DISTRICT SUPERVISOR

OPERATIONAL FRAMEWORK

AREA 8

Bella Coola Sub-district

DEPT. OF FISHERIES AND OCEANS

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Introduction

ere are a number of activities that must be performed before, during, d after a salmon fishing season. These include broadly:

1. Developing salmon expectations;
2. Developing a Sub-district fishing pattern based on these expectations;
3. Execution of the fishery, including management, reporting and recording;
4. Season evaluation.

the past these tasks have come no where near being a comprehensive erational plan. The "Salmon Expectations" format has remained changed since its beginnings in the early 1960's, while the complexity fishery management has grown immensely, particularly in the last fteen years.

thout adequate planning in any operation, time, money, and efforts ent can be largely wasted. More importantly, no assessment is ssible, and without assessment there is no basis for improvement.

veral recent developments in the Central Coast District have layed the oundwork for the implementation of a more detailed operational anning process. These are:

1. The development of a comprehensive Sub-district Salmon History and Record of Management Strategies (RMS);
2. Compilation of upgraded Sub-district escapement data into a useable field book, including target escapements, annual escapements, 10-year averages and timing data, 1950-1987 by species, by stream, by Sub-area, "Goruk, R., H. McNairnay, D. Peacock and J. Greenlee. 1988. Salmon escapement and timing data for Statistical Area 7 of the Central Coast of British Columbia. Can. Data Rep. Fish. Aquat. Sci. (#) v + 124 p."
3. Development of the use of Key Indicator streams, with an in-season field form for use in the RMS which includes average escapements, arrival and peak spawn timing, and target escapements;
4. Development of a weekly Operational Framework to identify indicators used in current week salmon management and to anticipate data requirements and operational needs in the coming week(s);
5. Development of a Minimum Fisheries Management Program to identify operational requirements (seasonal staff costs) based on in-season data required to manage the salmon fishery in a Sub-district;

6. Injection of existing Central Coast tagging information into the RMS in a revised format allowing some guidance as to the destination of fish being fished at a particular location in a particular week;

7. Division of Sub-districts into smaller sub-areas based on Key streams and the management of stocks in distinct locales, as opposed to the "blanket area" approach (this item is especially important in the identification of available surpluses, and where, when, and how they can be harvested);

8. Development, in general, of the use of "Adaptive Management", and the use of seasonal assessments to improve the future cycle of events.

Using these items as a foundation, a comprehensive salmon management framework has been developed and has been designed to allow annual fishing plans and operational requirements to be easily detailed. The principal components of the framework, which is the library of past information and local knowledge, are a series of "rules", both general and on a week by week basis, regarding the various stocks and fisheries in Area 8. These "rules" are largely dictated by timing and migration of the various stocks within Area 8 and are immutable except by nature.

The Sub-district Operational Plan begins with these rules together with the annual Salmon Expectations which identify fishable surpluses (or test fisheries where no surplus has been identified) by stock based on brood year escapements with respect to Key Streams and sub-areas. Together these form the weekly net fishing management plan.

When the weekly plans for the fishery have been layed out one important pre-season planning function remains, that being the formulation of an annual list of Operational Requirements based on the weekly management plan. This includes seasonal staffing requirements, patrol vessel requirements, and aircraft charter requirements.

Using this kind of planning approach would ensure:

1. Clearer objectives for the Sub-district Fishery Officer to embark on and execute his fishery;

2. Better use of resources, both money and manpower;

3. A better opportunity to assess the operation and adapt accordingly;

4. A better understanding by fishermen of the Department and its operation providing a better opportunity for them to plan their season;

5. Better fishery management.

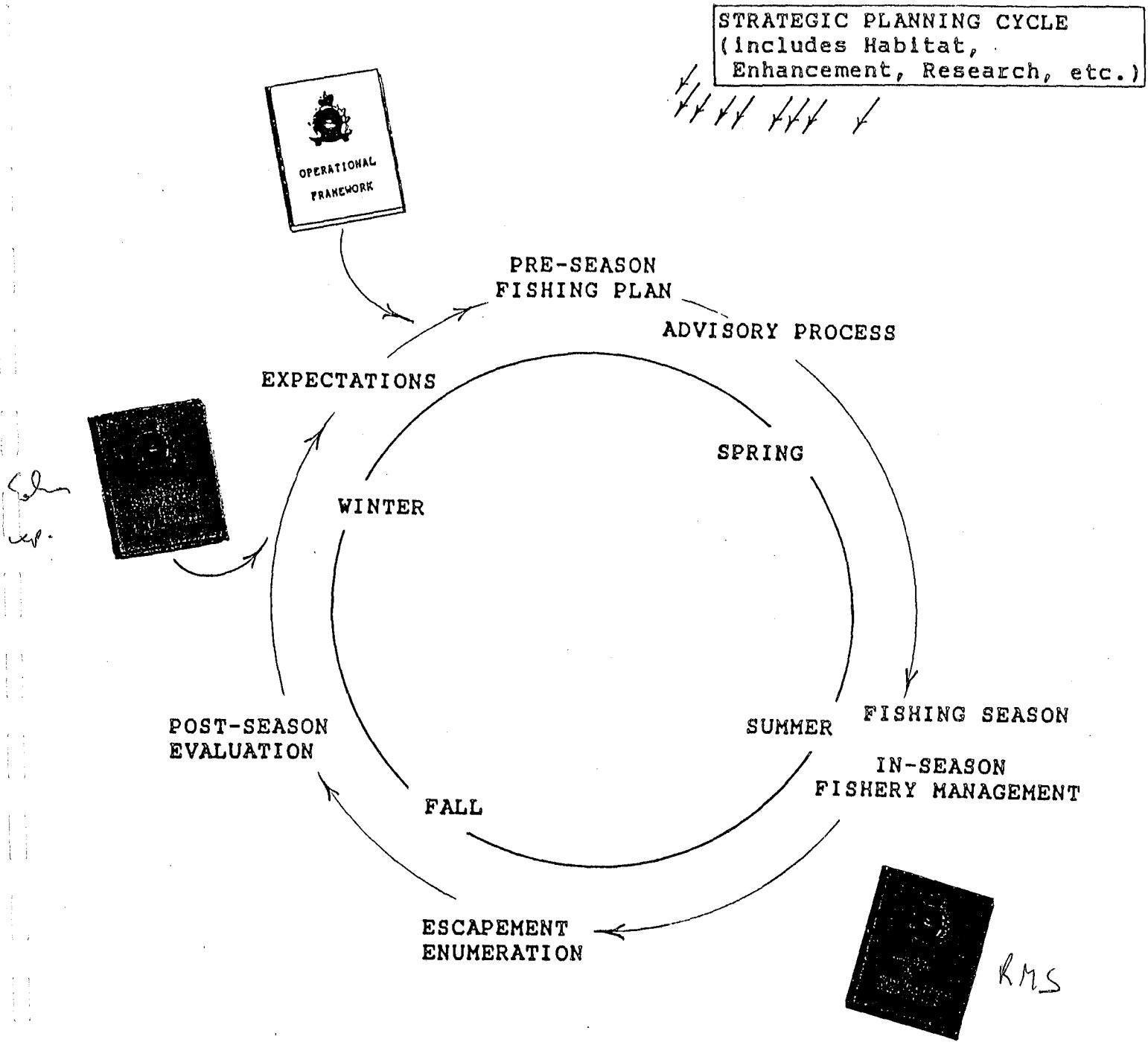


Figure 1 - the Adaptive Management Cycle
(Harvest Management - Salmon)

Without planning, without a record of events and results, evaluation and improvement is impossible.

