# Recreational Mail Surveys, 1989 Tidal Sportfishing Diary Program and Visitors Sportfishing Survey 

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# RECREATIONAL MAIL SURVEYS, 1989 TIDAL SPORTFISHING DIARY PROGRAM AND VISITORS SPORTFISHING SURVEY 

## PREFACE

The Tidal Sportfishing Diary Program was initiated in 1979 to obtain estimates of the sport catch by B.C. residents fishing in B.C. tidal waters. The Visitors Sportfishing Survey was first conducted in 1982 to obtain estimates of sport catch and expenditures by visitors fishing in B.C. tidal waters. Previous reports cover survey development and annual results. This report serves as a continuation of this series and deals with the 1989/90 results. Catch estimates are presented in these reports as survey results and are not necessarily the accepted numbers for all species and areas.

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RECREATIONAL MAIL SURVEYS, 1989 TIDAL SPORTFISHING DIARY PROGRAM AND VISITORS SPORTFISHING SURVEY


#### Abstract

Bijsterveld, L. 1990. Recreational mail surveys, 1989 - Tidal Sportfishing Diary Program and Visitors Sportfishing Survey. Can. Manuscr. Rep. Fish. Aquat. Sci. 2092: vi +31 p.

Mail surveys collected 1989/90 licence year catch and effort data on recreational fishing in B.C. tidal waters. During 2,199,000 angler days, adult anglers caught and kept $1,978,000$ salmon including 524,000 chinook and $1,101,000$ coho. Problems related to mail surveys are reviewed.


Keywords: sportfishing, tidal waters, logbook, mail survey, catch statistics

## RESUME

Bijsterveld, L. 1990. Recreational mail surveys, 1989 - Tidal Sportfishing Diary Program and Visitors Sportfishing Survey. Can. Manuscr. Rep. Fish. Aquat. Sci. 2092: vi +31 p.

Lors d'enquêtes par correspondance, on a recueilli des données sur les efforts et les prises pour la saison de pêche récréative 1989-1989 dans les eaux de marée en C.-B. Pendant 2,199,000 jours-pêcheurs, les pêcheurs adultes à la ligne ont capturé et gardé $1,978,000$ saumons dont 524,000 saumons chinook et $1,101,000$ saumons coho. Les problèmes reliés aux enquêtes par correspondance sont l'étude.

Mots clés: pêche sportive, eaux de marée, journal de bord, enquête par correspondance, statistiques sur les prises.

## RECREATIONAL MAIL SURVEYS, 1989 TIDAL SPORTFISHING DIARY PROGRAM AND VISITORS SPORTFISHING SURVEY

## INTRODUCTION

The Tidal Sportfishing Diary Program is a mail survey of resident B.C. tidal water anglers. The Diary Program was introduced in 1979 as a method of estimating recreational catch and effort. It was necessary to survey large numbers of B.C. adults in order to contact anglers in the absence of a licencing program. The B.C. Tidal Waters Sport Fishing Licence, introduced during 1981, identified anglers and provided a sample base for the program beginning in 1982. The licences also provide a sample base for anglers visiting B.C. The Visitors Sportfishing Survey was first conducted in 1982 to obtain estimates of sport catch and expenditures by anglers visiting B.C. during the previous year. The 1981 and 1982 licence years corresponded to calendar years (January 1 to December 31). The 1983 licence year was a transition from a calendar year to a fiscal year (April 1 to March 31) and extended from January 1, 1983 to March 31, 1984. The 1983 Diary program and Visitors Survey covered the entire 15 month period although only the 1983 calendar year statistics were published. The 1989/90 population and catch and effort statistics correspond to the 1989/90 licence year (April 1, 1989 - March 31, 1989).

## METHODOLOGY

A systematic sample of 39,000 1988/89 B.C. Tidal Waters Sport Fishing Licences was drawn. The licence information was keyed directly from the licence stubs into a computer to produce an address list. The B.C. addresses were used for the Diary Program while the remainder were used for the Visitors Sportfishing Survey.

## Tidal Sportfishing Diary Program

In 1989/90, the Diary Program was conducted as follows: semi-monthly, a new sample or panel of 1,400 licence holders was mailed a diary form covering a full "month". Half of the panels were responsible for recording fishing activity for a calendar month, the other half for an interval from the middle of one month to the middle of the next. Data for the first half of the "month" was filled in from memory; data for the second half was filled in as anglers fished. Diarists were provided with addressed postage paid envelopes for returning the survey forms. Drawings of the 5 salmon species and lingcod, rockfish and halibut were included to aid identification. Reminders were sent to all panel members at the end of the "month".

