Outline of British Columbia Salmon Troll Fisheries Management: Issues and Options Results of a Two-Day Workshop

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October 1988

OUTLINE OF BRITISH COLUMBIA OUTSIDE SALMON TROLL FISHERIES MANAGEMENT: ISSUES AND OPTIONS

RESULTS OF A TWO-DAY WORKSHOP

by

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ABSTRACT

Shardlow, T. F. 1988. Outline of British Columbia outside salmon troll management: issues and options - results of a two-day workshop. Can. Ind. Rep. Fish. Aquat. Sci.: 47 p.

This report is based on a two-day workshop which described the current management problems associated with the outside troll fishery including estimating catches, communication, enforcement/management, licencing, processing, shortened season, redline management, and run assessment. The report identifies and assesses remedial management options for each problem.

RESUME

Shardlow, T. F. 1988. Outline of British Columbia outside salmon troll management: issues and options - results of a two-day workshop. Can. Ind. Rep. Fish. Aquat. Sci.: 47 p.

Le présent rapport est fondé sur un atelier de travail de deux jours sur la description des problèmes de gestion courants associés à la pêche au lignes traînantes comprenant l'estimation des prises, la communication, la mise en vigueur et la g estion, l'octroi de permis, la transformation, le raccourcissement des saisons de pêche, et l'évaluation de la remonte. Les mesures correctrices de gestion pour chacun des problèmes sont indiquées et évaluées.

INTRODUCTION

This report summarizes the results of a two-day workshop involving representatives from each sector of the outside troll fishing industry including the Pacific Trollers Assn., Northern Trollers Assn., Fisheries Council of B.C., Pacific Seafood Council, Fishermen's Union (U.F.A.W.U.), the Native Brotherhood of B.C. and as well as representatives from the Department of Fisheries and Oceans (DFO). The term "outside troll fishing" refers to all British Columbia coastal areas, excluding the Strait of Georgia.

The workshop participants, listed in Appendix 1, were asked by the Outside Troll Advisory Committee (OTAC) to describe the current problems associated with the outside troll fishery, to identify remedial management options, and provide preliminary qualitative assessment of each option proposed. The assignment was constrained by the understanding that limitations provided by the U.S./Canada Treaty, Commercial Fishing Industry Council (CFIC), Pacific Advisory Council (PARC) and the Minister were not subject to discussion.

A list of objectives for troll management (Appendix 2) was prepared. This list was used as a guide when assessing each option and is included here to assist the readers in evaluating the options provided in this report.

The scope of the assignment was large; therefore, much of the discussion remained cursory in order to cover as many options as possible. The problems were grouped into eight major categories:

1) Estimating catches
2) Communication
3) Enforcement/Management
4) Licensing
5) Processing
6) Season length
7) Redline management
8) Run assessment

Problems associated with more than one of the above categories, were discussed under multiple headings. It was evident from the workshop proceedings that problems associated with catch estimation were numerous and had a great impact on many aspects of the fishery.

All workshop members participated freely and without prejudice in the discussion and in problem resolution. It was decided by workshop members that all options, even personally unpalatable ones, be discussed openly. By doing so, the members hoped that the views of all concerned could be captured in this document.

In the following sections, each major problem is presented individually together with remedial management options, as well as advantages and disadvantages for each option. The key points considered and their order of presentation are shown in the Table of Contents.

ESTIMATING CATCHES

Introduction

Estimating catches accurately on a timely basis during the fishing season has become of paramount concern. Troll catch ceilings put in effect since 1985 on all major salmon species, have placed a heavy demand on fisheries management (Shardlow et al. 1986, 1988). Accurate assessment of troll catch levels each week and, in the case of the short sockeye and pink salmon fisheries , each day during the season, have become necessary. Various sources of catch data such as the In-season Catch Monitoring Programme, daily hails of vessels fishing, troll log books and increased aerial surveillance of the fleet have contributed to increased ability to monitor catches. However, serious difficulties still exist as evidenced by the results in recent years. In 1987, the South Coast ceiling for sockeye was exceeded by over 30% and the North Coast chinook target was exceeded by approximately 17%. Similar problems occurred in 1985 and 1986. In addition, reported catches for a fishery may change substantially after the fishery has closed. For example, in mid-September 1987 WCVI chinook catches were reported at 437,000; in October the same fishery had a reported catch of 385,000. Final catch figures are sometimes unavailable until years after fishing has occurred. These problems cause concern and confusion in industry.

Problem Statement

Current catch estimation procedures sometimes fail to provide accurate estimates on a timely basis during the season. This problem is particularly acute for fisheries of short duration, such as WCVI sockeye and pink, where targeting and fishing success may change dramatically day-to-day. Catch estimates are confounded by poorly known undelivered catches on board vessels still fishing and unknown illegal catches taken before and after a species opening. Some catch is deliberately misreported by area caught and gear used so that it will be recorded toward the ceiling of another fishery or gear type. Also, confusing reporting may occur due to multiple sources of catch information.

Sometimes final catch estimates change several years after the fishery. For example, fish landed and stored but not sold do not show up on sales slip records since sales slips are only required at point of sale and not at point of landing. Also, some fish are sold at remote locations and to buyers who truck fish, thus making sales slips or landing information difficult to obtain in-season.

Remedial Options

1) Increase Offshore Hails

This option includes increasing the number of vessels currently contacted offshore by patrol boats to obtain recent catch information. This measure can help determine the amount of undelivered catch on board vessels still fishing. Hails are particularly valuable during peak fishing and during fisheries of short duration, such as sockeye and pink, when few vessels deliver during the opening.

Advantages

Hails are a standard tool employed by the Department and can use existing resources and methods. Hail information can be transmitted daily thus enabling a more timely estimate of catch per effort. The increased contact by patrol boats with trollers has the benefit of encouraging a higher rate of compliance by trollers with fishing regulations, and can benefit relations between the Department and fishermen generally.

Disadvantages

There are currently not enough patrol vessels to cover all areas properly, particularly if the fishing fleet is widely dispersed or if the fishing is of long duration such as with chinook and coho. Offshore patrol vessels are large and expensive to operate, and any time spent gathering catch data is time lost from regular enforcement activity. Hails cannot be performed in unfavorable weather conditions such as fog or rough seas. If such weather conditions occur during the peak of a fishery, the risk of information loss is high. Hails provide only estimates of catch per effort, and potential for misreporting catches remains. Increased hailing has been perceived as harassment by some fishermen, particularly if the same vessel is hailed several times over a short period. Some fishermen feel hailing can disturb their fishing operation.

2) High Security Electronic Hails

This system involves contracting trollers to report by radio their daily catch information to a central DFO location. All transmissions would be private either through using a system of codes or by means of electronic security.

Advantages

This method provides more timely catch information prior to vessel deliveries. It allows trollers to maintain their right to privacy of personal catch information, and avoids the disadvantages associated with conventional hails: poor weather, incomplete fleet coverage, draining enforcement resources and disturbing fishermen (see also option 1 above). This method would be most valuable for gaining information on undelivered catches, particularly during fisheries of short duration. In addition, contractual agreement with trollers, rather than requesting information, can address misreporting of hailed catches. Finally, electronic hails may be less expensive than current methods.

Disadvantages

Unlike conventional hails, electronic hails cannot be verified immediately by direct observation. The logistics and electronic hardware are untested since this system has not been used to date. The level of cooperation from the fishing fleet is uncertain and the required payment to trollers for performing the contracted work is undetermined. Sampling bias may occur, and coverage of the fishery would be limited unless a substantial number of vessels participated (e.g. 10% or 50 vessels for WCVI each day). The level of cooperation in this program could be compromised at critical times if controversial management actions were initiated in-season.

3) Increase Rate of Transfer of Sales Slip Information

Sales slips may be transferred more rapidly from precessors to the Department by employing, for example, FAX or telephone transfer. This option is primarily for increasing the timeliness of in-season information and would reduce the lag time to obtain post-season catch estimates. It does not address the problems of undelivered, unsold or illegal catches.

Advantages

The sales slip system currently provides the official record of catches, and improving on an existing system can be more desirable in some cases than implementing a new untried system. The present method may be speeded up by two to five days.

Disadvantages

The current rate of information transfer will be improved by only a few days. All the shortcomings of the existing system, such as misreported catches, unrecorded deliveries, and delayed deliveries will persist.

4) Develop System of Obtaining Landed Catch Directly from Processors/Buyers

This approach involves contacting the major buyers and processors on a regular basis to obtain information on total landed weight to date. Landed weights are then summed and converted to pieces using average weight values. This option is intended primarily to gain more timely catch data.

Advantages

The information on landed weight to date by species is already available and summarized by all major buyers. Therefore, this information should be relatively easy and inexpensive to obtain. It is possible to implement this procedure in 1988 in order to improve the timeliness of catch estimates.

Disadvantages

Only the major buyers can be contacted. The catch delivered to freezer trucks or remote buyers must be estimated (about 10-20% of landed catch may fall within this category). Also, since the portion of catch landed at any processor can vary from season to season, sampling bias will be introduced. If the information retrieval process is informal and not a legal requirement, then cooperation from buyers may vary, particularly during times of controversy over management actions. Finally, this option does not address problems of undelivered, unsold, or illegal catches.

5) Landing Slip System

The landing slip system involves mandatory reporting of catch at time of landing instead of at time of sale, and would replace the current sales slip system. Landing slip records are seen as a mandatory requirement and a condition of the processor's licence. This option deals primarily with the problem of unreported catches due to delayed sales of stored fish. If a piece count is also recorded on the landing slip, then mean weights can be calculated directly, without reference to other sampling programs.

Advantages

The problem of post-season lags and adjustment to reported catches should be reduced.

Disadvantages

If piece counts are required, then buyers would be forced to perform a piece count which is currently not part of their operation. Landing slips do not address other catch monitoring problems and DFO must still introduce measures to speed the flow of this paperwork.

6) Mandatory Daily Logs

Mandatory logs require fishermen to record daily the catch in pieces by species, area and gear type in a log book provided by the Department. The catch log is kept on board at all times while fishing.

Advantages

Logs could be intercepted at delivery to form a sample of catch per effort that is accurate in terms of area and day fished. Logs are also useful during Fishery Officers' enforcement checks to verify or collaborate evidence. For example, it would be harder to claim the fish as gillnet-caught if recorded areas and times in the log do not match gillnet openings.

Disadvantages

Mandatory logs mean more government paperwork and this measure, by itself, may be viewed as having limited benefits.

7) Combined Mandatory Log/Landing Slip System

This system requires that logs be completed daily for catches in pieces by species and area, and attached to landing slips on delivery to the buyer or processor. The landing slip which records pounds landed, and the accompanying log will be forwarded to the Department for catch analysis.

Advantages

This approach has all the advantages of both systems separately, plus some additional benefits gained by combining the two measures. The problems of post-season lags and adjustments to reported catches should be reduced. Catch per effort is more accurately recorded by day and area fished. The benefit of collaborative evidence for enforcement checks is also provided by the logs. When both measures are combined, processors are no longer required to provide piece counts because these are recorded on the accompanying log form. In addition, the comparison of pounds delivered and the piece count provides cross checks for enforcement and biological purposes (i.e. average weights).