Without evaluation and improvement, planning and recording become wasted efforts.

READ CAREFULLY

1. Reporting of all catches to the Dept of Fisheries and Oceans is the responsibility of the fisherman and a condition of licence renewal.
2. Accurate catch reports must include the map number or numbers showing the area in which your fish were caught
3. The statistical areas shown on this map are to be used as a guide only. For more exact information refer to the Pacific Fishery Management Area Regulations.

● Dept. of Fisheries and Oceans Office

——— Statistical areas are divided by red lines

——— Surfline

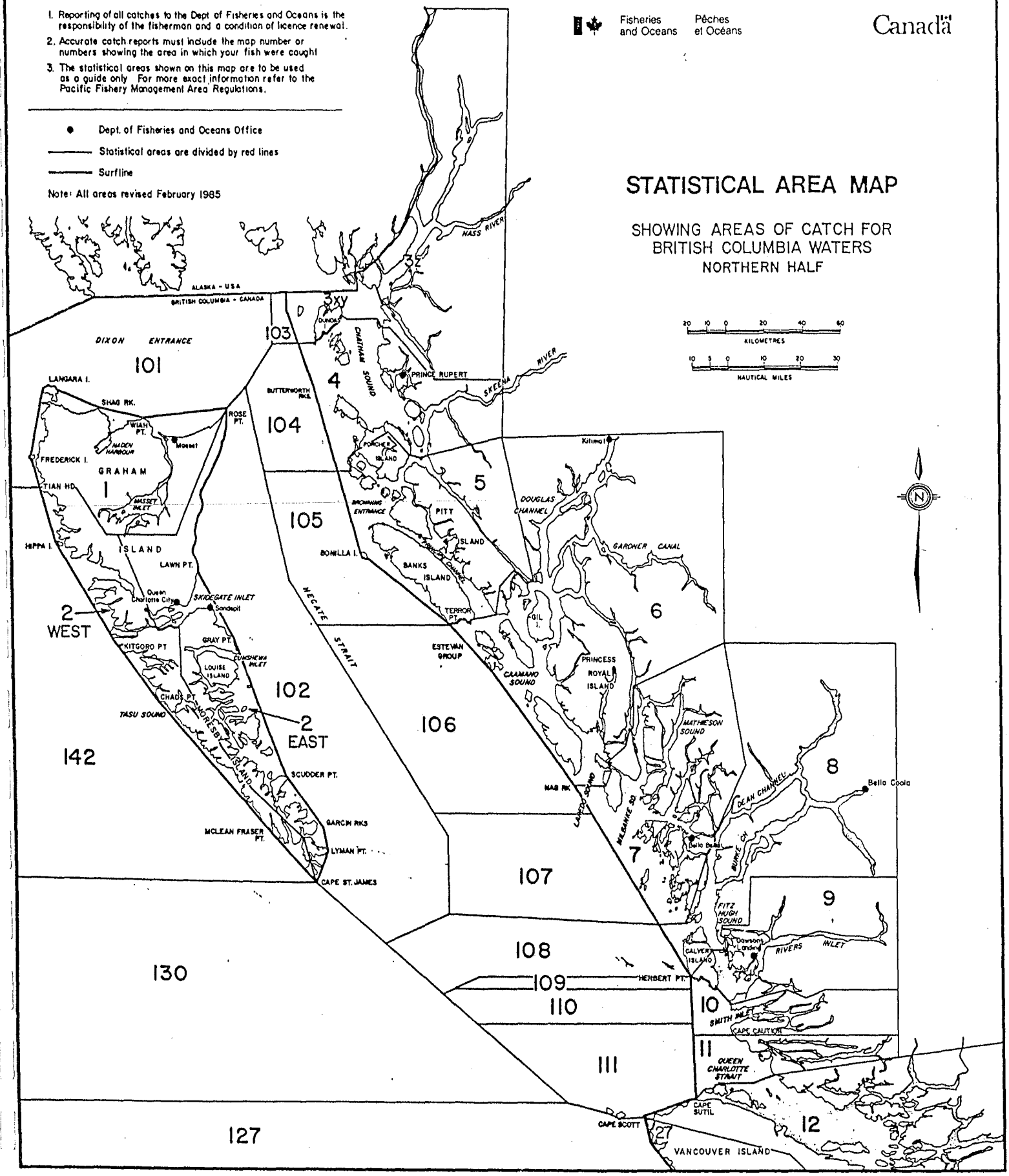
Note: All areas revised February 1985

Fisheries and Oceans / Pêches et Océans

Canada

STATISTICAL AREA MAP

SHOWING AREAS OF CATCH FOR BRITISH COLUMBIA WATERS NORTHERN HALF



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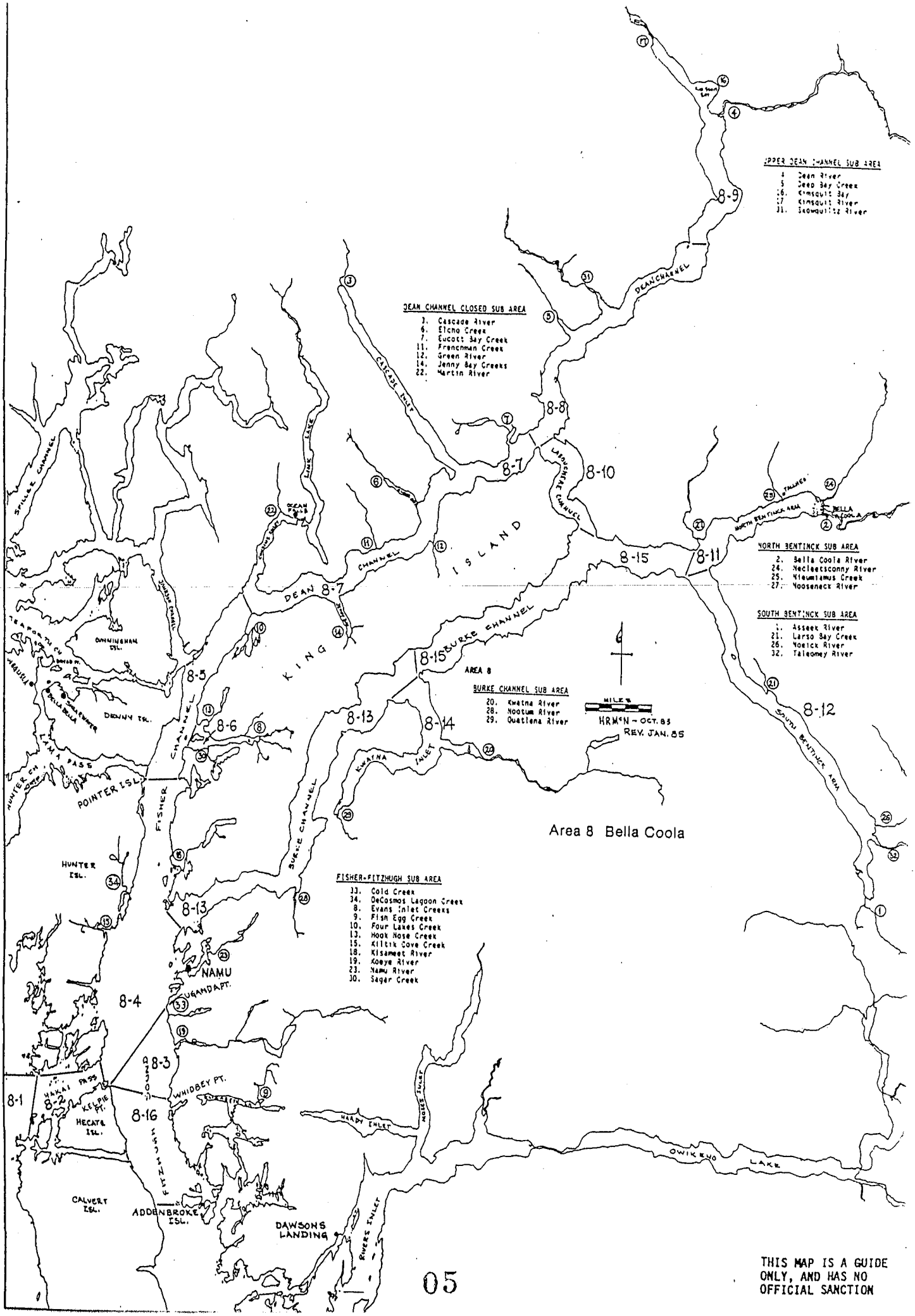