The data from returned diaries was entered into a computer. A program checked the data during entry to prevent duplicate entries and to ensure that the areas, months, types of fishing and daily catches were valid. Invalid information was not used for estimation of catch and effort. Diaries received more that one month after the last date of the diary "month" were considered to be late and were not used.

## Visitors Sportfishing Survey

Three thousand questionnaires were sent to visiting North American anglers (excluding B.C.) at the end of the licence year. Reminders were sent to questionnaire nonrespondents four weeks after the initial sendout. Questionnaire recipients were asked about their fishing activity in B.C. during the 1989/90 licence year.

The data from returned surveys was entered into a computer. A program checked the data during entry to prevent duplicate entries and to ensure that the areas, months, and daily catches were valid. Invalid information was not used for estimation of catch and effort. Surveys received more that one month after the reminder sendout were considered to be late and were not used.

## RESULTS

## Returns

The number of diary returns for each panel of the 1989/90 Diary Program is provided in Table 1. The percentage of anglers returning diaries and fishing during each diary period varies throughout the year, as shown in Table 1. During the entire year, $40 \%$ of the anglers contacted returned diaries. Fourteen percent of those returning diaries actually fished. The response rate appears lower than in previous years (Table 2). The percentage returned was higher but some returned surveys were misplaced and were not available for analysis. In addition, Canada Post changed its standards for business mail and insisted that postal codes be present on all outgoing mail. This affected the number of undeliverables for some batches.

Three thousand questionnaires were sent out for the 1989/90 Visitors Survey. The return rate for the Visitors Survey was $67 \%$.

## Resident Sportfishing Population

The estimated number of B.C. resident adult anglers in 1989/90 is provided in Table 3. The population is estimated using the proportion of B.C. anglers in the licence sample and the total licence sales. The population consists of adult B.C. resident tidal water anglers, aged 16 and over. Characteristics of the population of licence holders can be estimated from the sample. Males account for $79 \%$ of the population of licence holders while females account for $21 \%$ (Figure 1). The population of B.C. adults, by comparison, is composed of almost equal numbers of males and females (Statistics Canada 1990).

The age composition of the B.C. adult population is presented in Figure 2. The proportion of individuals between 26 and 64 years of age is higher among licenced anglers than among B.C. adults in general. More young adults and people 65 years of age and over are present in the total population of adults (Statistics Canada 1990).

TABLE 1

DIARY RETURNS - 1989/90

| Panel Period Und | Undeliverable | Total Possible Response | Number of Respondents | Adjusted Response $\qquad$ | \% That Fished |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1989 |  |  |  |  |  |
| Apr 01 - Apr 30 | 152 | 1,248 | 612 | 49 | 4 |
| Apr 16 - May 15 | 199 | 1,201 | 623 | 52 | 8 |
| May 01 - May 31 | 186 | 1,214 | 620 | 51 | 12 |
| May 16 - Jun 15 | 190 | 1,210 | 559 | 46 | 20 |
| Jun 01 - Jun 30 | 165 | 1,235 | 609 | 49 | 23 |
| Jun 16 - Jul 15 | 149 | 1,251 | 697 | 56 | 26 |
| Jul 01 - Jul 31 | 182 | 1,218 | 436 | 36 | 30 |
| Jul 16 - Aug 15 | 188 | 1,212 | 264 | 22 | 34 |
| Aug 01 - Aug 31 | 198 | 1,202 | 231 | 19 | 41 |
| Aug 16 - Sep 15 | 208 | 1,192 | 286 | 24 | 37 |
| Sep 01 - Sep 30 | 263 | 1,137 | 251 | 22 | 42 |
| Sep 15 - Oct 16 | 238 | 1,162 | 309 | 27 | 30 |
| Oct 01 - Oct 31 | 218 | 1,182 | 362 | 31 | 23 |
| Oct 15 - Nov 16 | 231 | 1,169 | 367 | 31 | 11 |
| Nov 01 - Nov 30 | 220 | 1.180 | 438 | 37 | 7 |
| Nov 15 - Dec 16 | 230 | 1,170 | 484 | 41 | 5 |
| Dec 01 - Dec 31 | 216 | 1,184 | 550 | 46 | 5 |
| Dec 15 - Jan 16/90 | O 357 | 1,043 | 568 | 54 | 5 |
| 1989 |  |  |  |  |  |
| Jan 01 - Jan 31 | 241 | 1,159 | 580 | 50 | 4 |
| Jan 15 - Feb 16 | 257 | 1,143 | 583 | 51 | 4 |
| Feb 01 - Feb 28 | 300 | 1,100 | 522 | 47 | 3 |
| Feb 15 - Mar 16 | 266 | 1,134 | 493 | 43 | 2 |
| Mar 01 - Mar 31 | 299 | 1,101 | 474 | 43 | 3 |
| Mar 15 - Apr 16 | 232 | 1,168 | 470 | 40 | 7 |
| TOTAL 5 | 5,385 | 28,215 | 11,388 | 40 | 14 |