Disadvantages

This is a completely new system and has associated implementation problems. It requires two forms on delivery instead of one. This method needs to be reviewed further before all the advantages and disadvantages are understood.

8) Short-Term Total Closures

This measure involves a scheduled coastwide closure of five to seven days' duration prior to the opening of major pink or sockeye fisheries. All previous catches are delivered during the closure, thereby confirming both the amount of undelivered catch on board vessels and improving the estimate of total catch to date.

Advantages

Closures are the most effective way to prevent illegal fishing and to determine undelivered catches. This measure will improve the accuracy and timeliness of catch monitoring, and reduce the confusion surrounding in-season estimates. In addition, closures may allow the overall season to be extended.

Disadvantages

It will be difficult to schedule a closure five to seven days prior to the estimated opening of pink or sockeye fisheries. The date of opening for these species is often not known that far in advance. Closures and the subsequent large-scale offloading of catches will place a burden on processors. Large volumes of fish delivered in a short period can reduce both the quality and landed value of the catch, and can increase the cost of processing. Coastal communities may suffer some loss of income if fishing vessels deliver their catches to major centres during the closure. Freezer vessels will lose their advantage of being able to fish without returning to port to offload. Also, fishermen may feel compelled to fish regardless of weather conditions, thereby aggrevating safety problems. Finally, the effective fishing time may be shortened by this action because fishing effort will be concentrated during the open period and the catch ceiling may be reached in a shorter time period.

9) Mandatory Maximum Trip Length

A maximum duration for a fishing trip followed by a mandatory delivery can be set by regulation. A 10- to 15- day trip length is proposed.

Advantages

The main benefit from this action is in reducing the amount of undelivered catch. Limiting trip lengths may also improve the quality of fish product delivered because fish will be delivered to processors more frequently.

Disadvantages

Although limiting trip lengths will reduce the amount of undelivered fish, this measure will be very difficult to enforce. This action also will reduce the effectiveness of freezer trollers whose advantage of long trips will be lost.

10) Area Licensing

In this proposal, troll vessels elect to fish either in the north (above Cape Caution) or the south (WCVI) each year. An annual licence will be issued restricting fishing to the area chosen.

Advantages

The misreporting of catches by region (North vs. South) will be minimized since the licensed area fished and the area reported for fish caught must be the same. Another advantage is that more predictable fishing effort within each area may be expected since the effort by area will no longer shift north and south. Increased predictability of effort will assist both management and catch monitoring. Currently, there is a need for coastwide coordination of openings and closings. Area licensing will greatly reduce this need. In addition, different areas opened in the north and south create loopholes for illegal retention. These loopholes will be avoided. Finally, the local fleet will benefit because it will no longer have to compete with vessels from outside their area.

Disadvantages

Area licensing will reduce fishing opportunities especially for long ranging trollers. Also, some allocation issues are complicated. For example, the catch of southbound pinks is currently counted against the southern allocation regardless of where they are caught. Under area licensing, southbound pinks caught by northern vessels cannot be assigned to a southern catch allocation.

11. Single Gear Licensing

Under single gear licensing, vessels must elect to fish with one gear type only. Currently, salmon fishing vessels hold one of two licences: a Seine Licence which permits seining, trolling and gillnetting, and a Troll/Gillnet Licence which does not permit seining. Under this licensing practice, a vessel may switch from one fishing gear to another, thus making it difficult to monitor or predict fishing effort by gear type. This system limits the effectiveness of troll management.

Advantages

Catches cannot be easily misreported by gear type, and this will assist enforcement, catch monitoring and management in general. In addition, effort by gear will be clearly identifiable and switching between gears will be eliminated therefy simplifying the troll allocation process. Finally, the capitalization of vessels fishing more than one gear type will be reduced.

Disadvantages

Single gear licensing will be a major disruption to the fishermen. Vessels already equipped with more than one gear type will incur large costs in converting to single gear vessels. Also, the options of fishermen to catch fish are reduced.

12. Catch Ceiling Averaging

Annual overages or shortfalls in troll allocations in any one season may be made up in subsequent years. This provision already exists for chinook and coho on the west coast of Vancouver Island and may be extended to other species. Catch ceiling averaging will remove the apparent urgency by the Department to meet all allocations within each season.

Advantages

This measure will reduce the need to have accurate estimates of catch in-season, thereby reducing the high cost of monitoring and enforcement. Also management flexibility will be increased.

Disadvantages

Catching up next year or cycle is not always possible. For example, if the runs are depressed, a catch-up fishery may not be possible.

COMMUNICATION

Introduction

In-season communication regarding the management of the troll fishery has become increasingly important since 1985 when active management of this fishery was begun. Openings and closings are now announced with a 48-hour notice in many cases, and both departmental staff and industry require briefings on background information regarding these announcements. Moreover, information is required on a coastwide basis since both fishermen and patrol vessels currently operate by travelling between the North and South Coasts.

Problem Statement

There is a need to coordinate information between the North and South Coasts so that management may reflect a coastal perspective. This coordination requires better informed and more involved departmental field staff. Improvements in internal coordination will hopefully translate into more consistent and comprehensive information being passed to industry. In addition, there is a need to deal more effectively with feedback from the fleet during the season. Other related problems include unclear notices to industry, and frequent delays in relaying notices to industry until early evening of Fridays; by that time, most departmental staff are unavailable for clarification of notices.

Another area of concern is the incomplete cooperation with the Coast Guard regarding notices to mariners. Lack of priority of troll notices by the Department also contributes to communication problems (net boats tied up at dock get notices before the troll boats on grounds).

Remedial Options

1) Assign a Department of Fisheries and Oceans Troll Coordinator

The Troll Coordinator would be responsible for coordinating the distribution of information relevant to both the North and South Coasts. The duties would also include participating in conference calls with both the Department and industry, and acting as a focus for feedback from the fleet.

Advantages

One individual can act as a focus for the fishery, and provide a central information source.

Disadvantages

A coordinator will mean a new and additional 'actor' in the business, and an increase in departmental staffing costs.

2) Simultaneous North-South Conference Calls

Coastwide conference calls may be conducted simultaneously with all patrol vessels involved and with appropriate North and South Coast staff.

Advantages

This measure can improve coastwide communications by avoiding indirect transfer of information (translation problems). Also, unlike the troll coordinator option, no new staff will be required.

Disadvantages

It may be technically too difficult to have coastwide teleconferences. Also, a conference call can be undermined by fishermen wanting to disrupt the call.

3) Continuous Recorded Messages

This option involves using a B.C. Tel radio telephone and ultimately a VHF Channel dedicated to fisheries for the purpose of broadcasting taped announcements.

Advantages

This system will be accessible on a 24-hour basis everyday of the week. It can save staff time and departmental operational costs currently devoted to providing information.

Disadvantages

The cost for a system utilizing B.C. Tel is unknown, and the availability of a dedicated VHF Channel is uncertain. Also, this option does not address communication problems within the Department.

4) Troll Hot Line

A Troll Hot Line is a telephone number that can be used to reach the Department regarding important in-season information, such as serious shaker problems or infractions of fishing regulations. This system could be coupled with the existing O.R.R. system.

Advantages

This measure provides fishermen with a central reporting facility. Also, compliance with regulations may be improved through fleet self-enforcement.

Disadvantages

Enforcement capability is required to respond to infractions of fishing regulations.

5) Increase Priority of Troll Notices

Troll notices are currently not given top priority at the Operations Room.

Advantages

By giving troll notices high priority, many notices could be given to industry during the departmental working hours when staff are available for consultation.

Disadvantages

Non-troll notices will be given a lower priority.

6) Formal In-season Catch Reporting System

A formal system where one source is specified for the coordinated release of current catch information is proposed as a solution to the present confused catch reporting. Catch updates could be provided to industry and DFO staff on a specified day and time each week during the season. Twice weekly update could be provided during the peak of the season.

Currently, catch information is available from several sources on a daily basis and can be obtained by phoning DFO personnel. Catch estimates change daily and information transferred is not always complete. Consequently, different catches can be reported by different people on the same day.

Advantages

Formalized reporting will provide information more consistently and broadly than the current method. No increase in costs is expected and confusion regarding catch information could be reduced.

Disadvantages

Releasing catch information only at specified times means that users will not have catch estimates on a daily or informal basis.

7) Improve Communication Between Department and Coast Guard

Advantages

The information will be available to the fleet via Coast Guard broadcasts. This system will not require additional departmental expenses.

Disadvantages

The Department will have little or no control over the priority of broadcast since DFO information will be secondary to Coast Guard information. Thus broadcasts may be omitted or reduced.

ENFORCEMENT/MANAGEMENT

Introduction

Prior to 1985, enforcement of the troll regulations was not a major undertaking (Argue et al. 1987). However, new management actions and the resultant frequent implementation of troll regulations have greatly increased enforcement requirements. Prolonged periods when retention of a certain species is illegal, or areas where possession of some salmon species is illegal have multiplied, resulting in strained existing resources.

The long time period required to amend or change troll regulations is not in keeping with the demands of fishery. The penalties for violating fishing regulations are also felt to be insufficient to discourage law breakers.

Problem Statement

Measures are required to deal with illegal catches taken prior to a species opening and after a closure.

Remedial Options

1) Mandatory Daily Logs

This option was discussed earlier in the Catch Estimation section. Fisherman are required to record daily the catch in pieces by species, area and gear type in a log book provided by the Department. The catch log is kept on board at all times while fishing.

Advantages

The advantages for enforcement are that logs provide evidence for prosecution. For example, it is difficult to claim that fish were taken in an open area or by gillnet unless other openings reasonably coincide with the current possession of the species. Further advantages of logs for monitoring catches are discussed in the Catch Estimation section.

Disadvantages

Logs may be viewed by industry as more red tape and paperwork. Mandatory logs will hinder, not solve illegal retention, and will increase departmental expenses.

2) Increase Enforcement Checks

More frequent contact with trollers through boardings and hold checks can help reduce illegal retention.

Advantages

The departmental structure that organizes enforcement checks is already in place and no new system is required. Frequent boardings by enforcement staff should aid in discouraging illegal fishery.

Disadvantages

Offshore enforcement is costly, and some fishermen will see frequent boardings as harassment.

3) Short-Term Total Closures

This action will involve a total closure of approximately one week prior to the opening of a fishery when most of the illegal retention problems occur.

Advantages

Total closures are the most effective way to prevent illegal fishing. Because they are straightforward, closures require less enforcement effort than other measures. Closures for enforcement purposes can also have the advantages cited for closures proposed for catch monitoring and shortening the season (see appropriate sections).

Disadvantages

Periodic total closures will tend to concentrate and increase fishing effort during the open periods. Because of this, some of the problems resulting from the shortened season will persist. Problems with fleet safety and capitalization problems associated with the need to fish during openings will remain. Moreover, actual seasonal fishing time required to reach the catch ceiling may decrease due to the combined effect of building up of fish populations during closures and the concentration of fishing effort during subsequent openings.

Processors will experience the adverse effect associated with high volumes of deliveries during closures (see Processing section below for more complete discussion). Trollers may deliver to places other than the traditional west coast ports for higher prices thereby disadvantaging west coast communities.

The advantage to freezer trollers of being able to avoid down time during deliveries will be lessened, since closures allow for deliveries without loss in fishing time. Finally, total closures are viewed generally as a loss of fishing opportunity by the fleet.