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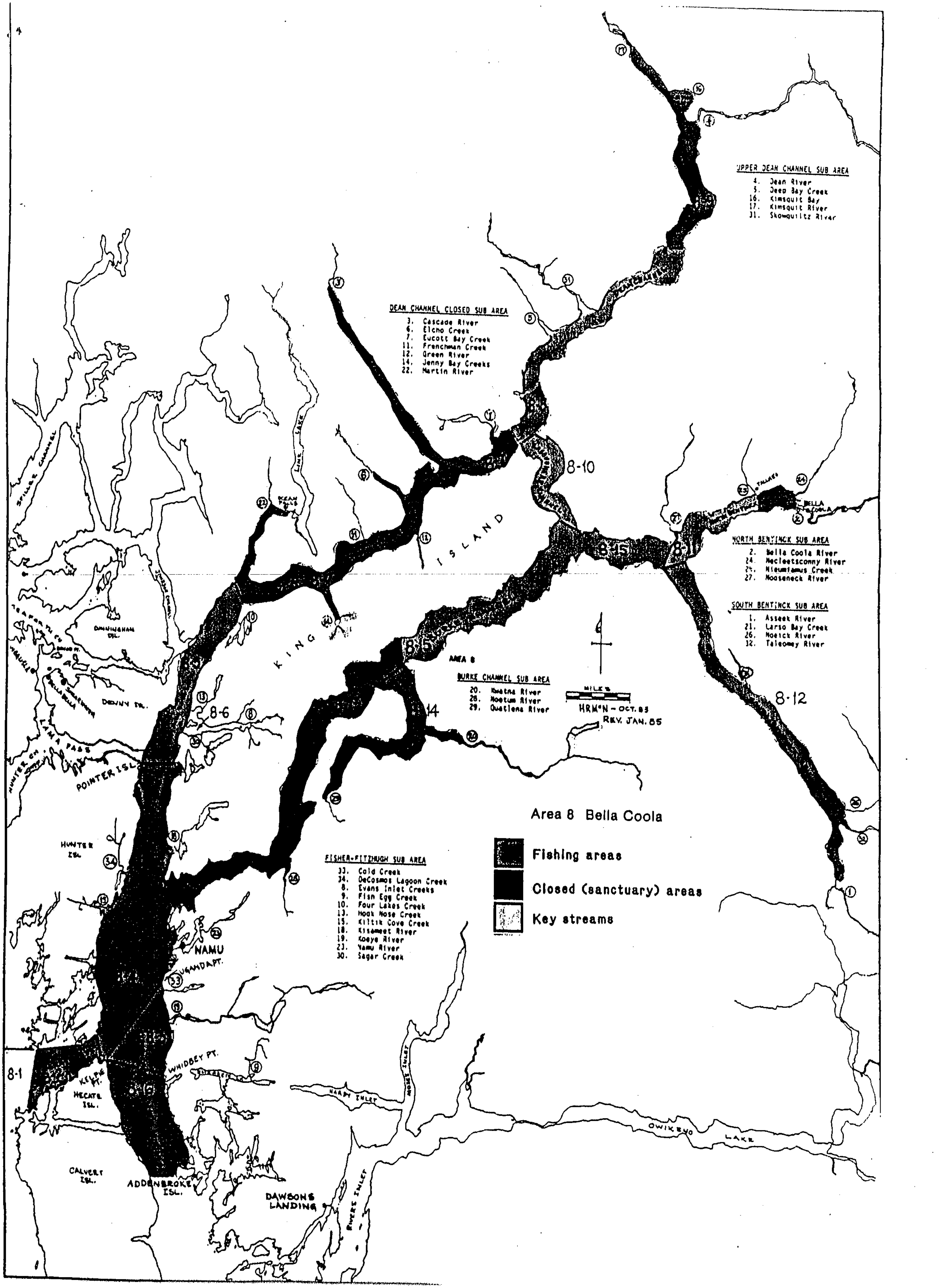
THIS MAP IS A GUIDE ONLY, AND HAS NO OFFICIAL SANCTION


UPPER DEAN CHANNEL SUB AREA
4. Dean River
5. Deep Bay Creek
16. Kimsquit Bay
17. Kimsquit River
31. Skowquiltz River
DEAN CHANNEL CLOSED SUB AREA
3. Cascade River
6. Elcho Creek
7. Eucott Bay Creek
11. Frenchman Creek
12. Green River
14. Jenny Bay Creeks
22. Martin River
8-10
KING ISLAND
BELLA COOLA
NORTH BENTINCK SUB AREA
2. Bella Coola River
24. Necleetsconny River
25. Nieumiamus Creek
27. Noosaneck River
SOUTH BENTINCK SUB AREA
1. Asseek River
21. Larso Bay Creek
26. Noeick River
32. Taleomey River
8-12
AREA 8
BURKE CHANNEL SUB AREA
20. Kwatna River
28. Nootum River
29. Quatlena River
HRM·N - OCT. 83
REV. JAN. 85
8-6
DENNY IS.
POINTER ISL.
LAMA PASS
HUNTER ISL.
NAMU
8-1
HECATE ISL.
CALVERT ISL.
ADDENBROKE ISL.
DAWSONS LANDING
OWIKENO LAKE
RIVERS INLET
Area 8 Bella Coola
Fishing areas
Closed (sanctuary) areas
Key streams
FISHER-FITZHUGH SUB AREA
33. Cold Creek
34. DeCosmos Lagoon Creek
8. Evans Inlet Creeks
9. Fish Egg Creek
10. Four Lakes Creek
13. Hook Nose Creek
15. Kiltik Cove Creek
18. Kisameet River
19. Koeye River
23. Namu River
30. Sager Creek

AREA 8 STOCK NOTES

CHINOOK

Migration and Timing

Bella Coola River (mouth) - from early May to mid-July, peaking June 20-25 (source: IFF and commercial gillnet fishery). Dean River, approximately one to two weeks later (source: commercial gillnet fishery - no IFF in this area).