TABLE 2
ANNUAL DIARY RETURNS 1985-1989

| Diary Year | Undeliverable | Total <br> Possible <br> Response | Number of <br> Respondents | Adjusted <br> Response <br> $(\%)$ | \% That <br> Fished |
| :--- | :---: | :---: | :---: | :---: | :---: |
| $1985 / 86$ | 1,149 | 7,601 | 4,361 | 57 | 15 |
| $1986 / 87$ | 1,881 | 14,659 | 7,935 | 54 | 16 |
| $1987 / 88$ | 4,340 | 24,603 | 14,050 | 57 | 14 |
| $1988 / 89$ | 4,280 | 29,320 | 15,398 | 53 | 13 |
| $1989 / 90$ | 5,385 | 28,215 | 11,388 | 40 | 14 |

## TABLE 3

ESTIMATED POPULATION OF B.C. RESIDENT ANGLERS

| Year | Number of <br> Anglers |
| :--- | ---: |
| 1981 | 203,000 |
| 1982 | 223,000 |
| $1983 / 84$ | 224,000 |
| $1984 / 85$ | 225,000 |
| $1985 / 86$ | 239,000 |
| $1986 / 87$ | 242,000 |
| $1987 / 88$ | 240,000 |
| $1988 / 89$ | 237,000 |
| $1989 / 90$ | 251,000 |

The distribution of B.C. licenced anglers by area of residence is presented in Figure 3. Over $75 \%$ of licenced anglers are from Vancouver Island and the Greater Vancouver area. Eight percent of B.C. adults purchased a Tidal Waters Sport Fishing Licence in 1989. As expected, this percentage was higher in coastal areas as shown in Figure 3.

## Population of Visiting Anglers

The estimated number of anglers visiting B.C. in 1989/90 is presented in Table 4. The sex composition of the population of visiting anglers is similar to the composition of B.C. resident anglers. Males account for $80 \%$ of the visiting population and females account for $20 \%$.

The age composition of the population of visiting anglers is presented in Figure 2. The proportion of individuals over the age of 35 is higher among visiting anglers than among B.C. resident anglers.

Americans accounted for $68 \%$ of the visiting anglers while Canadians accounted for $28 \%$. The remaining $4 \%$ of the visiting anglers originated from outside North America. The proportions of visiting anglers by country of origin are presented in Figures 4 and 5.

TABLE 4

ESTIMATED POPULATION OF VISITING ANGLERS

| Country of Origin |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Year | Canada |  | U.S.A. | Other | Total |
| 1981 | 32,300 |  | 43,100 | 3,600 | 79,000 |
| 1982 | 28,700 |  | 40,900 | 1,500 | 71,100 |
| $1983 / 84$ | 30,300 | 42,600 | 2,000 | 74,900 |  |
| $1984 / 85$ | 25,700 | 51,600 | 300 | 74,900 |  |
| $1985 / 86$ | 27,200 | 63,600 | 2,600 | 77,600 |  |
| $1986 / 87$ | 44,800 | 61,300 | 3,900 | 110,000 |  |
| $1987 / 88$ | 33,200 | 71,100 | 4,200 | 108,500 |  |
| $1988 / 89$ | 34,000 | 70,100 | 5,000 | 109,100 |  |
| $1989 / 90$ | 31,200 | 76,600 | 4,300 | 112,100 |  |

FIGURE 1
SEX COMPOSITION OF B.C. ADULTS, ANGLERS AND VISITING ANGLERS 1989/90


FIGURE 2
AGE COMPOSITION OF B.C. ADULTS, ANGLERS AND VISITING ANGLERS 1989/90


FIGURE 3
DISTRIBUTION OF B.C. RESIDENTS AND LICENCED ANGLERS BY REGION - 1989/90


FIGURE 4

## All Visiting Anglers <br> 1989/90



Total Visiting Anglers

NonCanadian Anglers
$1989 / 90$


## Catch

British Columbia resident and visiting angler catches are presented in Table 5 and Table 6, respectively. The combined catch by B.C. resident and visiting anglers is presented in Table 7.