4) Area Closures

This option should reduce illegal retention by closing areas where the prohibited species is abundant. It is viewed as an alternative to the more severe action of total closure.

Advantages

Fishermen will lose fewer opportunities to fish with selected area closures than with total closures.

Disadvantages

It is difficult to define areas of continued concentrated abundance for many salmon species; this is particularly true for WCVI pink and sockeye. Area closures require boundary patrols and are more consuming of enforcement resources than are total closures. Also, this measure is more disadvantageous to less mobile vessels.

5) Gear Restrictions

Fishing gear configurations, such as number of hooks per line and fishing depth, and terminal gear such as spoons and plugs are deployed in such a way as to attract and catch a target species. Although to some degree all salmon species are caught on all terminal gear and fishing gear configurations, some fishing methods are quite specific, such as red gear for pink salmon. Gear restrictions, then, in some cases can reduce the catch of prohibited species.

Advantages

The main advantage to using gear restrictions is that it has minimum disruption effect on fishing operations. Gear restrictions also assist in reducing the number of shakers (fish discarded because their retention is prohibited).

Disadvantages

Restrictions on terminal gear are difficult to enforce and difficult to define for regulatory purposes, because a given terminal gear is not completely species specific. For these reasons, this type of action will likely have limited effect on reducing illegal retention. Also, when pink and sockeye are the non-retention species, fishing opportunities for other salmon species are reduced.

6) Allow Incidental Catch

This option will permit some retention to allow incidental catch and reduce shaking. For example, total salmon catch may have an allowable 25% incidental catch of pink salmon. When a closed species is not abundant or when the fleet is targeting on other species, then catches (shaking rates) will be minor or incidental for the closed species. So long as a minor incidental catch is allowable, actions restricting the catch of non-target species in a vessel's total catch can avoid the need for closures.

Advantages

The main advantages of allowing limited retention are in avoiding closures which are disruptive to fishing, and in avoiding shaker losses which are wasteful. Another advantage becomes apparent when small allocations or catch ceilings will not permit a full scale fishery. In this case, if catches can be contained at low incidental levels, then opportunities to fish other species are not limited.

Disadvantages

This measure is not enforceable and is unlikely to deter illegal fishing.

7) Allow Retention

A simple method to prevent illegal fishing prior to a species opening is not to prohibit the catch of that species. This approach will involve allowing the retention of pink or sockeye, for example, until such time as the catch allocations are reached.

Advantages

The absence of the restriction eliminates the need to enforce non-retention of the species. Moreover, higher prices for early-caught fish may be realized.

Disadvantages

Not all stocks can sustain fishing and often the early timing stocks are in need of protection from fishing. Also, depending on the species, fish caught early in the season tend to be smaller than fish caught later. Small vessels fishing near shore waters will be less able to share in the available catch.

8) Individual Vessel Quotas

This option requires that each vessel be licenced to fish to its own individual quota.

Advantages
This measure can avoid requirement for specific closing dates.

Disadvantages
The measure is difficult to enforce and requires a longer enforement period. Also, it limits fishing opportunites and is conducive to black market practices. In addition, it leads to buying and selling of licences, thereby increasing quotas for some vessels.

9) Prohibit Gillnets and Gillnet-Caught Fish on Board While Trolling

This option addresses the problem of misreporting catches by gear type.

Advantages
This measure helps close the loophole during troll openings.

Disadvantages
Some of the fleet may have no offloading locations or racks for holding nets.

LICENSING

Introduction

Currently, there are two types of licences for salmon fishing: a Seine Licence which allows a vessel to use a purse seine, gillnet or troll gear, and a Gillnet-Troll Licence which does not permit seining. In the 1970s, less than 50% of troll licences were Gillnet-Troll, while in the late 1980s this component increased to about 65%. Similarly, more Seine Licenses are reporting gillnet catches in the late 1980s than in previous years.

Shorter seasons may be causing an increase in the number of gillnet/troll and gillnet/seine combination vessels relative to single purpose vessels. This trend may be the result of reduced fishing opportunity for a single gear type.

Problem Statement

The opportunity currently exists for seines to troll, thus potentially causing an increase in troll effort. This scenario could cause greater gear competition and increased capitalization of the fleet, and may further complicate development of fishing plans. In addition, combination licences provide opportunity to misreport catch by gear type.

Remedial Options

1) Single Gear Licencing

This action will require vessels to be licenced for fishing with one gear type only. This measure will eliminate Gillnet/Troll combination vessels and remove the opportunity for seine vessels to fish with gillnets or troll gear.

Advantages

The opportunity to misreport catches by gear type will be removed, and enforcement of gear-specific regulations will be simplified. Effort and number of vessels by gear type will be known, thus facilitating the allocation process and in-season management. In addition, reduced capitalization of the fleet will be expected.

Disadvantages

A single purpose licence will be a major disruption to the current system, particularly to those fishermen who now have combination vessels. Under single purpose licence, the opportunities to catch salmon in a season are further restricted.

PROCESSING

Introduction

In recent years, there have been periods of mandatory offloading caused by regulations prohibiting the possession of certain species. This is a new development in troll fisheries and has caused hardships for fishermen and processors alike. Illegal buying practices also may have increased.

Problem Statement

Periods of non-possession or closures, and the resultant large scale offloading of catches place a burden on processors. Large volumes of fish delivered in a short period can reduce both the quality and landed value of the catch and increase the cost of processing. Shoreworkers work around the clock to keep up with deliveries, thereby increasing safety problems. Finally, the volume of salmon purchased prior to an opening and the number of undersized salmon purchased has reportedly increased.

Remedial Options

1) Minimize In-season Closures or Non-possession Periods

Advantages

Fewer closures or non-possession periods mean fewer disruptions to fishermen and processors. The quality and landed value of the catch may increase.

Disadvantages

The catch must be halted when the ceiling is reached. Other methods of prohibiting catches such as non-retention, are less effective than closures.

2) Increase Enforcement at Plants

This action will mean an increase in the number of enforcement inspectors at landing locations.

Advantages

Purchasing practices may be improved through increased compliance of buyers and fishermen to regulations governing size limit and species possession. Also, enforcement at landing locations is less costly than offshore enforcement.

Disadvantages

The timely enforcement of openings and closings at landing locations will be difficult since the illegal catches had already occurred. Most of the benefit will be limited to improved compliance to size limits. Also, this measure requires Fishery Officer resources.

SEASON LENGTH

Introduction

The duration of the outside troll fishery season has changed drastically in recent years from approximately five to six months (April/May to end of September) until 1985, to only ten weeks in 1986 and seven weeks in 1987. The problems associated with the shortened season are numerous.

Problem Statement

Fishermen now feel compelled to fish more intensively because fishing opportunities are reduced in time. Consequently, safety risks are increased due to vessels fishing during adverse weather conditions, fewer breaks taken, and more travelling occuring at night. Troll vessels are capitalizing more in terms of duplicate electronics and essential operating equipment, and more trollers are converting to freezer capability in order to reduce down time. The smaller ice and day vessels are now at a greater disadvantage since the effect of lost fishing time in a short season is heightened.

Coastal communities which derived a benefit from six months of fishing activity must now rely on revenue from a fishery of less than two months' duration. Individuals who used to gain U.I.C. benefits now cannot do so because the season is shorter than the period of work required to be eligible for benefits. Finally, fewer salmon stocks are supporting the burden of harvest than previously. This effect is expected when migrating

stocks are fished in less than two months as opposed to six months. Consequently, those stocks harvested during a short, intensive fishery are sustaining higher harvest rates than those stocks which are dominant at times when the fishery is closed. Thus, some stocks may be overexploited and others underexploited.

Redemial Options

1) Reduce Fleet Size

The purpose of fleet reduction is to extend the season. A small fleet will take longer to attain the catch ceilings than a large fleet. This measure could be accomplished through a licence buy-back program.

Advantages

The advantages are gained by lengthening the season. This will have a beneficial effect on all those factors mentioned in the Problem Statement above.

Disadvantages

Fleet reduction through a buy-back program will be costly. Licences offered for sale will be from the less efficient vessels that take a smaller fraction of the catch, leaving the more efficient vessels to continue fishing. The purchase of inefficient licences will reduce the effect and increase the cost of a buy-back plan. Finally, the wealth from fishing will be concentrated among fewer fishermen.

2) Reduce Fleet Efficiency

Reducing the catch efficiency of a fleet will result in extending the season. Measures such as limiting the number of girdies per vessel to four, or restricting the kinds of terminal gear such as spoons and plugs, will reduce a vessel's catching power.

Advantages

The advantages are gained by lengthening the season. This will have a beneficial effect on all those factors mentioned in the Problem Statement above.

Disadvantages

Reduction in catch efficiency means a reduced net income from fishing since the same or greater amount in daily operating costs will catch fewer fish than before regulations. Effective enforcement of terminal gear restrictions will be very difficult.

3) Single Species Fisheries

Currently, management actions are designed to reduce the interval when the retention of a hooked fish is illegal. Under different management objectives, these non-retention fisheries could be extended, thereby allowing single salmon species fisheries to be conducted. The effect of this action will be to extend the overall length of the season. A spring chinook fishery is one example of this option.

Advantages

The advantages are gained by lengthening the season. This will have a beneficial effect on all those factors mentioned in the Problem Statement above.

Disadvantages

The main disadvantage is in the inefficient use of the salmon resource. During non-retention fisheries, some released fish die. In addition, by fishing earlier in the season some salmon are caught at a smaller size than if they were permitted to grow and were taken later in the season. Also, non-retention fisheries require increased enforcement activity. Finally, assessment and possible Pacific Salmon Treaty paybacks may be required if fishing mortalities are increased.

4) Short-Term Total Closures

Short-term closures can be implemented for three reasons. Firstly, if an early-season chinook fishery was conducted, this fishery could be followed by a closure of two to six weeks, for example. Secondly, closures of five to seven days prior to the opening of pink or sockeye fisheries may be implemented for enforcement or management reasons. Thirdly, periodic closures of approximately five to seven days throughout the season (i.e. pulse fishing) may be employed mainly for the purpose of prolonging the season.

Advantages .

Periodic total closures implemented for any purpose will have the effect of lengthening the season. This will have a beneficial effect on all those factors mentioned in the Problem Statement above. In addition, accuracy of in-season catch estimation could be improved, particularly with respect to determining undelivered catches. Total closures also have the advantage of being one of the most effective regulations in terms of enforcement. Finally, short-term closures will allow for vessel maintenance.

Disadvantages

Periodic total closures will tend to concentrate and increase fishing effort during the open periods. Because of this, some of the problems resulting from a shortened season will persist. The safety and capitalization problems associated with the need to fish during openings will remain. Moreover, actual fishing time during the season may decrease due to the combined effect of building up of fish populations during closures and the concentration of fishing effort during subsequent openings. As a result, catch ceilings may be reached sooner than expected.

Processors will experience the adverse effects associated with high volumes of deliveries during closures (see Processing section above for more complete discussion). Fishing vessels may deliver to places other than the traditional west coast ports thereby disadvantaging west coast communities. The advantage to freezer trollers of being able to avoid lost fishing days during deliveries will be lessened since closures allow for deliveries during non-fishing days. Finally, total closures are viewed generally as a loss of fishing opportunity by the fleet.