Indian Food Fishery

The IFF for Chinooks on the Bella Coola River is an important indicator of timing and stock strength. Effort shifts from steelhead to large mesh nets for Chinooks after May 1. Effort increases with success rate and peaks during the first two weeks of June, at which time effort switches to smaller mesh nets for Sockeye (peak of effort does not coincide with peak of migration). N.B. During the recent commercial gillnet closures, an increased IFF effort and catch was evident.

Commercial Net Fishery

Historical Review

The main management effort has been directed toward the Atnarko (Bella Coola) Chinook, with Dean River stocks being passively managed. No other Chinooks in Area 8 are of commercial consequence. Prior to the late 1970's the area was opened by Regulation on February 1st for gillnets only (minimum 8.5 inch mesh) but there was no significant effort prior to mid-May. Fishing would peak in late June, and by early July most fishermen would switch to smaller mesh nets for Sockeye (small mesh nets and seines not permitted prior to late June - early July). Effort was spread throughout Area 8. Fishermen chose not to fish in upper Dean Channel due to seal predation, and South Bentinck Arm due to lack of fish. Kwatna Inlet was closed by Public Notice to protect "Feeder Springs". Fleet size usually ranges from 50 to 60 boats. Catch during the May-June period usually ranged from 5000 to 10,000 pcs. (average weight 20-22 pounds dressed).

Extreme tides and foul weather adversely affect catch success.

Since the early 1980's, fishing in North Bentinck Arm has been restricted to daylight hours only, in an effort to reduce the loss of net-caught Chinook to seals.

Note: The definition of mesh size in the Regulations was changed in the early 1980's from 8.5 inches (stretch measure) to 8 inches (203 mm) taut measure.

Future Fisheries

Snootli Hatchery will provide the opportunity for directed Chinook fisheries on surplus returns. Current target escapement on the Atnarko River is 25000.

If returns from Snootli Hatchery enhanced Chinook should eventually exceed traditional harvest levels, then the Department of Fisheries will be required to develop new and innovative fishing plans since traditional fishing strategies will prove inadequate. It should be recognized that some of the surplus will be harvested outside of Area 8. In addition, wild stocks historically have contributed 6500 to 11500 pieces annually to the Area 8 fisheries.

Note: Catch Per Unit Effort (CPUE) per day on a 2 day fishery is different than on a 1 day fishery because in a 2 day fishery deliveries occur at noon on the first day (1 day CPUE higher than 2 day CPUE). This means the first day of a fishery of two or more days cannot be directly compared with a one day fishery.

Expect CPUE to be higher than historic average, possibly due to international Chinook conservation measures assuming this program continues.

The commercial Chinook fishery in Area 8 has a special problem with illegal set nets. This method is more effective than legal drift nets, and therefore special enforcement is required.

Note: Also see Management Considerations for Passing Stocks

Sport Fishery

Tidal Waters

Historically, there has not been a directed sport fishery on Area 8 Chinook because they don't bite.

Bella Coola/Atnarko River

The sport fishery concentrates in the Bella Coola River from early May through mid-June, at which time the river normally becomes glacial resulting in poor fishing success. Through June and July effort shifts to the non-glacial Atnarko River. The Atnarko River is closed to Chinook fishing by Regulation July 15th. Up to one third of the total Bella Coola/Atnarko Chinook non-tidal sport catch is taken during the last two weeks of the fishery. In recent years conservation measures have been taken, including bait bans, and July 1st closures.

Sport catch is not a good indicator of stock strength as success and effort is highly dependent upon water conditions. Turbidity and extreme high or low water levels contribute to low fishing success rates and reduced effort.

Enhancement

The Atnarko Pilot Project, designed to rehabilitate odd year Pink salmon, trapped, reared, and nose-tagged wild Chinook fry from 1974 through to 1978. From the Fall of 1975 through to 1978 eggs were also taken.

Year	Fry trapped (Spring)	Eggs taken (Fall)
1974 -	20,076	
1975 -	64,141	3,228
1976 -	4,667	5,035
1977 -	56,570	15,200
1978 -	62,700	314,000

The project was discontinued after 1978 because the size of the hatchery was inadequate and there were water quality problems.

Atnarko River Chinook have been enhanced since 1981 by Snootli Creek Hatchery at Bella Coola in an effort to rehabilitate these recently (1980's) depressed stocks. The fifteen year International Chinook stock rebuilding program initiated in 1984 has also contributed to the rehabilitation of this stock. Current hatchery egg target is two million for the Atnarko River. An expansion projected completed in 1986 will increase the capacity to five million eggs, however, this expansion includes eggs from areas other than Area 8 (Area 9-Wannock River Chinook). The degree of enhancement has yet to be determined for the Atnarko River. The opportunity exists to enhance the Dean River Chinook and the Taleomey River in South Bentinck Arm.

Migration information regarding routes through Burke and/or Dean Channels is poor. The proportion of Atnarko/Dean River fish migrating through either channel is uncertain from year to year.

Escapements

Atnarko River Chinook escapement surveys are assessed by boat/foot and some by helicopter. It was designated as a Key Stream by the Chinook Technical Committee under the terms of the Pacific Salmon Treaty. As as result various new methods of enumeration, including some experimental mark- recapture methods, were evaluated, but it was concluded the traditional fishery officer methods worked best.

Inseason Stock Strength Indicators

1. Indian Food Fish (IFF) catch data
2. CPUE (commercial fishery) - Weather - Tides (Big tides and poor weather gives poor catches)
3. Fleet Size

Expectations

Return rates to the terminal area were much greater in 1984 probably due to restrictions in the early portion of the Northern British Columbia and Southeast Alaska troll fisheries precipitated by the Pacific Salmon Treaty negotiations. There is no reason to believe that those restrictions will not be in place in the future.

Projected returning stocks are calculated using brood year age composition and an age class specific return rate. Brood age compostition and age specific return rates are found in the expectations.

Management Considerations for Passing Stocks

Juveniles (30 to 45 cm) are known to be present in significant numbers in Fisher Channel/Fitz Hugh Sound throughout June and until mid July (source - historic seine catch records). For this reason the seine fishery is delayed until mid July. A similar concern exists between Corvette Island and Salvage Island in lower Fitz Hugh Sound and persists throughout the summer. These are vulnerable to both gillnet and seine, and this area should remain closed throughout the season. (source - gillnet fishermen, in-season advisory meeting - 1986 - Dawsons Landing).

A portion of Hakai seaward of Barney Point has been closed to net fishing (1986) mainly to reduce the sport/commercial net conflict but also to minimize incidental Chinook catches by the commercial net fleet.

SOCKEYE

Atnarko and Kimsquit sockeye are the actively managed stocks with respect to the commercial fishery in Area 8, with Koeye, Namu, Kisameet, and Hooknose being passively managed. The Namu/Koeye River stocks are used for Bella Bella IFF needs.

Migration and Timing

Atnarko River - measured by the IFF in the Bella Coola River, run timing from mid June to late July, peaking July 10th.

Kimsquit River - approximately one week to ten days later than the Bella Coola River timing. Run timing measured by the Dean Channel gillnet test fishery (1984 and 1985), from early July until late July early August, peaking approximately July 15th to 20th.

Koeye River, Namu River, Kisameet River, and Hooknose Creek are mostly June timing.

Indian Food Fishery

Bella Coola/Atnarko River:

The first portion of the Atnarko River Sockeye run is traditionally harvested exclusively by the Indian Food Fishery in the Bella Coola River. A major portion of this early segment of the run is also a significant contributor to the total escapement as it is not fished commerically. The principle gear used in this fishery are drift nets, however some set nets are also used.