Most of the salmon were caught between Vancouver Island and the mainland. This area accounted for $83 \%$ of the total salmon, including $68 \%$ of the chinook and $87 \%$ of the coho caught and kept by B.C. resident anglers in 1989/90. This area contributed a smaller proportion ( $68 \%$ ) of the total salmon caught by visiting anglers.

Almost $80 \%$ of the rockfish and lingcod caught by residents were taken from waters between Vancouver Island and the mainland. About $70 \%$ of the lingcod and the rockfish caught by visitors were taken from this area. Most ( $59 \%$ ) of the halibut caught by B.C. residents were taken from waters north of Vancouver Island. Almost half ( $48 \%$ ) of the halibut catch by visitors was taken from waters west of Vancouver Island.

## Effort

British Columbia resident anglers fished an estimated 1.7 million days in 1989/90. Visiting anglers fished an estimated 516,000 days in B.C. tidal waters in the 1989/90 licence year, bringing the total tidal water estimate of effort to 2.2 million days during the 1989/90 licence year. More than $90 \%$ of the finfish effort by B.C. resident anglers occurrs from boats. Most of the combined effort ( $81 \%$ ) by residents and visitors occurs between Vancouver Island and the mainland.

TABLE 5

## 1989/90 CATCH ${ }^{1}$ AND EFFORT ${ }^{1}$ BY REGION FOR B.C. RESIDENT ANGLERS

| Region | $\begin{array}{r} \text { Days } \\ \text { Fished } \end{array}$ | Chinook | Coho | $\begin{array}{r} \text { Pink } \\ \text { Salmon } \\ \hline \end{array}$ | Other Salmon <br> salmon | Total Salmon | Lingcod | Rockfish | Halibut |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| North Coast <br> (Areas 1-6) ${ }^{2}$ | 76.1 | 31.1 | 21.6 | 6.9 | 0.7 | 60.3 | 11.5 | 35.3 | 12.7 |
| Central Coast (Areas 7-11) ${ }^{2}$ | 24.4 | 7.7 | 19.0 | 4.7 | 0.3 | 31.7 | 7.9 | 24.8 | 2.0 |
| E. Vancouver Is. <br> (Areas 12-14) ${ }^{2}$ | 532.0 | 96.0 | 436.3 | 103.8 | 6.7 | 642.8 | 66.4 | 80.7 | 1.5 |
| Sunshine Coast (Areas $15-16)^{2}$ | 205.8 | 35.8 | 68.3 | 0.0 | 1.1 | 105.2 | 29.4 | 102.8 | 0.7 |
| S. Vancouver 1 <br> (Areas 17-20) ${ }^{2}$ | 490.2 | 99.7 | 210.3 | 123.1 | 15.6 | 448.7 | 30.3 | 154.0 | 3.3 |
| H. Vancouver 1 <br> (Areas 21-27) ${ }^{2}$ | 173.8 | 80.6 | 67.0 | 3.8 | 6.1 | 157.5 | 13.1 | 34.5 | 3.5 |
| Lower Mainland (Areas 28-29) ${ }^{2}$ | 180.2 | 18.4 | 22.3 | 17.9 | 3.9 | 62.5 | 3.0 | 18.7 | 1.3 |
| Total B.C. ${ }^{3}$ <br> (Areas $1-29)^{2}$ | 1,682.5 | 369.3 | 844.8 | 260.2 | 34.4 | 1,508.7 | 161.6 | 450.8 | 25.0 |

