

RE: Information for the Hg risk assessment SAB meeting this
afternoon

Michaud.Dave

to:

Angela Nugent

07/20/2011 01:46 PM

Show Details

Angela, regarding the fish size issue, I am providing a report produced by the WI DNR concerning what is caught and kept in WI (WI leads the nation in fishing licenses sold). It suggests quite plainly that the vast majority of fish caught by the public are small panfish. I agree with Leonard Levin and others on this call that it is reasonable to assume that subsistence fishers are more likely to keep whatever they catch (within reason) since that is what the general public does!. This has great significance for the TSD since it is well established that small panfish and bottom dwellers such as bullhead contain much less MEHg than top predator species such as largemouth bass and walleye. In addition, the larger individuals of these species comprise a much lower percentage of fish populations in any waterbody, but especially waterbodies that are less productive. As such, they are less likely to be harvested by subsistence fishers who are likely to be shore-bound (sport fishermen who intentionally fish for larger individuals oven have specialized fishing gear, including "fish-finders" depth and temperature finders, etc.;gear that would not likely to be owned by subsistence fishers!)

A Statewide Mail Survey to Estimate 2000-2001 Angler Catch, Harvest, and Effort in Wisconsin

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Abstract. - Fishery agencies are mandated to protect, restore, and enhance fishery resources. Fishery managers must recognize the needs and preferences of anglers in making many of their management decisions. A statewide mail survey was developed to estimate total angler catch, harvest and effort during 2000-2001 for Wisconsin's inland lakes and rivers. A bi-weekly mail survey and a reminder postcard were sent to query anglers about their catch, harvest, and effort during a two-week period. Over 53,000 surveys were mailed over the course of the 11-month angling season. Anglers were randomly selected from Wisconsin's statewide Automated License Issuance System (A.L.I.S.), a statewide database containing the names and addresses of those who purchase fishing and hunting licenses. A follow-up survey of subjects who did not respond to the initial survey, mailed 2 weeks following receipt of the initial survey, was used to estimate non-response bias. A 2-week recall period was utilized to limit the effect of recall bias. To estimate the bias from recall, mail survey estimates from selected lakes were compared to concurrent contact creel survey estimates. The independent variables response type (respondent and non-respondent) and survey period (21 individual survey periods) differed significantly for angler catch, harvest and effort estimates between the two survey methods. After correcting for non-response and recall biases, anglers fished 44-million hours on 11-million trips to catch 69-million fish and harvest 31-million fish. Non-response bias was 25% for mean angler effort, 23% for mean angler catch and 28% for mean angler harvest. Recall bias was 3% for mean angler effort, 45% for mean angler catch and 28% for mean angler harvest. Four of the top six waterbodies visited by anglers based on reported trips were rivers. Although anglers stated a preference for walleyes, bluegill, crappie and yellow perch had a greater harvest. Our study produced comparable estimates of statewide catch, harvest, and effort, with manageable levels of error from recall and non-response bias. We recommend that statewide mail surveys be repeated every five to seven years concurrently with contact creel surveys, to provide updated information to assist Wisconsin fisheries managers in their statewide policy and regulatory decisions.

Fishery agencies are mandated to protect, restore, and enhance fishery resources for present and future generations, so fisheries managers must recognize the needs and preferences of anglers in making many of their management decisions (Bray et al. 1996). Increasing numbers of outdoor recreational participants are demanding greater diversity in their resource settings and opportunities (Swanson and McCollum 1991). The 1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of Interior 1996), conducted by the U. S. Fish and Wildlife Service through the Bureau of the Census, indicated that annual participation in outdoor recreational activities is increasing. To satisfy the public's desire for recreational opportunities, fishery agencies must periodically monitor the extent of resource use, along with attitudes and opinions of the angling public (Miranda and Frese 1991). Surveys are not only for providing recreational opportunities, gathering data

from anglers also allows fisheries managers to determine the impact anglers have upon their state's resources.

In early fishery research, market counts and commercial fishery catch data were used to estimate harvest, whereas little was known about recreational angling harvest. Beginning in the early 1900s, data on recreational angling effort was collected to standardize catch estimates (Hubbs 1930). Fishery managers currently use a variety of methods to collect data from recreational anglers. Angler use data gives managers 1) an estimate of the number of fish being removed from a system by a typical angler with a standard unit of effort, 2) the data needed to assist in setting objectives, developing regulations to manipulate exploitation, 3) monitoring the effectiveness of management decisions, and 4) providing the highest quality fishing experience. Angler effort, catch, and harvest are typical outputs of such user surveys (Weithman 1991). User surveys also suggest which

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management programs are popular and how to divide resources (Swanson and Mccollum 1991). User surveys provide data for evaluating and monitoring the status and trends of fish populations, changes in angling regulations, trends in angler effort, success of fish stockings, and the success or failure of other management decisions (Lockwood 1997). With this information, managers can evaluate long-term trends of their fisheries in reaching management objectives or evaluating possible reasons for their success or failure (O'Bara 1991).

Fishery management requires information on the biology of the managed fish, the habitat in which the fish lives, and characteristics of the people using the resource (Malvestuto 1996). In past years, limited sociological research was conducted (O'Bara 1991) because fisheries management's emphasis was on the collection of biological data such as angler catch, harvest, and success rate. With the use of effective survey methods, information on the number of participants, the number of days participants spent fishing, expenditures related to fishing, socioeconomic status, and their attitudes toward various agency issues can increase the effectiveness of management decisions (Fisher 1991).

Resource managers can obtain information from the angling public through various tools such as contact creel surveys, mail surveys, and telephone surveys (Malvestuto 1996). In contact creel surveys, methods range from mandatory creel censuses, where anglers must sacrifice privacy to access a particular body of water, to voluntary creel surveys, where anglers are interviewed before (pre-trip interview), during (mid-trip or incomplete interview), or after completing their fishing trip (completed trip interview) (Malvestuto 1996). In mail surveys, anglers are contacted during creel surveys and provided with mail-back postcards, or are mailed questionnaires and follow-up postcards or phone calls (Malvestuto 1996). In telephone surveys, anglers are telephoned at their residence and asked to participate in the survey (Malvestuto 1996).

Contact Creel Surveys

The most commonly used angler survey method is the contact creel survey (Newman et al. 1997). Creel surveys are used to assess the quality of a specific fishery or management practice (O'Bara 1991) or estimate the amount of angling activity and the harvest of different kinds of fishes in number and weight (Malvestuto 1996). Creel surveys require agency employees to ask anglers to participate in the survey and record biological information about the angler's fishing activities (Roach et al. 1999).

The Wisconsin Department of Natural Resources (WDNR) currently uses contact creel surveys to estimate angler effort, catch, and harvest on 20-25 of Wisconsin's lakes each year (Rasmussen et al. 1998). Lockwood (1997) suggested that the Michigan Department of Natural Resources use creel surveys for the same purpose, and to evaluate stocking practices and changes in regulations. Creel surveys can be used to obtain other information about anglers, though surveyors should be brief because anglers will not usually tolerate long interviews. Creel surveys that spend extended time per angler could lead to the loss of surveying opportunities, and would reduce the time for adequate sampling of the angling population (Brown 1991).

On-site creel surveys have advantages over other survey methods. Creel surveys record angler effort (from instantaneous counts of anglers) and harvest (from interviews of anglers) first-hand to provide data that is critical to fisheries managers (Newman et al. 1997, Rasmussen et al. 1998). Through the use of creel surveys, management personnel interact with anglers, to monitor support for current and future management actions, educate the public regarding regulations and conservation issues, and gain public input on methods to enhance recreational fishing (Malvestuto 1996). Through direct observations, creel clerks count, identify and measure fish species caught (Malvestuto 1996).

On-site creel surveys include roving, access-point, and aerial surveys. In roving surveys, creel clerks contact anglers as the clerk moves around the fishing area, either by boat or vehicle, along a prescribed route, periodically counting anglers they observe fishing (Malvestuto 1996). In access-point surveys, creel clerks are stationed at access points used by anglers. Because interviews are typically of completed trips, this method has an advantage over the roving survey (Malvestuto 1996). Access-point surveys are ideal if anglers depart from a small number of access points (Malvestuto 1996). Disadvantages of access-point surveys are that anglers may switch their access points over time and the surveyor may not be able to survey all departing anglers if the number of access points is large (Malvestuto 1996). Creel clerks are unable to monitor all access points at the same time. In aerial surveys, boats and anglers are counted while fishing, and are often used in conjunction with other on-site surveys to estimate daily fishing harvest and effort. The primary benefit of aerial surveys is the large geographical areas that can be covered over a short period. Disadvantages of aerial surveys are the high cost of flying, inclement or cloudy weather, and the inability of aerial surveys to be conducted at night (Malvestuto 1996).

Response rates with contact creel surveys are typically higher than with other methods, and recall bias, the inability to accurately remember previous events, is low.

Contact creel surveys do not suffer from prestige bias, which occurs when anglers overestimate or underestimate certain events due to perceived social desirability or undesirability of their answers (Westat 1989). Weithman (1991) suggested that estimates from contact creel surveys would be more accurate for small waters with less than 20,000 days of fishing per year, because a higher percentage of anglers could be interviewed.

Contact creel surveys have several disadvantages, including cost and training time for personnel. Contact creel surveys may need to be conducted over several decades to gather enough information to design effective management strategies for long-lived species. Because of the large time and expense of contact creel surveys, costs frequently exceed the fiscal resources of the monitoring agency. Although many anglers cooperate in creel surveys, some anglers may terminate fishing upon seeing a creel clerk (Gilbert 2000). Another disadvantage of contact creel surveys is the time involved training personnel to survey anglers, identify fish species, and complete standard survey forms (O'Bara 1991). O'Bara (1991) found that different results from two clerks surveying the same waters could have led to different management objectives. Agencies sometimes hire inexperienced personnel as creel clerks, but lack of experience can lead to data errors and a lack of desire and skill on the part of the clerks, which can lead to negative attitudes by anglers toward the agency. Other factors that can affect results of contact creel surveys include not being able to survey during all fishing periods, inability to contact all anglers in large geographical areas, difficulty relating the small sampled population to the total population, anglers who catch only a few fish or were unsuccessful less willing to participate, anglers being less willing to reveal potential illegal catches, and angler's feelings of "harassment" from creel clerks (Malvestuto 1996).

Telephone Surveys

Because of problems associated with contact creel surveys, some agencies have used telephone surveys to evaluate angling fisheries. Telephone surveys are an intermediate method between expensive and more accurate contact creel surveys and less expensive and sometimes less accurate mail surveys (Newman et al. 1997). Telephone surveys have some advantages over contact creel surveys and mail surveys. Telephone surveys offer greater geographical coverage, lower cost per respondent, and greater response rates than mail surveys, though response rates are lower than those from creel surveys. Weithman (1991) found telephone surveys were better for estimating angler effort and success for large, high-use waters in Missouri than contact surveys and mail surveys due to their larger and more complete

coverage. Samples were selected randomly from a statewide database of licensed anglers, stratified by license type, and contacted by phone. Anglers without phones or whose phones were unlisted were removed from the sample. Weithman's (1991) study suffered from small sample size and anglers were surveyed for only 4 months out of the year.

Since 1955, the U.S. Fish and Wildlife Service has conducted national surveys to determine participation in and expenditures for various outdoor-related activities. The national survey asks respondents to recall their activities during the previous year. The 1985 national survey asked respondents in early 1986 about their activities during all of 1985 (Fisher et al. 1991). Brown (1991) suggested that studies based on annual recall are only useful for trend purposes. Based on concerns over the large biases from an annual recall survey, Westat was contracted to determine the effect of different recall periods on survey results (Fisher et al. 1991). Westat (1989) found that the annual recall period of the national survey caused strong recall biases and suggested a modified survey design of avid recreationists. For 1990, the national survey was changed to a telephone survey conducted every three months based on the findings from Westat (1989). Although Brown (1991) suggested that shortening the recall period from annual to quarterly periods still would not eliminate recall bias, Fisher et al. (1991) stated that a reduction in the recall period from twelve to three months would reduce recall bias.

Weithman (1991) found that for major reservoirs, estimates of angler effort from telephone surveys were precise (i.e. confidence intervals were $\pm 15\%$ of the point estimates). Weithman (1991) also found that data recorded by anglers were highly variable. He suggested telephone surveys were preferred over mail surveys of anglers due to extended recall periods and high recall bias that plague typical mail surveys. At the start of his study, Weithman (1991) asked potential participants if they would be willing to participate over the course of his study. This pre-qualification process may have divided avid anglers from non-avid anglers and those more willing to participate in surveys from those who would usually be classified as non-respondents. His methodology precluded those who would be unwilling to participate in his survey, increasing his response rates and reducing numbers of non-respondents. He mailed those who volunteered to participate in the study a diary, for use during the telephone interviews, to assist the anglers in recalling their previous fishing experiences. Angler diaries, if used as requested, could have eliminated recall bias. Reminder postcards were also sent prior to being contacted by telephone. Interviews were arranged to accommodate the anglers. Follow-up letters were sent to those who could not be contacted. Weithman (1991) concluded that effective management of the interviewees was crucial to success of the survey

and found that 92% of the anglers originally contacted agreed to cooperate in the 2-year surveys, and 90% remained cooperators in the first year while 80% of the total remained for the second year. The study cost \$50,000 per year, which averaged \$10 per respondent; far less than \$40 per interview for contact creel surveys (Weithman 1991).

Zuerlein (1984) used the telephone in a statewide survey of Nebraska's licensed anglers to determine their fishing preferences and activities. A sub-sample of telephone respondents were asked to participate in a follow-up mail survey to estimate their 1982 fishing experiences. Those who agreed to participate in the follow-up mail survey were not significantly different than those who participated in the telephone survey. Zuerlein (1984) sent postcards and follow-up surveys to those who had not responded to initial surveys. The extremely low response rate to the telephone survey (34%) could have led to sampling, recall, and non-response biases. The final response rate for the follow-up mail surveys was 74.3%. Harris and Bergersen (1985) found that without the use of a follow-up survey, estimates of Colorado angler demand for sport fisheries would have been over-estimated by 132%.

In a survey of non-charter boats in the U.S. Virgin Islands, the use of the telephone as the survey instrument proved to be inadequate and possibly produced biased estimates (Jennings 1992). Methods employed initially were to systematically call households during daytime hours each month to ask about monthly harvest and success information. Jennings (1992) found this led to low response rates. The calling time was then extended to the late evening hours. Jennings (1992) found that the response rate seemed to be related to the time when calls were placed, which led to less than half of all calls being answered. For his study, a telephone survey was found to be inadequate for obtaining non-demographic data due to biased sampling from directory listings. Connelly et al. (1997) found that a quarterly telephone survey of Lake Ontario anglers had a recall bias just as large as an annual mail survey.

Mail Surveys

Mail surveys benefit from lower cost per respondent and larger geographical coverage than is possible from contact creel surveys. However, mail surveys have often suffered from misuse (Brown 1991) and long recall periods (Westat 1989). Mail surveys often ask respondents to recall their activities anywhere from one month to a year prior to receiving the survey instrument (Westat 1989, Fisher et al. 1991, Kokel et al. 1991). Methods for conducting mail surveys include leaving mail-back postcards on the windshields of anglers' vehicles (Carline 1972), giving mail-back questionnaires

to on-site creel survey participants (Carline 1972, Kokel et al. 1991), and using large-scale mailings to licensed anglers (Perdue and Ditton 1983, Leinonen 1988, Dolsen and Machlis 1991, Connelly et al. 1997).

Kokel et al. (1991) used contact and mail surveys to evaluate when and how to interview anglers along the James River, Virginia. They used a combination of a contact survey (before, during, and complete trip interviews) and a mail survey of previously contacted anglers who agreed to participate in the mail survey. They achieved a final response rate of almost 81%. They found that estimates of fishing activity from contact interviews were double those from mail survey returns (Kokel et al. 1991). They also noted that anglers contacted during on-site interviews, who were willing to participate in the mail survey, might have had different characteristics than the general angling population. They also noted that mail survey participants may have been more avid anglers and thus more aware of their level of activities, expenditures, and regulations. They suggested that results from mail surveys should be analyzed carefully when the sampled population is volunteers (Kokel et al. 1991).

Hunt and Ditton (1996) used a statewide annual mail survey of licensed Texas anglers from computerized angler license files to determine the extent of fishing activity, angler characteristics, species preference, and trends in Texas' angling surveys. They estimated that they needed a sample size of at least 10,000 anglers to conduct annual species-specific follow-up surveys. They mailed an initial survey, reminder postcards, and second and third mailings that included replacement surveys. This resulted in response rates ranging from 61% to 72%. They stated that this level of response provided reliable results, which could then be extrapolated to the licensed population of Texas. Failing to survey non-respondents would have increased the mean number of days fished per year from 19 to 24. They found that even though some of their questions suffered from recall bias, using telephones as the follow-up method would have been costly and time-consuming due to the number of directory searches and calls needed before a successful contact could be made.

Chase and Harada (1984) suggested that recall is affected by a respondent's frequency of participation near the end of the recall period. The accuracy of an angler's recall is closer to actual if he or she is surveyed close to their last fishing activity. Gems et al. (1982), in a telephone study on the impact of time on recall, felt that while a two month recall may be too long for fishermen to accurately recall their activities, even a one month recall period would lead to underreporting of activities. Gems et al. (1982) suggested that an even shorter recall period, such as a two-week period, would

provide surveyors with the most accurate data from anglers.

Objectives

Concern over expanding estimates from contact creel surveys in northern Wisconsin (obtained as part of ongoing state-tribal fishery monitoring activities) to the entire state, along with increasing budgetary costs, led WDNR to ask whether other methods could be developed to estimate statewide angling effort, catch, and harvest (Beard 2000). To make results usable and not solely for trend purposes, a large sample size would be needed. Use of contact creel surveys on a large number of lakes statewide would be too costly and use of a telephone survey would not likely produce reliable estimates due to low contact rates. A telephone survey would require a large staff of trained personnel to conduct the interviews.

Therefore, our first objective was to determine statewide catch, harvest and effort by a mail survey. To address this objective, we designed and evaluated a mail survey with a two-week recall period as a means of estimating angling effort, catch, and harvest in Wisconsin during the 2000-2001 angling season, while trying to account for non-response and recall biases. Based on prior research discussed above, we expected to find that those who responded to the initial mail survey would differ in their catch, harvest, and effort from those who failed to respond to the initial mail survey. Thus, our second objective was to determine if non-response bias was a significant source of error in statewide estimates of angling effort, catch, and harvest. To address the second objective, we used a follow-up mail survey to compare angling effort, catch, and harvest between those who responded and those who failed to respond to the initial mail survey. We also expected to find that responders and non-responders to the mail survey would fail to accurately recall their angling effort, catch, and harvest, but that it would not be a significant source of error. Thus, our third objective was to determine if recall bias was a significant source of error in statewide estimates of angling effort, catch, and harvest. To address our third objective, we compared mail survey estimates of angling catch, effort, and harvest to concurrent contact angler survey interviews, and based on those results, we adjusted statewide estimates of angling effort, catch, and harvest for both non-response bias and recall bias.

STUDY AREA

The state of Wisconsin has over 15,000 lakes, with only 40% of those being officially named, primarily located in Northern and Eastern Wisconsin (WDNR 1999b). Lakes over 20 acres in size (3,620 lakes) constitute more

than 93% of Wisconsin's inland lake surface area and total lake surface area, not including the Great Lakes, approaches one million acres. The largest lake in Wisconsin is Lake Winnebago (137,708 acres). Vilas County has the most lakes within the state (1,327 lakes) and Outagamie County has the fewest lakes (4 lakes; WDNR 1999b). The state also has more than 12,600 rivers and streams that flow through 44,000 miles of Wisconsin (WDNR 2002). Wisconsin has 54,310 square miles of land surface area with 98 people per square mile (U.S. Census Bureau 2000).

According to the U.S. Census Bureau, the population of Wisconsin on April 1, 2000 was 5,363,675 people (U.S. Census Bureau 2000). The number of anglers in Wisconsin rose from 1.36 million in 1995 to 1.88 million in 1999 (WDNR 1999a). According to the 1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, 1.47 million anglers fished 17.13 million days, an average of 11.6 days per angler, on Wisconsin's lakes and rivers. Of these, 936,000 were resident anglers (U.S. Department of Interior 1996). Of the 1.23 million anglers who fished Wisconsin's inland lakes and rivers in 1996, 1.08 million fished ponds and lakes and 544,000 fished rivers and streams. According to the national survey, anglers fished for 11.05 million days on Wisconsin's ponds and lakes and 4.21 million days on rivers and streams (U.S. Department of Interior 1996).

METHODS

Mail Survey

The sample frame for the mail survey was the Automated License Issuance System (ALIS), which the Wisconsin legislature approved in the spring of 1998 to obtain name and address information from anglers who purchased licenses for the 2000-2001 fishing season. The ALIS database was queried every three months to obtain updated license-holder data during the 2000-2001 angling season. This made up the sample frame from which the random sample was drawn. The sample frame also included people who were 65 to 73 years of age (reduced rate permits) and military personnel (free annual armed forces permits). However, the sampling frame did not include anglers under the age of 16 or older than the age of 73 years because individuals of these ages are allowed to fish without a license in the state of Wisconsin.

Every two weeks, about 2,500 licensed anglers (1,538 – 4,738 anglers) were drawn from the sample frame. Sampling from the sample frame was random and stratified by the four angler license types (resident, nonresident, patron, and sportsman) Wisconsin has available for purchase. Stratification was based on the percentage of sales the license types comprised. The

mail survey covered 21 two-week periods beginning in May 2000 and ending in March 2001. During the 10-month angling season, 53,312 surveys were sent to anglers, or 4.0% of the licensed population. Surveys were sent during both open-water and ice-fishing seasons, except during a two-week period in November (12 November 2001 to 25 November 2001) when ice formation prevents angling from occurring. The WDNR also stopped their onsite creel surveys for 30 days during November. The survey instrument included a survey questionnaire, a cover letter explaining the importance and objectives of the survey, and a postage-paid reply envelope (Appendix A). The mailings, envelope inserts and envelope labeling were contracted out to a local private vendor that labeled each postage-paid reply envelope with a unique code given to each license holder. All components were inserted into an outer envelope and labeled with the license holder's address.