Kimsquit River:

No Indian Food Fishery on this stock.

Koeye River:

Mainly utilized by Bella Bella Band since 1975, by agreement between the District Supervisor and the Areas 7 and 8 Fishery Officers, because of the pressure on limited Area 7 Sockeye stocks.

Namu River:

Sockeye utilized for Bella Bella Indian Food Fishery needs (Namu plant workers).

Commercial Net Fishery

Sockeye escapements to the Bella Coola River declined in the late 1970's to less than one third of the target escapement of 75000. Historically, Sockeye target fisheries have been restricted to the latter portion of the run during the first two weeks of July. Recently, (1980's) these have usually been restricted to one day commercial test fisheries to assess stock strength. The stock is responding with increased escapements.

Kimsquit River Sockeye appear to be depressed (less than one half of target), however, escapements are difficult to enumerate. As with the Bella Coola/Atnarko River Sockeye, effort since 1981 has been restricted to short commercial test fisheries. There is currently a lenient approach to these test fisheries as they are scheduled even if brood year escapements indicate a small probability of surplus stock.

The Sockeye fishery in Area 8 is not governed by pre-season expectations or to meet target escapements, but rather by socio-economic considerations. In the past expectations have shown no available surplus, yet a commercial gillnet fishery has been scheduled. In theory, the Atnarko and Kimsquit Sockeye stocks could produce annual surpluses of 155,000 pieces, if the present Sockeye target escapements

were consistently met. Some justification for a fishery on Kimsquit stocks can be made based upon the uncertainty of the escapement estimates. However, more recently there has been less pressure to hold socio-political fisheries on this stock and more of an interest in stock rebuilding.

Sport Fishery

There is no targetted sport fishery, either tidal or non-tidal, on sockeye.

Enhancement

There is no current enhancement of Sockeye in Area 8. There were enhancement pilot studies carried out by the Pacific Biological Station on Hooknose Creek from the mid 40's to mid 60's.

Escapements

Atnarko River escapements are well documented since the system is relatively easy to enumerate. The Kimsquit River, however, is difficult to enumerate as it is glacial during the migration period, there is a high percentage of lake spawners, the spawning season is long (September to November) and access for spawner enumeration is difficult due to its remoteness (aircraft only).

Expectations

Projected returning stocks are calculated using brood year age composition and an age class specific return rate. Brood age compostition and age specific return rates are found in the expectations.

Management Considerations for Passing Stocks

The management of lower Fitz Hugh Sound (8-16) and Hakai Pass (8-2) during June and the first three weeks of July should be considered in conjunction with the Area 9 Sockeye manager because it is believed there can be Rivers Inlet Sockeye present.

PINK

The Area 8 pink fishery is dominated by the Atnarko River stock. The other actively managed stock originates in the Koeye River. The main fishery is managed by catch-per-unit-effort (CPUE) during the season to an Atnarko River escapement target of one million. Koeye River Pink arrive later in the season, are managed separately, and peak week for this fishery is August 10-16. There are a number of passive stocks throughout Area 8, but none are noteworthy on an individual basis except Kwatna River. These passive stocks seem to parallel the Atnarko River stock, such that if the Atnarko stock is managed successfully all the remaining pink stocks in Area 8 would appear to do well.

Migration and Timing

The migration of Area 8 pinks through the area is relatively quick and milling is not usually a problem. Arrival in the lower Bella Coola River is approximately July 14th for even years and July 24th for odd years as indicated by the IFF. In the Atnarko River arrival is approximately late July for even years and early August for odd years.

Migration routes vary from year to year. The proportion of the run using either Burke or Dean Channel is unpredictable and can have a profound effect on incidental chum and steelhead catches. Although the majority of the Pink salmon are harvested in Fitz Hugh Sound, a significant number can be taken in Fisher Channel should a fair portion of the stock use this migration route. This results in a higher incidental catch of Chum and steelhead bound for Dean Channel streams, and possibly Chum in some years bound for Roscoe Inlet in Area 7 (a tagging and recovery program required). Normally the major portion of the Atnarko River Pink run migrates through Burke Channel, and numerous jumpers in Burke Narrows will be indicative of a fair return of Pink salmon.

Kwatna Pink appear to migrate with the Atnarko Pink and arrive at Kwatna Bay around July 25th.

Koeye Pink begin to show in Koeye Bay and vicinity late in the first week of August.

Indian Food Fishery

Insignificant Indian Food Fish catches on any Pink stocks in Area 8.

Sport Fishery

Sport fish catches of Pink salmon in Hakai Pass can be an important preliminary indicator of arrival and stock strength in the fishing area.

Commercial Net Fishery

There appears to be an inverse relationship between fish size and run size. For example, if the first commercial seine catches show many large fish (4-6 lbs.) then a small run is anticipated. Usually 3 to 3.5 lb. fish indicate a run of 2 to 2.5 million total stock. Later in the season (August) larger fish may also indicate Fraser River pink salmon passing through the area.

If there is a large returning stock Hakai Pass (8-2) should be opened to accommodate the fleet required to harvest the surplus.

The bulk of the Area 8 Pink harvest is taken by the seine fleet. Gillnet catches in Fisher/Fitz Hugh are insignificant. In the BCGNA, the Bella Coola gillnet fleet may shift its preference from Chum to Pink salmon if there is a poor return of Chum.

Enhancement

In the mid 1970's incubation boxes were utilized in an attempt to rebuild the declining odd year pink stocks in the Atnarko River but the stocks recovered naturally and the incubation boxes were only operated for a short period (1975-79).

A small scale stabilization spawning channel on the Atnarko River was constructed in 1986.

Expectations

The return rates for Area 8 are based on Central Coast (Areas 6-7-8) 10 cycle (20 year) average return rates for even and odd year Pink salmon.

Hydraulic sampling and downstream fry counts carried out by Biological crews in the Bella Coola/Atnarko River have become extremely important indicators of returning stock strength since its beginning in the mid-1970's. Attention should be given to evaluating current year results against past years predictions, ie were they higher or lower than what actually happened.

Escapements

Escapement to the Atnarko River is determined by means of a tower count. From time to time it is necessary to calibrate the tower count. The preferred method is with mark/recapture.

The remainder of Area 8 Pink are enumerated in the traditional way.

Management Considerations for Passing Stocks

None

CHUM

There are 2 distinct groups of Chum salmon in Area 8. The first and more important are the summer Chum which are both earlier and larger than their late summer run counterparts. The major summer Chum stocks are referred to as the Bella Coola, Kimsquit and Dean Closed stocks. The Dean Closed stock is an amalgamation of 6 streams in outer Dean Channel.

The second group (late summer Chum) consists mainly of the Martin River stocks, and those of outer Area 8 (Fisher/Fitz). These stocks are harvested incidentally in the fishery.

In addition, there is a group of true fall Chum which spawn in the Bella Coola/Atnarko River in early November. This run is small and will never support a commercial fishery.

Migration and Timing

Summer Chum timing is very similar to that of Pink therefore these stocks are impacted upon by any commercial fishery directed on Pink salmon. As with Pink, migration routes are thought to be variable.

The majority of Chum salmon are harvested in Fitz Hugh Sound and Fisher Channel, with a significant number being taken in in DCGNA (8-8 and 8-9) and BCGNA (8-10, 8-11, 8-12, and 8-15).