REDLINE MANAGEMENT

Introduction

Recent management actions have included the redline system which involves pre-defined closures of areas where a particular species is abundant. The closures occur if catch levels exceed a certain series of catch values called "The Redline". The purpose of the closures is to extend fishing time required to reach a ceiling. This avoids wasteful non-retention fisheries and problems of fleet movement. Redline closures could be used for any species.

Problem Statement

Redline closures did not effectively extend the chinook and coho season as planned in 1987. The North Coast would have had an extensive non-retention fishery for chinook if coho stocks had been stronger, and the early South Coast closure for chinook and coho caused a gear transfer to the North. Finally, there was a problem in 1987 of defining sockeye non-retention areas in the North Coast. The closures did not shut off all opportunities on Fraser sockeye, and contributed to enforcement problems.

Remedial Options

1) Enhance Redline Closures

In this case, closed areas will be increased to further slow the rate of catch.

Advantages

The chances of avoiding non-retention or non-possession fisheries will be increased if the season is extended.

Disadvantages

The uncertainty about annual abundance of salmon means that on years of very high abundance like 1987 for chinook, the season may not be extended.

2) Slow Start

A slow start means the season will open with the area closures in place. This action should extend fishing time required to catch a ceiling until the season end. If fish abundances are lower than expected, as indicated by catch rates, then some closures will be lifted.

Advantages

The fishery is paced from day one, and the large early-season catches are controlled.

Disadvantages

In years of lower than expected abundance, there is a potential to catch less than the ceiling. In some cases, the closures required to pace the fishery would be quite large.

RUN ASSESSMENT

Introduction

Predictions regarding the expected annual stock abundance are a cornerstone to management planning. Currently, only pink and sockeye stocks have formal predictions, while chinook and coho have almost no pre-season assessment of expected annual abundance.

Similarly, in-season assessments of run strength and timing are revised as information from the fishery is obtained. As with pre-season predictions, only pink and sockeye estimates are provided and these revisions are usually made after the troll fishery is completed for these species. Some in-season estimates of coho run strength are available, but these estimates are incomplete.

Problem Statement

Predictions of annual stock abundance and in-season revisions of predictions are only available for pink and sockeye salmon. In-season revisions are sometimes made after the troll fishery is completed.

Remedial Options

1) Troll Test Fishery

A troll test fishery commencing early in the season can provide advance information on run strength and diversion for pink and sockeye salmon. This could help provide a formal revision to run strength prediction prior to the end of the troll season.

Advantages

Early revision to run strength prediction could allow the troll fleet to achieve its annual allocation for pink and sockeye salmon.

Disadvantages

Troll test fishing is costly. Also, some of the results are in the experimental stages and not applicable in the near future.

2) Formal Run Prediction for Chinook and Coho

This option proposes that resources and staff be assigned to provide an annual prediction for these species.

Advantages

Planning the fishing season and in-season management of chinook and coho fisheries will be much improved if the predictions are reasonably close to the observed runs.

Disadvantages

It is very difficult to predict chinook abundance because of their multiple age classes and mixed stocks. Coho abundance is also difficult to predict since basic information on escapement is lacking and many stocks are co-mingled in a fishery. Also, this option will be costly in departmental staff and resources.

SUMMARY

This report identifies and assesses remedial management options for the current problems associated with managing the outside troll fishery. The problems addressed include: estimating catches, communication, enforcement/ management, licencing, processing, season length, redline management and run assessment.

Several of the options presented in this report have been adopted for the 1988 season. The slow start option, renamed the green line, was employed as the chinook management plan for both the North Coast and WCVI (see Appendix 3). Also, four of the communication options,i.e. continuous recorded messages, simultaneous north-south conference calls (in-house), formal in-season catch reporting, and troll coordinator (in this case troll communication coordinators in the North Coast and WCVI) have been instituted (see Appendix 4). Finally, with reference to estimating catches, a system of obtaining landed catches directly from processors is underway in the South Coast.

ACKNOWLEDGMENTS

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LITERATURE CITED

Argue, A.W., M.P. Shepard, T.F. Shardlow and A.D. Anderson. 1987. Review of salmon troll fisheries in southern British Columbia. Can. Tech. Rep. Fish. Aquat. Sci. 1502: 150 p.

Shardlow, T.F., A.D. Anderson and A.W. Argue. 1986. Review of 1985 south coast salmon troll fisheries. Can. MS Rep. Fish. Aquat. Sci. 1895: 68 p.

Shardlow, T.F., T.G. Hoyt and A.D. Anderson. 1988. Review of 1986 South coast salmon troll fisheries. Can. Tech. Rep. Fish. Aquat. Sci. 1560: 99 p.

Appendix 1. List of workshop participants for review of outside troll management issues and options, 1987-1988.

Two meetings were held to address outside troll fishery problems. The first meeting held on November 29 to December 1, 1987, produced a list and evaluation of problems and options. The second meeting held on January 5, 1988, served to review and edit the results of the first meeting.

List of Participants[a]

Participant	Association
G. Adams	Pacific Troller Association
R. Alexander[b]	Processor, WCVI Communities
D. Christensen	Processors, WCVI Communities
D. Doerksen	Northern Trollers Association
C. Gissing[b]	U.F.A.W.U.
T. Hoyt[c]	DFO (Hook & Line Unit)
N. Keitlah[b]	Native Brotherhood of B.C.
G. Klimes[c]	DFO (Enforcement Unit)
R. McCarthy[c]	Native Brotherhood of B.C.
D. Peacock[b]	DFO (North Coast Sr. Mgmt. Bio.)
T. Shardlow	DFO (Hook and Line Unit) - Subcommittee Chairman
J. Sutcliffe[c]	U.F.A.W.U.
P. Wilson	Fisheries Council of B.C.

[a]Listed in alphabetical order.
[b]Attended January 5th meeting only.
[c]Attended November 29th meeting only.

Appendix 2. List of objectives for troll mangement.

1. Management plans must consider fleet equity (Day, Ice, Freezer, North/South). If possible, management actions should avoid disadvantaging any sector, any troll type or coastal community.

2. Canadian troll fishing plans should ensure maximum benefits to Canadian troll fishermen.

3. Management plans should be coordinated for the North and South Coasts.

4. Fishing plans should minimize salmon non-retention fisheries for both adults and juveniles.

5. Fishing plans should minimize harvest of depressed stocks and provide opportunities to harvest surplus production.

6. Fishing plans should maximize landed value.

7. Fisheries should be managed in accordance with Canada/USA Treaty.

8. Fisheries should be managed in accordance with CFIC/PARC guidelines.

9. Fisheries should be managed in accordance with recommendations developed by OTAC.

10. Fishing plans should be enforceable.

11. Where possible and practical, closures and openings should be coordinated between species and between the North and South Coasts.

12. Where possible, fishing plans should minimize disruptions in traditional troll fishing practices.

Appendix 3. 1988 Salmon troll fishing plans.

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June 24, 1988

1988 SALMON TROLL FISHING PLANS

WEST COAST VANCOUVER ISLAND

AND NORTH COAST

Pêches et Océans Fisheries and Oceans

Canada

1988 COMMERCIAL SALMON TROLL FISHERY PLANS FOR THE W.C.V.I.

This Bulletin provides details regarding the 1988 salmon troll fishing plan for the West Coast of Vancouver Island. This plan has been developed through consultations with the Outside Troll Advisory Committee (representatives of fishing organizations, buyers and the Department of Fisheries and Oceans).

SUMMARY

The minimum size limit for troll caught chinook is 67 cm in "nose to fork length" and 56 cm for the "head off length". The "head off length" is the shortest length of the fish to the fork of the tail. These are the same size limits in effect during the 1987 season.

Area closures will be in place at the onset of the season to slow the catch rate. In 1988 a "Green Line Concept" has been incorporated to signal catch levels that require management action. Certain area closures may be lifted to accelerate the catch rate, as required.

The Department will continue enforcement activities both on the grounds and at landing points. Salmon piece counts are requested.

1. Catches for chinook and coho are limited to 360,000 and 1.80 million pieces, respectively in accordance with the Pacific Salmon Treaty in the following Areas: 21-27; 121-127; 130-1. Troll caught chinooks from Area 12 will be accounted for within the 360,000 limitation.

2. Trolling for chinook, coho, pink and chum will start July 1 with non-retention of sockeye until July 10, 1988.

3. Trolling for sockeye will commence on July 10, 1988.

4. Specific areas will be closed at the onset of the season to slow the catch rate of chinook. One or more of these areas will be opened if catch rates fall below pre-established, "Green Line" levels.

5. Areas 11-1 and 11-2 closed and a chinook catch ceiling of 19,000 for Areas 110 and 111.

6. Swiftsure Bank will remain closed in 1988 in accordance with the Pacific Salmon Treaty.

7. If chum troll catches increase disproportionately to run size, then opportunities for trolling will be limited.

8. The management objective is to extend the season to at least September 1, 1988. No trolling will be permitted after September 30, 1988.

9. A recorder phone service from Tofino for W.C.V.I. troll information is planned for 1988. Industry will be provided with the number when the service is installed.

10. Proposed management actions and catches will be reported Thursday each week with additional reporting days added if required.

1988 COMMERCIAL SALMON TROLL FISHERY PLANS FOR THE WEST COAST OF VANCOUVER ISLAND MANAGEMENT AREAS 11, 12, 21-27, 121-127, 130-1

DETAILS

CATCH LIMITATIONS:

As provided for in the Pacific Salmon Treaty, the 1988 troll catch for the West Coast of Vancouver Island shall not exceed 360,000 chinook and 1.80 million coho salmon in statistical Areas 21, 23, 24, 25, 26, 27, 121, 123, 124, 125, 126, 127 and 130-1. Troll caught chinook from Area 12 (not to exceed 5,000 fish) will be accounted for within the 360,000 chinook allocation. There is no set allocation for pink salmon in the South Coast for 1988. However, if excessive interception of Central Coast pink salmon occurs in Areas 127 and 111, restrictions will be imposed in-season in those areas if the North Coast allocation is taken. The Canadian total allowable catch for Fraser River sockeye, based on expectations, is 790,000 with an inside troll allocation of 4% and 4.8% allocated to outside trollers. Troll chum catches will be monitored to ensure that the troll fishery does not escalate in 1988. If catches increase disproportionately to the strength of the run, then the chum fishery will be curtailed.

TROLLING DATES:

Trolling for chinook, coho, chum and pink salmon will commence at 0001 hours on July 1 and may continue to September 1, 1988 unless the quotas are achieved prior to this time. If the quotas are not achieved at this time the fishery will continue. All trolling will close September 30, 1988.

Trolling for sockeye will commence on July 10, 1988. This opening date will allow passage of depressed Early Stuart sockeye stocks.

RED LINE AND GREEN LINE:

The troll management plan has been developed to minimize, where possible, non-retention fisheries and to slow the catch rate of chinook which is expected to be higher than 1987. Pre-designated closed areas established in previous years (Wreck, Chinook #1 & #2) have been redrawn, expanded upon and renamed Chinook Conservation Areas (CCA). These areas will be closed at the onset of the season.