Data from ALIS with missing information was deleted and data with extraneous information was edited for correctness or deleted. Surveys returned by the U. S. Postal Service with incorrect addresses were removed from the list of selected anglers unless corrected information was available.

The survey instrument (Appendix A) included five questions: (1) Have you fished in Wisconsin this 2000-2001 fishing season (May 6, 2000 to March 3, 2001); (2) What single species of fish do you fish for most often, (3) Do you fish as part of your profession, (4) Are you a member of a fishing club, and (5) Have you fished during the two-week period stated on the accompanying cover letter? Question 1 was used to gradually introduce the interviewee to the survey. Question 2 was used to determine what species of fish anglers preferred to catch in general. Questions 3 and 4 were used to determine if these types of questions were valid measures of skill. Question 5 was used to direct anglers toward the survey's data tables and to estimate the number of anglers who fished during the 2000-2001 angling season. Anglers who fished during the 2-week period specified in the accompanying cover letter were asked to complete a data table with their trip(s) information. Anglers who did not fish were asked to return the survey even though they had not fished during that two-week period.

The survey's data table was designed so that a respondent could easily describe their fishing experiences. Anglers were requested to complete the survey based on their activities alone. Each survey recipient was asked to list the date of each trip, the name of each waterbody fished, the county where the waterbody was located, and the nearest town to that waterbody. This information assisted us in determining the reliability of the data. The number of hours spent fishing and the primary fish species targeted were requested for each waterbody

listed. Anglers were also asked to list the numbers of each species of fish they caught, and how many were kept. Catch information was requested for 11 game fish species: yellow perch (*Perca flavescens*), walleye (*Stizostedion vitreum*), bluegill (*Lepomis macrochirus*), crappie (genus *Pomoxis*), northern pike (*Esox lucius*), muskellunge (*Esox masquinongy*), brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), and catfish (family *Ictaluridae*). Anglers who caught a species other than those listed in the table were asked to provide the name of the species in an 'Other' category. Connelly and Knuth (1993) suggested that a list of species on the survey form would assist anglers in recalling species data.

Angling Effort, Catch, and Harvest

For purposes of estimating statewide angling effort (hours), catch (numbers), and harvest (numbers), survey responses were separated into 21 survey periods (p) and two respondent groups (r = respondent and n = non-respondent). The number of license-holders in Wisconsin present at the start of each of the 21 survey periods (N_p) was estimated by linear interpolation from the number of records in the ALIS database at 3-month intervals. Other quantities were defined or estimated as follows, based on procedures described by Pollock et al. (1994):

n_p = number of surveys mailed during each survey period p ;

n_{pr} = number of initial mail surveys returned by respondents r ;

N_p = number of license holders per period p ;

y_{pr} = number of hours, fish caught (total and for each species), or fish kept (total and for each species) reported on initial mail surveys returned by respondents r during each survey period p ;

$\bar{y}_{pr} = \frac{y_{pr}}{n_{pr}}$ = mean number of hours, fish caught, or fish kept per angler by those who returned initial surveys (i.e. by respondents) in each survey period;

$Y_r = \sum_{p=1}^{21} N_p \bar{y}_{pr}$ = total annual number of hours, fish caught, or fish kept, by those who responded to the initial surveys r ;

$\bar{Y}_r = \frac{Y_r}{\sum_{p=1}^{21} N_p}$ = average number of hours, fish caught, or fish kept per angler, over the 21 survey periods p , by those who responded to the initial surveys r .

Non-Response Bias

Anglers were classified as respondents or non-respondents based on whether they returned the initial or follow-up survey instrument. Anglers who received a survey but did not respond within one week after receiving the initial survey were sent a reminder postcard that requested they further consider replying to the initial survey. Anglers who returned the initial survey were classified as respondents. If after one week after receipt of the reminder postcard those anglers who failed to return the initial survey were classified as non-respondents and sent a follow-up survey for purposes of accounting for non-response bias when estimating statewide angling effort, catch, and harvest. Those anglers who returned the follow-up survey were considered a random sample of those who failed to respond to the initial survey.

The significance of non-response bias on annual estimates of statewide effort, catch, and harvest was estimated by comparing mean effort, catch, and harvest per angler between those who responded to the initial mail survey (respondents) and those who responded to the follow-up survey (non-respondents). Two-way analysis of variance (ANOVA) was used to determine if angling effort, catch, and harvest differed significantly between respondents and non-respondents among survey periods (Wenger and Gregersen 1964). Angler effort, catch, and harvest were dependent variables in each ANOVA and survey periods (21 periods) and respondent group (respondents and non-respondents) were independent variables. The interaction between survey periods and respondent groups tested consistency among survey periods between respondent groups. Differences of $P \leq 0.05$ were assumed to be significant.

n_{pn} = number of follow-up mail surveys returned by non-respondents n ;

y_{pn} = number of hours, fish caught (total and for each species), or fish kept (total and for each species) reported on follow-up mail surveys returned by non-respondents n during each survey period p ;

$\bar{y}_{pn} = \frac{y_{pn}}{n} =$ mean number of hours, fish caught, or fish kept per angler by those who returned follow-up surveys (i.e. by non-respondents) in each survey period p ;

$\bar{y}_p = \bar{y}_{pr} \left(\frac{n_{pr}}{n_p} \right) + \bar{y}_{pn} \left(1 - \frac{n_{pr}}{n_p} \right) =$ mean number of hours, fish caught, or fish kept per angler by those who returned initial surveys (i.e. respondents r) and follow-up surveys (i.e. non-respondents n) in each survey period p ;

$Y_N = \sum_{p=1}^{21} N_p \bar{y}_p =$ total annual number of hours, fish caught, or fish kept, corrected for non-response bias N ;

$\bar{Y}_{NB} = \frac{Y_N}{\sum_{p=1}^{21} N_p} =$ average number of hours, fish caught, or fish kept per angler, over the 21 survey periods p , corrected for non-response bias N ;

$NB_p = \frac{(\bar{y}_{pr} - \bar{y}_p)}{\bar{y}_{pr}} =$ non-response bias NB per period p for mean number of hours, fish caught, or fish kept per angler, and;

$NB = \frac{\sum_{p=1}^{21} NB_p}{21} =$ average non-response bias NB , over the 21 survey periods p , of annual total number of hours, fish caught, or fish kept.

Recall Bias

The significance of recall bias on annual estimates of statewide effort, catch, and harvest was estimated by comparing mean effort, catch, and harvest per angler between mail survey respondents and non-respondents and mean effort, catch, and harvest per angler for contact creel surveys in northern Wisconsin lakes. Rasmussen et al. (1998) showed that the WDNR creel survey program provided unbiased estimates of angler effort, catch, and harvest, so we assumed that estimates of mean angler effort, catch, and harvest per angler from the contact creel surveys were unbiased. Therefore, we assumed that recall bias caused any differences between contact creel survey estimates and mail survey estimates.

In Wisconsin creel surveys, all anglers in an angling party are included together on one interview form. To compare against individual angler trips reported on mail survey forms, the total catch and harvest in each creel interview were divided by the number of anglers reported in the angling party. Then a number of individual creel interviews were generated based on the number of anglers in the angling party with each new entry containing the same creel survey effort and the per-angler adjusted catch and harvest amounts. These expanded creel survey angler interviews were compared to the mail survey's individual angler reported trips, that occurred on the 216 lakes within the Wisconsin's creel survey sample frame, separated by respondent and non-respondent.

To ensure the two sets of estimates were from the same angling population, mail survey responses were included

only for waters that were subjected to random selection for contact creel surveys; the 216 lakes in northern Wisconsin. Of the 216 lakes eligible for random selection for contact creel surveys, 22 were actually selected and subjected to contact creel surveys during the 2000-2001 angling season. Therefore, anglers who were interviewed during contact creel surveys on the 22 lakes during the 2000-2001 angling season were from the same angling population as anglers who returned initial and follow-up mail surveys for their fishing activities on the 216 lakes that were eligible for random selection for contact creel surveys. One-way analysis of variance was used to compare estimates from contact creel surveys to estimates from respondents and non-respondents to the mail survey. Differences of $P \leq 0.05$ were assumed to be significant.

n_c = number of anglers interviewed during contact creel surveys c ;

y_c = number of hours, fish caught (total and for each species), or fish kept (total and for each species) as reported by the contact creel surveys c ;

$\bar{y}_c = \frac{y_c}{n} =$ mean number of hours, fish caught, or fish kept per angler by those interviewed during contact creel surveys c ;

$\bar{y}_{mr} =$ mean number of hours, fish caught, or fish kept per angler by those who returned initial mail surveys m from lakes within the creel survey sample frame (i.e. by respondents r);

$\bar{y}_{mn} =$ mean number of hours, fish caught, or fish kept per angler by those who returned follow-up mail surveys m from lakes within the creel survey sample frame (i.e. by non-respondents n);

$$\bar{y}_{pNRB} = \left(\bar{y}_{pr} + \bar{y}_{pr} \frac{(\bar{y}_c - \bar{y}_{mr})}{\bar{y}_{mr}} \right) \left(\frac{n_{pr}}{n_p} \right) + \left(\bar{y}_{pn} + \bar{y}_{pn} \frac{(\bar{y}_c - \bar{y}_{mn})}{\bar{y}_{mn}} \right) \left(1 - \frac{n_{pr}}{n_p} \right) =$$

mean number of hours, fish caught, or fish kept per survey returned in each survey period p , corrected for non-response and recall biases;

$Y_{NRB} = \sum_{p=1}^{21} N_p \bar{y}_{pNRB} =$ total annual number of hours, fish caught, or fish kept, corrected for non-response and recall biases;

$\bar{Y}_{NRB} = \frac{Y_{NRB}}{\sum_{p=1}^{21} N_p} =$ average number of hours, fish caught, or fish kept per angler, over the 21 survey periods p , corrected for non-response and recall biases;

$RB_p = \frac{(\bar{y}_{pNRB} - \bar{y}_p)}{\bar{y}_{pNRB}} =$ recall bias RB per period p for mean number of hours, fish caught, or fish kept per angler;

$RB = \frac{\sum_{p=1}^{21} RB_p}{21} =$ average recall bias RB , over the 21 survey periods p , of annual total number of hours, fish caught, or fish kept;

$$s_p^2 = \frac{\sum_{p=1}^{21} (y_{pr} - \bar{y}_{pr}) + \sum_{p=1}^{21} (y_{pn} - \bar{y}_{pn})}{(n_p - 1)} =$$

sample variance of those who returned initial and follow-up surveys in each survey period;

$$Var(\bar{y}_{pNRB}) = \left(\frac{N_p - n_p}{N_p} \right) \frac{s_p^2}{n_p} =$$

variance of the mean number of hours, fish caught, or fish kept per angler in each survey period;

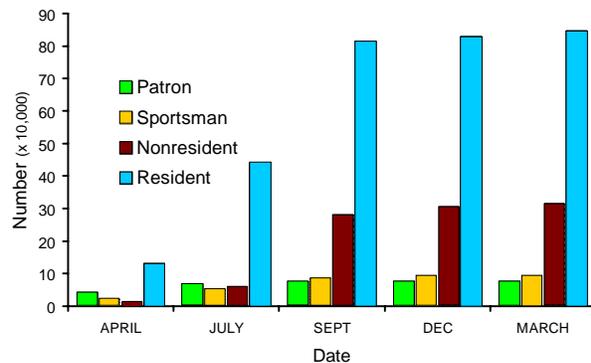


Figure 1. Numbers of fishing licenses sold during the 2000-2001 Wisconsin angling season.

$$Var(Y) = \sum_{p=1}^{21} N_p^2 Var(\bar{y}_{pNRB}) =$$
 variance of the annual total number of hours, fish caught, or fish kept, uncorrected for non-response and recall biases; and

$$CI(Y) = 1.96\sqrt{Var(Y)} =$$
 95% confidence interval around annual total number of hours, fish caught, or fish kept, uncorrected for non-response and recall biases.

RESULTS

Angler Characteristics

During the 2000-2001 angling season, 1,330,542 million anglers purchased licenses to fish in Wisconsin. The number of licensed anglers increased from 210,504 in April 2000, to 1,260,666 in September 2000, and 1,330,542 in March 2001 (Figure 1). Residents purchased 77% of all licenses sold, of which 6.9% (92,069) were sportsman licenses, 5.8% (77,435) were patron licenses, and 63.6% (845,833) were regular licenses. Non-residents purchased 23.7% of the licenses sold.

Based on angler residency, anglers from Wisconsin and from its neighboring states utilized Wisconsin's fishery resources the most. Most anglers (96%) resided in states bordering the Great Lakes, with Wisconsin residents purchasing 75% of all licenses sold (Table 1). In contrast, Baur (1983) found that only 4% of licensed anglers in Illinois were non-residents, and Connelly et al. (1996) found that 17% of New York anglers were non-residents.

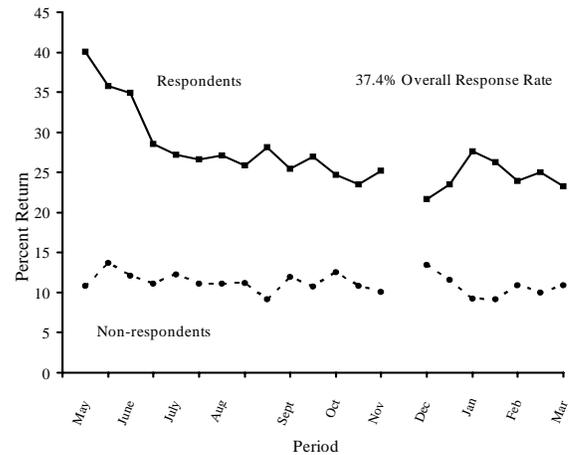


Figure 2. Percent mail surveys returned by respondents and non-respondents for the 2000-2001 Wisconsin angling seasons.

Table 1. Number of angling licenses purchased by region and state of residence during the 2000-2001 angling season in Wisconsin.

Region	State of Residence	Licenses Sold	Percentage of Total Sales
Plains	Nebraska, Colorado, Iowa, Kansas, Missouri, North Dakota, South Dakota, New Mexico, Oklahoma	23,591	1.77%
East	Washington, D.C., North Carolina, Virginia, West Virginia, Maryland, New Jersey	3,295	0.25%
Lakes	Illinois, Indiana, Michigan, Minnesota, New York, Wisconsin, Ohio	1,274,266	95.78%
North East	Connecticut, Massachusetts, Maine, New Hampshire, Pennsylvania, Rhode Island, Vermont	2,440	0.18%
South	Alabama, Arkansas, Florida, Georgia, Kentucky, Texas, Louisiana, Mississippi, South Carolina, Tennessee	14,283	1.07%
West	Alaska, Hawaii, California, Arizona, Idaho, Montana, Nevada, Oregon, Utah, Washington, Wyoming	11,036	0.83%
Wisconsin		1,015,337	76.31%
Non-Resident		315,205	23.69%
Non-US		1,562	0.12%
Total		1,330,542	100%

Table 2. Number of anglers (of those who specified a preferred species) and trips spent fishing for various fish species on the statewide mail survey during the 2000-2001 angling season in Wisconsin.

Preferred Species	Anglers	Percent	Primary Species	Trips	Percent
walleye	4,537	22.76	blank	14,890	
bluegill	2,491	12.50	walleye	3,267	26.25
bass	2,041	10.24	bass	1,326	10.65
panfish	1,515	7.60	bluegill	1,317	10.58
not specified	1,275	6.40	pike	910	7.31
crappie	1,252	6.28	crappie	904	7.26
trout	966	4.85	panfish	823	6.61
yellow perch	932	4.68	yellow perch	695	5.58
pike	846	4.24	musky	630	5.06
musky	742	3.72	trout	581	4.67
largemouth bass	709	3.56	not specified	299	2.40
any	437	2.19	smallmouth bass	297	2.39
smallmouth bass	417	2.09	largemouth bass	276	2.22
sunfish	375	1.88	catfish	251	2.02
salmon	288	1.44	any	168	1.35
catfish	263	1.32	sunfish	153	1.23
perch	152	0.76	white bass	125	1.00
brook trout	150	0.75	brook trout	102	0.82
white bass	123	0.62	salmon	86	0.69
brown trout	100	0.50	brown trout	71	0.57
bullhead	53	0.27	sturgeon	27	0.22
lake trout	50	0.25	bullhead	24	0.19
rainbow trout	42	0.21	steelhead trout	16	0.13
steelhead trout	39	0.20	lake trout	15	0.12
chinook salmon	27	0.14	rainbow trout	11	0.09
carp	23	0.12	carp	10	0.08
coho salmon	21	0.11	chinook salmon	10	0.08
king salmon	14	0.07	flathead catfish	9	0.07
black bass	11	0.06	sucker	8	0.06
striped bass	11	0.06	coho salmon	7	0.06
sturgeon	9	0.05	black bass	5	0.04
sucker	8	0.04	rock bass	5	0.04
rock bass	6	0.03	striped bass	5	0.04
sheepshead	3	0.02	not specified	4	0.03
whitefish	2	0.01	sheepshead	2	0.02
channel catfish	2	0.01	steelhead	2	0.02
chubs	1	0.01	bowfin	1	0.01
sauger	1	0.01	chubs	1	0.01
flathead catfish	1	0.01	rough fish	1	0.01
			sauger	1	0.01
			splake	1	0.01
Total	19,935	100.00	Total	27,343	100.00

Of 53,212 surveys mailed during the 2000-2001 angling season in Wisconsin, 37.4% were returned (19,936 surveys), including 26% of initial surveys (i.e. respondents; 14,046 surveys) and 11% of follow-up surveys (i.e. non-respondents; 5,890 surveys; Figure 2). Over 15% of those who returned surveys (3,006) were non-residents, including 14% of all non-respondents and 15% of all respondents. Among anglers who

returned surveys, 86.5% (17,254) said that they had fished at least once during the season, while 13.4% (2,682) said that they had not fished prior to completing their survey. Respondents comprised 58% of those reporting that they had not fished during the season and 72.3% of those reporting that they had fished at least once during the season. Of 19,936 surveys returned, 74.7% (14,896) had not fished during the two-

Table 3. Statewide catch, harvest, and effort, trips, corrected for non-response and recall biases, during the 2000-2001 angling season in Wisconsin.

Comparison	Catch		Harvest		Effort		Trips	
	Total	Mean	Total	Mean	Total	Mean	Total	Mean
Uncorrected for non-response or recall bias.	163,552,433	6.64	55,340,587	2.25	61,022,909	2.48	15,211,718	0.62
Average non-response bias.	22.84%		20.75%		25.01%		28.35%	
Corrected for non-response bias.	125,363,891	5.09	43,204,776	1.75	45,210,183	1.84	10,767,529	0.44
Average recall bias.	44.62%		27.59%		2.66%		*	
Corrected for recall and non-response bias.	69,445,957	2.82	31,303,049	1.27	44,015,887	1.79	*	
Variance.	(4,053,452)		(1,785,021)		(1,083,756)		(235.857)	

(*) Unable to determine recall bias from creel surveys because that data was not collected during creel interviews of anglers.

week period in which they were surveyed, of which 67% were respondents. Of those who fished during the period in which they were surveyed, 79% (4,023) were respondents and 20% (1,017) were non-respondents.

Species Preferences

The walleye (*Stizostedion vitreum*) was the species most preferred by anglers reporting a preference (22.76%) and by the number of trips taken (26.25%) during the 2000-2001 angling season in Wisconsin (Table 2). The bluegill (*Lepomis macrochirus*) was the second most preferred species by anglers reporting a preference (12.50%) and third by the number of trips taken (10.58%). Black basses (*Micropterus* spp.) were the third most preferred species by anglers reporting a preference (10.24%) and second by the number of trips taken (10.65%).

Angling Effort, Catch, and Harvest

During the 2000-2001 angling season, an average Wisconsin angler fished for 1.79 hours, caught 2.82 fish, and harvested 1.27 fish, corrected for non-response and recall biases, from Wisconsin's lakes and streams during the 2000-2001 angling season (Table 3). After expanding the results from the mail survey to the angling population, 1,330,543 anglers fished for 44,015,887 hours to catch 69,445,957 fish and harvest 31,303,049 fish (Table 3).

Based on 5,040 anglers reporting 12,446 trips (11,991 day trips), 1,330,543 anglers took 10,767,529 trips (Table 3) with 73.7% of anglers reported fishing lakes and reservoirs and 34.7% reported fishing rivers, creeks and flowages (Table 4).

Mean catch, harvest and effort per angler declined steadily from their maximums occurring after the beginning of the season, whereas total catch, harvest and effort did not reach their maximums until mid-season.

Table 4. Numbers and percentages of anglers, hours, and trips contacted by the initial mail survey that reported they fished in rivers and creeks versus lakes and rivers during the 2000-2001 angling season in Wisconsin.

Destination	Number of anglers	Percentage of anglers	Number of Hours	Percentage of hours	Number of trips	Percentage of trips
Rivers and Creeks	1,396	34.7%	11,227	27.9%	2,810	28.0%
Lakes and Reservoirs	2,963	73.7%	26,786	66.6%	6,663	66.4%

(*Percentages may not equal 100% due to anglers fishing both lakes and rivers, and the names given to waterbodies)

Non-Response Bias

Respondents differed significantly from non-respondents in their average levels of effort, catch, and harvest during the 2000-2001 angling season in Wisconsin. Mean effort per angler was significantly higher for respondents (2.86 hours per angler) than for non-respondents (1.77 per angler; Table 5), and the

Table 5. Mean effort, catch and harvest per angler for respondents and non-respondents contacted by mail survey during the 2000-2001 angling season in Wisconsin.

