, 20.0)	---	---	5	1	---	---
[20.0, 21.0)	---	---	3	2	---	---
[21.0, 22.0)	---	---	1	1	---	---
[22.0, 23.0)	---	---	---	1	---	---
[23.0, 24.0)	---	---	---	4	---	---
[24.0, 25.0)	---	---	---	4	---	---
[25.0, 26.0)	---	---	---	4	---	---
[26.0, 27.0)	1	---	---	4	---	---
[27.0, 28.0)	---	---	---	3	---	---
[28.0, 29.0)	---	---	---	2	---	---
[29.0, 30.0)	---	---	---	4	---	---
[30.0, 31.0)	---	---	---	2	---	---
[31.0, 32.0)	---	---	---	---	---	---
[32.0, 33.0)	---	---	---	1	---	---
[33.0, 34.0)	---	---	---	---	---	---
[34.0, 35.0)	---	---	---	1	---	---
[35.0, 36.0)	---	---	---	---	---	---
[36.0, 37.0)	---	---	---	2	---	---
[37.0, 38.0)	---	---	---	---	---	---
[38.0, 39.0)	---	---	---	---	---	---
[39.0, 40.0)	---	---	---	---	---	---
[40.0, and up)	---	---	---	---	---	---
Total	1	120	506	44	320	1
Min. Length	26.80	7.00	6.00	15.00	6.00	10.00
Max. Length	26.80	14.50	21.50	36.50	8.50	10.00
Mean Length	26.80	9.00	14.16	24.73	7.17	10.00

Table 106. Percent of angler parties seeking specific fish species or types\*, 3 Hennepin County, Minnesota lakes, open-water season 2003.

Species/Type Fish Sought	Medicine %	Independence %	Sarah %
Largemouth bass	25	10	34
No Preference/"Anything"	20	17	14
Crappie	18	13	19
Bluegill/Sunfish	18	8	24
Muskellunge	-0-	31	-0-
Northern Pike	18	7	8
Walleye	-0-	13	-0-
Yellow Perch	1	<1	1
(Total # of interviews)	(397)	(567)	(348)

\* Responses for multi-fish preferences were split equally among species/type stated, then added to respective single-species totals; e.g. a party's response of seeking "northern pike and walleye" was entered as 0.5 each for northern pike and walleye. The "panfish" preference was separated as 0.4 each for bluegill/sunfish and crappie and 0.2 for yellow perch.

Table 107. Percentages of each gender fishing 3 Hennepin County, Minnesota lakes, open-water season 2003.

Gender	Medicine %	Independence %	Sarah %
Male	84	86	72
Female	16	14	18
(# anglers)	(848)	(1,228)	(752)

Table 108. Age distributions of anglers fishing 3 Hennepin County, Minnesota lakes, open-water season 2003.

		AGE GROUP							
		under						65 &	
		16	16-24	25-34	35-44	45-54	55-64	older	Total
<b>Medicine</b>	%	17	8	16	24	19	7	9	100
	# surveyed	144	68	134	203	153	55	74	837
<b>Independence</b>	%	17	11	17	28	17	6	4	100
	# surveyed	202	131	208	340	208	69	57	1,215
<b>Sarah</b>	%	16	7	11	30	18	6	12	100
	# surveyed	121	51	82	222	130	46	88	740



Table 109. Percentages of anglers traveling different distances to fish 3 Hennepin County, Minnesota lakes, open-water season 2003.

Lake	Distance Traveled to Lake (Miles)						# Respondents
	<10	10-25	26-50	51-75	76-150	151+	
Medicine	79	17	1	<1	-0-	3	846
Independence	19	66	11	1	1	2	1,220
Sarah	32	57	8	<1	1	1	752

**The 5 most frequent cities of residence (derived from ZIP codes):**

<i>Medicine:</i>		<i>Independence:</i>	
Plymouth	18% /156 responses	Minneapolis	10% /117 responses
Minneapolis	13% /107 responses	Plymouth	8% / 96 responses
Brooklyn Park	10% / 87 responses	Delano	8% / 96 responses
Crystal	9% / 78 responses	Plymouth	7% / 85 responses
Golden Valley	8% / 64 responses	Brooklyn Center	3% / 33 responses
 <i>Sarah:</i>			
	Delano	9% / 67 responses	
	Maple Grove	7% / 53 responses	
	Brooklyn Park	5% / 40 responses	
	Greenfield	5% / 34 responses	
	Rockford	5% / 34 responses	

Table 110. Percent of angler parties using various electronic location devices while fishing, 3 Hennepin County, Minnesota lakes, open-water season 2003.

Electronic Device	Medicine %	Independence %	Sarah %
No Info Given or Recorded / Not Applic.	72	48	61
Depthfinder / Flasher	28	52	39
GPS	-0-	-0-	-0-
Underwater Video Camera	-0-	-0-	-0-
Multiple Devices (Camera + Flasher)	-0-	-0-	-0-
Number Parties Surveyed	397	567	348

Table 111. Mean ratings, on a 10-point scale, of the day's fishing quality, as rated by participating angler parties, Medicine Lake, open-water season 2003. N = number of angler parties responding. Sums of species values exceeded total number of interviews because of multiple responses. SE = 1 standard error.