As in previous years, a red line has been developed. In the past, when catches exceeded the red line, additional closures were implemented. This year, however, the season is commencing with the maximum chinook closures in place. It was believed that additional closures over those proposed would cause undue disruption and seriously threaten the opportunity to achieve the coho allocation.

The green line is a new concept for 1988. Like the red line, it will signal catch levels that require management action. When catch levels fall below the green line, area closures will be lifted to accelerate chinook catches. Should catch levels increase too rapidly and exceed red line values, then closures will be reinstated. Red and green lines are shown in Table 1. Figure 1 shows area closures.

The order of opening closed areas is as listed below unless information in-season indicates otherwise.

OPENING SEQUENCE

	CHINOOK CONSERVATION ZONE
1	E
2	D
3	B
4	C
5	A

Notice for area closures will be a minimum of 48 hours while openings may be announced for midnight of the same day. If chinook non-possession is implemented then Areas A and C will close to minimize shaker impact.

Coho abundance is expected to be lower than in 1987. However, should abundance be greater than expected, the "980 line" closure, as defined, will be implemented. Both a Red and Green Line have been developed for coho. (See Table 2).

CONSERVATION OF LOWER GEORGIA STRAIT CHINOOK:

In 1988 a separate catch ceiling of 19,000 chinooks is established for Areas 111 and 110. The catch ceiling plus the closure of Areas 10 and 11 addresses the Minister's conservation directive to reduce the harvest rate of Lower Georgia Strait Chinook Stocks by 20% in the Lower Central troll fishery. The 19,000 is derived by reducing the average chinook catch in Areas 10, 11, 111 and 110 by 20% from the period 1985-87 (post Treaty years). It should be noted, however that the 19,000 ceiling for Areas 111 and 110 is still part of the overall ceiling in the North Coast (1-11).

FISHING PLAN

The detailed fishing plan is as follows:

Outside Surf Line (Areas 121 to 127, 130-1 and 111)

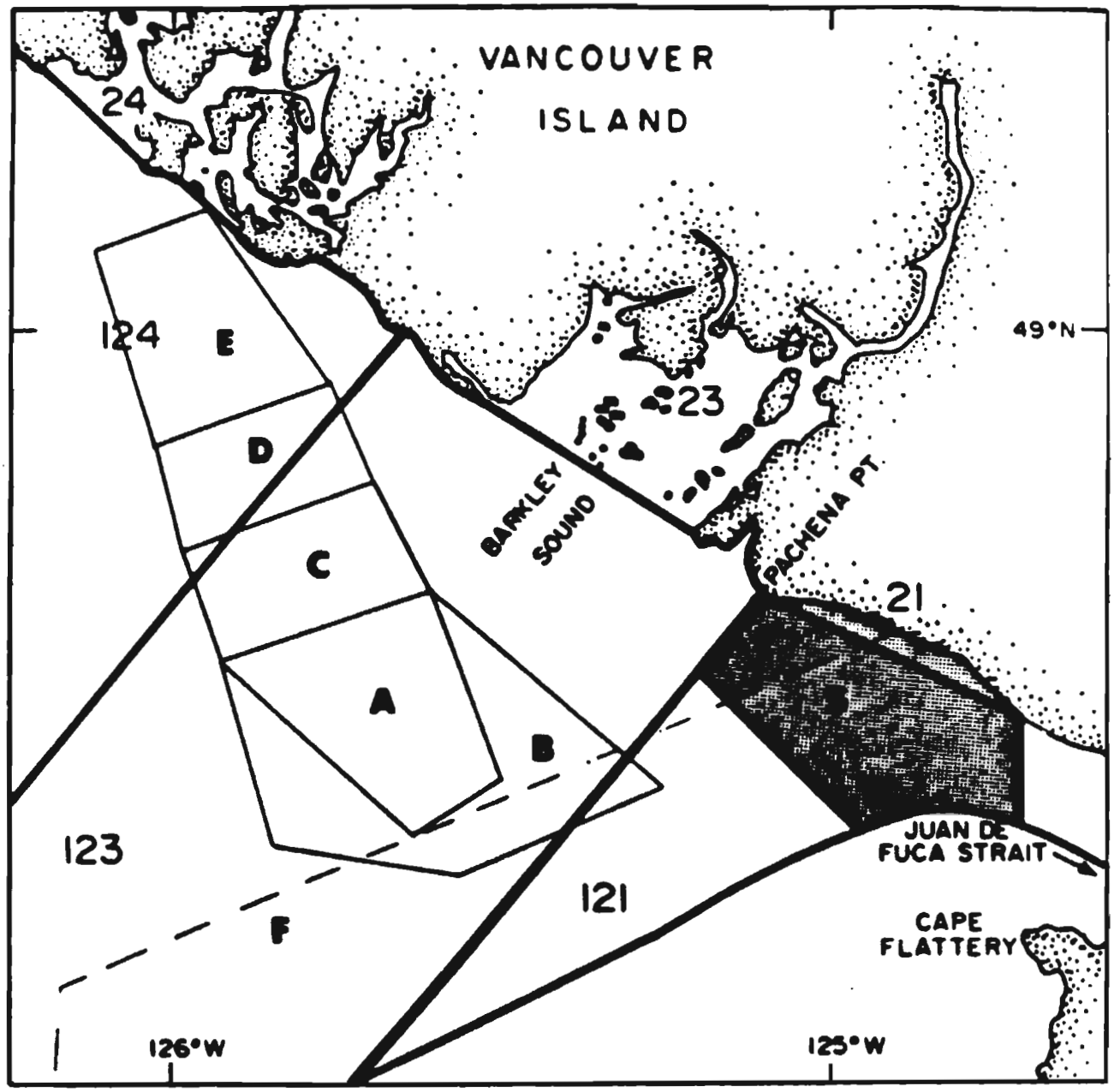
As of July 1, 1988, at 0001 hours, the following management areas will open until further notice to commercial salmon trolling for chinook, coho, pink and chum salmon only:

Areas 121 to 127 inclusive and 130-1, 111, except as follows: (see next page)

CHINOOK CONSERVATION CLOSURES

AREA BOUNDARY COORDINATES

COORDINATE NUMBER	LORAN-C		LATITUDE (Degrees, Minutes)	LONGITUDE
	Chinook Conservation Area A			
7	5990-Y-29090	5990-Z-41570	48° 39.25'N	125° 57.22'W
8	5990-Y-29090	5990-Z-41650	48° 43.68'N	125° 37.62'W
9	5990-Y-28980	5990-Z-41650	48° 28.63'N	125° 37.72'W
10	5990-Y-28990	5990-Z-41680	48° 32.00'N	125° 30.20'W
	Chinook Conservation Area B			
7	5990-Y-29090	5990-Z-41570	48° 39.25'N	125° 57.22'W
8	5990-Y-29090	5990-Z-41650	48° 43.68'N	125° 37.62'W
11	5990-Y-29000	5990-Z-41600	48° 28.18'N	125° 50.70'W
12	5990-Y-28960	5990-Z-41660	48° 26.62'N	125° 35.20'W
13	5990-Y-28960	5990-Z-41740	48° 31.80'N	125° 15.30'W
	Chinook Conservation Area C			
5	5990-Y-29140	5990-Z-41550	48° 45.30'N	126° 01.50'W
6	5990-Y-29140	5990-Z-41630	48° 49.40'N	125° 41.95'W
7	5990-Y-29090	5990-Z-41570	48° 39.25'N	125° 57.22'W
8	5990-Y-29090	5990-Z-41650	48° 43.68'N	125° 37.62'W
	Chinook Conservation Area D			
3	5990-Y-29200	5990-Z-41530	48° 52.80'N	126° 05.40'W
4	5990-Y-29200	5990-Z-41610	48° 56.55'N	125° 46.25'W
5	5990-Y-29140	5990-Z-41550	48° 45.30'N	126° 01.50'W
6	5990-Y-29140	5990-Z-41630	48° 49.40'N	125° 41.95'W
	Chinook Conservation Area E			
1	5990-Y-29290	5990-Z-41490	49° 03.90'N	126° 12.90'W
2	Lenard Island Light			
3	5990-Y-29200	5990-Z-41530	48° 52.80'N	126° 05.40'W
4	5990-Y-29200	5990-Z-41610	48° 56.55'N	125° 46.25'W
	Swiftsure (Area S)			
	Defined as Pacific Fishery Management Areas 21, 121-1 and that portion of 121-2 lying easterly of a line connecting the two coordinates described below.			
14	5990-Y-28996	5990-Z-41752	48° 37.15'N	125° 12.80'W
15	5990-Y-28904	5990-Z-41810	48° 29.30'N	124° 58.00'W



KEY

A	Chinook Conservation Area A
B	Chinook Conservation Area B
C	Chinook Conservation Area C
D	Chinook Conservation Area D
E	Chinook Conservation Area E
F	980 Line Closure
S	Swiftsure Bank Closure

Figure 1. 1988 CHINOOK CONSERVATION CLOSURES

Table 1 06-Jun-88

CHINOOK TROLL RED LINE AND GREEN LINE
CATCHES FOR WCVI FOR 1988

STAT WEEK	IDEAL CATCH	RED LINE PERCENT	RED LINE CATCH	GRN LINE CATCH	GRN LINE PERCENT
7/2	121,451	30.0%	157,900	78,900	35.0%
7/3	182,848	26.0%	230,400	128,000	30.0%
7/4	228,880	22.0%	279,200	171,700	25.0%
7/5	270,726	18.0%	319,500	216,600	20.0%
8/1	303,245	14.0%	345,700	257,800	15.0%
8/2	326,936	10.0%	359,600	294,200	10.0%
8/3	343,396	5.0%	360,000	326,200	5.0%
8/4	353,992	2.0%	360,000	346,900	2.0%
9/1	360,000	0.0%	360,000	360,000	0.0%

Comments:
1) Ideal catch is based on 1986-87 average sales slip catches.
   1987 week 7-1 catch reduced by 20% because of size limit change (26"-28").
2) Week 7/2 is July 1 to 9. Week 9/1 is August 28 to 31.

Table 2

COHO TROLL RED LINE AND GREEN LINE
CATCHES FOR WCVI IN 1988

STAT WEEK	IDEAL CATCH	RED LINE PERCENT	RED LINE CATCH	GRN LINE CATCH	GRN LINE PERCENT
7/2	408,619	30.0%	531,200	286,000	30.0%
7/3	675,152	26.0%	850,700	499,600	26.0%
7/4	920,222	22.0%	1,122,700	717,800	22.0%
7/5	1,159,623	18.0%	1,368,400	950,900	18.0%
8/1	1,352,804	14.0%	1,542,200	1,163,400	14.0%
8/2	1,493,115	10.0%	1,642,400	1,343,800	10.0%
8/3	1,635,343	6.0%	1,733,500	1,537,200	6.0%
8/4	1,770,867	2.0%	1,800,000	1,735,500	2.0%
9/1	1,800,000	0.0%	1,800,000	1,800,000	0.0%

1) Ideal catch is based on 1986-87 average sales slip catches.
2) Week 7/2 is July 1 to 9. Week 9/1 is August 28 to 31.

In the event of greater than expected coho abundance, the following closure will be implemented:

980 Line (Area F)

Defined as that area to the SE of loran-C line 5990-Y-28980.