Parameter	Variable	Mean	SE	N
Effort	Respondent	2.8626	0.0548	14049
	Non-respondent	1.7743	0.0847	5890
Catch	Respondent	7.8119	0.2030	14049
	Non-respondent	5.0902	0.3135	5890
Harvest	Respondent	2.6689	0.0886	14049
	Non-respondent	1.7382	0.1369	5890

difference was consistent over all survey periods, except during November and December (Table 6, Figure 3). Mean catch per angler was significantly higher for respondents (7.81 fish per angler) than for non-respondents (5.09 fish per angler; Table 5), and the difference was consistent over all survey periods (Table 6, Figure 4). Mean harvest per angler was significantly higher for respondents (2.67 fish per angler) than for non-respondent (1.74 fish per angler; Table 5), and the difference was consistent over all survey periods (Table 6, Figure 5). Respondents and non-respondents reported similar preferences for the species of fish they sought (Figure 6).

The average non-response bias was 25% for angling effort, 23% for catch, 21% for harvest, and 28% for

angler trips during the 2000-2001 angling season in Wisconsin (Table 3).

Recall Bias

Creel clerks interviewed 8,165 angler parties and 16,404 individual anglers during contact creel surveys in the 2000-2001 angling season in Wisconsin. Anglers surveyed by mail reported taking 1,834 trips to the 216 lakes that were subjected to random selection for contact creel surveys in northern Wisconsin. Of the 1,834 trips

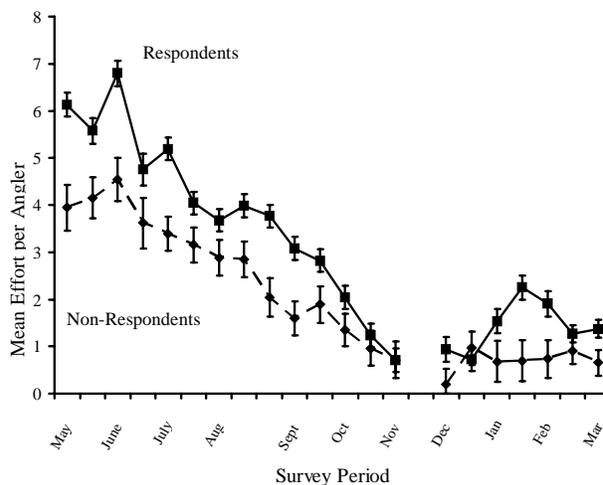


Figure 3. Mean angler effort of respondents and non-respondents for the 2000-2001 Wisconsin angling season.

reported by the mail survey, mean effort per angler, mean catch per angler, and mean harvest per angler did not differ significantly between respondents and non-respondents (Table 7).

Table 6. Analysis of variance of effort, catch, and harvest among 21 mail survey periods and between two respondent groups during the 2000-2001 angling season in Wisconsin.

Variable	Source	Mean	Variance	F	df	P
Effort	Period	2.7455	39.8527	66.8306	20	0.0000
	Respond	2.3188	42.2401	116.4948	1	0.0000
	Respond × Period	2.5176	39.6268	2.0073	20	0.0048
Catch	Period	7.5727	557.5324	41.8909	20	0.0000
	Respond	6.4519	578.8897	53.1711	1	0.0000
	Respond × Period	7.0025	556.3320	1.1669	20	0.2727
Harvest	Period	2.5787	108.1233	22.9787	20	0.0000
	Respond	2.2038	110.3324	32.6177	1	0.0000
	Respond × Period	2.3667	107.9690	1.2960	20	0.1687

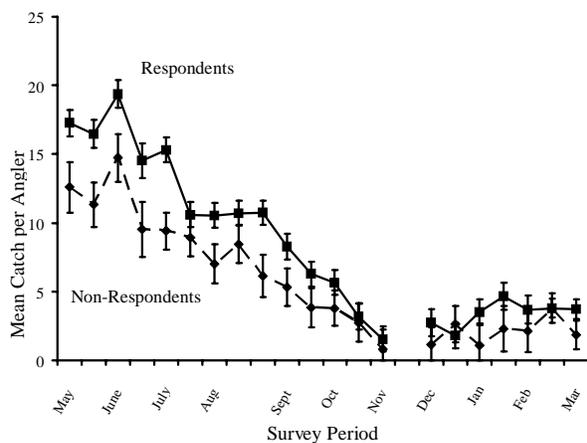


Figure 4. Mean angler catch of respondents and non-respondents for the 2000-2001 Wisconsin angling season.

Mean hours per angler, mean catch per angler, and mean harvest per angler differed significantly between contact and mail surveys. Anglers interviewed during creel surveys had a significantly lower mean effort (3.248 hours per trip) than those contacted during the mail survey (3.380 hours per trip; Table 7). Anglers interviewed during creel surveys had a significantly lower mean catch (3.978 fish per trip) than those contacted during the mail survey (7.544 fish per trip; Table 7). Anglers interviewed during creel surveys had a significantly lower mean harvest (1.587 fish per trip) than those contacted during the mail survey (2.416 fish per trip; Table 7).

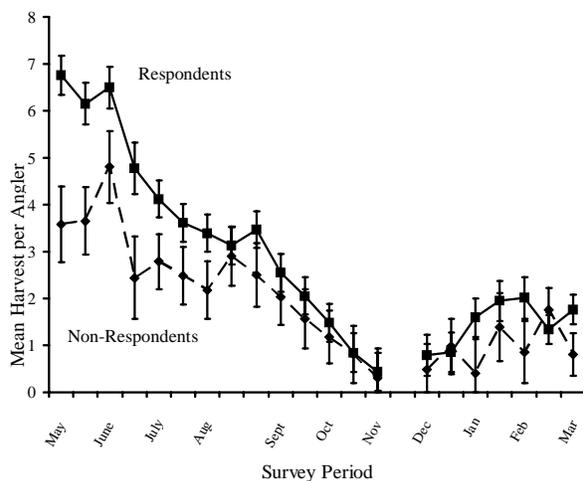


Figure 5. Mean angler harvest of respondents and non-respondents for the 2000-2001 Wisconsin angling season.

Statewide estimates, corrected for recall and non-response bias, of each species caught indicated that bluegill were the species caught and harvested most by

anglers in Wisconsin (Table 8). Among panfish species, bluegill had the highest catch (25,799,957 fish) and the highest harvest (14,353,749 fish), yellow perch had the second highest catch (8,714,747 fish) and third highest harvest (5,113,615 fish), and crappie had the third highest catch (7,855,666 fish) and second highest harvest

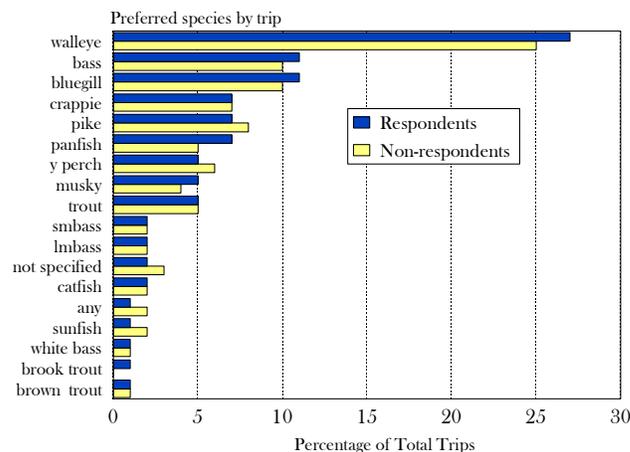


Figure 6. Fish species preferred by trip by response type for the 2000-2001 Wisconsin angling season.

(5,405,953 fish) of all species (Table 8). Among game-fish species, walleye had the fourth highest catch (7,580,236 fish) and fourth highest harvest (2,169,291 fish), largemouth bass had the fifth highest catch (4,514,100 fish) and seventh highest harvest (504,522 fish), northern pike had the sixth highest catch (3,715,090 fish) and fourth highest harvest (840,307 fish), and muskellunge had the eleventh highest catch (296,289 fish) and eleventh highest harvest (37,010 fish) of all species (Table 8).

DISCUSSION

Angler Characteristics

Even limiting responses to a 2-week survey program, recollection of activities incurred non-response and recall biases, independent of survey method. Bias from recall (2.66%) and non-response (25.01%) led to estimates of total effort of 44,015,887 hours. With mean effort from the mail surveys greater than that of the creel surveys, the bias from recall and non-response still appears significant even for surveys requesting information on activities occurring as short as two weeks post-activity. The harvest from the creel survey was significantly less (56%) than estimates gathered by the sub-sample from the mail surveys. The bias from recall (27.59%) and non-response (20.75%) led to estimates of harvest of 31,303,049 fish. With harvest being

Table 7. Comparison of mean effort, catch, and harvest between the sub-sample of respondents and non-respondents contacted by mail survey, and between anglers contacted by mail survey and interviewed during contact creel surveys during the 2000-2001 angling season in Wisconsin.

Parameter	Groups	Variable Mean	Variable se	n	Overall Mean	Variance	F	N	df	P
Effort	Respondent	3.397	0.047	1,508	3.349	3.162	0.769	1,834	1	0.381
	Non-Respondent	3.301	0.088	326						
	Creel	3.248	0.016	16,404	3.314	4.371	6.533	18,238	1	0.011
	Mail	3.380	0.049	1,834						
Catch	Respondent	7.679	0.270	1,508	7.301	179.2040	1.441	1,834	1	0.230
	Non-Respondent	6.924	0.515	326						
	Creel	3.978	0.070	16,404	5.761	80.439	260.911	18,238	1	0.0000
	Mail	7.544	0.209	1,834						
Harvest	Respondent	2.496	0.116	1,508	2.273	19.767	2.697	1,834	1	0.101
	Non-Respondent	2.050	0.228	326						
	Creel	1.587	0.031	16,404	2.001	15.646	72.580	18,238	1	0.000
	Mail	2.416	0.092	1,834						

recorded by on-site creel clerks, harvest reported from creeled lakes is typically considered accurate. Filion (1980) found evidence that showed angler biases could increase harvest estimates from 11% - 168% over those from field records. Roach et al. (1999) found Maine anglers reported their harvest rates more accurately than their catch rates because harvesting a fish was more memorable. Here, the angler reported mean harvest had lower errors (27.59%) due to recall and non-response (20.75%) than the errors from recall and non-response (44.62% and 22.84%, respectively) associated with angler reported mean catch. For the 2000-2001

Wisconsin statewide mail survey, catch from the anglers fishing on creel-surveyed waters was almost twice as great as estimates from the creel surveys. Bias from recall and non-response (44.62% and 22.84%, respectively) led to revised estimates in catch to 69,445,957 fish. If recall were not a factor then the mean catch from the two survey methods would not be dissimilar. Our survey produced estimates of angler trips, angler effort and numbers of anglers that was comparable to the national surveys and Wisconsin contact creel survey. These similarities show that this statewide mail survey could gather usable angler catch and harvest data that can be useful in creating statewide management and policy decisions.

Table 8. Angling catch and harvest of various fish species, estimated by mail survey and corrected for non-response and recall bias, during the 2000-2001 angling season in Wisconsin.

Species	Catch		Harvest	
	Estimate	SE	Estimate	SE
Bluegill	25,799,957	2,207,217	14,353,749	1,315,256
Yellow Perch	8,714,747	1,140,643	5,113,615	650,482
Crappie	7,855,666	1,162,713	5,405,953	660,360
Walleye	7,580,236	1,047,854	2,169,291	251,969
LM Bass	4,514,100	527,173	504,522	108,234
Northern Pike	3,715,090	491,022	840,307	136,502
SM Bass	3,238,567	487,384	292,682	59,590
Catfish	1,100,853	300,347	419,248	171,219
Brook Trout	1,064,643	487,327	243,317	82,294
Brown Trout	951,442	320,120	254,418	59,652
Muskellunge	296,289	109,496	37,010	14,403
Total	69,445,957		31,303,049	

That is not to say that the recall bias was not compounded. Again, recollection of mundane activities usually incurs a recall bias. Roach et al. (1999) found catch rates from their mail survey of Maine anglers exceeded the rates attained through on-site surveys. Carline (1972) found catch rates from post card returns were double the rates from on-site interviews. Here, recall of catch in the mail survey led to higher estimates of catch compared to the creel survey's estimates. Difference between the two estimates could be due to over-estimation of non-memorable species, such as bluegill and yellow perch, which tend to be smaller than harvestable game fish and their numbers easily generalized.

The sampling frame for the mail survey did not include anglers under the age of 16 or older than the age of 74, because anglers of these ages are not required to purchase a license in Wisconsin. Surveys of license

holders alone could suffer from sampling bias, if a segment of the angling population is not required to purchase a license. For example, using two consecutive 6-month mail surveys of Illinois anglers in 1983, Baur (1993) found that only 57.9% of the 1.4 million Illinois anglers were licensed in 1983. If unlicensed anglers younger than age 15 or older than age 74 made a significant portion of all angling trips in Wisconsin, then the results from our statewide mail survey do not fully represent angling in the state.

Our survey indicated that women were under-represented among anglers of Wisconsin. Females made up 51% of Wisconsin's population (WDOA 2000), but purchased only 24% of all angling licenses during the 2000-2001 angling season. Similarly, Zuerlein (1984) found that 67.8% of adult Nebraskan anglers were male and Connelly et al. (1996) found that 87.7% of New York anglers were male.

Recent national surveys supported our estimates of angler distribution on Wisconsin's waters. We found that 73% of all angling trips were made to lakes, ponds, and reservoirs and 34% of all angling trips were made to creeks, rivers and flowages during the 2000-2001 angling season in Wisconsin. The 1996 national survey (DOI 1996) found that 87% of anglers fished ponds, reservoirs and lakes and the 1985 national survey (DOI 1985) found that 43% of anglers fished creeks and rivers in Wisconsin.

We found that walleye was the most highly sought species, with bass and bluegills second and third, respectively, whereas the 1996 and 1985 national surveys estimated that panfish were the most popular fish species (DOI 1985, 1996). The 1985 national survey found that black bass and walleye were favored second and third, respectively, while muskellunge was favored eighth among freshwater anglers (DOI 1985). In 1996, the national survey estimated that walleye and black bass were second and third, respectively, and muskellunge were not specified (DOI 1996).

The 1.33 million licensed anglers in Wisconsin are similar to the number of anglers estimated from national surveys in 1985 (DOI 1985) and 1996 (DOI 1996). We estimated that Wisconsin anglers took 512,739 trips every 2 weeks and 10,767,529 trips during 2000-2001 angling season, which was similar to estimates from national surveys in 1985 and 1996. In 1985, the national survey estimated 1.6 million anglers spent 26 million days or 17.1 million trips fishing in Wisconsin (DOI 1985). The 1996 national survey estimated 1.2 million anglers spent 14.4 million days or 10.7 million trips fishing in Wisconsin (DOI 1996).

We found the number fishing license purchases reached it near maximum of 1.26 million by September 2000, halfway through the season. By the end of the season,

5 months later in March 2001, purchases only increased by 70,000 to its maximum of 1.33 million. There were 210,504 licenses sold prior to the start of the season in May 2000. By July 2000, there were over 400,000 new licenses sold. By September 2000, there were over 636,000 new licenses purchased since July 2000. By December 2000, there were only 43,349 new licenses purchased since September 2000.

Response Rates

We found that the overall response rate of respondents (26%) and non-respondents (11%) combined was 37%, which is lower than most other general public surveys for which results have been published. For example, Kokel et al. (1991) achieved a response rate of almost 81% from a mail survey of anglers along the James River in Virginia by using a pre-selection interview of a small segment of the population already engaged in recreational and angling activities. However, Kokel et al. (1991) concluded that the mail survey population consisted of anglers who volunteered their names, so may not have accurately represented the angling population. After 3 weeks, 35% responded to Jamsen's (1971) initial semi-annual mail survey of Michigan's 1.1 million anglers. If Jamsen (1973) had stopped accepting surveys 2 weeks after the survey period, like our survey, his response rates would have been similar to ours. Hunt and Ditton (1996) achieved response rates between 61% and 72% in statewide annual mail surveys of licensed Texas anglers using two follow-up surveys for each of their 10 different surveys. The lowest response rates attained by Hunt and Ditton (1996) were from the general population of fishing license holders. Kokel et al. (1991), in their test of recall bias, achieved a response rate of 81% in a mail survey of previously contacted Virginia anglers using a follow-up process similar to ours. Kokel et al. (1991) determined that those who replied to the third follow-up survey were still respondents and compared the results from the mail survey to the results attained from on-site surveys, which were conducted up to a year prior, to test for recall bias (Kokel et al. 1991). The 1996 New York statewide angler mail survey of New York anglers achieved a final response rate of 54% based on a 2-month recall period (Connelly et al. 1996), whereas their concurrent quarterly telephone survey of 1,085 New York anglers had a response rate of 30%. Bray (1996) achieved a response rate of 76% for a telephone survey of Mississippi anglers using 10 follow-up attempts over a 3-4 month period while achieving a response rate of 52% for his mail survey. Baur (1993) achieved response rates of 43% and 46% from his surveys of Illinois anglers.

The relatively low response rate to our 2000-2001 Wisconsin statewide mail survey could have been

affected by the survey design. Several reasons for the lower than normal response rates could be that we surveyed a generalized licensed angler population and used limited follow-up mailings to a 2-week recall period. Typical surveys of generalized populations tend to achieve 30%-60% response rates (Dillman 1978; Tarrant et al. 1993; Bray et al. 1996). Tarrant et al. (1993) achieved similar response rates (42.4% for their 6-month mail survey and 36.5% and 36.9% for their 3-month mail surveys) in their mail surveys of Colorado anglers. To limit recall bias, our design allowed only one follow-up survey to be sent to non-responders after the postcard reminder. Typical mail survey designs call for 2-3 follow-up surveys following some form of reminder notice (Dillman 1978). Typical mail surveys usually incorporate many of the guidelines that Dillman set out in the "total design method" (Dillman 1978). If response time had been increased in our survey, to allow anglers more time to respond to initial surveys before being classified as non-responders, overall response rate would likely have been higher. The 1985 national survey of Wisconsin anglers was conducted by phone and door-to-door for a response rate of 66% (DOI 1985). Conducting follow-up surveys personally allows surveyors multiple attempts to contact non-responders. Budgetary and personnel constraints prevented our survey from being conducted personally.

Non-Response Bias

We found that non-response bias was 25% for angling effort, 23% for angling catch, and 21% for angling harvest in Wisconsin during the 2000-2001 angling season. Harris and Bergersen (1985) also found major errors in the estimated mean number of days fished, where respondents fished 24 days per year and non-respondents fished only 2 days per year. Leinonen (1988) found that a non-response bias of 18% overestimated the number of fishing households in Finland. Carline (1972) found that the mean catch rate from a mail-back postcard, was double the mean catch rate from on-site interviews, because unsuccessful anglers did not return postcards. Unlike other surveys, our Wisconsin statewide survey separated responders from non-responders using a very narrow time frame in which to respond. The effects of non-response bias may depend on the length of the recall period (Tarrant et al. 1993), because anglers may underreport their activities in proportion to the length of the period they are required to recall (Gems et al. 1982). Wenger and Gregerson (1964) found that party size and years of use greatly affected non-response bias in their survey of registration stations, and suggested that large groups who used the area for the first time were less likely to register than small parties who used the area in the previous 1 or 2 years. As we found with this mail survey, Connelly et al. (1997) also found that

non-respondents were less likely to fish and fished at a lower rate than respondents.

Recall Bias

We found that recall bias was much lower for angling effort (2.7%) than for catch (45%) or harvest (28%), a pattern generally similar to other studies. For angling effort, recall bias was low enough to be non-significant for management decisions, but for catch and harvest was substantial. Similarly, Roach et al. (1999) found that Maine anglers reported their mean harvest with lower recall bias (28%) than their mean catch (45%), and Carline (1972) found that catch rates reported on postcards were twice the rates obtained from on-site interviews.

Recommendations

Our study produced usable estimates of statewide catch, harvest, and effort, with manageable and correctable effects from recall and non-response bias. Even with a 2-week recall period, biases from recall and non-response were significant, but after applying corrections, results from the mail survey were comparable to other similar state and national surveys. Weithman (1991) found that his telephone survey of Missouri anglers was reliable for effort, catch, and harvest rates for important species, when compared to known-use (daily tag) fisheries.

The design of our survey highlighted a potential difference between early responders and those who responded to the follow-up survey. As Hunt and Ditton (1996) and Connelly et al. (1996) had previously showed, our results also indicated that anglers who did not fish during the 2-week period in which they were surveyed were less likely to return surveys. By limiting the time that people were allowed to respond and still be considered a respondent, the likelihood that a person would be considered a non-respondent increased. Conversely, an extended response time would increase response rates, though an extended response time would also extend the recall period. We propose that by extending the response time, recall bias could be partly included within non-response bias. Therefore, the effect of recall bias could increase as the recall period increases. Surveys based on extensive response times, where 3-6 months were allowed for response, may need to be revisited for errors from recall bias. Focusing effort and money to minimize non-response bias without attempting to quantify and limit recall bias could be problematic.

The design of future surveys should acknowledge that non-response bias is inherent within mail surveys and methods should account for this source of error. In

the future, anglers could be pre-notified at the time of license purchase that this research is being undertaken. Anglers could be asked to volunteer themselves to be included in future surveys. By informing anglers ahead of time of the need for recall and quick responses to the surveys, non-response could be reduced. In various studies, pre-notification, or even pre-selection, has resulted in response rates of up to 80%, with little non-response bias. Fisher et al. (1991) found that bias from non-response was not a factor in their study because response rates averaged over 80%. Weithman (1991) found that when anglers were pre-notified, they more accurately recalled their fishing activity. Pre-selection seems to make anglers more aware of their activities. Although, surveying anglers who are more willing to participate may be surveying only avid or more responsible anglers and thus under-representing the casual anglers.