Angler Group	Mean Rating	SE	N
All Respondents	4.9	0.18	187
Parties Seeking Sunfish	4.8	0.63	63
" " Crappie	4.8	0.35	59
" " Largemouth bass	4.8	0.31	60
" " Northern pike	4.8	0.32	52

From responses to the questions "On a 1 to 10 scale, with 1 being poor and 10 being excellent, how would you rate your fishing today, based on size and number of fish caught?"

Table 112. Frequencies of response ratings for fishing trip quality, participating angler parties, Medicine Lake, open-water season 2003. Value sums can exceed total number of interviews because ratings were applied to all fish species/types sought.

Angler Type	<- lowest										Rating-- Lake Fishing Quality		highest ->	
	1	2	3	4	5	6	7	8	9	10	Total			
All Respondents	23	13	25	26	22	21	27	14	10	6	187			
Those Seeking SUN	10	4	8	5	8	6	11	5	5	1	63			
" " CRP	9	4	9	6	5	6	9	5	5	1	59			
" " LMB	7	5	4	12	10	6	7	6	1	2	60			
" " NOP	6	4	9	9	4	3	7	6	2	2	52			

# From responses to the questions "On a 1 to 10 scale, with 1 being poor and 10 excellent, how would you rate your fishing today, based on size and number of fish caught?"

SUN = sunfish      CRP = crappie      LMB = largemouth bass      NOP = northern pike

Table 113. Mean ratings, on a 10-point scale, of the day's fishing quality, as rated by participating angler parties, Lake Independence, open-water season 2003. N = number of angler parties responding. Sums of species values exceeded total number of interviews because of multiple responses. SE = 1 standard error.

Angler Group	Mean Rating	SE	N
All Respondents	4.6	0.18	224
Parties Seeking Sunfish	5.8	0.38	44
" " Crappie	5.8	0.34	53
" " Northern pike	4.8	0.53	21
" " Muskellunge	4.6	0.37	64
" " Largemouth bass	4.3	0.38	41

From responses to the questions "On a 1 to 10 scale, with 1 being poor and 10 being excellent, how would you rate your fishing today, based on size and number of fish caught?"

Table 114. Frequencies of response ratings for fishing trip quality, participating angler parties, Lake Independence, open-water season 2003. Value sums can exceed total number of interviews because ratings were applied to all fish species/types sought.

Angler Type	<- lowest Rating-- Lake Fishing Quality highest ->										Total
	1	2	3	4	5	6	7	8	9	10	
All Respondents	46	25	16	18	30	21	30	25	6	7	224
Those Seeking SUN	3	3	-0-	6	10	3	6	8	1	4	44
" " CRP	4	4	-0-	8	7	7	7	11	1	4	53
" " NOP	3	2	2	2	2	2	6	2	-0-	-0-	21
" " MUE	17	6	5	2	4	7	10	7	4	2	64
" " LMB	6	7	5	2	8	5	4	2	1	1	41

# From responses to the questions "On a 1 to 10 scale, with 1 being poor and 10 excellent, how would you rate your fishing today, based on size and number of fish caught?"

SUN=sunfish      CRP=crappie      MUE=muskellunge      NOP=northern pike      LMB=largemouth bass

Table 115. Mean ratings, on a 10-point scale, of the day's fishing quality, as rated by participating angler parties, Lake Sarah, open-water season 2003. N = number of angler parties responding. Sums of species values exceeded total number of interviews because of multiple responses. SE = 1 standard error.

Angler Group	Mean Rating	SE	N
All Respondents	5.7	0.17	193
Parties Seeking Sunfish	6.8	0.22	74
" " Crappie	6.3	0.27	70
" " Largemouth bass	5.6	0.26	87
" " Northern pike	5.1	0.53	22

From responses to the questions "On a 1 to 10 scale, with 1 being poor and 10 being excellent, how would you rate your fishing today, based on size and number of fish caught?"

Table 116. Frequencies of response ratings for fishing trip quality, participating angler parties, Lake Sarah, open-water season 2003. Value sums can exceed total number of interviews because ratings were applied to all fish species/types sought.

Angler Type	<- lowest										Rating-- Lake Fishing Quality		highest ->	
	1	2	3	4	5	6	7	8	9	10	Total			
All Respondents	11	9	19	20	28	27	31	24	9	15	193			
Those Seeking SUN	1	-0-	1	8	8	11	16	16	5	8	74			
" " CRP	1	1	7	8	10	8	12	11	5	7	70			
" " LMB	5	3	9	10	18	14	10	7	3	8	87			
" " NOP	2	1	3	3	2	3	2	5	-0-	1	22			

# From responses to the questions "On a 1 to 10 scale, with 1 being poor and 10 excellent, how would you rate your fishing today, based on size and number of fish caught?"

SUN = sunfish      CRP = crappie      LMB = largemouth bass      NOP = northern pike