[^0]TABLE 6

## 1989/90 CATCH $^{1}$ AND EFFORT ${ }^{1}$ BY REGION FOR VISITING ANGLERS

| Region | $\begin{array}{r} \text { Days } \\ \text { Fished } \end{array}$ | Chinook | Coho | $\begin{array}{r} \text { Pink } \\ \text { Salmon } \\ \hline \end{array}$ | Other <br> Salmion | Total <br> Salmon | Lingeod | Rockfish | Halibut |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| North Coast <br> (Areas 1-6) ${ }^{2}$ | 32.1 | 14.8 | 8.1 | 3.3 | 0.6 | 26.8 | 1.9 | 7.0 | 2.0 |
| Central Coast <br> (Areas 7-11) ${ }^{2}$ | 20.6 | 4.9 | 5.3 | 2.6 | 0.4 | 13.2 | 1.7 | 5.0 | 0.8 |
| E. Vancouver is. (Areas 12-14) ${ }^{2}$ | 271.0 | 61.9 | 154.8 | 31.8 | 4.5 | 253.0 | 31.2 | 69.8 | 1.5 |
| Sunshine Coast <br> (Areas 15-16) ${ }^{2}$ | 36.1 | 6.9 | 16.8 | 0.5 | 0.0 | 24.2 | 6.1 | 25.7 | 0.3 |
| S. Vancouver Is. (Areas 17-20) ${ }^{2}$ | 46.7 | 11.0 | 20.3 | 7.1 | 1.1 | 39.5 | 4.7 | 22.8 | 4.3 |
| W. Vancouver Is. (Areas 21-27) ${ }^{2}$ | 99.6 | 53.7 | 49.7 | 3.3 | 1.6 | 108.3 | 16.9 | 44.6 | 8.1 |
| Lower Mainland (Areas 28-29) ${ }^{2}$ | 10.1 | 1.5 | 1.5 | 0.8 | 0.2 | 4.0 | 2.3 | 5.3 | 0.0 |
| Total B.C. ${ }^{3}$ <br> (Areas $1-29)^{2}$ | 516.2 | 154.7 | 256.5 | 49.4 | 8.4 | 469.0 | 64.8 | 180.2 | 17.0 |

[^1]TABLE 7 1989/90 B.C. TIDAL WATER SPORT CATCH ${ }^{1}$ AND EFFORT ${ }^{1}$ (000'S)

|  | B.C. Resident $\qquad$ Anglers ${ }^{2}$ | Visiting Anglers ${ }^{3}$ | Total ${ }^{4}$ |
| :---: | :---: | :---: | :---: |
| Angler Days | 1,682.5 | 516.2 | 2,198.8 |
| Chinook | 369.3 | 154.7 | 523.8 |
| Coho | 844.8 | 256.5 | 1,101.2 |
| Pink Salmon | 260.2 | 49.4 | 309.7 |
| Other Salmon | 34.4 | 8.4 | 42.9 |
| Total Salmon | 1,508.7 | 469.0 | 1,977.6 |
| Lingcod | 161.6 | 64.8 | 226.4 |
| Rockfish | 450.8 | 180.2 | 631.1 |
| Halibut | 25.0 | 17.0 | 42.0 |

[^2]TABLE 8

> B.C. TIDAL WATER SALMON SPORT CATCH ${ }^{1}$ AND EFFORT ${ }^{1}\left(000^{\prime}\right.$ S) $$
1985-1989
$$

|  | 1985/86 | 1986/87 | 1987/88 | 1988/89 | 1989/90 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Effort |  |  |  |  |  |
| Angler Days | 2,237.8 | 2,194.8 | 1,837.9 | $1,715.0$ | 2,198.8 |
| Catch |  |  |  |  |  |
| Chinook | 513.2 | 474.6 | 353.3 | 279.3 | 523.8 |
| Coho | 1,092.5 | 1,325.1 | 982.6 | 1,367.3 | 1,101.2 |
| Other Salmon | 294.9 | 131.9 | 256.5 | 188.1 | 352.6 |
| Total Salmon | 1,900.6 | 1,931.6 | 1,592.4 | 1,834.7 | 1,977.6 |
| Lingcod | NA | 275.9 | 228.1 | 203.4 | 226.4 |
| Rockfish | NA | 602.2 | 467.3 | 555.6 | 631.1 |
| Halibut | NA | 26.0 | 21.2 | 33.8 | 42.0 |
| Salmon Catch per Unit Effort |  |  |  |  |  |
| Chinook | . 23 | . 22 | . 19 | . 16 | . 24 |
| Coho | . 49 | . 60 | . 53 | . 80 | . 50 |
| Total Salmon | . 85 | . 88 | . 87 | 1.07 | . 90 |

[^3]
## Catch and Effort by Juvenile Anglers

A Tidal Waters Sport Fishing Licence for juvenile anglers (age 15 and under) was introduced as part of the 1988/89 licence system. The population of juvenile anglers by residence can be estimated from juvenile licence sales and a sample of licences providing residence information. In 1989/90, there were 46,100 B.C. juvenile anglers and 11,900 visiting juvenile anglers, estimated using licence sales and sample information.