Recall bias was a significant source of bias for the 2000-2001 Wisconsin statewide mail survey. Mean angler catch gathered by the mail surveys appeared to be influenced more by recall than estimates of harvest. Creel surveys asked anglers to recall their estimates of effort and catch, but the harvest was hand counted. This “confirmation” of the angler’s mentally perceived harvest amount could re-enforce that memorable event that harvest is typically perceived to be. Effort could have been made memorable because it could be easier to recall a specific time of day (i.e. the time of day fishing started) than a general number of fish caught throughout the day. In general, catch appears to be affected more by recall than harvest or effort. The use of concurrent on-site creel surveys as a baseline to adjust the mail survey’s estimates is a reliable method to identify and remove the bias from recall. That the creel surveys were conducted concurrently adds legitimacy to the comparisons. Errors from recall could have more of an impact on angler-reported data than previous research has been able to show. Further research should be conducted regarding the extent that recall plays a role on angler-reported fishing activities.

Final costs for the 2000-2001 Wisconsin statewide survey were \$1.25 per mailed survey or \$3.35 per survey returned. Wisconsin’s 2000-2001 creel surveys cost Wisconsin approximately \$400,000 or \$40 per party contacted (Beard 2000). With ever-tightening budgets, new methods for estimating angler catch, harvest, and effort will be needed in the future. Managers of fishery resources need to weigh the costs of an affordable method for statewide data collection that accounts for non-response and recall biases with the more accurate and expensive contact creel surveys. Some benefits of using a state mail survey over a creel survey, or even a national survey, are the extensive statewide coverage and the ability to sample the angler license files. The mail

survey also allows managers to ask anglers additional questions that is not feasible with a creel survey and allows anglers to complete their surveys at their leisure unlike telephone surveys. Although mail surveys are easier and cheaper than on-site creel surveys, biases associated with the use of mail surveys need to be carefully managed. Future surveys should also be capable of surveying the public’s opinions on current policies and operations, which would give the public a feeling of connection to resource managers and the state’s resources. If the developments of fishery programs and policy issues in the future do not include input from resource users, agencies could suffer from criticism, loss of prestige, and other ill feelings by the public (Miranda and Frese 1991).

We recommend the WDNR conduct statewide mail surveys every five to seven years concurrently with contact creel surveys, to provide updated information to assist Wisconsin managers in their statewide policy and regulatory decisions. Should the WDNR or others wishing to use a similar mail survey to gather corrected levels of catch, harvest and effort, they would only need to use the final bias correction formula (\bar{y}_{pt}) to attain the non-response and recall bias corrected estimates they need.

Mail surveys could also be used to determine if there are differences in angler effort over Wisconsin’s various geographical regions. Should managers consider replacing their current creel survey program with a similar mail survey program, managers would need to determine if there are significant differences between those who fish in the ceded territories compared to anglers who fish the rest of the state. Preliminary data collected through this survey indicates significant differences between the ceded territories and the entire state, although there seems to be similarities between lakes within the creel survey sample frame and the ceded territories. If further research shows data collected through a mail survey is comparable to the data collected through creel surveys, WDNR could save hundreds of thousands of dollars a year. Further research could also determine if there actual significant differences between those who fish Wisconsin’s rivers and those who only fish lakes.

LITERATURE CITED

Beard Jr., D. T. 2000. Personal interview. Wisconsin Department of Natural Resources. Madison, WI.

- Bray, G. S., J. T. Forbes, H. L. Schram, Jr., and D. A. Gill. 1996. Characteristics of respondents and non-respondents to mail and telephone angler surveys. Proceedings of the 50th Annual Conference Southeastern Association of Fish and Wildlife Agencies 0:156-162.
- Brown, T. L. 1991. Use and abuse of mail surveys in fisheries management. American Fisheries Society Symposium 12:255-261.
- Carline, R. F. 1972. Biased harvest estimates from a postal survey of a sport fishery. Transactions of the American Fisheries Society 101:262-266.
- Chase, D. R. and M. Harada. 1984. Response error in self-reported recreation participation. Journal of Leisure Research 16:322-329.
- Connelly, N. A., T. L. Brown, and B. A. Knuth. 1997. New York statewide angler survey, report 1: Angler effort and expenditures. New York State Department of Environmental Conservation. Division of Fish and Wildlife. Albany, New York.
- Connelly, N. A. and B. A. Knuth. 1993. Great Lakes fish consumption health advisories: angler response to advisories and evaluation of communication techniques. Cornell University, Human Dimensions Research Unit, Publication 93-3, Ithaca, New York.
- Dillman, D. A. 1978. Mail and telephone surveys: the total design method. Wiley-Interscience, New York.
- Filion, L. 1980. Human surveys in wildlife management. Pages 441-453 in Sanford D. Schemnitz, editor, Wildlife Management Techniques Manual, 4th edition. The Wildlife Society, Washington, DC.
- Fisher, W. L., A. E. Grambsch, D. L. Eisenhower, and D. R. Morganstein. 1991. Length of recall period and accuracy of estimates from the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. American Fisheries Society Symposium 12:367-374.
- Gems, B., D. Ghosh, and R. Hitlin. 1982. A recall experiment: Impact of time on recall of recreational fishing trips. Proceedings of the Section on Survey Research Methods. American Statistical Association. 1982:372-375. Washington, D.C.
- Gilbert, S. 2000. Personal interview. Wisconsin Department of Natural Resources. Woodruff, Wisconsin.
- Harris, C. C. and E. P. Bergersen. 1985. Survey on demand for sport fisheries: Problems and potentialities for its use in fishery management planning. North American Journal of Fisheries Management 5(3a):400-410.
- Hubbs C. L. 1930. Fishery research in Michigan. Transactions of The American Fisheries Society 60:182-188.
- Hunt, K. M., and R. B. Ditton. 1996. Using survey research in support of fisheries management: The 1994 Texas statewide angler survey. American Fisheries Society Symposium 16:236-244.
- Jansen, G. C. 1971. Michigan's 1971 sport fishery. Michigan Department of Natural Resources. Research and Development Report #268. Lansing, MI.
- Jansen, G. C. 1973. Michigan's 1973 sport fishery. Michigan Department of Natural Resources. Surveys and Statistical Services Report #133. Lansing, MI.
- Jennings, C. A. 1992. Survey of non-charter boat recreational fishing in the U.S. Virgin Islands. Bulletin of Marine Science 50(2):342-351.
- Kokel, R. W., J. S. Stanovick, L. A. Nielsen, and D. J. Orth. 1991. When to ask: Angler responses at different times in the fishing trip and year. American Fisheries Society Symposium 12:102-107.
- Leinonen, K. 1988. Biased catch estimates due to nonresponse in fishing questionnaire. Finnish Fisheries Research 7:66-74.
- Lockwood, R. N. 1997. Evaluation of catch rate estimators from Michigan access point angler surveys. North American Journal of Fisheries Management 17:611-620.
- Malvestuto, S. P. 1996. Sampling the recreational creel. Pages 591-624 in B. R. Murphy and D. W. Willis, editors. Fisheries Techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.
- Miranda, L. E., and W. Frese. 1991. Surveys for social and market analysis: Can fishery scientists predict angler preferences? American Fisheries Society Symposium 12:375-379.
- Newman, S. P., P. W. Rasmussen, and L. M. Andrews. 1997. Comparison of a stratified, instantaneous count creel survey with a complete mandatory creel census on Escanaba Lake, Wisconsin. North American Journal of Fisheries Management 17:321-330.

- O'Bara, C. J. 1991. Long-term analysis of creel surveys: Problems concerning the interpretation and use of results. *American Fisheries Society Symposium* 12:281-284.
- Pollock, K. H., C. M. Jones, and T. L. Brown. 1994. Angler survey methods and their applications in fisheries management. *American Fisheries Society Special Publication* 25.
- Rasmussen, P. W., M. D. Staggs, T. D. Beard Jr., and S. P. Newman. 1998. Bias and confidence interval estimators evaluated by simulation. *Transactions of the American Fisheries Society* 127:469-480.
- Roach, B., J. Trial, and K. Boyle. 1999. Comparing 1994 angler catch and harvest rates from on-site and mail surveys on selected Maine lakes. *North American Journal of Fisheries Management* 19:203-208.
- Swanson, C. S., and D. W. McCollum. 1991. Surveys for economic analysis: Application of economics to recreational fisheries management: An overview. *American Fisheries Society Symposium* 12:299-315.
- Tarrant, M. A., M. J. Manfredi, P. B. Bayley, and R. Hess. 1993. Effects of recall bias and non-response bias on self-report estimates of angling participation. *Journal of Fisheries Management* 13:217-222.
- U.S. Department of the Interior. 1985. The 1985 national survey of fisheries, hunting and wildlife-associated recreation for Wisconsin. Fish and Wildlife Service, and U.S. Department of Commerce, Bureau of the Census. U.S. Government Printing Office, Washington, D. C.
- U.S. Department of the Interior. 1996. The 1996 national survey of fisheries, hunting and wildlife-associated recreation for Wisconsin. Fish and Wildlife Service, and U.S. Department of Commerce, Bureau of the Census. U.S. Government Printing Office, Washington, D. C.
- Weithman, A. S. 1991. Telephone surveys preferred in collecting angler data statewide. *American Fisheries Society Symposium* 12:271-280.
- Wenger, W. D. and H. M. Gregersen. 1964. The effect of nonresponse on representativeness of wilderness-trail register information. U.S. Forest Service Research Paper PNW-17. U.S. Department of Agriculture Forest Service November 1964.
- Westat. 1989. Investigation of possible recall/reference period bias in National Surveys of Fisheries, Hunting and Wildlife-Associated Recreation. Final Report to U.S. Fish and Wildlife Service, Washington, D.C.
- Wisconsin Department of Administration. 1999. Division of Housing and Intergovernmental Relations, Demographic Services Center. Population Trends in Wisconsin: 1990-1999. Madison, Wisconsin.
- Wisconsin Department of Administration. 2000. Division of Housing and Intergovernmental Relations, Demographic Services Center. Profile of General Demographic Characteristics: 2000. Madison, Wisconsin.
- Wisconsin Department of Natural Resources. 1999a. Wisconsin's Fish and Wildlife Annual Report 1998-99. Publication Pub-CE-259-00REV. Madison, Wisconsin.
- Wisconsin's Department of Natural Resources. 1999b. Wisconsin Lakes. Bureau of Water Resources Management. Bureau of Fisheries Management - Lakes. Aquatic Education. Publication Pub-FH-800-95REV. Madison, Wisconsin.
- Zuerlein, G. 1984. Statewide Fishing Survey. Nebraska Game and Parks Commission, Fisheries Division. Nebraska.

APPENDICES

Appendix A

The 2000-2001 Statewide Wisconsin Angler Mail Survey

Appendix B

Estimation of Total Statewide Angler Catch, Harvest, and Effort for the 2000-2001 Wisconsin Statewide Angler Mail Survey Correcting for Non-response and Recall Bias

Appendix C

Estimation of Total Catch and Harvest for Species Included in the 2000-2001 Wisconsin Statewide Angler Mail Survey, Corrected for Non-response and Recall Bias

INSTRUCTIONS:

Please answer the questions to the best of your ability to recall exact numbers. Even if you are unable to answer the rest of the survey, please answer these first few questions.

Record your responses directly on the survey form based on all lakes or rivers in Wisconsin that you fished between the dates shown on the cover letter that came with this questionnaire.

- 1) Have you fished in Wisconsin this 2000/2001 fishing season? Yes No

- 2) What SINGLE species of fish do you fish for most often? _____

- 3) Do you fish as part of your profession? Yes No

- 4) Are you a member of a local fishing club or a national fishing club like B.A.S.S.? Yes No

- 5) Have you been fishing during the two-week time period stated on the cover letter? Yes No

If you have been fishing within the two-week period stated on the cover letter, please continue with the survey by completing the table on the following page by describing only the trips taken during that time period.

Even if you have not been fishing during these two weeks, your answers are still VERY important. Please fold and return this survey in the envelope provided.



- 1) Please fill out this form based only on your fishing during the **two-week period** stated on the cover letter. Separate your fishing trips according to each different lake or river you fished. Also, please note the exact month and day of that trip.
- 2) List each lake or river you fished in Wisconsin and then the number of hours actually spent fishing on **that** lake or river. Do not include your travel times to and from the lake or river.
- 3) List the total number of fish you caught and the number of fish that you kept of each species.
 (See Example: Spent 5 hours actually on Clear Lake near Stevens Point fishing for Walleyes. Caught 8 Walleyes, but only took 2 home. During that trip, you also caught and kept 3 Crappies and took home only 1 of your 2 Northern Pike.)

Which lake or river did you fish? (please list your trips by date and then by lake or river name)				How many hours did you fish each lake or river?		List the number of each species of fish caught and the number of fish you kept. (example: number of fish caught / number of fish kept)											
Date (month and day)	Lake or River Name	County	Nearest Town	What were you primarily fishing for?	Number of hours spent fishing.	Walleye	Yellow Perch	Bluegill / Sunfish	Crappie	Northern Pike	Muskie	Brook Trout	Brown Trout	Largemouth Bass	Smallmouth Bass	Catfish	Other
May 6	Clear Lake	Portage	Stevens Point	Walleye	5	8 / 2			3 / 3	2 / 1							

*Use the back of this form for additional entries.

Date (month and day)	Lake or River Name	County	Nearest Town	What were you primarily fishing for?	Number of hours spent fishing.	Yellow Perch	Walleye	Bluegill / Sunfish	Crappie	Northern Pike	Muskie	Brook Trout	Brown Trout	Largemouth Bass	Smallmouth Bass	Catfish	Other

If you need additional entries or would like to write any comments about this survey, please feel free on a separate piece of paper.

Thank you for the time and effort that you put into completing this survey!

If you have any questions or comments regarding this survey,
please feel free to contact me:

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Table B-1. Statewide angling effort during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Hours				Hours/Angler				Licensed				Angling Hours						
	Sent	Respond	NonResp	Recall	Respond	NonResp	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	Respond	NonResp	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	
04/30/00 - 05/13/00	1,538	616	167		3776.5	658.5	6,1307	3,9431	4.8193	348,270.9	2,135,138	1,678,415	1,627,737										
05/14/00 - 05/27/00	1,534	548	210		3055.05	872.5	5,5749	4,1548	4.6621	486,037.9	2,709,617	2,265,952	2,202,722										
05/28/00 - 06/10/00	1,535	536	185		3641.95	840.25	6,7947	4,5419	5.3285	623,804.8	4,238,556	3,323,965	3,229,541										
06/11/00 - 06/24/00	1,253	357	139		1696.5	503.2	4,7521	3,6201	3.9427	751,177.2	3,569,670	2,961,634	2,885,891										
06/25/00 - 07/08/00	2,544	691	311		3586.25	1055.5	5,1899	3,3939	3.8817	878,549.6	4,559,622	3,410,295	3,321,205										
07/09/00 - 07/22/00	2,543	676	281		2734.6	886	4,0453	3,1530	3.3902	1,005,922.0	4,069,222	3,410,284	3,325,553										
07/23/00 - 08/05/00	2,546	691	283		2541	816	3,6773	2,8834	3.0989	1,133,294.4	4,167,440	3,511,918	3,424,186										
08/06/00 - 08/19/00	2,543	658	283		2623.7	806.25	3,9874	2,8489	3.1435	1,260,666.8	5,026,765	3,962,922	3,863,246										
08/20/00 - 09/02/00	2,540	715	233		2691.25	475	3,7640	2,0386	2.5243	1,265,483.3	4,763,262	3,194,470	3,105,992										
09/03/00 - 09/16/00	2,548	647	304		1995	486.5	3,0835	1,6003	1.9769	1,270,299.9	3,916,922	2,511,298	2,443,396										
09/17/00 - 09/30/00	2,548	686	273		1934.5	515	2,8200	1,8864	2.1378	1,275,116.5	3,595,791	2,725,919	2,655,314										
10/01/00 - 10/14/00	2,689	664	337		1355.75	456	2,0418	1,3531	1.5232	1,279,933.0	2,613,357	1,949,558	1,900,371										
10/15/00 - 10/28/00	2,690	633	292		782.5	281	1,2362	0,9623	1.0268	1,284,749.6	1,588,178	1,319,142	1,287,610										
10/29/00 - 11/11/00	2,686	677	270		478.83	192.5	0,7073	0,7130	0.7115	1,289,566.1	912,087	917,566	896,469										
11/12/00 - 11/25/00										1,294,382.7													
11/26/00 - 12/09/00	2,687	583	362		549	73	0,9417	0,2017	0.3622	1,299,199.2	1,223,431	470,597	455,674										
12/10/00 - 12/23/00	2,689	633	311		461.5	301	0,7291	0,9678	0.9116	1,304,015.8	950,716	1,188,788	1,163,514										
12/24/00 - 01/06/01	2,239	620	207		953.5	140	1,5379	0,6763	0.9149	1,309,321.2	2,013,609	1,197,907	1,163,205										
01/07/01 - 01/20/01	2,241	589	205		1323.5	143	2,2470	0,6976	1.1048	1,314,626.6	2,954,004	1,452,408	1,407,543										
01/21/01 - 02/03/01	2,244	537	245		1023	181	1,9050	0,7388	1.0179	1,319,932.0	2,514,507	1,343,513	1,305,250										
02/04/01 - 02/17/01	4,737	1186	473		1505.75	431	1,2696	0,9112	1.0009	1,325,237.4	1,682,526	1,326,479	1,293,508										
02/18/01 - 03/03/01	4,738	1103	519		1507.5	337.5	1,3667	0,6503	0.8171	1,330,542.8	1,818,489	1,087,153	1,057,959										
Total	53,312	14,046	5,890		40,217	10,451	2,8632	1,7743	2,0612	24,650,129	61,022,909	45,210,183	44,015,887										

Table B-2. Statewide angling catch during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Catch				Catch/Angler				Licensed				Angling Catch			
	Sent	Respond	NonResp	Recall	Respond	NonResp	Recall	Recall	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	Respond	NonResp	Recall	Recall	
04/30/00 - 05/13/00	1,538	616	167	10630	17,2565	12,5868	14,4571	348,271	6,009,935	5,034,995	2,756,475	348,271	6,009,935	5,034,995	2,756,475					
05/14/00 - 05/27/00	1,534	548	210	9025	16,4690	11,3286	13,1649	486,038	8,004,547	6,398,645	3,514,292	486,038	8,004,547	6,398,645	3,514,292					
05/28/00 - 06/10/00	1,535	536	185	10385	19,3750	14,7405	16,3588	623,805	12,086,218	10,204,715	5,623,887	623,805	12,086,218	10,204,715	5,623,887					
06/11/00 - 06/24/00	1,253	357	139	5183	14,5182	9,5252	10,9478	751,177	10,905,746	8,223,718	4,548,743	751,177	10,905,746	8,223,718	4,548,743					
06/25/00 - 07/08/00	2,544	691	311	10587	15,3213	9,4180	11,0214	878,550	13,460,499	9,682,889	5,355,983	878,550	13,460,499	9,682,889	5,355,983					
07/09/00 - 07/22/00	2,543	676	281	7169	10,6050	8,9609	9,3979	1,005,922	10,667,832	9,453,576	5,270,584	1,005,922	10,667,832	9,453,576	5,270,584					
07/23/00 - 08/05/00	2,546	691	283	7279	10,5340	7,0141	7,9694	1,133,294	11,938,133	9,031,733	5,005,415	1,133,294	11,938,133	9,031,733	5,005,415					
08/06/00 - 08/19/00	2,543	658	283	7047	10,7097	8,4523	9,0364	1,260,667	13,501,396	11,391,896	6,346,936	1,260,667	13,501,396	11,391,896	6,346,936					
08/20/00 - 09/02/00	2,540	715	233	7691	10,7566	6,1416	7,4407	1,265,483	13,612,353	9,416,131	5,192,816	1,265,483	13,612,353	9,416,131	5,192,816					
09/03/00 - 09/16/00	2,548	647	304	5358	8,2813	5,3224	6,0737	1,270,300	10,519,732	7,715,438	4,281,379	1,270,300	10,519,732	7,715,438	4,281,379					
09/17/00 - 09/30/00	2,548	686	273	4314	6,2886	3,8425	4,5011	1,275,116	8,018,735	5,739,384	3,175,142	1,275,116	8,018,735	5,739,384	3,175,142					
10/01/00 - 10/14/00	2,689	664	337	3766	5,6717	3,7893	4,2541	1,279,933	7,259,379	5,445,007	3,026,722	1,279,933	7,259,379	5,445,007	3,026,722					
10/15/00 - 10/28/00	2,690	633	292	2008	3,1722	2,7671	2,8624	1,284,750	4,075,477	2,058,443	2,058,443	1,284,750	4,075,477	2,058,443	2,058,443					
10/29/00 - 11/11/00	2,686	677	270	1044	1,5421	0,8111	0,9954	1,289,566	1,988,637	709,060	709,060	1,289,566	1,988,637	709,060	709,060					
11/12/00 - 11/25/00								1,294,383				1,294,383								
11/26/00 - 12/09/00	2,687	583	362	1608	2,7581	1,1519	1,5004	1,299,199	3,583,383	1,075,929	1,075,929	1,299,199	3,583,383	1,075,929	1,075,929					
12/10/00 - 12/23/00	2,689	633	311	1135	1,7930	2,6367	2,4381	1,304,016	2,338,164	1,795,298	1,795,298	1,304,016	2,338,164	1,795,298	1,795,298					
12/24/00 - 01/06/01	2,239	620	207	2171	3,5016	1,0725	1,7451	1,309,321	4,584,736	1,240,901	1,240,901	1,309,321	4,584,736	1,240,901	1,240,901					
01/07/01 - 01/20/01	2,241	589	205	2747	4,6638	2,3024	2,9231	1,314,627	6,131,204	2,116,517	2,116,517	1,314,627	6,131,204	2,116,517	2,116,517					
01/21/01 - 02/03/01	2,244	537	245	1979	3,6853	2,1306	2,5027	1,319,932	4,864,330	1,831,903	1,831,903	1,319,932	4,864,330	1,831,903	1,831,903					
02/04/01 - 02/17/01	4,737	1186	473	4512	3,8044	3,7992	3,8005	1,325,237	5,041,713	2,822,010	2,822,010	1,325,237	5,041,713	2,822,010	2,822,010					
02/18/01 - 03/03/01	4,738	1103	519	4112	3,7280	1,8748	2,3062	1,330,543	4,960,283	1,697,520	1,697,520	1,330,543	4,960,283	1,697,520	1,697,520					
Total	53,312	14,046	5,890	109,750	29,981	7,8136	5,8077	24,650,129	163,552,433	69,445,957	69,445,957	24,650,129	163,552,433	69,445,957	69,445,957					