Indian Food Fishery

Insignificant Indian Food Fishery on Chum salmon in Area 8.

Sport Fishery

Insignificant Sport Fishery on Chum salmon in Area 8.

Commercial Net Fishery

Summer Chum salmon are harvested by gillnets in Fisher Channel, Fitz Hugh Sound, Dean Channel Gillnet Area, and the Bella Cool Gillnet Area. They are also harvested incidentally by seines in Fisher Channel and Fitz Hugh Sound. In some years the seine fleet will target on Chum salmon, principally in Fisher Channel (8-5).

Martin River (late summer) Chum salmon are harvested by gillnets and seines in Fisher Channel. This fishery could be held in daylight to reduce Coho interceptions.

Fall Chum are generally of a smaller size and of poor quality.

Enhancement Need history of startup, targets, on line dates ...

The only notable enhancement activity in Area 8 is the Snootli Hatchery on the Bella Coola River. The original purpose of the hatchery was to produce sufficient numbers of Summer Chum to allow the Pink fishery to continue. Since Pink salmon are more productive than Chum the intention was to allow the Pink fishery to continue at an exploitation rate without adversely affecting the summer Chum population. There is little enhancement of fall Chum stocks largely due to the difficulty in acquiring brood stock and the negative impact on Area 8 Coho.

Increased production of Pink salmon is not feasible due to concerns regarding Dean River steelhead. Therefore Chum production is balanced with Pink production.

Expectations

Projected returning stocks are calculated using brood year age composition and an age class specific return rate. Brood age compostition and age specific return rates are found in the expectations.

A high incidence of three year old fish in one year usually indicates a higher than average return rate from the brood year for four year olds in the following year.

Escapements

Because of the glacial headwaters of the Bella Coola and Kimsquit Rivers they are very turbid and difficult to enumerate. Annual spawner counts are done on side channels and tributaries which have good visibility. Estimates are based on these observations in comparison to other years.

Management Considerations for Passing Stocks

The Fisher Channel/Fitz Hugh Sound Chum fishery results in a high incidental catch of Chum and steelhead bound for Dean Channel streams, and, in some years, possibly Chum bound for Roscoe Inlet in Area 7 (a tagging and recovery program required).

COHO

There are currently no target net fisheries on Coho. There is a significant incidental catch of Coho taken during the later net fisheries directed at Chum. Escapement enumeration is difficult because of the extended spawning season (September to January), and the patrol vessels generally leave in October. For all systems where Coho are found, they should be counted in late December or January after they have moved onto the spawning beds, however, conditions and water levels in coastal areas often make this job difficult or impossible at this time of the year. At present the only systems covered on an annual basis are the Bella Coola River tributaries and Martin River. In 1985 one charter vessel was kept on part time until the third week of November and even this was insufficient. In order to manage Coho as other species a committment must be made to get better escapement information as well as some fry or smolt output data.

Management Considerations for Passing Stocks

Juveniles (30 to 45 cm) are known to be present in significant numbers between Corvette Island and Salvage Island in lower Fitz Hugh Sound and are present throughout the summer. These are vulnerable to both gillnet and seine, and this area should remain closed throughout the season. (source - gillnet fishermen, in-season advisory meeting - 1986 - Dawsons Landing).

Area 8 Weekly Notes and Fishery Management Guide

Convention Regarding Use Of Dates

Weeks are designated following Canada/Us Treaty Guidelines. Week 1 contains a January 1st and includes all days up to and including the first Saturday. Each following week starts on Sunday, and will continue until the following Saturday.

BCGNA - Bella Coola Gillnet Area: 8-10, 8-11, 8-12, 8-15

DCGNA - Dean Channel Gillnet Area: 8-8

F/FH - Fisher Channel, Fitz Hugh Sound Area: 8-2, 8-3, 8-4, 8-5, 8-16

Scale Sampling Program

Scales should be taken during the following fisheries:

1. Sockeye - commercial gillnet fishery in the Bella Coola Gillnet Area (BCGNA) and the Dean Channel Gillnet Area (DCGNA); - IFF in the Bella Coola River;
2. Chum - commercial gillnet fishery in the Bella Coola Gillnet Area (BCGNA) and the Dean Channel Gillnet Area (DCGNA); - IFF in the Bella Coola River;
3. Chinook - commercial gillnet fishery; - IFF Bella Coola River; - Sport fishery Bella Coola/Atnarko and Dean Rivers.

WEEK 19:May 3-9, 1987

IFF:

- Indian Food Fish (IFF) figures start to be of interest in Chinook management.

- in years when meeting the target escapement it is anticipated the IFF catch to be near 1500 Chinook for the year, this will be dependent upon commercial fisheries and contributions from Snootli Hatchery. A poor returning run, expect IFF catch to be 500 pieces and a good return would expect 2000 pieces.

- should start Guardian on Bella Coola River for run timing and strength information and for enforcement. Will also be collecting catch data and scale samples

- general monitoring of the fishery for catch statistics and scale samples

- anticipated IFF for the week: poor return expected catch to be 10; medium run near 50 Chinook and a good run 75 pieces assuming an effort of 30-50 gillnet drifts for the week.

Sport Fishery:

- non-tidal water sport fishery starting on Chinook in the Bella Coola River.

Commercial Net Fishery:

- normally too early, however this will be dependent on returning stock size. High returns could result in an early fishery.

- See Chinook Stock Notes re: CPUE

Other:

- Chinook is the only species of concern in fishery management this week.

- the beginning and end of the run appear to extend as the run size increases (eg. first IFF caught Chinook of a good run could be in early April).

- take as many Chinook scale samples as possible from the IFF to establish age composition for Atnarko River Chinook.

- should have at least one patrol vessel in the sub-district this week for habitat, boundary signs, general creek inspections, etc. This would have to be increased if fishing.

WEEK 20:May 10-16, 1987

IFF:

- Chinook concerns same as previous week only more intense

- a Chinook catch of: 30 pieces for a poor return, 60 pieces in a medium year and in a good year 90 pieces would be expected this week in the IFF, assuming an effort of 50-60 gillnet drifts for the week.

- starting to look for trends in the IFF catch data over the season, in order to get some indication of Chinook run strength.

Sport Fishery:

- Bella Coola River sports fishery accelerating providing water conditions are good (90% of the time water levels are good)

- hot weather in April and early May will increase water levels and reduce sport fishing pressure

- Atnarko River Guardian required on strength this week for Atnarko River sport fishery (May 15th).

Commercial Net Fishery:

- expect to start commercial gillnet fishery for Chinook during this week, depending on stock strength. The fishing area will consist of the Bella Coola Gillnet Area (BCGNA) consisting of 8-10, 8-11, and 8-15 plus lower Burke Channel (8-13). Fitzhugh Sound, Fisher Channel, Dean Channel and the remainder of Area 8 should not be opened for Chinook to protect unenhanced stocks.

- patrolmen required to assist in patrolling the closed areas to prevent poaching.

- Two patrol vessels will be required for this fishery.

- in the future this fishing area could be altered depending upon migration routes (Burke or Dean Channels). A tagging program is necessary to determine these routes.

- See Chinook Stock Notes re: CPUE

Other:

- Chinook is the only species of concern in fishery management this week.

ADMINISTRATIVE NOTE: office becomes extremely busy with requests for licences and inspections etc. as commercial fleet begins to prepare for upcoming season. Part time clerk required in the office. In the future (possibly 1987) this will move to Week 6 if Chinook fishery opens earlier.