Other surveys (Cox 1977; Cumming 1979; Pelletier, Lacasse and Ducharme 1981; Thomson 1974) indicate that the average number of days fished by resident juvenile anglers is one-third to two-thirds the average number of days fished by their adult counterparts. Juvenile resident effort is estimated using the assumption that each juvenile resident angler fishes half as many days as an adult resident.

Results of previous Visitors Surveys (James 1986; James 1985) indicate that the majority of visiting anglers come to the province to fish or for a vacation. Juvenile visiting anglers would probably be members of families on fishing trips or vacations. These juveniles would be more likely to fish than would resident juveniles. The assumption is, therefore, that visiting juveniles fish proportionally more than resident juveniles but less than visiting adults. It is assumed that visiting juveniles fish 75\% the number of days fished by visiting adults.

The catch by juvenile anglers is estimated to be the effort by juvenile anglers multiplied by the catch rates for adult anglers. It is assumed that juvenile anglers generally fish with and are assisted by adults so the catch rates are equal. The catch and effort for juvenile anglers is presented in Table 9. These numbers are not included in the previously discussed catches by adult anglers.

TABLE 9

## 1989/90 SPORT CATCH AND EFFORT BY ADULT AND JUVENILE ANGLERS

| Type of Angler | Number of Anglers | Angler Days | Chinook | Coho |
| :---: | :---: | :---: | :---: | :---: |
| Adults: |  |  |  |  |
| B.C. Residents | 251,000 | 1,682,500 | 369,300 | 844,800 |
| Visitors | 112,100 | 516,200 | 154,700 | 256,500 |
| Total Adults ${ }^{1}$ | 363,100 | 2,198,800 | 523,800 | 1,101,200 |

Juveniles:

| B.C. Residents | 46,100 | 154,500 | 34,000 | 77,300 |
| :---: | :---: | :---: | :---: | :---: |
| Visitors | 11,900 | 41,100 | 12,300 | 20,600 |
| Total Juveniles | 58,000 | 195,600 | 46,300 | 97,900 |
| TOTAL ANGLERS | 421,100 | 2,394,400 | 570,100 | 199,100 |

## DISCUSSION

## Nonresponse Bias

Certain types of error are associated with any type of survey. One type of error is referred to as nonresponse and may result from the failure to measure or contact the entire survey sample (Cochrane 1977). Biased measurements could be obtained if the characteristics of the measured group differ from the group not measured. Individuals that voluntarily return questionnaires as part of a mail survey are possibly more interested in the questionnaire subject and could differ from those who don't return questionnaires. Tidal Diary respondents could be more active and successful anglers than nonrespondents. Estimates of fishing activity from this source alone could be biased upwards.

Nonrespondents were surveyed by telephone as part of the 1987/88 Diary program. Survey results indicate that $73 \%$ of the nonrespondents fished compared to $74 \%$ of the respondents. A chi-square test indicated no difference between these participation rates at the .05 level of significance. Nonrespondents reported fishing more days and catching more salmon, on the average, although these differences are not significant as indicated by $t$-tests at the .05 level of significance. Catch per angler day (CPUE) can be considered to be a measure of fishing success. The chinook and coho CPUE for respondents were higher but not significantly so as indicated by t-tests at the .05 level of significance. Therefore, the hypothesis that nonrespondents were as successful as the respondents was accepted.

## Recall Bias

Another source of error is recall bias that arises when individuals cannot always accurately recall details after time has passed. The result could be either under or over estimating, depending on the subject. The magnitude of the error could increase with time. This type of bias can be a problem in postseason mail surveys such as the Visitors Survey when the recall period is long. Diary program participants, however, are asked to recall the last half month only and keep records as they fish for the remainder of the month. For each half month, a recalled set of data and a current set of data are collected. Recalled and current data were compared for the 1985 through 1988 programs. Generally, the average catch and effort was higher for recalled data than for current data. The differences between
the recalled and current data were not significant as indicated by analyses of variance at the .05 level of significance.

Diaries received more that one month after the last date of the diary "month" are considered to be late and are not used for catch and effort estimation. The purpose of this exclusion is to eliminate information recalled over a longer period of time and reduce the possible effects of recall bias.