Table B-3. Statewide angling harvest during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Harvest				Harvest/Angler				Licensed				Angling Harvest			
	Sent	Respond	NonResp	Recall	Respond	NonResp	Overall	Recall	Respond	NonResp	Overall	Recall	Population	Biased	Nonresponse	Recall	Population	Biased	Nonresponse	Recall
04/30/00 - 05/13/00	1,538	616	167		4167	598	4.8560		6.7646	3.5808	4.8560		348,271	2,355,917	1,691,205	1,178,417		2,355,917	1,691,205	1,178,417
05/14/00 - 05/27/00	1,534	548	210		3369	766	4.5408		6.1478	3.6476	4.5408		486,038	2,988,069	2,206,990	1,560,481		2,988,069	2,206,990	1,560,481
05/28/00 - 06/10/00	1,535	536	185		3481	888	4.8000		6.4944	4.8000	5.3917		623,805	4,051,240	3,363,344	2,407,429		4,051,240	3,363,344	2,407,429
06/11/00 - 06/24/00	1,253	357	139		1703	339	3.1031		4.7703	2.4388	3.1031		751,177	3,583,347	2,330,993	1,662,883		3,583,347	2,330,993	1,662,883
06/25/00 - 07/08/00	2,544	691	311		2844	866	3.1461		4.1158	2.7846	3.1461		878,550	3,615,912	2,764,047	2,003,412		3,615,912	2,764,047	2,003,412
07/09/00 - 07/22/00	2,543	676	281		2442	698	2.7840		3.6124	2.4840	2.7840		1,005,922	3,633,819	2,800,443	2,033,818		3,633,819	2,800,443	2,033,818
07/23/00 - 08/05/00	2,546	691	283		2345	617	2.5095		3.3936	2.1802	2.5095		1,133,294	3,845,985	2,844,050	2,056,801		3,845,985	2,844,050	2,056,801
08/06/00 - 08/19/00	2,543	658	283		2055	820	2.9559		3.1231	2.8975	2.9559		1,260,667	3,937,189	3,726,397	2,743,163		3,937,189	3,726,397	2,743,163
08/20/00 - 09/02/00	2,540	715	233		2475	583	2.7722		3.4615	2.5021	2.7722		1,265,483	4,380,519	3,508,187	2,544,635		4,380,519	3,508,187	2,544,635
09/03/00 - 09/16/00	2,548	647	304		1649	619	2.1663		2.5487	2.0362	2.1663		1,270,300	3,237,596	2,751,877	2,016,127		3,237,596	2,751,877	2,016,127
09/17/00 - 09/30/00	2,548	686	273		1408	429	1.7009		2.0525	1.5714	1.7009		1,275,116	2,617,149	2,168,899	1,581,178		2,617,149	2,168,899	1,581,178
10/01/00 - 10/14/00	2,689	664	337		985	396	1.2512		1.4834	1.1751	1.2512		1,279,933	1,898,696	1,601,475	1,174,625		1,898,696	1,601,475	1,174,625
10/15/00 - 10/28/00	2,690	633	292		535	235	0.8143		0.8452	0.8048	0.8143		1,284,750	1,085,847	1,046,169	774,348		1,085,847	1,046,169	774,348
10/29/00 - 11/11/00	2,686	677	270		293	81	0.3335		0.4528	0.3000	0.3335		1,289,566	558,114	430,031	313,369		558,114	430,031	313,369
11/12/00 - 11/25/00													1,294,383							
11/26/00 - 12/09/00	2,687	583	362		461	174	0.5479		0.7907	0.4807	0.5479		1,299,199	1,027,326	711,883	520,137		1,027,326	711,883	520,137
12/10/00 - 12/23/00	2,689	633	311		541	304	0.9486		0.8547	0.9775	0.9486		1,304,016	1,114,491	1,236,959	921,064		1,114,491	1,236,959	921,064
12/24/00 - 01/06/01	2,239	620	207		986	83	0.7303		1.5903	0.4010	0.7303		1,309,321	2,082,243	956,210	660,321		2,082,243	956,210	660,321
01/07/01 - 01/20/01	2,241	589	205		1145	285	1.5358		1.9440	1.3902	1.5358		1,314,627	2,555,598	2,018,977	1,469,700		2,555,598	2,018,977	1,469,700
01/21/01 - 02/03/01	2,244	537	245		1079	209	1.1298		2.0093	0.8531	1.1298		1,319,932	2,652,154	1,491,203	1,066,347		2,652,154	1,491,203	1,066,347
02/04/01 - 02/17/01	4,737	1186	473		1589	829	1.6493		1.3398	1.7526	1.6493		1,325,237	1,775,550	2,185,686	1,630,137		1,775,550	2,185,686	1,630,137
02/18/01 - 03/03/01	4,738	1103	519		1943	419	1.0295		1.7616	0.8073	1.0295		1,330,543	2,343,830	1,369,750	984,661		2,343,830	1,369,750	984,661
Total	53,312	14,046	5,890		37,495	10,238	1.9836		2.6694	1.7382	1.9836		24,650,129	55,340,587	43,204,776	31,303,049		55,340,587	43,204,776	31,303,049

Table C-1. Statewide bluegill catch during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Catch				Catch/Angler				Licensed				Angling Catch					
	Sent	Respond	NonResp	Respond	NonResp	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	Respond	NonResp	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	
04/30/00 - 05/13/00	1,538	616	167	2,518	546	4,0877	3,2695	3.5972	348,271	1,423,614	1,252,789	687,479										
05/14/00 - 05/27/00	1,534	548	210	2,336	727	4,2628	3,4619	3.7480	486,038	2,071,869	1,821,672	1,004,683										
05/28/00 - 06/10/00	1,535	536	185	3,765	941	7,0243	5,0865	5.7631	623,805	4,381,763	3,595,066	1,978,823										
06/11/00 - 06/24/00	1,253	357	139	2,300	452	6,4426	3,2518	4.1609	751,177	4,839,517	3,125,575	1,717,656										
06/25/00 - 07/08/00	2,544	691	311	3,278	1,064	4,7438	3,4212	3.7805	878,550	4,167,707	3,321,333	1,844,053										
07/09/00 - 07/22/00	2,543	676	281	2,606	959	3,8550	3,4128	3.5304	1,005,922	3,877,859	3,551,272	1,981,860										
07/23/00 - 08/05/00	2,546	691	283	2,643	632	3,8249	2,2332	2.6652	1,133,294	4,334,728	3,020,463	1,668,703										
08/06/00 - 08/19/00	2,543	658	283	2,628	578	3,9939	2,0424	2.5474	1,260,667	5,035,004	3,211,369	1,771,236										
08/20/00 - 09/02/00	2,540	715	233	2,980	653	4,1678	2,8026	3.1869	1,265,483	5,274,322	4,032,956	2,232,936										
09/03/00 - 09/16/00	2,548	647	304	1,508	918	2,3308	3,0197	2.8448	1,270,300	2,960,761	3,613,734	2,033,503										
09/17/00 - 09/30/00	2,548	686	273	1,146	255	1,6706	0,9341	1.1324	1,275,116	2,130,151	1,443,880	797,067										
10/01/00 - 10/14/00	2,689	664	337	678	630	1,0211	1,8694	1.6600	1,279,933	1,306,920	2,124,626	1,202,297										
10/15/00 - 10/28/00	2,690	633	292	443	88	0,6998	0,3014	0.3951	1,284,750	899,122	507,652	279,678										
10/29/00 - 11/11/00	2,686	677	270	163	5	0,2408	0,0185	0.0745	1,289,566	310,486	96,119	50,797										
11/12/00 - 11/25/00									1,294,383	0	0	0										
11/26/00 - 12/09/00	2,687	583	362	463	285	0,7942	0,7873	0.7888	1,299,199	1,031,783	1,024,788	576,061										
12/10/00 - 12/23/00	2,689	633	311	583	522	0,9210	1,6785	1.5002	1,304,016	1,201,013	1,956,221	1,107,813										
12/24/00 - 01/06/01	2,239	620	207	1,235	140	1,9919	0,6763	1.0406	1,309,321	2,608,083	1,362,522	741,931										
01/07/01 - 01/20/01	2,241	589	205	892	314	1,5144	1,5317	1.5272	1,314,627	1,990,912	2,007,654	1,123,773										
01/21/01 - 02/03/01	2,244	537	245	857	175	1,5959	0,7143	0.9253	1,319,932	2,106,484	1,221,282	673,112										
02/04/01 - 02/17/01	4,737	1186	473	2,188	1,135	1,8449	2,3996	2.2607	1,325,237	2,444,873	2,995,954	1,686,499										
02/18/01 - 03/03/01	4,738	1103	519	1,751	341	1,5875	0,6570	0.8736	1,330,543	2,112,222	1,162,418	639,996										
Total	53,312	14,046	5,890	36,961	11,360	2,6314	1,9287	2.1138	56,509,191	46,449,343	25,799,957											

Table C-2. Statewide bluegill harvest during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Harvest				Harvest/Angler			Licensed			Angling Harvest		
	Sent	Respond	NonResp	Recall	Respond	NonResp	Recall	Recall	Respond	NonResp	Recall	Overall	Population	Biased	Nonresponse	Recall	
04/30/00 - 05/13/00	1,538	616	167	1,154	288	1,8734	1.7246	1.7842	1.8734	1.7246	1.7842	348,271	652,443	621,371	444,772		
05/14/00 - 05/27/00	1,534	548	210	1,086	240	1.9818	1.1429	1.4425	1.9818	1.1429	1.4425	486,038	963,206	701,129	495,054		
05/28/00 - 06/10/00	1,535	536	185	1,614	433	3.0112	2.3405	2.5747	3.0112	2.3405	2.5747	623,805	1,878,397	1,606,125	1,152,354		
06/11/00 - 06/24/00	1,253	357	139	1,022	147	2.8627	1.0576	1.5719	2.8627	1.0576	1.5719	751,177	2,150,429	1,180,762	829,120		
06/25/00 - 07/08/00	2,544	691	311	1,176	396	1.7019	1.2733	1.3897	1.7019	1.2733	1.3897	878,550	1,495,187	1,220,938	888,782		
07/09/00 - 07/22/00	2,543	676	281	1,077	296	1.5932	1.0534	1.1969	1.5932	1.0534	1.1969	1,005,922	1,602,630	1,203,966	872,895		
07/23/00 - 08/05/00	2,546	691	283	1,086	250	1.5716	0.8834	1.0702	1.5716	0.8834	1.0702	1,133,294	1,781,125	1,212,835	871,823		
08/06/00 - 08/19/00	2,543	658	283	869	199	1.3207	0.7032	0.8630	1.3207	0.7032	0.8630	1,260,667	1,664,923	1,087,899	782,404		
08/20/00 - 09/02/00	2,540	715	233	1,232	347	1.7231	1.4893	1.5551	1.7231	1.4893	1.5551	1,265,483	2,180,525	1,967,935	1,438,200		
09/03/00 - 09/16/00	2,548	647	304	667	453	1.0309	1.4901	1.3735	1.0309	1.4901	1.3735	1,270,300	1,309,567	1,744,788	1,304,394		
09/17/00 - 09/30/00	2,548	686	273	546	135	0.7959	0.4945	0.5757	0.7959	0.4945	0.5757	1,275,116	1,014,889	734,027	530,314		
10/01/00 - 10/14/00	2,689	664	337	318	260	0.4789	0.7715	0.6993	0.4789	0.7715	0.6993	1,279,933	612,980	895,008	671,760		
10/15/00 - 10/28/00	2,690	633	292	138	14	0.2180	0.0479	0.0880	0.2180	0.0479	0.0880	1,284,750	280,088	113,012	78,351		
10/29/00 - 11/11/00	2,686	677	270	97	3	0.1433	0.0111	0.0444	0.1433	0.0111	0.0444	1,289,566	184,768	57,287	37,897		
11/12/00 - 11/25/00												1,294,383					
11/26/00 - 12/09/00	2,687	583	362	260	136	0.4460	0.3757	0.3909	0.4460	0.3757	0.3909	1,299,199	579,403	507,908	375,710		
12/10/00 - 12/23/00	2,689	633	311	247	220	0.3902	0.7074	0.6327	0.3902	0.7074	0.6327	1,304,016	508,834	825,087	622,012		
12/24/00 - 01/06/01	2,239	620	207	516	59	0.8323	0.2850	0.4366	0.8323	0.2850	0.4366	1,309,321	1,089,693	571,595	400,657		
01/07/01 - 01/20/01	2,241	589	205	393	187	0.6672	0.9122	0.8478	0.6672	0.9122	0.8478	1,314,627	877,162	1,114,556	830,729		
01/21/01 - 02/03/01	2,244	537	245	529	56	0.9851	0.2286	0.4096	0.9851	0.2286	0.4096	1,319,932	1,300,268	540,661	375,414		
02/04/01 - 02/17/01	4,737	1186	473	824	527	0.6948	1.1142	1.0092	0.6948	1.1142	1.0092	1,325,237	920,738	1,337,379	1,003,186		
02/18/01 - 03/03/01	4,738	1103	519	849	129	0.7697	0.2486	0.3699	0.7697	0.2486	0.3699	1,330,543	1,024,144	492,143	347,922		
Total	53,312	14,046	5,890	15,700	4,775	1.1178	0.8107	0.8916	1.1178	0.8107	0.8916	24,071,400	19,736,411	14,353,749			

Table C-3. Statewide walleye catch during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Catch				Catch/Angler				Licensed				Angling Catch			
	Sent	Respond	NonResp	Respond	NonResp	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	
04/30/00 - 05/13/00	1,538	616	167	1,392	193	2,2597	1.1557	1.5979	348,271	787,002	556,496	301,885								
05/14/00 - 05/27/00	1,534	548	210	1,220	340	2,2263	1.6190	1.8360	486,038	1,082,055	892,352	490,793								
05/28/00 - 06/10/00	1,535	536	185	1,523	436	2,8414	2.3568	2.5260	623,805	1,772,490	1,575,727	870,243								
06/11/00 - 06/24/00	1,253	357	139	295	176	0.8263	1.2662	1.1409	751,177	620,721	856,992	482,323								
06/25/00 - 07/08/00	2,544	691	311	1,132	314	1.6382	1.0096	1.1804	878,550	1,439,245	1,037,018	573,651								
07/09/00 - 07/22/00	2,543	676	281	661	201	0.9778	0.7153	0.7851	1,005,922	983,601	789,734	438,907								
07/23/00 - 08/05/00	2,546	691	283	656	115	0.9493	0.4064	0.5537	1,133,294	1,075,892	627,540	344,007								
08/06/00 - 08/19/00	2,543	658	283	541	282	0.8222	0.9965	0.9514	1,260,667	1,036,506	1,199,363	673,845								
08/20/00 - 09/02/00	2,540	715	233	627	142	0.8769	0.6094	0.6847	1,265,483	1,109,732	866,523	480,144								
09/03/00 - 09/16/00	2,548	647	304	485	65	0.7496	0.2138	0.3499	1,270,300	952,234	444,437	241,657								
09/17/00 - 09/30/00	2,548	686	273	616	156	0.8980	0.5714	0.6593	1,275,116	1,145,003	840,736	465,562								
10/01/00 - 10/14/00	2,689	664	337	620	195	0.9337	0.5786	0.6663	1,279,933	1,195,118	852,846	473,262								
10/15/00 - 10/28/00	2,690	633	292	391	336	0.6177	1.1507	1.0253	1,284,750	793,581	1,317,207	746,143								
10/29/00 - 11/11/00	2,686	677	270	240	39	0.3545	0.1444	0.1974	1,289,566	457,158	254,547	139,720								
11/12/00 - 11/25/00									1,294,383											
11/26/00 - 12/09/00	2,687	583	362	180	15	0.3087	0.0414	0.0994	1,299,199	401,125	129,186	69,297								
12/10/00 - 12/23/00	2,689	633	311	105	23	0.1659	0.0740	0.0956	1,304,016	216,306	124,656	68,734								
12/24/00 - 01/06/01	2,239	620	207	139	13	0.2242	0.0628	0.1075	1,309,321	293,541	140,743	76,261								
01/07/01 - 01/20/01	2,241	589	205	266	9	0.4516	0.0439	0.1511	1,314,627	593,702	198,588	105,269								
01/21/01 - 02/03/01	2,244	537	245	80	119	0.1490	0.4857	0.4051	1,319,932	196,638	534,746	304,535								
02/04/01 - 02/17/01	4,737	1186	473	381	37	0.3212	0.0782	0.1391	1,325,237	425,730	184,301	99,854								
02/18/01 - 03/03/01	4,738	1103	519	394	68	0.3572	0.1310	0.1837	1,330,543	475,280	244,390	134,144								
Total	53,312	14,046	5,890	11,944	3,274	0.8503	0.5559	0.6334	17,052,659	13,668,127	7,580,236	4,000,000								

Table C-4. Statewide walleye harvest during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Harvest				Harvest/Angler			Licensed			Angling Harvest		
	Sent	Respond	NonResp	Respond	NonResp	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall					
04/30/00 - 05/13/00	1,538	616	167	303	31	0.4919	0.1856	0.3083	348,271	171,309	107,368	73,609					
05/14/00 - 05/27/00	1,534	548	210	256	87	0.4672	0.4143	0.4332	486,038	227,054	210,538	151,729					
05/28/00 - 06/10/00	1,535	536	185	456	117	0.8507	0.6324	0.7087	623,805	530,700	442,068	316,512					
06/11/00 - 06/24/00	1,253	357	139	50	37	0.1401	0.2662	0.2303	751,177	105,207	172,959	129,716					
06/25/00 - 07/08/00	2,544	691	311	224	83	0.3242	0.2669	0.2824	878,550	284,798	248,139	181,349					
07/09/00 - 07/22/00	2,543	676	281	194	55	0.2870	0.1957	0.2200	1,005,922	288,682	221,290	160,655					
07/23/00 - 08/05/00	2,546	691	283	138	26	0.1997	0.0919	0.1211	1,133,294	226,331	137,288	97,759					
08/06/00 - 08/19/00	2,543	658	283	114	45	0.1733	0.1590	0.1627	1,260,667	218,413	205,105	150,926					
08/20/00 - 09/02/00	2,540	715	233	118	29	0.1650	0.1245	0.1359	1,265,483	208,849	171,959	124,958					
09/03/00 - 09/16/00	2,548	647	304	82	7	0.1267	0.0230	0.0494	1,270,300	160,996	62,704	42,876					
09/17/00 - 09/30/00	2,548	686	273	139	33	0.2026	0.1209	0.1429	1,275,116	258,369	182,198	131,392					
10/01/00 - 10/14/00	2,689	664	337	105	28	0.1581	0.0831	0.1016	1,279,933	202,399	130,063	93,751					
10/15/00 - 10/28/00	2,690	633	292	60	39	0.0948	0.1336	0.1244	1,284,750	121,777	159,871	119,769					
10/29/00 - 11/11/00	2,686	677	270	41	9	0.0606	0.0333	0.0402	1,289,566	78,098	51,836	37,396					
11/12/00 - 11/25/00									1,294,383								
11/26/00 - 12/09/00	2,687	583	362	27	12	0.0463	0.0331	0.0360	1,299,199	60,169	46,778	34,398					
12/10/00 - 12/23/00	2,689	633	311	32	7	0.0506	0.0225	0.0291	1,304,016	65,922	37,960	27,233					
12/24/00 - 01/06/01	2,239	620	207	53	2	0.0855	0.0097	0.0307	1,309,321	111,926	40,141	26,781					
01/07/01 - 01/20/01	2,241	589	205	49	3	0.0832	0.0146	0.0327	1,314,627	109,366	42,927	29,248					
01/21/01 - 02/03/01	2,244	537	245	19	49	0.0354	0.2000	0.1606	1,319,932	46,702	211,989	162,524					
02/04/01 - 02/17/01	4,737	1186	473	95	9	0.0801	0.0190	0.0343	1,325,237	106,153	45,480	31,524					
02/18/01 - 03/03/01	4,738	1103	519	57	23	0.0517	0.0443	0.0460	1,330,543	68,759	61,244	45,187					
Total	53,312	14,046	5,890	2,612	731	0.1860	0.1241	0.1404	3,651,977	2,989,904	2,169,291	2,169,291					