WEEK 21: May 17-23, 1987

IFF:

- IFF catches should be increasing this week. 50 pieces in a poor return, 75-100 for a medium return and 100-110 Chinook for a good return assuming an effort of 50-70 gillnet drifts for the week.

- starting to get a general feeling for Chinook run strength.

- if IFF Chinook catch trends indicate a poor run would begin to consider emergency restrictions.

- monitor catches for hatchery contribution*

Sport Fishery:

- The sport fishery for Chinook should be starting in Atnarko River this week.

- if IFF Chinook catch trends indicate a poor run, should consider conservation measures in the sport fishery, coinciding with IFF restrictions (eg: early closure on the Atnarko River).

- Atnarko River Guardian gathering catch data and scale samples.

- monitor catches for hatchery contribution

Commercial Net Fishery:

- management of the commercial Chinook fishery continuing. Intensity dependant on returning run strength. For a poor year CPUE would be 5; medium return 10; good return 15. Note: Catch figures for "good" returns are estimates because historically there has not been any good returns.The above CPUE based on one day fisheries.

- See Chinook Stock Notes re: CPUE on one and two day fisheries.

Other:

- not managing any other species at this point

- patrol boat could be diverted to Burke Channel herring spawn measurement from mid May to June

- logging referrals and inspections increase with increased activity in the forest.

WEEK 22: May 24-30, 1987

IFF:

- IFF Chinook catches should be showing an increase this week and is becoming dependant on Chinook run size

- IFF catches (total for the week) should be 75-100 pieces for a poor return, 150-200 Chinook for a medium return and good return should be 300-400 pieces assuming 50-70 gillnet drifts for the week.

- Guardian monitoring catches for hatchery contribution

Sport Fishery:

- sport catch statistics not a relevant indicator of Chinook stock strength due to extreme variablility resulting from fluctuations in water levels and turbidity. Continue to get catch statistics, scale samples and enforce regulations in the Bella Coola/Atnarko River sport fishery.

- Guardian monitoring catches for hatchery contribution

Commercial Net Fishery:

- management of the commercial Chinook fishery continuing. Intensity dependent on returning run strength. Poor return CPUE is 5; medium return 10; good return 15.

  Note: Catch figures for "good" returns are estimates because historically there have not been any good returns. The above CPUE based on one day fisheries.

- See Chinook Stock Notes re: CPUE on one and two day fisheries.

Other:

- Chinook only species managed this week (same as previous week but more intense).
- picture of the Chinook run size taking form by the end of the week.
- information from Bella Bella regarding IFF troll fishery in Seaforth Channel.
- Information from any early commercial troll opening in outer Area 7 and 8-1 is important in Area 8 Chinook management.
- start thinking about Koeye and Namu Sockeye
- monitor Roe Herring and herring bait pond(s) in Burke Channel

WEEK 23: May 31-June 6, 1987

IFF:

- still managing only Chinook, (too early for Sockeye).
- IFF Chinook catches can be an important management consideration: still looking at trends in IFF Chinook catches
- IFF catches should be 75-100 pieces for a poor return, 150-200 Chinook for a medium return and good return should be 300-400 pieces assuming 60-80 gillnet drifts for the week. The good return catch (300-400) is based on reaching the Chinook target escapement for the Atnarko River.
- IFF Chinook catches are affected by water levels. Ideal conditions are "slightly coloured and moderate levels", however these conditions not normal at this time of year. Normal conditions include higher flows and more turbid water.
- Guardian monitoring catches for hatchery contribution, gathering catch data, and scale samples
- cumulative Chinook catch in IFF should be 500-700 pieces
- IFF could have a lull which would be associated with any early troll opening. If the troll fishery is closed the IFF catch may be higher (Note: In 1986 the troll fishery did not open until June 20th, and the weekly IFF Chinook catch was 315 pcs for 85 drifts; TTD 751)
- requests for licences for Namu/Koeye IFF for Sockeye starting, therefore would like to have Koeye Guardian in place this week, otherwise a patrol vessel is required here.

Sport Fishery:

- Bella Coola/Atnarko River sports fishery-no change. As the Bella Coola River becomes higher and more turbid, effort shifts to the Atnarko River.

- High water may also affect catches in the Atnarko River.

Commercial Net Fishery:

- commercial gillnet fishery targeting on Atnarko River Chinook continues this week

- The season's trend to date in the IFF Chinook catch is an indicator of stock strength, but this early in the season, more confidence would be given to the expectations than to the IFF catch data. (IFF may be influenced by high water or reduced effort when IFF fishermen switch to the commercial fishery)

- the commercial gillnet fishery anticipated fleet size 50-60 boats

- Poor return CPUE is 5; medium return 10; good return 15.

  Note: Catch figures for "good" returns are estimates because historically there have not been any good returns. The above CPUE based on one day fisheries.

- See Chinook Stock Notes re: CPUE on one and two day fisheries.

Other:

- nearing the peak of the Atnarko River Chinook run

- big tides could result in large numbers of Chinook moving into the Bella Coola River

- should note that recent Chinook fisheries have been very short (one day) which makes comparisons with previous two to three or four day fisheries difficult.

- In recent years, Chinook return rates are more uncertain as result of recent troll fishery restrictions

- jumpers in Fitz Hugh, Hakai Pass and near Sunny Island indicate presence of Sockeye.

Week 24:June 7-13, 1987

IFF:

- some Sockeye may begin to show in the Bella Coola River but will be very few in number (total for week 10-20 pieces)

- this is peak week for Chinook in terms of CPUE although effort decreases slightly

- expect IFF catch of: 75-100 pieces in a poor year, 150-200 for

a medium return, and 300-400 for a good return for this week, assuming 30-50 gillnet drifts. Note: The effort is reduced from previous weeks. Chinook food fish catches have been satisfied and fishermen are now waiting for the Sockeye run to build.

- Chinook catch trend is important, however, other factors may affect trends (eg. low tides influence Chinook entry into the Bella Coola River)

- IFF at Koeye River restricted to fishing outside the half mile radius river mouth boundary. Fishery based largely on use of commercial gillnets from Bella Bella. At present, this fishery is basically unmanaged, however IFF catch statistics are collected when possible. This situation is undesireable and could be easily remedied by having the Koeye Guardian on station from June 15th through September, rather than starting June 25th as in recent years.

- Namu IFF outside Namu restricted to fishing outside the Namu River (harbour) boundary. Usually Namu plant workers from Bella Bella use 50 fathom gillnets. Individual licences are usually issued for a two day period between 6 PM Sunday to 6 PM Thursday

- patrol boat should be in vicinity of Koeye/Namu for IFF

Sports Fishery:

- little change from previous week with some increases in effort

- if the weather in May and June is cool the Bella Coola River will be clear and still fishable

Commercial Gillnet Fishery:

- Chinook are still the only species managed this week.

- anticipated catch average should be: poor return 5-10; medium return 15; good return 25 from an expected fleet size of 50 to 60 boats

WEEK 25: June 14 - 20, 1987

IFF:

- monitoring IFF catch of Chinook in the Bella Coola River for indication of stock size, but catch is now considered incidental to Sockeye since 50% of the effort has switched to small-mesh (108 to 130 mm) sockeye nets. This could be considered a transition week, since this is usually the last week that large-mesh nets are used in any numbers.