## Inaccurate Reporting

Error can also result from inaccurate reporting by the respondents. Drawings of the required fish with identification points were supplied to all of the diarists to assist in correct species identification. During data entry, a computer program checked the catches against valid daily limits. Catches over the limit were were not used for catch estimation because the the catch could have been identified incorrectly or the reported catch could have been for the fishing party rather than for the individual angler.

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## APPENDIX A

## SPECIES LIST <br> COMMON AND SCIENTIFIC NAMES OF FISH RECORDED

## Common Name

## Chinook

## Coho

Pink Salmon
Other salmon
Lingcod
Rockfish
Halibut

## Scientific Name

Oncorhynchus tshawytscha
Oncorhynchus kisutch
Oncorhynchus gorbuscha
Oncorhynchus spp.
Ophiodon elongatus
Sebastes spp.
Hippoglossus stenolepis

## APPENDIX B

STATISTICAL AREA MAP


## APPENDIX C

TIDAL SPORTFISHING DIARY PROGRAM PANEL PRESENTATION


## APPENDIX D

FORM SAMPLES

## 1. Tidal Sportfishing Diary - Page 1


2. Look at the enclosed mon and enter the number of the aree you fithed.
3. Enter m" for mont, "se for thore, mper for pier, wa for kiver liar and wer foiving.
4. If you uned boet, check the enclosed mep. If you find the merina you ued, enter it's letter code.
5. Enter how mary chinook yeu yourself threw back mod/or kept. Plamse onter your personal eatch, not the total catch of your fishing party.
6. Enter how many coto you yourself threw beck and/or kept. Piease enter your personal catch, not the total eatch of your fishing party.
7. Enter how mary of these other fiah you kept. Please enter your persaral eatch, rot the total catch of your fishine party.

Exmple: in the exmple below, the magler fithed on the 5 th in oren 17 from a boit launchad from Irechin Point. The angler threw beek 2 coho and kept 1 chinook, 2 coho, 3 rockfiah wnd 1 other fieh.
Excmple: OSTDBE1
010202
$\square$

| From: <br> Fri Sep |  |  |  |
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|  | 11 |  |  |
|  | 12 |  |  |
|  | 13 | , |  |
|  | 14 |  |  |
| To: ${ }_{\text {rei }}$ | 15 |  |  |



1. Tidal Sportfishing Diary - Page 2

2. Look at the enclosed map and enter the nuber of the aren you fished.
3. Enter man for boat, "s" for shore, mpe for Pler, me for kiver bar and me for Diving.
4. If you used boent, eheck the anclosed mp. If you find the morine you ustod, enter it's letter code.
5. Enter now many chinook you yourself threw back and/or kapt. Please anter your personal catch, not the total catch of your tishing party.
6. Enter how many coho you yourself threw beck and/or kept. Please onter your persoral catch, not the cotal catch of your fishing party.
7. Enter how mary of these other fith you kopt. Please unter your persornat catch, not the total catch of your fishing party.

Exaple: in the exaple below, the angler fishod on the 25 ih in aras 17 from boat lounched from Brechin Point. The angler threw beck 2 cotho and kept 1 chinook. 2 coho. 3 rockfifh wnd 1 other 7 inh.

Example: 251 BE1


## 2．Visitor Sportfishing Survey－Page 1



B．Did you fish in B．C．tidal waters dunng the 1989／90 licence year（April 1989－March 1990）？ （Please check one of the cricles）．


2．MONTH：Record the month（s）you fished in B．C．tidal waters during 1989／90．Please use one row for each different month．
3．AREA：Refer to the Statistical Area Map below，Locste the area（s）where you were fishing and record the area number．If you fished in more than one area during a month，use a separate line for each area and record the days fished and catch for each different area．

4．OF DAYS：Record the number of days you fished in each area and month．Include the days where nothing was caught．
5．SALMON：Record the number of fish you yourseff kept in the appropriate column．Please enter your personal catch，not the total catch of your fishing party．Record king and spring salmon in the＂chinook＂column and sitver in the＂coho＂column．

6．OTHER FISH：Record the number of fish you yourself kept in the appropriate column．Phease enter your personal catch，not the total catch of your fishine party．