Table C-5. Statewide yellow perch catch during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Catch				Catch/Angler				Licensed				Angling Catch			
	Sent	Respond	NonResp	Recall	Respond	NonResp	Recall	Recall	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	Respond	NonResp	Recall	Recall	
04/30/00 - 05/13/00	1,538	616	167		974	45			1.5812	0.2695	0.7948	348,271	550,675	276,815	146,563					
05/14/00 - 05/27/00	1,534	548	210		699	170			1.2755	0.8095	0.9760	486,038	619,964	474,375	260,003					
05/28/00 - 06/10/00	1,535	536	185		1069	127			1.9944	0.6865	1.1432	623,805	1,244,118	713,129	385,131					
06/11/00 - 06/24/00	1,253	357	139		585	91			1.6387	0.6547	0.9350	751,177	1,230,921	702,372	383,680					
06/25/00 - 07/08/00	2,544	691	311		1112	302			1.6093	0.9711	1.1444	878,550	1,413,816	1,005,420	555,889					
07/09/00 - 07/22/00	2,543	676	281		765	310			1.1317	1.1032	1.1108	1,005,922	1,138,358	1,117,345	624,784					
07/23/00 - 08/05/00	2,546	691	283		1180	264			1.7077	0.9329	1.1432	1,133,294	1,935,293	1,295,525	714,568					
08/06/00 - 08/19/00	2,543	658	283		990	670			1.5046	2.3675	2.1442	1,260,667	1,896,748	2,703,132	1,525,136					
08/20/00 - 09/02/00	2,540	715	233		1115	231			1.5594	0.9914	1.1513	1,265,483	1,973,446	1,456,967	805,601					
09/03/00 - 09/16/00	2,548	647	304		831	133			1.2844	0.4375	0.6525	1,270,300	1,631,560	828,929	452,791					
09/17/00 - 09/30/00	2,548	686	273		593	165			0.8644	0.6044	0.6744	1,275,116	1,102,251	859,945	477,248					
10/01/00 - 10/14/00	2,689	664	337		467	71			0.7334	0.2107	0.3398	1,279,933	938,746	434,878	236,730					
10/15/00 - 10/28/00	2,690	633	292		274	101			0.4329	0.3459	0.3664	1,284,750	556,116	470,675	262,995					
10/29/00 - 11/11/00	2,686	677	270		130	3			0.1920	0.0111	0.0567	1,289,566	247,627	73,131	38,486					
11/12/00 - 11/25/00												1,294,383								
11/26/00 - 12/09/00	2,687	583	362		233	71			0.3997	0.1961	0.2403	1,299,199	519,234	312,186	172,977					
12/10/00 - 12/23/00	2,689	633	311		231	110			0.3649	0.3537	0.3563	1,304,016	475,873	464,675	260,613					
12/24/00 - 01/06/01	2,239	620	207		176	16			0.2839	0.0773	0.1345	1,309,321	371,678	176,101	95,351					
01/07/01 - 01/20/01	2,241	589	205		483	40			0.8200	0.1951	0.3594	1,314,627	1,078,038	472,433	255,393					
01/21/01 - 02/03/01	2,244	537	245		425	73			0.7914	0.2980	0.4160	1,319,932	1,044,639	549,158	301,353					
02/04/01 - 02/17/01	4,737	1186	473		922	250			0.7774	0.5285	0.5908	1,325,237	1,030,244	783,015	435,246					
02/18/01 - 03/03/01	4,738	1103	519		652	203			0.5911	0.3911	0.4377	1,330,543	786,504	582,367	324,208					
Total	53,312	14,046	5,890		13,926	3,446			0.9915	0.5851	0.6921		21,785,850	15,752,573	8,714,747					

Table C-6. Statewide yellow perch harvest during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Harvest				Harvest/Angler				Licensed				Angling Harvest	
	Sent	Respond	NonResp	Recall	Respond	NonResp	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	Biased	Nonresponse	Recall		
04/30/00 - 05/13/00	1,538	616	167		505	13	0.8198	0.0778	0.3750	348,270.9	285,514	130,607	85,269	285,514	130,607	85,269		
05/14/00 - 05/27/00	1,534	548	210		346	83	0.6314	0.3952	0.4796	486,037.9	306,878	233,103	165,250	306,878	233,103	165,250		
05/28/00 - 06/10/00	1,535	536	185		421	76	0.7854	0.4108	0.5416	623,804.8	489,966	337,871	237,835	489,966	337,871	237,835		
06/11/00 - 06/24/00	1,253	357	139		222	25	0.6218	0.1799	0.3058	751,177.2	467,119	229,700	159,371	467,119	229,700	159,371		
06/25/00 - 07/08/00	2,544	691	311		362	87	0.5239	0.2797	0.3461	878,549.6	460,253	304,026	218,013	460,253	304,026	218,013		
07/09/00 - 07/22/00	2,543	676	281		329	106	0.4867	0.3772	0.4063	1,005,922.0	489,569	408,729	298,338	489,569	408,729	298,338		
07/23/00 - 08/05/00	2,546	691	283		532	151	0.7699	0.5336	0.5977	1,133,294.4	872,522	677,382	491,511	872,522	677,382	491,511		
08/06/00 - 08/19/00	2,543	658	283		475	378	0.7219	1.3357	1.1769	1,260,666.8	910,056	1,483,638	1,115,698	910,056	1,483,638	1,115,698		
08/20/00 - 09/02/00	2,540	715	233		520	90	0.7273	0.3863	0.4823	1,265,483.3	920,352	610,290	436,506	920,352	610,290	436,506		
09/03/00 - 09/16/00	2,548	647	304		382	41	0.5904	0.1349	0.2505	1,270,299.9	750,007	318,265	219,984	750,007	318,265	219,984		
09/17/00 - 09/30/00	2,548	686	273		283	102	0.4125	0.3736	0.3841	1,275,116.5	526,032	489,775	359,476	526,032	489,775	359,476		
10/01/00 - 10/14/00	2,689	664	337		168	27	0.2530	0.0801	0.1228	1,279,933.0	323,838	157,191	110,599	323,838	157,191	110,599		
10/15/00 - 10/28/00	2,690	633	292		146	47	0.2306	0.1610	0.1774	1,284,749.6	296,325	227,860	166,710	296,325	227,860	166,710		
10/29/00 - 11/11/00	2,686	677	270		71	2	0.1049	0.0074	0.0320	1,289,566.1	135,243	41,232	27,198	135,243	41,232	27,198		
11/12/00 - 11/25/00										1,294,382.7								
11/26/00 - 12/09/00	2,687	583	362		59	15	0.1012	0.0414	0.0544	1,299,199.2	131,480	70,681	50,759	131,480	70,681	50,759		
12/10/00 - 12/23/00	2,689	633	311		165	19	0.2607	0.0611	0.1081	1,304,015.8	339,909	140,929	98,006	339,909	140,929	98,006		
12/24/00 - 01/06/01	2,239	620	207		77	7	0.1242	0.0338	0.0588	1,309,321.2	162,609	77,044	53,401	162,609	77,044	53,401		
01/07/01 - 01/20/01	2,241	589	205		289	22	0.4907	0.1073	0.2081	1,314,626.6	645,037	273,536	188,258	645,037	273,536	188,258		
01/21/01 - 02/03/01	2,244	537	245		181	53	0.3371	0.2163	0.2452	1,319,932.0	444,893	323,671	235,782	444,893	323,671	235,782		
02/04/01 - 02/17/01	4,737	1,186	473		272	100	0.2293	0.2114	0.2159	1,325,237.4	303,933	286,125	210,923	303,933	286,125	210,923		
02/18/01 - 03/03/01	4,738	1,103	519		310	85	0.2811	0.1638	0.1911	1,330,542.8	373,951	254,237	184,728	373,951	254,237	184,728		
Total	53,312	14,046	5,890		6,115	1,529	0.4354	0.2596	0.3059	9,635,486	7,075,891	5,113,615		9,635,486	7,075,891	5,113,615		

Table C-7. Statewide northern pike catch during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Catch				Catch/Angler				Licensed				Angling Catch			
	Sent	Respond	NonResp	Recall	Respond	NonResp	Recall	Recall	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	Respond	NonResp	Recall	Recall	
04/30/00 - 05/13/00	1,538	616	167		563	50			0.9140	0.2994	0.5455	348,271	318,306	189,997	101,946					
05/14/00 - 05/27/00	1,534	548	210		662	160			1.2080	0.7619	0.9213	486,038	587,148	447,775	245,384					
05/28/00 - 06/10/00	1,535	536	185		708	82			1.3209	0.4432	0.7497	623,805	823,981	467,671	252,410					
06/11/00 - 06/24/00	1,253	357	139		221	40			0.6190	0.2878	0.3822	751,177	465,014	287,067	157,427					
06/25/00 - 07/08/00	2,544	691	311		736	109			1.0651	0.3505	0.5446	878,550	935,763	478,452	260,498					
07/09/00 - 07/22/00	2,543	676	281		290	109			0.4290	0.3879	0.3988	1,005,922	431,535	401,186	223,988					
07/23/00 - 08/05/00	2,546	691	283		232	114			0.3357	0.4028	0.3846	1,133,294	380,498	435,888	244,570					
08/06/00 - 08/19/00	2,543	658	283		312	103			0.4742	0.3640	0.3925	1,260,667	597,763	494,778	275,497					
08/20/00 - 09/02/00	2,540	715	233		376	46			0.5259	0.1974	0.2899	1,265,483	665,485	366,841	200,157					
09/03/00 - 09/16/00	2,548	647	304		314	52			0.4853	0.1711	0.2509	1,270,300	616,498	318,657	174,216					
09/17/00 - 09/30/00	2,548	686	273		296	40			0.4315	0.1465	0.2232	1,275,116	550,196	284,659	155,161					
10/01/00 - 10/14/00	2,689	664	337		155	65			0.2334	0.1929	0.2029	1,279,933	298,780	259,689	145,015					
10/15/00 - 10/28/00	2,690	633	292		91	21			0.1438	0.0719	0.0888	1,284,750	184,695	114,116	63,101					
10/29/00 - 11/11/00	2,686	677	270		112	27			0.1654	0.1000	0.1165	1,289,566	213,340	150,225	83,262					
11/12/00 - 11/25/00												1,294,383								
11/26/00 - 12/09/00	2,687	583	362		191	26			0.3276	0.0718	0.1273	1,299,199	425,638	165,418	89,811					
12/10/00 - 12/23/00	2,689	633	311		120	95			0.1896	0.3055	0.2782	1,304,016	247,207	362,757	205,105					
12/24/00 - 01/06/01	2,239	620	207		180	20			0.2903	0.0966	0.1503	1,309,321	380,126	196,734	107,072					
01/07/01 - 01/20/01	2,241	589	205		228	65			0.3871	0.3171	0.3355	1,314,627	508,888	441,028	245,801					
01/21/01 - 02/03/01	2,244	537	245		135	86			0.2514	0.3510	0.3272	1,319,932	331,826	431,855	243,601					
02/04/01 - 02/17/01	4,737	1,186	473		291	51			0.2454	0.1078	0.1423	1,325,237	325,164	188,526	103,703					
02/18/01 - 03/03/01	4,738	1,103	519		354	76			0.3209	0.1464	0.1871	1,330,543	427,028	248,892	137,365					
Total	53,312	14,046	5,890		6,567	1,437			0.4675	0.2440	0.3029		9,714,879	6,732,213	3,715,090					

Table C-8. Statewide northern pike harvest during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Harvest				Harvest/Angler				Licensed				Angling Harvest	
	Sent	Respond	NonResp	Respond	NonResp	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	Biased	Nonresponse	Recall	Biased	Nonresponse	
04/30/00 - 05/13/00	1,538	616	167	48	1	0.0779	0.0060	0.0348	348,270.9	27,138	12,120	7,877	27,138	12,120	7,877			
05/14/00 - 05/27/00	1,534	548	210	82	22	0.1496	0.1048	0.1208	486,037.9	72,728	58,710	41,845	72,728	58,710	41,845			
05/28/00 - 06/10/00	1,535	536	185	77	7	0.1437	0.0378	0.0748	623,804.8	89,614	46,653	31,780	89,614	46,653	31,780			
06/11/00 - 06/24/00	1,253	357	139	11	6	0.0308	0.0432	0.0396	751,177.2	23,146	29,781	22,137	23,146	29,781	22,137			
06/25/00 - 07/08/00	2,544	691	311	67	12	0.0970	0.0386	0.0544	878,549.6	85,185	47,829	33,818	85,185	47,829	33,818			
07/09/00 - 07/22/00	2,543	676	281	38	13	0.0562	0.0463	0.0489	1,005,922.0	56,546	49,198	35,998	56,546	49,198	35,998			
07/23/00 - 08/05/00	2,546	691	283	25	19	0.0362	0.0671	0.0587	1,133,294.4	41,002	66,565	49,979	41,002	66,565	49,979			
08/06/00 - 08/19/00	2,543	658	283	27	3	0.0410	0.0106	0.0185	1,260,666.8	51,729	23,291	16,175	51,729	23,291	16,175			
08/20/00 - 09/02/00	2,540	715	233	35	0	0.0490	0.0000	0.0138	1,265,483.3	61,947	17,438	11,084	61,947	17,438	11,084			
09/03/00 - 09/16/00	2,548	647	304	26	7	0.0402	0.0230	0.0274	1,270,299.9	51,048	34,785	25,129	51,048	34,785	25,129			
09/17/00 - 09/30/00	2,548	686	273	37	0	0.0539	0.0000	0.0145	1,275,116.5	68,775	18,516	11,770	68,775	18,516	11,770			
10/01/00 - 10/14/00	2,689	664	337	11	12	0.0166	0.0356	0.0309	1,279,933.0	21,204	39,558	29,892	21,204	39,558	29,892			
10/15/00 - 10/28/00	2,690	633	292	17	8	0.0269	0.0274	0.0273	1,284,749.6	34,504	35,035	25,993	34,504	35,035	25,993			
10/29/00 - 11/11/00	2,686	677	270	18	1	0.0266	0.0037	0.0095	1,289,566.1	34,287	12,214	8,258	34,287	12,214	8,258			
11/12/00 - 11/25/00									1,294,382.7									
11/26/00 - 12/09/00	2,687	583	362	40	2	0.0686	0.0055	0.0192	1,299,199.2	89,139	24,961	16,644	89,139	24,961	16,644			
12/10/00 - 12/23/00	2,689	633	311	44	29	0.0695	0.0932	0.0877	1,304,015.8	90,642	114,310	85,519	90,642	114,310	85,519			
12/24/00 - 01/06/01	2,239	620	207	46	3	0.0742	0.0145	0.0310	1,309,321.2	97,143	40,621	27,719	97,143	40,621	27,719			
01/07/01 - 01/20/01	2,241	589	205	83	46	0.1409	0.2244	0.2025	1,314,626.6	185,253	266,147	199,252	185,253	266,147	199,252			
01/21/01 - 02/03/01	2,244	537	245	18	22	0.0335	0.0898	0.0763	1,319,932.0	44,244	100,749	76,510	44,244	100,749	76,510			
02/04/01 - 02/17/01	4,737	1,186	473	124	16	0.1046	0.0338	0.0515	1,325,237.4	138,558	68,295	48,060	138,558	68,295	48,060			
02/18/01 - 03/03/01	4,738	1,103	519	93	12	0.0843	0.0231	0.0374	1,330,542.8	112,185	49,719	34,868	112,185	49,719	34,868			
Total	53,312	14,046	5,890	967	241	0.0688	0.0409	0.0483	1,476,015	1,476,015	1,156,495	840,307	1,476,015	1,156,495	840,307			

Table C-9. Statewide muskellunge catch during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Catch				Catch/Angler				Licensed				Angling Catch			
	Sent	Respond	NonResp	Recall	Respond	NonResp	Overall	Recall	Respond	NonResp	Overall	Recall	Population	Biased	Nonresponse	Recall	Population	Biased	Nonresponse	Recall
04/30/00 - 05/13/00	1,538	616	167	14,189	23	16	0.0724	0.0373	0.0958	0.0233	0.0724	0.0373	348,270.9	13,004	25,211	14,189				
05/14/00 - 05/27/00	1,534	548	210	3,843	13	2	0.0146	0.0237	0.0095	0.0146	0.0146	0.0237	486,037.9	11,530	7,094	3,843				
05/28/00 - 06/10/00	1,535	536	185	15,360	55	3	0.0464	0.1026	0.0162	0.0464	0.0464	0.1026	623,804.8	64,010	28,935	15,360				
06/11/00 - 06/24/00	1,253	357	139	10,651	20	2	0.0263	0.0560	0.0144	0.0263	0.0263	0.0560	751,177.2	42,083	19,719	10,651				
06/25/00 - 07/08/00	2,544	691	311	49,740	60	33	0.1009	0.0868	0.1061	0.1009	0.1009	0.0868	878,549.6	76,285	88,622	49,740				
07/09/00 - 07/22/00	2,543	676	281	12,445	46	2	0.0233	0.0680	0.0071	0.0233	0.0233	0.0680	1,005,922.0	68,450	23,452	12,445				
07/23/00 - 08/05/00	2,546	691	283	24,370	33	10	0.0387	0.0478	0.0353	0.0387	0.0387	0.0478	1,133,294.4	54,123	43,866	24,370				
08/06/00 - 08/19/00	2,543	658	283	26,615	15	12	0.0373	0.0228	0.0424	0.0373	0.0373	0.0228	1,260,666.8	28,739	47,060	26,615				
08/20/00 - 09/02/00	2,540	715	233	36,966	39	12	0.0524	0.0545	0.0515	0.0524	0.0524	0.0545	1,265,483.3	69,026	66,259	36,966				
09/03/00 - 09/16/00	2,548	647	304	17,993	35	5	0.0260	0.0541	0.0164	0.0260	0.0260	0.0541	1,270,299.9	68,718	33,037	17,993				
09/17/00 - 09/30/00	2,548	686	273	24,905	28	9	0.0351	0.0408	0.0330	0.0351	0.0351	0.0408	1,275,116.5	52,046	44,731	24,905				
10/01/00 - 10/14/00	2,689	664	337	25,062	55	7	0.0361	0.0288	0.0208	0.0361	0.0361	0.0288	1,279,933.0	106,019	46,201	25,062				
10/15/00 - 10/28/00	2,690	633	292	5,396	14	1	0.0078	0.0221	0.0034	0.0078	0.0078	0.0221	1,284,749.6	28,415	10,051	5,396				
10/29/00 - 11/11/00	2,686	677	270	7,212	29	0	0.0108	0.0428	0.0000	0.0108	0.0108	0.0428	1,289,566.1	55,240	13,923	7,212				
11/12/00 - 11/25/00													1,294,382.7							
11/26/00 - 12/09/00	2,687	583	362	16,780	67	0	0.0249	0.1149	0.0000	0.0249	0.0249	0.1149	1,299,199.2	149,308	32,395	16,780				
12/10/00 - 12/23/00	2,689	633	311	251	1	0	0.0004	0.0016	0.0000	0.0004	0.0004	0.0016	1,304,015.8	2,060	485	251				
12/24/00 - 01/06/01	2,239	620	207	2,423	8	0	0.0036	0.0129	0.0000	0.0036	0.0036	0.0129	1,309,321.2	16,894	4,678	2,423				
01/07/01 - 01/20/01	2,241	589	205	608	2	0	0.0009	0.0034	0.0000	0.0009	0.0009	0.0034	1,314,626.6	4,464	1,173	608				
01/21/01 - 02/03/01	2,244	537	245	609	2	0	0.0009	0.0037	0.0000	0.0009	0.0009	0.0037	1,319,932.0	4,916	1,176	609				
02/04/01 - 02/17/01	4,737	1,186	473	290	2	0	0.0004	0.0017	0.0000	0.0004	0.0004	0.0017	1,325,237.4	2,235	560	290				
02/18/01 - 03/03/01	4,738	1,103	519	582	4	0	0.0008	0.0036	0.0000	0.0008	0.0008	0.0036	1,330,542.8	4,825	1,123	582				
Total	53,312	14,046	5,890	296,289	551	114	0.0246	0.0392	0.0194	0.0246	0.0246	0.0392	922,388	539,753	296,289					

Table C-10. Statewide muskellunge harvest during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys			Harvest			Harvest/Angler			Licensed			Angling Harvest	
	Sent	Respond	NonResp	Respond	NonResp	1	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	
04/30/00 - 05/13/00	1,538	616	167	1	1	1	0.0016	0.0060	0.0042	348,270.9	565	1,477	1,112	
05/14/00 - 05/27/00	1,534	548	210	0	0	0	0.0000	0.0000	0.0000	486,037.9	0	0	0	
05/28/00 - 06/10/00	1,535	536	185	1	0	0	0.0019	0.0000	0.0007	623,804.8	1,164	406	258	
06/11/00 - 06/24/00	1,253	357	139	2	0	0	0.0056	0.0000	0.0016	751,177.2	4,208	1,199	762	
06/25/00 - 07/08/00	2,544	691	311	10	0	0	0.0145	0.0000	0.0039	878,549.6	12,714	3,453	2,195	
07/09/00 - 07/22/00	2,543	676	281	1	0	0	0.0015	0.0000	0.0004	1,005,922.0	1,488	396	251	
07/23/00 - 08/05/00	2,546	691	283	2	1	1	0.0029	0.0035	0.0034	1,133,294.4	3,280	3,808	2,824	
08/06/00 - 08/19/00	2,543	658	283	0	0	0	0.0000	0.0000	0.0000	1,260,666.8	0	0	0	
08/20/00 - 09/02/00	2,540	715	233	0	6	6	0.0000	0.0258	0.0185	1,265,483.3	0	23,414	18,122	
09/03/00 - 09/16/00	2,548	647	304	0	2	2	0.0000	0.0066	0.0049	1,270,299.9	0	6,235	4,826	
09/17/00 - 09/30/00	2,548	686	273	5	1	1	0.0073	0.0037	0.0046	1,275,116.5	9,294	5,915	4,232	
10/01/00 - 10/14/00	2,689	664	337	5	0	0	0.0075	0.0000	0.0019	1,279,933.0	9,638	2,380	1,513	
10/15/00 - 10/28/00	2,690	633	292	2	0	0	0.0032	0.0000	0.0007	1,284,749.6	4,059	955	607	
10/29/00 - 11/11/00	2,686	677	270	0	0	0	0.0000	0.0000	0.0000	1,289,566.1	0	0	0	
11/12/00 - 11/25/00										1,294,382.7				
11/26/00 - 12/09/00	2,687	583	362	0	0	0	0.0000	0.0000	0.0000	1,299,199.2	0	0	0	
12/10/00 - 12/23/00	2,689	633	311	1	0	0	0.0016	0.0000	0.0004	1,304,015.8	2,060	485	308	
12/24/00 - 01/06/01	2,239	620	207	0	0	0	0.0000	0.0000	0.0000	1,309,321.2	0	0	0	
01/07/01 - 01/20/01	2,241	589	205	0	0	0	0.0000	0.0000	0.0000	1,314,626.6	0	0	0	
01/21/01 - 02/03/01	2,244	537	245	0	0	0	0.0000	0.0000	0.0000	1,319,932.0	0	0	0	
02/04/01 - 02/17/01	4,737	1186	473	0	0	0	0.0000	0.0000	0.0000	1,325,237.4	0	0	0	
02/18/01 - 03/03/01	4,738	1103	519	0	0	0	0.0000	0.0000	0.0000	1,330,542.8	0	0	0	
Total	53,312	14,046	5,890	30	11	11	0.0021	0.0019	0.0019	48,471	50,124	37,010	37,010	