COORDINATE NUMBER	LORAN-C	LATITUDE (Degrees,Minutes)	LONGITUDE
16	Intersection of Loran C Line 5990-Y-28980 with the Vanc. Is. shore	48° 40.50'N	124° 52.10'W
17	5990-Y-28980 5990-Z-41530	48° 19.82'N	126° 10.95'W
18	Intersection of Loran C line 5990-2-41530 with the international boundary.	48° 01.62'N	126° 14.06'W

NOTE: - The 980 Line (Area F) will be open at the beginning of the season.
- Non-retention of sockeye until July 10, 1988.

Inside Surf Line (Areas 21 and 23 to 27 inclusive, Area 11 and 12)

As of July 1, 1987, at 0001 hours, the following areas will open to trolling for chinook, coho and chum salmon only as follows:

Area 21 - Remains closed to trolling (part of Swiftsure closure).

Area 23 - All Area 23 open except Subareas 23-1 and 23-2 which remain closed until further notice.

Area 24 - All Area 24 open until August 1 after which only Subareas 24-2, 24-6 and 24-8 will remain open. Non-retention of sockeye in effect July 1 until further notice in all areas.

Area 25 - Remains closed to trolling.

Area 26 - Remains closed to trolling.

Area 27 - Open until August 1 except 27-7, 27-8, 27-9, 27-10 and 27-11. Effective August 1 all of Area 27 closed to trolling.

Area 11 - Subareas 11-1 and 11-2 remain closed. In the event that areas are required for sockeye opportunities, the following will open.

a) Those portions of Subareas 10-1 and 10-2 lying south of a line due west from Dugout Rock to the Surf Line.

b) Those portions of Subareas 11-1 and 11-2 lying east of a line from the northwest corner of Subarea 11-1 to Bright Island in the Buckle Group, then to the Mainland following the Area 11 and 12 boundary.

GREY AREA

Area 12 - As of July 1, 0001 hours, trolling for chinook and coho only is permitted in Subareas 12-10 and 12-13 (Deserters Group) 7 days per week for both Inside and Outside licenced vessels. In all other Subareas trolling is restricted to net fishing times and areas for both Inside and Outside licenced vessels with non-retention of chinook for vessels with inside licences. Troll fishing opportunities in Subareas 12-10 and 12-13 will be limited if the chinook troll catch in all of Area 12 exceeds 5,000 pieces.

NOTE: AFTER RESPECTIVE SPECIES QUOTAS ARE TAKEN, THE RETENTION AND POSSESSION OF THOSE SPECIES WILL BE PROHIBITED PURSUANT TO SECTIONS 5.2 OF THE B.C. FISHERY (GENERAL) REGULATIONS AND 5.2 OF THE PACIFIC COMMERCIAL SALMON FISHERY REGULATIONS. SUBSEQUENT TO RECENT COURT DECISIONS, THE D.F.O. WILL ENFORCE THESE SECTIONS.

NORTH COAST

The North coast fishing plans have been developed through a series of meetings with the Outside Troll Advisory Committee which is composed of representatives of the Northern Trollers Association, the Pacific Trollers Association, the UFAWU, the Native Brotherhood and the processing industry.

Background

Allocations & Limitations:

Chinook
- Chinook size limit. The minimum size limit for troll caught chinook is 67cm "nose to fork length" and 56 cm "head off length". The "head off" length is the shortest length of the fish to the fork of the tail. These are the same limits in effect during the 1987 season.
- The 1988 North Coast troll catch of chinook is limited to 183,000 to correct for 1987 overages.

Coho
- There is no Pacific Salmon Treaty limit in the North Coast.
- Skeena coho are well below target escapement and declining. Conservation actions for all users will be initiated or continued in 1988.
- Overall North Coast coho exploitation must not escalate as a result of effort transfer after North or South Coast chinook ceilings are reached.

Sockeye
- Up to 5% of the Areas, 1, 3, 4, 5 all gear sockeye catch allocated to troll.

Pink
- 1988 Area 1 Pink troll limitations from Pacific Salmon Treaty as follows.

  Closures to Pink trolling:

  A) In A-B line strip when catch in that area reaches 300,000 or by July 22 whichever comes first (see attached chart and fishing plan for details).

  B) General Area 1 closure to pink trolling when total Area 1 pink troll catch reaches 1.7 million (with the following area remaining open to pink trolling).
  - The area South of the mid-line of Dixon Entrance and East of a line from Langara Island to Cape Muzon will remain open (details are outlined in the attached chart and fishing plan).

Chum
- No escalation of harvest rates by the troll fleet.

Abundance:

Chinook - Assumed 20% greater than 1987.
Coho - No assumptions are made.

Sockeye - Areas 1, 3, 4, 5 - all gear catch expected to be 1.5 million.

Pink - Exceptionally large return expected to Skeena/Nass and Central Coast (12 - 28 million).

Chum - Above average, similar to 1987.

Objectives:

The troll fishing plan for 1988 was developed based on the allocations and limitations outlined above with consideration of the following objectives.

1) Minimize non-retention fisheries and the impacts of associated mortalities.
2) Minimize the foregone catch of species other than chinook.
3) Maintain or increase the economic benefits to the troll fleet under the current limitations.
4) Minimize the disruption of coastal communities, or a specific segment of the fleet.
5) Contribute to Strait of Georgia chinook conservation through a 20% reduction in harvest rates in South Central - Johnstone St. area.
6) Manage Northern and Southern areas as a co-ordinated unit.
7) Maintain manageability and enforceability of the plan.
8) Manage in a manner that fosters a positive relationship with other gear types, and meets long term Pacific Salmon Treaty objectives.

NORTH COAST FISHING PLAN

The following management areas will open to commercial trolling for all salmon species except sockeye 00:01 hours July 1, 1988. In addition, areas open to net fishing will be open to trolling during net fishing times after July 1.

Outside Surfline

Open - Areas 101, to 110, 130-2, 130-3 and that portion of 142-2 North of 53° 5'N (Buck Pt.)

Inside Surfline

Area	Subareas Open
1	1-1, 1-2, 1-3, 1-5 and 1-7
2E	All subareas
2W	(2-63 to 2-100) i.e. Buck Pt. North

3	3-1 (subareas 3-2, 3-3, 3-4 and 3-7 are scheduled to open mid August)
4	Closed
5	All subareas
6	6-9, 6-11, 6-13, 6-17 and that portion of 6-10 seaward of a line from McPhee Point on Princess Royal Island to the southern tip of Campania Island
7	7-1, 7-2, 7-18, 7-19, 7-20, 7-23, 7-25, 7-26, 7-27, 7-31 and 7-32
8	8-1
9	Closed
10	Those portions of subarea 10-1 and 10-2 lying north of a line due West from Dugout Rocks to the surfline.

SOCKEYE

The coastal approach to the management of Fraser sockeye will be continued in 1988. The sockeye opening in the southern portion of the North Coast is delayed until July 10 to coincide with South Coast sockeye openings (late opening to conserve early Stuart sockeye).

The following areas will open to trolling for sockeye July 1.

Outside Surfline

Open - Areas 101, 102-1, 103, 104, 105-1 and 142-2 North of 53° 5'N (Buck Point).

Inside Surfline

Area	Subareas open for sockeye July 1
1	1-1, 1-2, 1-3, 1-5 and 1-7
2E	2-1
2W	All subareas North of 53° 5' (2-63 through 2-100)
3	3-1
4	Closed
5	All subareas
6	Closed
7	Closed
8	Closed
9	Closed
10	Closed

This area can be roughly described as the area from Buck Point North, all of Dixon Entrance, and Hecate Strait North of a line from Sandspit to Bonilla Island.

In addition, the remainder of the North Coast troll fishing areas opened to trolling for other species July 1, will open to sockeye trolling July 10.

If the coastal outside troll Fraser River sockeye allocation is reached in-season, the North Coast will close to the possession and retention of sockeye with the exception of the followng areas of Dixon Entrance and Hecate Strait that will remain open to sockeye if the Area 1, 3, 4 and 5 sockeye troll allocation has not been reached.

Subareas Open 1-2, 1-3, 1-5, 1-7, 101-4, 101-5, 101-6, 101-7, 101-8, 101-9, 101-10, 103, 104, 102-1, 105-1, 2-1, 3-1 and Area 5 (all subareas inside surfline). This area can be roughly described as the area of Dixon Entrance east of a line from Langara Isl. to Cape Muzon and the area of Hecate Strait North of a line from Sandspit to Bonilla Isl. Any or all of these areas are still subject to closure to sockeye fishing if a significant interception of Fraser sockeye is detected in the weekly sampling.

COHO

There are serious concerns for the conservation of Skeena coho. Conservation measures will be initiated or continued for all users in 1988.

Accordingly, Area 4 inside the surfline will close to trolling except during net fishing times. These closures will include subareas 4-1, 4-2, 4-3, 4-4, and 4-13 which were open in 1987 (see attached chart). If the troll fishery extends past August 25 these (and possibly other subareas) may reopen to trolling.

PINK

Area 1

In-season Management to Pacific Salmon Treaty Ceilings

In order to comply with the Pacific Salmon Treaty arrangement for 1988 the following areas will be closed to pink salmon trolling when the following catch levels have been reached.

1) When the pink salmon troll catch in subareas 101-4, 101-8 and 101-3 North of 54° 37'N and 103 North of 54° 37' reaches 300,000 or after 22 days (whichever comes first) these areas would close to pink trolling.

2) In addition all of Area 1 (with the exception of the following areas) will close to pink salmon trolling when the total Area 1 pink troll catch reaches 1.7 million. Areas that will remain open to pink trolling include subareas 101-6, 101-10, 101-7, 1-2, 1-3, 1-5 and 1-7.

All pink trolling plans in Area 1 are subject to special restrictions if Skeena/Nass pink run strength does not materialize.

Area 2W

The Department of Fisheries and Oceans is concerned that a new large mixed stock pink troll fishery might develop in Area 2W. The northern portion of 2W remains open to provide trolling opportunities; however, if a large fleet concentrates on pink trolling in this area it may be closed in-season after consideration of pink run strengths and fleet fishing success in other areas.

CHUM

Troll fisheries in the North Coast should remain at historical proportions in relation to other gear.

CHINOOK

The chinook fishing plan for the North Coast is a departure from last year's 'red line' approach. After lengthy and difficult deliberations and consideration of all the listed objectives, the decision was to fish in the following manner:

AREA 10 & 11 - Lower Georgia Strait Conservation Closure and Ceiling

The following management actions have been taken to achieve a 20% harvest rate reduction in the South-Central troll harvest rate on Lower Georgia Strait chinook.

The chinook troll fishery in Areas 10, 11, 110 and 111 will close if the chinook catch in these areas reaches 19,000. In addition, the following areas will be closed for the season:

1) Those portions of subareas 10-1 10-2 lying south of a line due West from Dugout Rocks to the surfline.

2) All of subareas 11-1 and 11-2. A portion of these subareas will reopen if needed to harvest sockeye or pink salmon.

A 'green' line approach of opening the season will be utilized in the North Coast to extend the chinook troll season.

The following area in 2W will be closed to all salmon trolling when the season opens July 1:

> That portion of 142-2 South of 53° 5'N and adjacent inside areas (Buck Point south) i.e. Area 2W south of Buck Point.