Example：In the example below，the angler fished during July in Area 13 for 4 days．Two chinook， 1 pink and 4 rockfish were caught and kept．

|  |  |  | 5．SALMON |  |  |  | 6．OTHER FISH |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2．MONTH | $\begin{gathered} 3 \\ \text { AREA } \end{gathered}$ | $\begin{gathered} \text { 4. } \\ \text { of } \\ \text { DaYs } \end{gathered}$ | 总 | \％ | $\stackrel{\text { x }}{\text { E }}$ | 参 | 8 8 5 | 总 | 言 | $\stackrel{\text { ¢ }}{\text { ¢ }}$ |
| Ju：L：Y： | 13 | 4 | 2 | $\vdots$ | ： | ！ | ！ | 4 | ， |  |
| － |  | $\vdots$ |  | $\vdots$ |  |  |  | $\vdots$ |  |  |
| $\cdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots$ |  |  | ； | ： | ． | ， | ． | $\vdots$ |  |  |
| ：$\quad \vdots \quad \vdots \quad$ ！ |  | ， |  |  | ！ |  | ， | ． |  |  |
|  |  |  | ： | ： |  |  | ： | ． |  |  |
| ：$\quad$ ：$\quad$ ！ | ： | $\vdots$ | ． | ； | ， |  | ！ | ： |  |  |
| $\vdots$ | ！ | ： | ： | ： |  | ； | $\vdots$ | ： | ： | ． |
| ¢ $\quad \vdots \quad \vdots \quad \vdots \quad \vdots$ | ： | $\vdots$ | $\vdots$ | ： |  |  | $\vdots$ | ： |  |  |
| $\vdots \vdots \vdots \vdots \vdots$ |  | $\vdots$ |  | $\vdots$ |  | ： | ！ |  |  |  |

## FRANCAIS AU VERSO

STATISTICAL AREA MAP


## 2. Visitor Sportfishing Survey - Page 2



1. Avez-vous peche dans les eaux à marée de la C.-B. au cours !'année du permis (avpil 1989 . mars 1990 ;? faites une coche dans le cercle approprie.


Priere de pemplir le formulaire en suivant les indications ci-dessous.
2. MOSS: Inscrivez les mois oü vous avez peché dans les eaux à marée de la C. $\mathbf{C}$. au cours de 1989-90. Employez une ligne pour chaque mois.
3. SECTEUR: Reportez-vous a la carte des secteurs statistiques ei-dessous. Trouvez les secteurs dans lesquels vous avez peché et consignez-en le numero. Si vous avez peche dans plus d'un secteur au cours du mois, employez une ligne distincte pour chaque secteur et inscrivez dans chaque cas les jours oú vous avez peché et vos prises.
4. NO. DE JOURS: Indiquez le nombre de jours où vous avez peche dans chaque secteur et le mois. Comptez egalement les jours ou vous n'avez rien pris.
. SAUMON: Inscrivez dans la colonne appropriée le nombre de poissons que vous-meme vous avez gardés. Indiquez vos prises personnelles, plutot que ceiles de tout le groupe.
6. AUTRES FOISSONS: Inscrivez dans la cotonne appropriée le nombre de poissons que vous-meme vous avez gardes. Indiquez vos prises personnelles, plutot que celles de tout le groupe.

Exempia: Dans l'exemple ci-dessous, le pecheur a peche quatre jours en juillet dans le secteur 13. II a pris et garde deux quinnats, un saumon rose et quatre stbastes.


## ENGLISH ON REVERSE

LA CARTE DES ZONES STATISTIQUES



[^0]:    ${ }^{1}$ Catch is reported as thousands of fish kept and effort is reported as thousands of days fished.
    ${ }^{2}$ Department of Fisheries statistical areas as indicated on the map in Appendix B.
    ${ }^{3}$ Totals may not equal the sum of the regions due to rounding.

[^1]:    ${ }^{1}$ Catch is reported as thousands of fish kept and effort is reported as thousands of days fished.
    ${ }^{2}$ Department of Fisheries statistical areas as indicated on the map in Appendix B.
    ${ }^{3}$ Totals may not equal the sum of the regions due to rounding.

[^2]:    ${ }^{1}$ Catch is reported as thousands of fish kept and effort is reported as thousands of days fished.
    ${ }^{2}$ Tidal Sportfishing Diary Program
    ${ }^{3}$ Visitors Sportfishing Survey
    ${ }^{4}$ Totals may not equal the sum of the two surveys due to rounding.

[^3]:    ${ }^{1}$ Catch is reported as thousands of fish kept and effort is reported as thousand of days fished.