Table C-11. Statewide crappie catch during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Catch				Catch/Angler				Licensed				Angling Catch	
	Sent	Respond	NonResp	Recall	Respond	NonResp	Recall	Recall	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall			
04/30/00 - 05/13/00	1,538	616	167	1920	362	3,1169	2.5478	2.1677	2.5478	348,270.9	1,085,520	887,341	485,190					
05/14/00 - 05/27/00	1,534	548	210	1451	346	2.6478	1.6476	2.0049	486,037.9	1,286,936	974,469	533,832						
05/28/00 - 06/10/00	1,535	536	185	1128	380	2.1045	2.0541	2.0717	623,804.8	1,312,783	1,292,312	716,498						
06/11/00 - 06/24/00	1,253	357	139	660	129	1.8487	0.9281	1.1904	751,177.2	1,388,731	894,182	491,329						
06/25/00 - 07/08/00	2,544	691	311	1600	278	2.3155	0.8939	1.2800	878,549.6	2,034,268	1,124,564	614,815						
07/09/00 - 07/22/00	2,543	676	281	773	249	1.1435	0.8861	0.9545	1,005,922.0	1,150,263	960,190	534,326						
07/23/00 - 08/05/00	2,546	691	283	498	154	0.7207	0.5442	0.5921	1,133,294.4	816,759	671,000	372,946						
08/06/00 - 08/19/00	2,543	658	283	675	182	1.0258	0.6431	0.7421	1,260,666.8	1,293,237	935,591	518,565						
08/20/00 - 09/02/00	2,540	715	233	816	75	1.1413	0.3219	0.5525	1,265,483.3	1,444,244	699,228	378,720						
09/03/00 - 09/16/00	2,548	647	304	436	156	0.6739	0.5132	0.5540	1,270,299.9	856,029	703,707	391,978						
09/17/00 - 09/30/00	2,548	686	273	438	135	0.6385	0.4945	0.5333	1,275,116.5	814,141	679,980	378,245						
10/01/00 - 10/14/00	2,689	664	337	554	148	0.8343	0.4392	0.5367	1,279,933.0	1,067,896	687,002	379,765						
10/15/00 - 10/28/00	2,690	633	292	94	176	0.1485	0.6027	0.4958	1,284,749.6	190,784	637,043	363,423						
10/29/00 - 11/11/00	2,686	677	270	108	66	0.1595	0.2444	0.2230	1,289,566.1	205,721	287,626	162,303						
11/12/00 - 11/25/00									1,294,382.7									
11/26/00 - 12/09/00	2,687	583	362	143	18	0.2453	0.0497	0.0922	1,299,199.2	318,672	119,727	64,874						
12/10/00 - 12/23/00	2,689	633	311	69	34	0.1090	0.1093	0.1092	1,304,015.8	142,144	142,463	79,950						
12/24/00 - 01/06/01	2,239	620	207	355	23	0.5726	0.1111	0.2389	1,309,321.2	749,692	312,792	167,963						
01/07/01 - 01/20/01	2,241	589	205	524	33	0.8896	0.1610	0.3525	1,314,626.6	1,169,549	463,394	248,842						
01/21/01 - 02/03/01	2,244	537	245	420	47	0.7821	0.1918	0.3331	1,319,932.0	1,032,349	439,663	238,618						
02/04/01 - 02/17/01	4,737	1186	473	621	234	0.5236	0.4947	0.5019	1,325,237.4	693,906	665,201	372,323						
02/18/01 - 03/03/01	4,738	1103	519	774	220	0.7017	0.4239	0.4886	1,330,542.8	933,672	650,064	361,163						
Total	53,312	14,046	5,890	14,057	3,445	1.0008	0.5849	0.6945		19,987,296	14,227,539	7,855,666						

Table C-12. Statewide crappie harvest during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Harvest				Harvest/Angler				Licensed				Angling Harvest	
	Sent	Respond	NonResp	Respond	NonResp	Respond	NonResp	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	Biased	Nonresponse	Recall	
04/30/00 - 05/13/00	1,538	616	167	1136	171	1,842	1,0240	1.3525	348,270.9	642,266	471,023	328,974						
05/14/00 - 05/27/00	1,534	548	210	934	187	1,7044	0.8905	1.1812	486,037.9	828,393	574,123	403,418						
05/28/00 - 06/10/00	1,535	536	185	499	175	0.9310	0.9459	0.9407	623,804.8	580,744	586,824	426,128						
06/11/00 - 06/24/00	1,253	357	139	251	59	0.7031	0.4245	0.5038	751,177.2	528,139	378,476	272,112						
06/25/00 - 07/08/00	2,544	691	311	668	160	0.9667	0.5145	0.6373	878,549.6	849,307	559,907	401,438						
07/09/00 - 07/22/00	2,543	676	281	395	116	0.5843	0.4128	0.4584	1,005,922.0	587,780	461,118	335,274						
07/23/00 - 08/05/00	2,546	691	283	245	53	0.3546	0.1873	0.2327	1,133,294.4	401,819	263,695	189,005						
08/06/00 - 08/19/00	2,543	658	283	346	101	0.5258	0.3569	0.4006	1,260,666.8	662,904	505,029	367,147						
08/20/00 - 09/02/00	2,540	715	233	377	47	0.5273	0.2017	0.2934	1,265,483.3	667,255	371,242	261,347						
09/03/00 - 09/16/00	2,548	647	304	239	79	0.3694	0.2599	0.2877	1,270,299.9	469,245	365,440	266,355						
09/17/00 - 09/30/00	2,548	686	273	181	106	0.2638	0.3883	0.3548	1,275,116.5	336,437	452,383	337,596						
10/01/00 - 10/14/00	2,689	664	337	227	47	0.3419	0.1395	0.1894	1,279,933.0	437,567	242,477	172,723						
10/15/00 - 10/28/00	2,690	633	292	57	114	0.0900	0.3904	0.3197	1,284,749.6	115,688	410,774	314,154						
10/29/00 - 11/11/00	2,686	677	270	41	52	0.0606	0.1926	0.1593	1,289,566.1	78,098	205,446	156,283						
11/12/00 - 11/25/00									1,294,382.7									
11/26/00 - 12/09/00	2,687	583	362	54	9	0.0926	0.0249	0.0396	1,299,199.2	120,337	51,402	36,172						
12/10/00 - 12/23/00	2,689	633	311	48	22	0.0758	0.0707	0.0719	1,304,015.8	98,883	93,808	69,384						
12/24/00 - 01/06/01	2,239	620	207	270	12	0.4355	0.0580	0.1625	1,309,321.2	570,188	212,775	142,842						
01/07/01 - 01/20/01	2,241	589	205	297	21	0.5042	0.1024	0.2080	1,314,626.6	662,893	273,502	187,582						
01/21/01 - 02/03/01	2,244	537	245	314	15	0.5847	0.0612	0.1865	1,319,932.0	771,804	246,170	164,981						
02/04/01 - 02/17/01	4,737	1186	473	248	140	0.2091	0.2960	0.2742	1,325,237.4	277,115	363,422	271,676						
02/18/01 - 03/03/01	4,738	1103	519	537	135	0.4869	0.2601	0.3129	1,330,542.8	647,780	416,327	301,362						
Total	53,312	14,046	5,890	7,364	1,821	0.5243	0.3092	0.3658	10,334,643	7,505,362	5,405,953							

Table C-13. Statewide catfish catch during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Catch				Catch/Angler				Licensed				Angling Catch	
	Sent	Respond	NonResp	Respond	NonResp	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	Biased	Nonresponse	Recall	Biased	Nonresponse	Recall
04/30/00 - 05/13/00	1,538	616	167	277	4	0.4497	0.0240	0.1945	348,270.9	156,609	67,726	35,363	156,609	67,726	35,363			
05/14/00 - 05/27/00	1,534	548	210	250	12	0.4562	0.0571	0.1997	486,037.9	221,733	97,063	51,285	221,733	97,063	51,285			
05/28/00 - 06/10/00	1,535	536	185	119	13	0.2220	0.0703	0.1233	623,804.8	138,494	76,889	41,438	138,494	76,889	41,438			
06/11/00 - 06/24/00	1,253	357	139	87	85	0.2437	0.6115	0.5067	751,177.2	183,060	380,633	215,714	183,060	380,633	215,714			
06/25/00 - 07/08/00	2,544	691	311	158	86	0.2287	0.2765	0.2635	878,549.6	200,884	231,519	129,918	200,884	231,519	129,918			
07/09/00 - 07/22/00	2,543	676	281	332	43	0.4911	0.1530	0.2429	1,005,922.0	494,033	244,340	132,947	494,033	244,340	132,947			
07/23/00 - 08/05/00	2,546	691	283	122	39	0.1766	0.1378	0.1483	1,133,294.4	200,090	168,096	93,498	200,090	168,096	93,498			
08/06/00 - 08/19/00	2,543	658	283	102	54	0.1550	0.1908	0.1816	1,260,666.8	195,423	228,874	128,624	195,423	228,874	128,624			
08/20/00 - 09/02/00	2,540	715	233	189	16	0.2643	0.0687	0.1237	1,265,483.3	334,512	156,602	84,644	334,512	156,602	84,644			
09/03/00 - 09/16/00	2,548	647	304	61	13	0.0943	0.0428	0.0558	1,270,299.9	119,766	70,940	39,035	119,766	70,940	39,035			
09/17/00 - 09/30/00	2,548	686	273	48	18	0.0700	0.0659	0.0670	1,275,116.5	89,221	85,459	47,737	89,221	85,459	47,737			
10/01/00 - 10/14/00	2,689	664	337	27	24	0.0407	0.0712	0.0637	1,279,933.0	52,045	81,496	46,091	52,045	81,496	46,091			
10/15/00 - 10/28/00	2,690	633	292	16	7	0.0253	0.0240	0.0243	1,284,749.6	32,474	31,193	17,488	32,474	31,193	17,488			
10/29/00 - 11/11/00	2,686	677	270	14	1	0.0207	0.0037	0.0080	1,289,566.1	26,668	10,294	5,534	26,668	10,294	5,534			
11/12/00 - 11/25/00									1,294,382.7									
11/26/00 - 12/09/00	2,687	583	362	80	0	0.1372	0.0000	0.0298	1,299,199.2	178,278	38,681	20,036	178,278	38,681	20,036			
12/10/00 - 12/23/00	2,689	633	311	0	0	0.0000	0.0000	0.0000	1,304,015.8	0	0	0	0	0	0			
12/24/00 - 01/06/01	2,239	620	207	1	1	0.0016	0.0048	0.0039	1,309,321.2	2,112	5,158	2,930	2,112	5,158	2,930			
01/07/01 - 01/20/01	2,241	589	205	12	1	0.0204	0.0049	0.0090	1,314,626.6	26,784	11,767	6,362	26,784	11,767	6,362			
01/21/01 - 02/03/01	2,244	537	245	2	0	0.0037	0.0000	0.0009	1,319,932.0	4,916	1,176	609	4,916	1,176	609			
02/04/01 - 02/17/01	4,737	1,186	473	3	0	0.0025	0.0000	0.0006	1,325,237.4	3,352	839	435	3,352	839	435			
02/18/01 - 03/03/01	4,738	1,103	519	8	0	0.0073	0.0000	0.0017	1,330,542.8	9,650	2,247	1,164	9,650	2,247	1,164			
Total	53,312	14,046	5,890	1,908	417	0.1358	0.0708	0.0879	1,990,991	2,670,102	1,990,991	1,100,853	2,670,102	1,990,991	1,100,853			

Table C-14. Statewide catfish harvest during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Harvest				Harvest/Angler			Licensed			Angling Harvest	
	Sent	Respond	NonResp	Respond	NonResp	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall				
04/30/00 - 05/13/00	1,538	616	167	194	3	0.3149	0.0180	0.1369	348,270.9	109,683	47,681	30,827				
05/14/00 - 05/27/00	1,534	548	210	155	5	0.2828	0.0238	0.1163	486,037.9	137,474	56,549	36,974				
05/28/00 - 06/10/00	1,535	536	185	48	0	0.0896	0.0000	0.0313	623,804.8	55,863	19,507	12,400				
06/11/00 - 06/24/00	1,253	357	139	48	10	0.1345	0.0719	0.0898	751,177.2	100,999	67,420	48,200				
06/25/00 - 07/08/00	2,544	691	311	62	8	0.0897	0.0257	0.0431	878,549.6	78,828	37,872	26,350				
07/09/00 - 07/22/00	2,543	676	281	110	21	0.1627	0.0747	0.0981	1,005,922.0	163,686	98,704	70,375				
07/23/00 - 08/05/00	2,546	691	283	40	16	0.0579	0.0565	0.0569	1,133,294.4	65,603	64,488	47,449				
08/06/00 - 08/19/00	2,543	658	283	38	20	0.0578	0.0707	0.0673	1,260,666.8	72,804	84,878	63,087				
08/20/00 - 09/02/00	2,540	715	233	46	6	0.0643	0.0258	0.0366	1,265,483.3	81,416	46,332	32,690				
09/03/00 - 09/16/00	2,548	647	304	16	2	0.0247	0.0066	0.0112	1,270,299.9	31,414	14,212	9,896				
09/17/00 - 09/30/00	2,548	686	273	17	2	0.0248	0.0073	0.0120	1,275,116.5	31,599	15,334	10,691				
10/01/00 - 10/14/00	2,689	664	337	7	3	0.0105	0.0089	0.0093	1,279,933.0	13,493	11,912	8,759				
10/15/00 - 10/28/00	2,690	633	292	2	6	0.0032	0.0205	0.0165	1,284,749.6	4,059	21,142	16,231				
10/29/00 - 11/11/00	2,686	677	270	3	0	0.0044	0.0000	0.0011	1,289,566.1	5,714	1,440	916				
11/12/00 - 11/25/00									1,294,382.7							
11/26/00 - 12/09/00	2,687	583	362	0	0	0.0000	0.0000	0.0000	1,299,199.2	0	0	0				
12/10/00 - 12/23/00	2,689	633	311	0	0	0.0000	0.0000	0.0000	1,304,015.8	0	0	0				
12/24/00 - 01/06/01	2,239	620	207	1	0	0.0016	0.0000	0.0004	1,309,321.2	2,112	585	372				
01/07/01 - 01/20/01	2,241	589	205	0	1	0.0000	0.0049	0.0036	1,314,626.6	0	4,727	3,659				
01/21/01 - 02/03/01	2,244	537	245	1	0	0.0019	0.0000	0.0004	1,319,932.0	2,458	588	374				
02/04/01 - 02/17/01	4,737	1186	473	0	0	0.0000	0.0000	0.0000	1,325,237.4	0	0	0				
02/18/01 - 03/03/01	4,738	1103	519	0	0	0.0000	0.0000	0.0000	1,330,542.8	0	0	0				
Total	53,312	14,046	5,890	788	103	0.0561	0.0175	0.0277	957,205	593,373	419,248					

Table C-15. Statewide largemouth bass catch during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Catch				Catch/Angler				Licensed				Angling Catch							
	Sent	Respond	NonResp	Respond	NonResp	Respond	NonResp	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	Respond	NonResp	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	
04/30/00 - 05/13/00	1,538	616	167	731	42	1.1867	0.2515	0.6261	348,270.9	413,289	218,038	115,906												
05/14/00 - 05/27/00	1,534	548	210	607	215	1.1077	1.0238	1.0538	486,037.9	538,367	512,170	283,361												
05/28/00 - 06/10/00	1,535	536	185	644	248	1.2015	1.3405	1.2920	623,804.8	749,497	805,948	448,207												
06/11/00 - 06/24/00	1,253	357	139	347	129	0.9720	0.9281	0.9406	751,177.2	730,136	706,538	394,132												
06/25/00 - 07/08/00	2,544	691	311	912	206	1.3198	0.6624	0.8410	878,549.6	1,159,533	738,821	406,638												
07/09/00 - 07/22/00	2,543	676	281	777	253	1.1494	0.9004	0.9666	1,005,922.0	1,156,215	972,285	541,184												
07/23/00 - 08/05/00	2,546	691	283	615	266	0.8900	0.9399	0.9264	1,133,294.4	1,008,648	1,049,864	587,649												
08/06/00 - 08/19/00	2,543	658	283	572	164	0.8693	0.5795	0.6545	1,260,666.8	1,095,899	825,094	457,972												
08/20/00 - 09/02/00	2,540	715	233	499	74	0.6979	0.3176	0.4247	1,265,483.3	883,183	537,389	294,669												
09/03/00 - 09/16/00	2,548	647	304	484	120	0.7481	0.3947	0.4845	1,270,299.9	950,271	615,405	339,900												
09/17/00 - 09/30/00	2,548	686	273	337	56	0.4913	0.2051	0.2822	1,275,116.5	626,406	359,789	197,161												
10/01/00 - 10/14/00	2,689	664	337	472	23	0.7108	0.0682	0.2269	1,279,933.0	909,832	290,450	154,164												
10/15/00 - 10/28/00	2,690	633	292	59	5	0.0932	0.0171	0.0350	1,284,749.6	119,748	45,001	24,260												
10/29/00 - 11/11/00	2,686	677	270	75	21	0.1108	0.0778	0.0861	1,289,566.1	142,862	111,027	61,748												
11/12/00 - 11/25/00									1,294,382.7															
11/26/00 - 12/09/00	2,687	583	362	65	2	0.1115	0.0055	0.0285	1,299,199.2	144,851	37,049	19,508												
12/10/00 - 12/23/00	2,689	633	311	14	28	0.0221	0.0900	0.0740	1,304,015.8	28,841	96,555	55,084												
12/24/00 - 01/06/01	2,239	620	207	24	5	0.0387	0.0242	0.0282	1,309,321.2	50,683	36,903	20,407												
01/07/01 - 01/20/01	2,241	589	205	34	8	0.0577	0.0390	0.0439	1,314,626.6	75,887	57,764	32,057												
01/21/01 - 02/03/01	2,244	537	245	40	12	0.0745	0.0490	0.0551	1,319,932.0	98,319	72,707	40,439												
02/04/01 - 02/17/01	4,737	1186	473	86	4	0.0725	0.0085	0.0245	1,325,237.4	96,096	32,461	17,289												
02/18/01 - 03/03/01	4,738	1103	519	45	14	0.0408	0.0270	0.0302	1,330,542.8	54,283	40,173	22,364												
Total	53,312	14,046	5,890	7,439	1,895	0.5296	0.3217	0.3765	11,032,845	8,161,430	4,514,100													

Table C-16. Statewide largemouth bass harvest during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Harvest				Harvest/Angler				Licensed				Angling Harvest		
	Sent	Respond	NonResp	Respond	NonResp	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall
04/30/00 - 05/13/00	1,538	616	167	63	5	0.1023	0.0299	0.0589	348,270.9	35,619	20,517	13,906							
05/14/00 - 05/27/00	1,534	548	210	32	2	0.0584	0.0095	0.0270	486,037.9	28,382	13,114	8,748							
05/28/00 - 06/10/00	1,535	536	185	81	8	0.1511	0.0432	0.0809	623,804.8	94,269	50,473	34,512							
06/11/00 - 06/24/00	1,253	357	139	13	10	0.0364	0.0719	0.0618	751,177.2	27,354	46,438	34,863							
06/25/00 - 07/08/00	2,544	691	311	104	20	0.1505	0.0643	0.0877	878,549.6	132,227	77,068	54,680							
07/09/00 - 07/22/00	2,543	676	281	28	12	0.0414	0.0427	0.0424	1,005,922.0	41,665	42,614	31,449							
07/23/00 - 08/05/00	2,546	691	283	34	58	0.0492	0.2049	0.1627	1,133,294.4	55,763	184,361	140,594							
08/06/00 - 08/19/00	2,543	658	283	26	6	0.0395	0.0212	0.0259	1,260,666.8	49,814	32,701	23,527							
08/20/00 - 09/02/00	2,540	715	233	38	5	0.0531	0.0215	0.0304	1,265,483.3	67,256	38,444	27,136							
09/03/00 - 09/16/00	2,548	647	304	66	5	0.1020	0.0164	0.0382	1,270,299.9	129,582	48,492	32,980							
09/17/00 - 09/30/00	2,548	686	273	27	5	0.0394	0.0183	0.0240	1,275,116.5	50,187	30,578	21,797							
10/01/00 - 10/14/00	2,689	664	337	20	0	0.0301	0.0000	0.0074	1,279,933.0	38,552	9,520	6,051							
10/15/00 - 10/28/00	2,690	633	292	20	1	0.0316	0.0034	0.0101	1,284,749.6	40,592	12,917	8,676							
10/29/00 - 11/11/00	2,686	677	270	6	0	0.0089	0.0000	0.0022	1,289,566.1	11,429	2,881	1,831							
11/12/00 - 11/25/00									1,294,382.7										
11/26/00 - 12/09/00	2,687	583	362	7	0	0.0120	0.0000	0.0026	1,299,199.2	15,599	3,385	2,151							
12/10/00 - 12/23/00	2,689	633	311	0	1	0.0000	0.0032	0.0025	1,304,015.8	0	3,206	2,481							
12/24/00 - 01/06/01	2,239	620	207	5	0	0.0081	0.0000	0.0022	1,309,321.2	10,559	2,924	1,859							
01/07/01 - 01/20/01	2,241	589	205	7	4	0.0119	0.0195	0.0175	1,314,626.6	15,624	23,016	17,245							
01/21/01 - 02/03/01	2,244	537	245	6	8	0.0112	0.0327	0.0275	1,319,932.0	14,748	36,315	27,618							
02/04/01 - 02/17/01	4,737	1186	473	18	0	0.0152	0.0000	0.0038	1,325,237.4	20,113	5,036	3,201							
02/18/01 - 03/03/01	4,738	1103	519	9	5	0.0082	0.0096	0.0093	1,330,542.8	10,857	12,362	9,218							
Total	53,312	14,046	5,890	610	155	0.0434	0.0263	0.0308	890,191	696,361	504,522								