If the North Coast chinook ceiling of 183,000 cannot be taken in the open areas, the southern half of 2W will open inside the 100 fathom depth contour to increase the catch rate. This is expected to be an extremely unlikely event, and specific decision green line levels are not established at this time.

CLOSURES AFTER THE CEILING IS REACHED

When the North Coast chinook ceiling of 183,000 is reached, non-retention and non-possession of chinook salmon will be in effect in all areas open to trolling. In addition, all of the following "chinook sensitive areas" will be closed to all trolling to minimize chinook shaker mortality.

Areas 1 and 2W

1) All of Area 2W inside the surfline.
2) Subarea 142-2 inside the 100 fathom line (to be redefined).
3) The area inside a box boundary approximately 2 miles from the West, North and East shoreline of Langara Island.
4) Subarea 1-1, and those portions of 101-1 and 101-2 lying inside the 100 fathom contour.
5) A flexible plan is in place for Area 1 along the North Shore of the Queen Charlotte Islands.
   Subareas 1-2, 1-7 and 1-3. Subarea 101-7 West of Wiah Point will close in addition to these areas if 101-7 is not needed to harvest pink salmon.

AREAS 6 AND 7

Subareas 6-17, 7-31, 7-2, 7-1 and 7-32 closed to trolling.

AREAS 10 AND 11

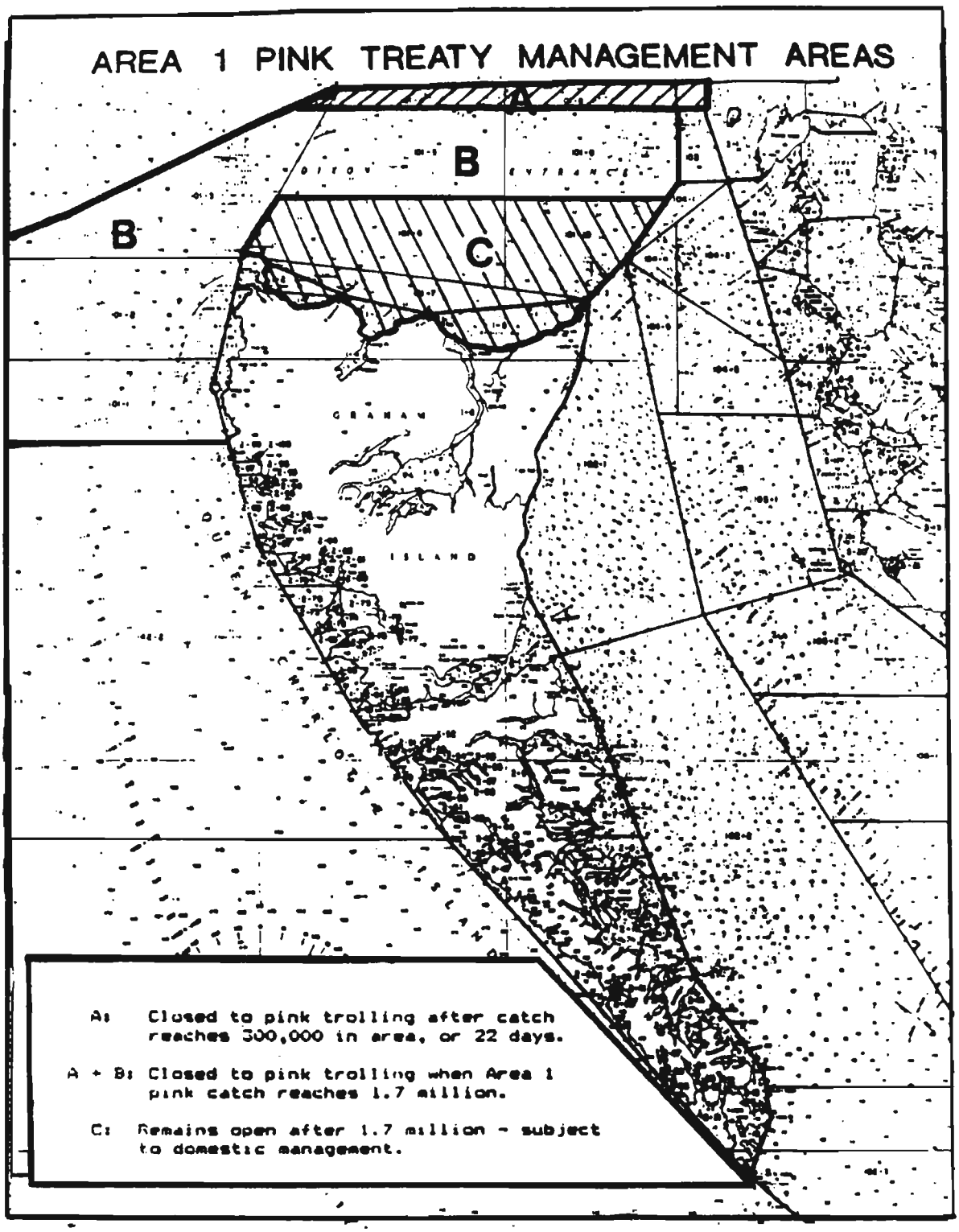
Seasonal Lower Georgia Strait chinook closures remain in effect.

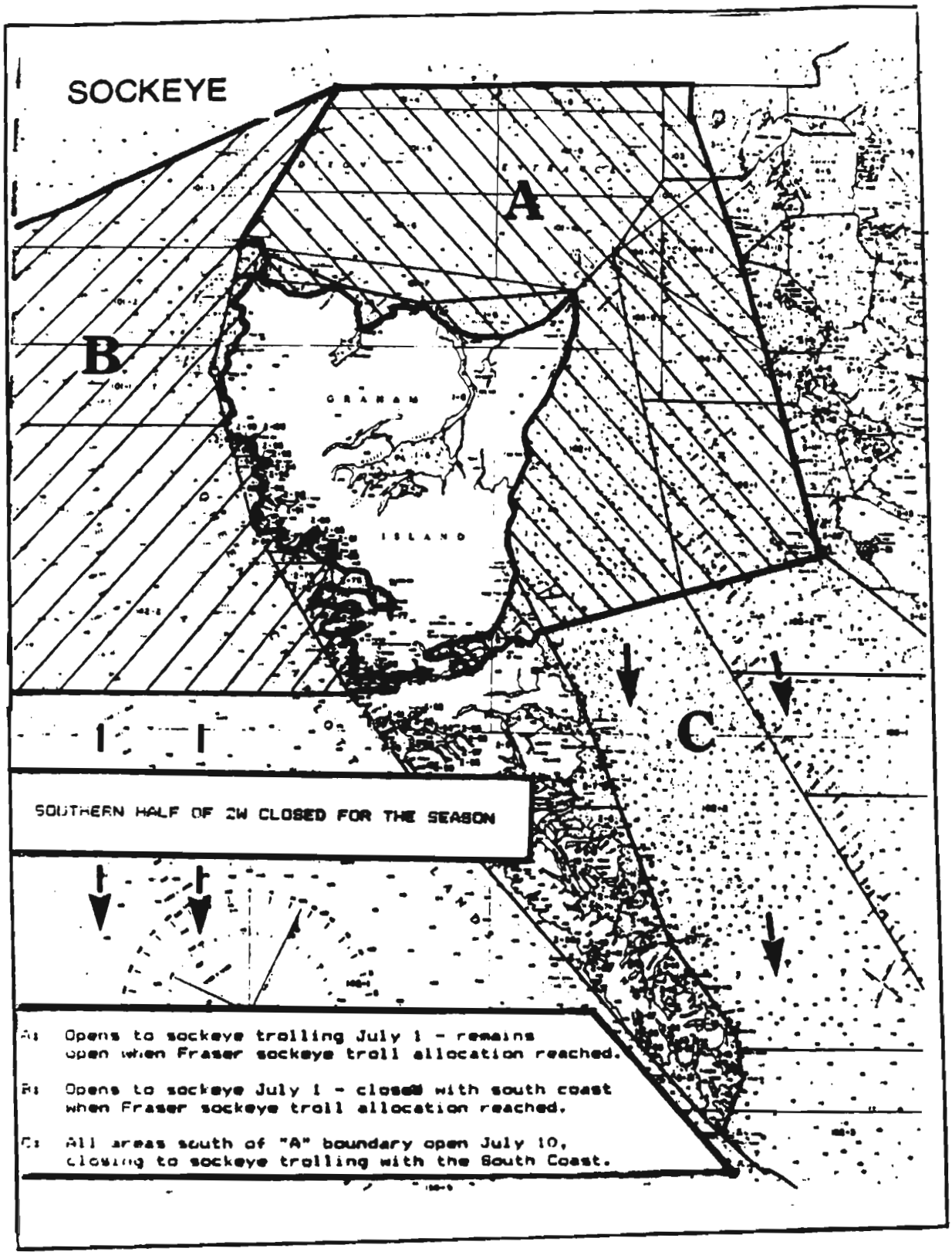
TERMINATION OF THE TROLL FISHERY

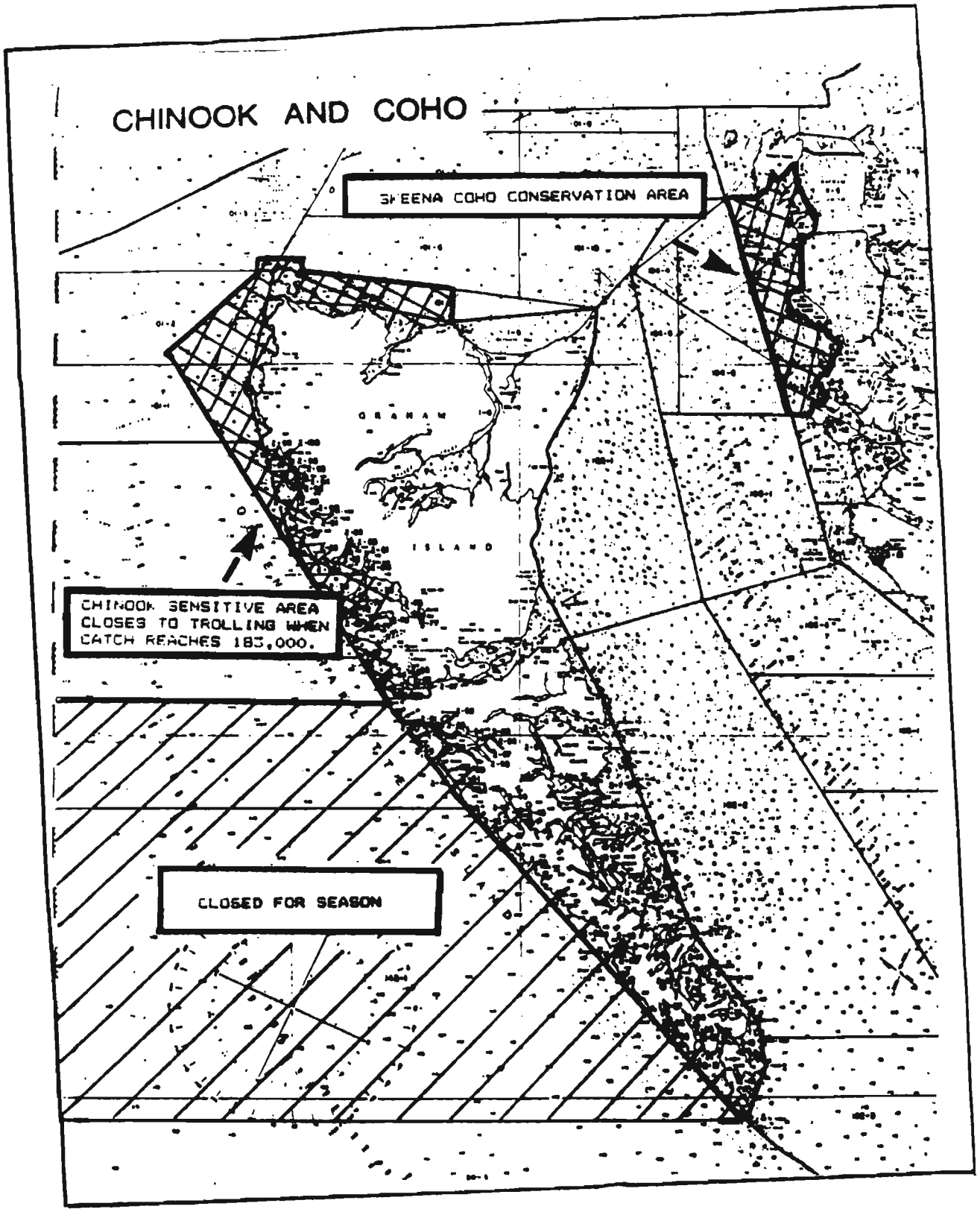
The troll fishery is expected to close September 1 unless coho abundance, troll effort and the chinook shaker rate indicates the fishery can continue without causing conservation problems or excessive chinook shaking. The decision will be made in-season after consultation with trollers and industry. The season could close prior to September 1, but the conditions would have to be exceptional, as occurred in 1987.