Table C-17. Statewide smallmouth bass catch during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Catch				Catch/Angler				Licensed				Angling Catch	
	Sent	Respond	NonResp	Recall	Respond	NonResp	Recall	Recall	Respond	NonResp	Recall	Recall	Overall	Population	Biased	Nonresponse	Recall	
04/30/00 - 05/13/00	1,538	616	167		535	45			0.8685	0.2695			0.5094	348,270.9	302,476	177,406	95,071	
05/14/00 - 05/27/00	1,534	548	210		446	97			0.8139	0.4619			0.5876	486,037.9	395,571	285,615	156,094	
05/28/00 - 06/10/00	1,535	536	185		324	82			0.6045	0.4432			0.4995	623,804.8	377,076	311,618	171,577	
06/11/00 - 06/24/00	1,253	357	139		155	51			0.4342	0.3669			0.3861	751,177.2	326,141	290,008	161,351	
06/25/00 - 07/08/00	2,544	691	311		829	283			1.1997	0.9100			0.9887	878,549.6	1,054,005	868,594	482,807	
07/09/00 - 07/22/00	2,543	676	281		369	144			0.5459	0.5125			0.5213	1,005,922.0	549,091	524,422	293,018	
07/23/00 - 08/05/00	2,546	691	283		597	217			0.8640	0.7668			0.7932	1,133,294.4	979,127	898,884	501,368	
08/06/00 - 08/19/00	2,543	658	283		528	159			0.8024	0.5618			0.6241	1,260,666.8	1,011,599	786,771	437,189	
08/20/00 - 09/02/00	2,540	715	233		438	112			0.6126	0.4807			0.5178	1,265,483.3	775,219	655,288	364,115	
09/03/00 - 09/16/00	2,548	647	304		410	40			0.6337	0.1316			0.2591	1,270,299.9	804,981	329,107	177,516	
09/17/00 - 09/30/00	2,548	686	273		240	45			0.3499	0.1648			0.2146	1,275,116.5	446,105	273,701	150,448	
10/01/00 - 10/14/00	2,689	664	337		182	35			0.2741	0.1039			0.1459	1,279,933.0	350,825	186,736	102,380	
10/15/00 - 10/28/00	2,690	633	292		173	11			0.2733	0.0377			0.0931	1,284,749.6	351,124	119,634	64,059	
10/29/00 - 11/11/00	2,686	677	270		86	3			0.1270	0.0111			0.0403	1,289,566.1	163,815	52,006	27,544	
11/12/00 - 11/25/00														1,294,382.7				
11/26/00 - 12/09/00	2,687	583	362		23	0			0.0395	0.0000			0.0086	1,299,199.2	51,255	11,121	5,760	
12/10/00 - 12/23/00	2,689	633	311		2	0			0.0032	0.0000			0.0007	1,304,015.8	4,120	970	502	
12/24/00 - 01/06/01	2,239	620	207		0	4			0.0000	0.0193			0.0140	1,309,321.2	0	18,295	10,510	
01/07/01 - 01/20/01	2,241	589	205		9	2			0.0153	0.0098			0.0112	1,314,626.6	20,088	14,734	8,166	
01/21/01 - 02/03/01	2,244	537	245		1	8			0.0019	0.0327			0.0253	1,319,932.0	2,458	33,374	19,139	
02/04/01 - 02/17/01	4,737	1186	473		4	2			0.0034	0.0042			0.0040	1,325,237.4	4,470	5,320	2,993	
02/18/01 - 03/03/01	4,738	1103	519		9	5			0.0082	0.0096			0.0093	1,330,542.8	10,857	12,362	6,959	
Total	53,312	14,046	5,890		5,360	1,345			0.3816	0.2284			0.2687	7,980,402	5,855,965	3,238,567	3,238,567	

Table C-18. Statewide smallmouth bass harvest during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Harvest				Harvest/Angler				Licensed				Angling Harvest		
	Sent	Respond	NonResp	Respond	NonResp	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall
04/30/00 - 05/13/00	1,538	616	167	51	9	0.0828	0.0539	0.0655	348,270.9	28,834	22,800	16,049							
05/14/00 - 05/27/00	1,534	548	210	15	4	0.0274	0.0190	0.0220	486,037.9	13,304	10,703	7,627							
05/28/00 - 06/10/00	1,535	536	185	14	0	0.0261	0.0000	0.0091	623,804.8	16,293	5,689	3,617							
06/11/00 - 06/24/00	1,253	357	139	2	3	0.0056	0.0216	0.0170	751,177.2	4,208	12,792	9,735							
06/25/00 - 07/08/00	2,544	691	311	40	19	0.0579	0.0611	0.0602	878,549.6	50,857	52,908	39,038							
07/09/00 - 07/22/00	2,543	676	281	27	7	0.0399	0.0249	0.0289	1,005,922.0	40,177	29,078	21,028							
07/23/00 - 08/05/00	2,546	691	283	38	8	0.0550	0.0283	0.0355	1,133,294.4	62,323	40,257	28,817							
08/06/00 - 08/19/00	2,543	658	283	21	9	0.0319	0.0318	0.0318	1,260,666.8	40,234	40,129	29,618							
08/20/00 - 09/02/00	2,540	715	233	32	21	0.0448	0.0901	0.0774	1,265,483.3	56,637	97,893	73,560							
09/03/00 - 09/16/00	2,548	647	304	25	2	0.0386	0.0066	0.0147	1,270,299.9	49,084	18,699	12,748							
09/17/00 - 09/30/00	2,548	686	273	6	8	0.0087	0.0293	0.0238	1,275,116.5	11,153	30,309	23,042							
10/01/00 - 10/14/00	2,689	664	337	6	0	0.0090	0.0000	0.0022	1,279,933.0	11,566	2,856	1,815							
10/15/00 - 10/28/00	2,690	633	292	0	0	0.0000	0.0000	0.0000	1,284,749.6	0	0	0							
10/29/00 - 11/11/00	2,686	677	270	2	0	0.0030	0.0000	0.0007	1,289,566.1	3,810	960	610							
11/12/00 - 11/25/00									1,294,382.7										
11/26/00 - 12/09/00	2,687	583	362	4	0	0.0069	0.0000	0.0015	1,299,199.2	8,914	1,934	1,229							
12/10/00 - 12/23/00	2,689	633	311	0	0	0.0000	0.0000	0.0000	1,304,015.8	0	0	0							
12/24/00 - 01/06/01	2,239	620	207	0	0	0.0000	0.0000	0.0000	1,309,321.2	0	0	0							
01/07/01 - 01/20/01	2,241	589	205	1	1	0.0017	0.0049	0.0040	1,314,626.6	2,232	5,314	4,032							
01/21/01 - 02/03/01	2,244	537	245	1	6	0.0019	0.0245	0.0191	1,319,932.0	2,458	25,178	19,405							
02/04/01 - 02/17/01	4,737	1186	473	3	0	0.0025	0.0000	0.0006	1,325,237.4	3,352	839	533							
02/18/01 - 03/03/01	4,738	1103	519	1	0	0.0009	0.0000	0.0002	1,330,542.8	1,206	281	179							
Total	53,312	14,046	5,890	289	97	0.0206	0.0165	0.0176		406,642	398,619	292,682							

Table C-19. Statewide brown trout catch during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Catch				Catch/Angler				Licensed				Angling Catch	
	Sent	Respond	NonResp	Recall	Respond	NonResp	Respond	NonResp	Overall	Population	Biased	Nonresponse	Recall	Respond	NonResp			
04/30/00 - 05/13/00	1,538	616	167	238	75	0.3864	0.4491	0.4240	348,270.9	134,559	147,658	81,780						
05/14/00 - 05/27/00	1,534	548	210	262	112	0.4781	0.5333	0.5136	486,037.9	232,376	249,630	138,715						
05/28/00 - 06/10/00	1,535	536	185	97	94	0.1810	0.5081	0.3939	623,804.8	112,890	245,702	138,921						
06/11/00 - 06/24/00	1,253	357	139	194	0	0.5434	0.0000	0.1548	751,177.2	408,203	116,304	60,243						
06/25/00 - 07/08/00	2,544	691	311	116	41	0.1679	0.1318	0.1416	878,549.6	147,484	124,422	69,213						
07/09/00 - 07/22/00	2,543	676	281	90	48	0.1331	0.1708	0.1608	1,005,922.0	133,925	161,754	90,911						
07/23/00 - 08/05/00	2,546	691	283	42	51	0.0608	0.1802	0.1478	1,133,294.4	68,883	167,498	95,166						
08/06/00 - 08/19/00	2,543	658	283	57	6	0.0866	0.0212	0.0381	1,260,666.8	109,207	48,069	26,018						
08/20/00 - 09/02/00	2,540	715	233	59	20	0.0825	0.0858	0.0849	1,265,483.3	104,424	107,443	60,062						
09/03/00 - 09/16/00	2,548	647	304	160	8	0.2473	0.0263	0.0824	1,270,299.9	314,139	104,708	55,646						
09/17/00 - 09/30/00	2,548	686	273	100	22	0.1458	0.0806	0.0981	1,275,116.5	185,877	125,135	69,059						
10/01/00 - 10/14/00	2,689	664	337	0	8	0.0000	0.0237	0.0179	1,279,933.0	0	22,881	13,145						
10/15/00 - 10/28/00	2,690	633	292	12	0	0.0190	0.0000	0.0045	1,284,749.6	24,355	5,731	2,969						
10/29/00 - 11/11/00	2,686	677	270	1	8	0.0015	0.0296	0.0225	1,289,566.1	1,905	29,059	16,666						
11/12/00 - 11/25/00									1,294,382.7									
11/26/00 - 12/09/00	2,687	583	362	52	0	0.0892	0.0000	0.0194	1,299,199.2	115,881	25,143	13,024						
12/10/00 - 12/23/00	2,689	633	311	3	4	0.0047	0.0129	0.0109	1,304,015.8	6,180	14,279	8,120						
12/24/00 - 01/06/01	2,239	620	207	6	0	0.0097	0.0000	0.0027	1,309,321.2	12,671	3,509	1,817						
01/07/01 - 01/20/01	2,241	589	205	5	0	0.0085	0.0000	0.0022	1,314,626.6	11,160	2,933	1,519						
01/21/01 - 02/03/01	2,244	537	245	0	0	0.0000	0.0000	0.0000	1,319,932.0	0	0	0						
02/04/01 - 02/17/01	4,737	1186	473	0	7	0.0000	0.0148	0.0111	1,325,237.4	0	14,702	8,446						
02/18/01 - 03/03/01	4,738	1103	519	0	0	0.0000	0.0000	0.0000	1,330,542.8	0	0	0						
Total	53,312	14,046	5,890	1,494	504	0.1064	0.0856	0.0910	2,124,119	1,716,560	951,442							

Table C-20. Statewide brown trout harvest during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Harvest				Harvest/Angler				Licensed				Angling Harvest	
	Sent	Respond	NonResp	Recall	Respond	NonResp	Overall	Recall	Respond	NonResp	Overall	Recall	Population	Biased	Nonresponse	Recall		
04/30/00 - 05/13/00	1,538	616	167		71	4	0.0605		0.1153	0.0240	0.0605		348,270.9	40,142	21,078	14,090		
05/14/00 - 05/27/00	1,534	548	210		30	26	0.0991		0.0547	0.1238	0.0991		486,037.9	26,608	48,184	35,978		
05/28/00 - 06/10/00	1,535	536	185		25	5	0.0339		0.0466	0.0270	0.0339		623,804.8	29,095	21,132	14,950		
06/11/00 - 06/24/00	1,253	357	139		7	0	0.0056		0.0196	0.0000	0.0056		751,177.2	14,729	4,197	2,668		
06/25/00 - 07/08/00	2,544	691	311		8	7	0.0195		0.0116	0.0225	0.0195		878,549.6	10,171	17,166	12,904		
07/09/00 - 07/22/00	2,543	676	281		15	17	0.0503		0.0222	0.0605	0.0503		1,005,922.0	22,321	50,613	38,351		
07/23/00 - 08/05/00	2,546	691	283		9	0	0.0035		0.0130	0.0000	0.0035		1,133,294.4	14,761	4,006	2,547		
08/06/00 - 08/19/00	2,543	658	283		1	4	0.0109		0.0015	0.0141	0.0109		1,260,666.8	1,916	13,704	10,538		
08/20/00 - 09/02/00	2,540	715	233		16	28	0.0926		0.0224	0.1202	0.0926		1,265,483.3	28,319	117,238	89,634		
09/03/00 - 09/16/00	2,548	647	304		5	1	0.0044		0.0077	0.0033	0.0044		1,270,299.9	9,817	5,610	3,997		
09/17/00 - 09/30/00	2,548	686	273		6	0	0.0024		0.0087	0.0000	0.0024		1,275,116.5	11,153	3,003	1,909		
10/01/00 - 10/14/00	2,689	664	337		0	0	0.0000		0.0000	0.0000	0.0000		1,279,933.0	0	0	0		
10/15/00 - 10/28/00	2,690	633	292		0	0	0.0000		0.0000	0.0000	0.0000		1,284,749.6	0	0	0		
10/29/00 - 11/11/00	2,686	677	270		0	1	0.0028		0.0000	0.0037	0.0028		1,289,566.1	0	3,572	2,765		
11/12/00 - 11/25/00													1,294,382.7					
11/26/00 - 12/09/00	2,687	583	362		1	0	0.0004		0.0017	0.0000	0.0004		1,299,199.2	2,228	484	307		
12/10/00 - 12/23/00	2,689	633	311		2	4	0.0106		0.0032	0.0129	0.0106		1,304,015.8	4,120	13,794	10,541		
12/24/00 - 01/06/01	2,239	620	207		3	0	0.0013		0.0048	0.0000	0.0013		1,309,321.2	6,335	1,754	1,115		
01/07/01 - 01/20/01	2,241	589	205		2	0	0.0009		0.0034	0.0000	0.0009		1,314,626.6	4,464	1,173	746		
01/21/01 - 02/03/01	2,244	537	245		0	0	0.0000		0.0000	0.0000	0.0000		1,319,932.0	0	0	0		
02/04/01 - 02/17/01	4,737	1186	473		0	7	0.0111		0.0000	0.0148	0.0111		1,325,237.4	0	14,702	11,379		
02/18/01 - 03/03/01	4,738	1103	519		0	0	0.0000		0.0000	0.0000	0.0000		1,330,542.8	0	0	0		
Total	53,312	14,046	5,890		201	104	0.0168		0.0143	0.0177	0.0168		226,178	341,410	254,418			

Table C-21. Statewide brook trout catch during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Catch				Catch/Angler				Licensed				Angling Catch			
	Sent	Respond	NonResp	Recall	Respond	NonResp	Overall	Recall	Respond	NonResp	Overall	Recall	Population	Biased	Nonresponse	Recall	Population	Biased	Nonresponse	Recall
04/30/00 - 05/13/00	1,538	616	167	237	43	0.3847	0.2575	0.3085	348,270.9	133,994	107,425	58,681								
05/14/00 - 05/27/00	1,534	548	210	335	18	0.6113	0.0857	0.2735	486,037.9	297,122	132,920	70,363								
05/28/00 - 06/10/00	1,535	536	185	134	202	0.2500	1.0919	0.7979	623,804.8	155,951	497,743	282,861								
06/11/00 - 06/24/00	1,253	357	139	74	0	0.2073	0.0000	0.0591	751,177.2	155,706	44,363	22,979								
06/25/00 - 07/08/00	2,544	691	311	119	25	0.1722	0.0804	0.1053	878,549.6	151,299	92,536	50,838								
07/09/00 - 07/22/00	2,543	676	281	62	47	0.0917	0.1673	0.1472	1,005,922.0	92,259	148,050	83,664								
07/23/00 - 08/05/00	2,546	691	283	46	2	0.0666	0.0071	0.0232	1,133,294.4	75,444	26,311	13,958								
08/06/00 - 08/19/00	2,543	658	283	19	12	0.0289	0.0424	0.0389	1,260,666.8	36,402	49,043	27,642								
08/20/00 - 09/02/00	2,540	715	233	147	8	0.2056	0.0343	0.0825	1,265,483.3	260,176	104,458	55,871								
09/03/00 - 09/16/00	2,548	647	304	319	29	0.4930	0.0954	0.1964	1,270,299.9	626,315	249,446	134,316								
09/17/00 - 09/30/00	2,548	686	273	159	11	0.2318	0.0403	0.0918	1,275,116.5	295,544	117,115	62,785								
10/01/00 - 10/14/00	2,689	664	337	3	3	0.0045	0.0089	0.0078	1,279,933.0	5,783	10,008	5,669								
10/15/00 - 10/28/00	2,690	633	292	2	10	0.0032	0.0342	0.0269	1,284,749.6	4,059	34,600	19,823								
10/29/00 - 11/11/00	2,686	677	270	0	78	0.0000	0.2889	0.2161	1,289,566.1	0	278,643	160,071								
11/12/00 - 11/25/00									1,294,382.7											
11/26/00 - 12/09/00	2,687	583	362	46	0	0.0789	0.0000	0.0171	1,299,199.2	102,510	22,242	11,521								
12/10/00 - 12/23/00	2,689	633	311	0	0	0.0000	0.0000	0.0000	1,304,015.8	0	0	0								
12/24/00 - 01/06/01	2,239	620	207	1	0	0.0016	0.0000	0.0004	1,309,321.2	2,112	585	303								
01/07/01 - 01/20/01	2,241	589	205	0	0	0.0000	0.0000	0.0000	1,314,626.6	0	0	0								
01/21/01 - 02/03/01	2,244	537	245	1	0	0.0019	0.0000	0.0004	1,319,932.0	2,458	588	305								
02/04/01 - 02/17/01	4,737	1186	473	0	2	0.0000	0.0042	0.0032	1,325,237.4	0	4,201	2,413								
02/18/01 - 03/03/01	4,738	1103	519	4	0	0.0036	0.0000	0.0008	1,330,542.8	4,825	1,123	582								
Total	53,312	14,046	5,890	1,708	490	0.1216	0.0832	0.0933		2,401,959	1,921,402	1,064,643								

Table C-22. Statewide brook trout harvest during the 2000-2001 angling season in Wisconsin, estimated by mail survey, with corrections for non-response and recall bias.

Period	Surveys				Harvest				Harvest/Angler				Licensed				Angling Harvest	
	Sent	Respond	NonResp	Recall	Respond	NonResp	Recall	Recall	Respond	NonResp	Recall	Recall	Overall	Population	Biased	Nonresponse	Recall	
04/30/00 - 05/13/00	1,538	616	167		75	13			0.1218	0.0778			0.0954	348,270.9	42,403	33,236	23,374	
05/14/00 - 05/27/00	1,534	548	210		116	11			0.2117	0.0524			0.1093	486,037.9	102,884	53,118	36,028	
05/28/00 - 06/10/00	1,535	536	185		36	11			0.0672	0.0595			0.0621	623,804.8	41,897	38,769	27,982	
06/11/00 - 06/24/00	1,253	357	139		35	0			0.0980	0.0000			0.0279	751,177.2	73,645	20,983	13,338	
06/25/00 - 07/08/00	2,544	691	311		37	15			0.0535	0.0482			0.0497	878,549.6	47,042	43,642	32,010	
07/09/00 - 07/22/00	2,543	676	281		19	19			0.0281	0.0676			0.0571	1,005,922.0	28,273	57,451	43,425	
07/23/00 - 08/05/00	2,546	691	283		15	0			0.0217	0.0000			0.0059	1,133,294.4	24,601	6,677	4,244	
08/06/00 - 08/19/00	2,543	658	283		4	0			0.0061	0.0000			0.0016	1,260,666.8	7,664	1,983	1,260	
08/20/00 - 09/02/00	2,540	715	233		25	0			0.0350	0.0000			0.0098	1,265,483.3	44,248	12,456	7,917	
09/03/00 - 09/16/00	2,548	647	304		14	5			0.0216	0.0164			0.0178	1,270,299.9	27,487	22,567	16,501	
09/17/00 - 09/30/00	2,548	686	273		23	4			0.0335	0.0147			0.0197	1,275,116.5	42,752	25,163	17,883	
10/01/00 - 10/14/00	2,689	664	337		0	0			0.0000	0.0000			0.0000	1,279,933.0	0	0	0	
10/15/00 - 10/28/00	2,690	633	292		0	0			0.0000	0.0000			0.0000	1,284,749.6	0	0	0	
10/29/00 - 11/11/00	2,686	677	270		0	7			0.0000	0.0259			0.0194	1,289,566.1	0	25,006	19,354	
11/12/00 - 11/25/00														1,294,382.7				
11/26/00 - 12/09/00	2,687	583	362		0	0			0.0000	0.0000			0.0000	1,299,199.2	0	0	0	
12/10/00 - 12/23/00	2,689	633	311		0	0			0.0000	0.0000			0.0000	1,304,015.8	0	0	0	
12/24/00 - 01/06/01	2,239	620	207		0	0			0.0000	0.0000			0.0000	1,309,321.2	0	0	0	
01/07/01 - 01/20/01	2,241	589	205		0	0			0.0000	0.0000			0.0000	1,314,626.6	0	0	0	
01/21/01 - 02/03/01	2,244	537	245		0	0			0.0000	0.0000			0.0000	1,319,932.0	0	0	0	
02/04/01 - 02/17/01	4,737	1186	473		0	0			0.0000	0.0000			0.0000	1,325,237.4	0	0	0	
02/18/01 - 03/03/01	4,738	1103	519		0	0			0.0000	0.0000			0.0000	1,330,542.8	0	0	0	
Total	53,312	14,046	5,890		399	85			0.0284	0.0144			0.0181		482,896	341,051	243,317	