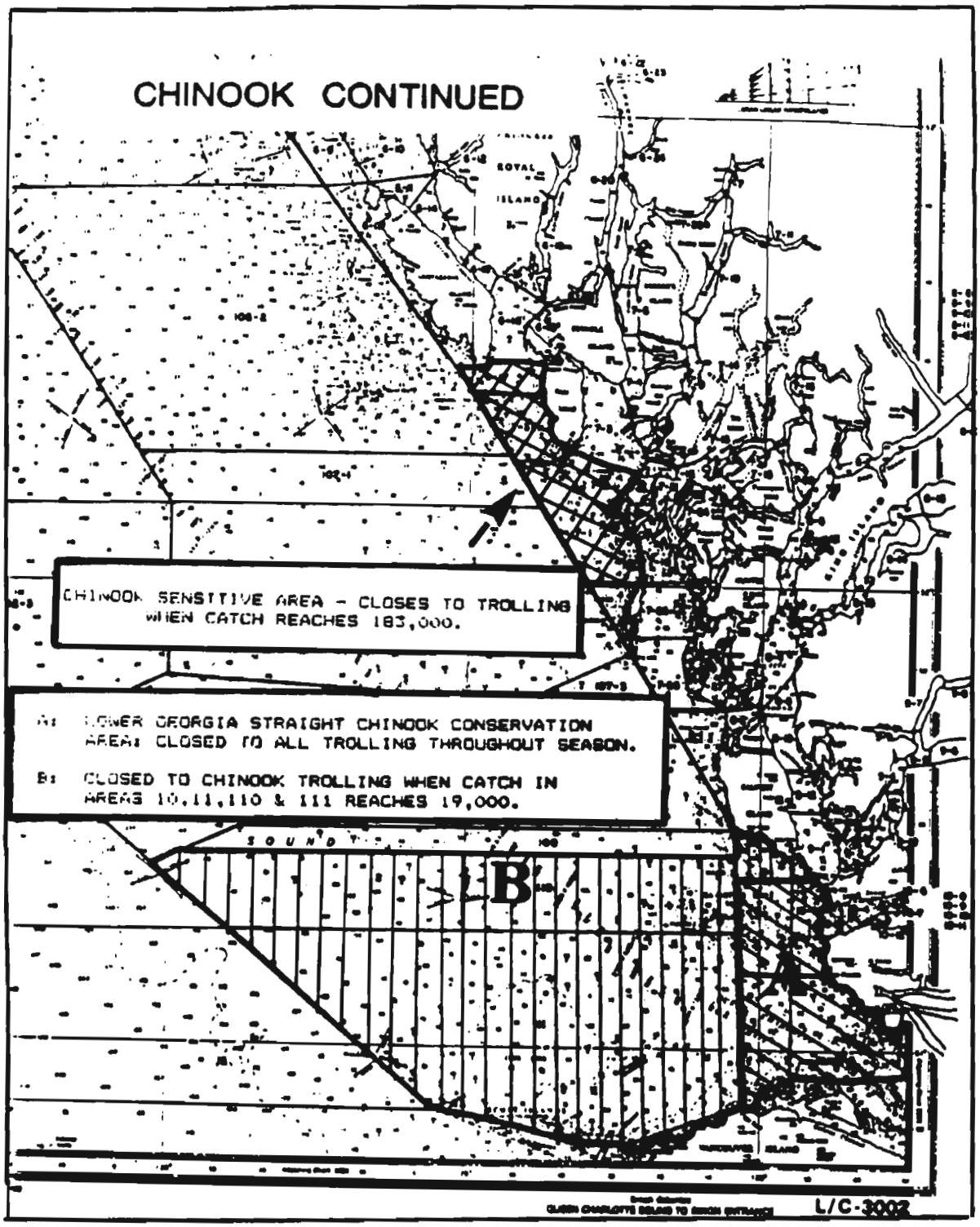
RETENTION AND POSSESSION

After respective specie quotas are taken, the retention and possession of those species will be prohibited pursuant to sections 5.(2) of the B.C. Fishery (General) Regulations and 5.2 of the Pacific Commercial Salmon Fishery Regulations. Subsequent to recent court decisions, the DFO will enforce these sections.


AREA 1 PINK TREATY MANAGEMENT AREAS
A
B
B
C
GRAHAM
ISLAND
A: Closed to pink trolling after catch reaches 300,000 in area, or 22 days.
A + B: Closed to pink trolling when Area 1 pink catch reaches 1.7 million.
C: Remains open after 1.7 million - subject to domestic management.


SOCKEYE
A
B
C
GRAHAM
ISLAND
SOUTHERN HALF OF 2W CLOSED FOR THE SEASON
A: Opens to sockeye trolling July 1 - remains open when Fraser sockeye troll allocation reached.
B: Opens to sockeye July 1 - closed with south coast when Fraser sockeye troll allocation reached.
C: All areas south of "A" boundary open July 10, closing to sockeye trolling with the South Coast.


CHINOOK AND COHO
SKEENA COHO CONSERVATION AREA
GRAHAM
ISLAND
CHINOOK SENSITIVE AREA
CLOSES TO TROLLING WHEN
CATCH REACHES 183,000.
CLOSED FOR SEASON


CHINOOK CONTINUED
CHINOOK SENSITIVE AREA - CLOSES TO TROLLING WHEN CATCH REACHES 183,000.
A: LOWER GEORGIA STRAIGHT CHINOOK CONSERVATION AREA: CLOSED TO ALL TROLLING THROUGHOUT SEASON.
B: CLOSED TO CHINOOK TROLLING WHEN CATCH IN AREAS 10,11,110 & 111 REACHES 19,000.
B
L/C-3002

Appendix 4. 1988 Communiction plan.

Government of Canada / Gouvernement du Canada

MEMORANDUM NOTE DE SERVICE

TO / À: P. Sprout
Area Manager
South Coast Division

FROM / DE: Doug Swift
Fishery Officer
Tofino Sub-district

SECURITY - CLASSIFICATION - DE SÉCURITÉ:

OUR FILE — N / RÉFÉRENCE:

YOUR FILE — V / RÉFÉRENCE:

DATE: June 14, 1988

SUBJECT / OBJET

COMMUNICATIONS PROCEDURE, 1988 WCVI TROLL SEASON

On June 10, 1988 a meeting was held in the Port Alberni DFO Office to discuss, and formulate, a plan regarding the above subject.

The following procedure is the result of this meeting and is how we propose to operate during the 1988 troll season.

1. WEDNESDAY

   Salmon services (Dave Schutz) forwards catch information to Nanaimo (Tom Shardlow) and Prince Rupert (Dave Peacock).

2. THURSDAY

   Conference call at 1300 hours between:

Tom Shardlow	Dave Peacock
Dave Schutz	John Lewis
Ed Lochbaum	Doug Swift
Dave Knapton	

   The purpose of this conference will be to discuss the catch rate, quotas, problems, etc.

   Due to annual leave commitments, alternates for these people should be established.

3. The first conference call will take place on July 7, 1988 at 1300 hours, and every Thursday thereafter. Conference call will be arranged by Dave Schutz.

4. After the conference call, F/O Swift will prepare the 'Notice to Industry' for the WCVI, and Dave Knapton for the North Coast. This notice will be forwarded to Dave Schutz by Telex or Rapidfax, who in turn will check for errors and prepare the multi-address telex for Indusry. If an error is noted, corrections will be made and the originating officer informed immediately.

. . ./2

5. In the interim, while Dave Schutz is finalizing the "Notice to Industry in Vancouver, the field office will contact the patrol vessels to clarify the forthcoming 'Notice to Industry' and answer any questions.

6. Vancouver to send the 'Notice to Industry' on Telex and Glenaire to all stations.

7. At 1705, the 'Notice to Industry' will be read over B.C. Tel Channels on the WCVI from the Tofino FLXWMXV; this will be a broadcast only. Discussions with the fleet will not take place. Both South Coast and North Coast information will be broadcast from Tofino. Arrangements have been made with B.C. Tel for ten minute periods - every Thursday, at 1705 for the following B.C. Tel locations:

Pachina	Tofino
Estevan	Kyuquot
Brooks Peninsula	Winter Harbour

8. The broadcast will be repeated on 78A and 2318 from the 'James Sinclair' and 'Tanu', who will have a hard copy of the notice.

9. If an additional broadcast is required on an additional day due to unforeseen events, notice of this broadcast will be transmitted over the Coast Guard weather channel first, to alert the fleet of the time of the broadcast.

10. If a particular announcement crates a significant amount of confusion and consternation among the fleet, DFO patrol vessels will contact the Tofino office who in turn will set up a conference call with these vessels to clarify the situation. This is not expected to be a common occurence.

11. The billing will be to the Tofino number, 725-3468. Broadcasts will be carried out on Tofino's unlisted number 725-3304.

No doubt there will be some unexpected problems arising in-season which are not covered by this plan. Hopefully though, this proposal will help streamline the flow of information to both the patrol vessels and to the fishing fleet. The use of the B.C. Tel channels will be expensive (approximately $110 per call), but when considering our present resources, this is the most efficient way to go. However, by limiting the transmissions to broadcasts only, for ten minute periods, costs should be contained.

I trust this will meet with your approval.

Doug Swift

DS/ldt

cc: Lyle Freeman, DFO, Port Alberni