- sporadic IFF in North Bentinck for Sockeye using commercial gillnet gear (not significant).

- Chinook IFF anticipated catch would be about 50 to 100 in a poor year, 100 to 150 for a medium year, and 150 to 200 for a good year, assuming an effort of 60 to 70 drifts. Cummulative catch to date in 1986 should be 800 to 1000 pieces. Any additional catch from this point will be incidental to the Sockeye fishery.

- If Chinook stocks require serious conservation, the Bella Coola Band may be requested to reduce fishing time (days per week).

- in years where expected escapement in the Bella Coola River is below target (eg. 65,000) anticipated weekly catch of sockeye could range from 200 to 1000. Because this is highly dependent on run timing it may be too early for catch information to be of great value to fisheries management. However, should start to look for trends.

- Week following the first appearance of Sockeye, expect heavy effort in the Bella Coola River IFF (probably this week).

- Koeye and Namu Sockeye IFF building. Although weekly catches in this fishery are highly variable and are dependent on effort, annual catches seem to have remained stable around 2000 to 3000 pieces.

Sport Fishery:

- same as last week but more intense.

- fishing success on the Bella Coola River is dependant on water conditions. If the river is high and turbid, most effort will shift to the Atnarko River.

- the Hakai Pass charter boat fishery starts this week. Patrol coverage of this fishery is neccessary to collect fishery management data and to provide enforcement.

- Atnarko River Chinook are not heavy contributors to the tidal water sport fishery because they do not seem to take sport gear in North Bentinck Arm.

Commercial Net Fishery:

- Ordinarily, this would be close to the peak of commercial fishing for Atnarko River Chinook (in years of good returns).

- the fleet may begin to move into Dean Channel (if open) to target on incoming Dean River Chinook.

Other:

- potential for herring to be spawning in Burke Channel requiring patrol vessel for survey.

- Sockeye are concentrated in Koeye Bay this week in preparation for upstream migration next week, therefore there must be a Guardian in place by June 15th.

WEEK 26: June 21 - 27, 1987

IFF:

- 95% of the effort in the Bella Coola River is directed at fishing Sockeye this week. One or two fishermen are still fishing Chinook using large mesh nets.

- IFF should be escalating with Sockeye catches of 200 to 300 in a poor year, 400 to 600 in a medium year, and 800 to 1000 in a good year based on 60 to 70 gillnet drifts for the week in the lower Bella Coola River. Chinook catch is mostly incidental in Sockeye nets.

- Chilcotin Indians will be likely fishing Sockeye and Chinook in the Atnarko River.

- Namu/Koeye IFF decreasing with possiblilty of this being next to last week.

Sport Fishery:

- Atnarko River Guardian monitoring and controlling bait restrictions with escalating sport fish pressure.

- The sports charter boats continue to arrive in Hakai Pass.

- Tidal sport fishery (private boats) starting in Fisher Channel and Fitz Hugh Sound.

Commercial Net Fishery:

- Could be fishing (gillnet) Chinook in a strong year.

- Too early to fish for Sockeye in years when stocks are depressed.

- Even if Sockeye returns were strong, seines would not be permitted to operate until mid-July to conserve immature Chinook ("squishers").

- coastal fishing patterns (Barkley Sound, Rivers and Smith Inlets, and the Skeena) will affect next week's fleet size in Area 8

Other:

- Sockeye move into Koeye River from Koeye Bay this week.

- Koeye Guardian in the past was hired and in place by mid-June for the purpose of Sockeye escapement enumeration, protection, monitoring and control of IFF on this stock. In some years this position has not been filled until the end of this week due to man year constraints. This is too late with respect to the above requirements.

- Herring spawn survey in Burke Channel should be finished.

- Logging referrals continuing.

- Selection of Dean Channel charter test fisherman and preparations for start of test fishery next week.

- Prime week for enforcement for illegal sales of Area 8 Chinook and Sockeye in Williams Lake.

WEEK 27: June 28 - July 4, 1987

IFF:

- Koeye/Namu IFF effort decreasing rapidly, although some Namu plant workers will continue to food fish throughout the season.

- IFF in the Bella Coola River increasing with 100% of the effort directed towards Sockeye. In poor years catch will be 500 to 750; medium 1000 to 2000; good 2500+ Sockeye, assuming an effort of 60 to 80 gillnet drifts. Anticipate some incidental catch of Chinook in this week.

- The Sockeye catch and CPUE in the Bella Coola River this week, and in the next two, are important indicators of Sockeye run strength with respect to any commercial gillnet fisheries.

Sport Fishery:

- little to no effort in the Bella Coola River because of water conditions, therefore effort now concentrated in Atnarko River.

- tidal effort increasing. This includes charter operations at Hakai Pass as well as private boats throughout Area 8.

Commercial Net Fishery:

- In years of strong returns this would likely be the last week of a directed commercial gillnet fishery on Area 8 Chinook.

- There could be a Sockeye fishery on Atnarko River stocks during this week in years where stock strength warrants it

- Since Chinook and Sockeye are both present in the fishing areas during this week, either species could be protected during potential commercial gillnet fisheries by imposing mesh restrictions. To catch Sockeye and conserve Chinook use 165 mm maximum; to catch Chinook and conserve Sockeye use 203 mm minimum mesh size.

- May begin to see a showing of Pink and Chum in the commercial gillnet catch in Fisher Channel and Fitz Hugh Sound (F/FH). (eg. In 1985 a total of 2400 Chum were recorded in F/FH, and in 1984 a total of 1400 Pink for the week.)

- During this week the Pink catch in the BCGNA should be evaluated in relation to estimated total stock size.

- Start of Kimsquit River Sockeye in Fisher Channel indicated by increased abundance in catches.

Other:

- Dean Channel charter test fishery should start this week. Program ran in 1984 and 1985 but was discontinued in 1986 mainly due to lack of support by local fishermen.

WEEK 28: July 5 - 11, 1987

IFF:

- Koeye/Namu IFF insignificant this week.

- peak of Atnarko River Sockeye migration in Bella Coola River IFF.

- In poor years catch will be 750 to 1000; medium 1500 to 2000; good 2500+ Sockeye, assuming an effort of 60 to 80 gillnet drifts.

Sport Fishery:

- Atnarko River sport fishery for Chinook closes July 15th by regulation, making this week a frenzy of sport fishing activity.

- The tidal water sport fishing activity remains steady and stable through July and August.

- Occasional Pink should appear in the Hakai sport fishery this week.

- Sport fish charter vessels in Hakai Pass are usually completely booked by this week, and will remain so for the balance of the summer sport fishing season.

Commercial Net Fishery:

- This is past the peak of the Atnarko River Sockeye run in the commercial fishing areas.

- This could be a peak week for Kimsquit River Sockeye in the commercial gillnet fishery in Fisher Channel. Should see the beginning of Kimsquit River Sockeye in the Dean Channel Test Fishery (in 8-9). In years of good returns of Sockeye to the Kimsquit River a commercial fishery would be probable in the Dean Channel Gillnet Area (DCGNA, 8-8).

- There should be showings of Pink and Chum in the commercial Sockeye fishery in F/FH this week. Begin to look at Chum catch averages in all fishing areas. F/FH catch averages may begin to give early indication of Bella Coola and Kimsquit Rivers Chum run strength (especially if Kimsquit River Chum is predicted to be weak).

- In years of low gillnet effort in 8-5 (eg. less than 15 boats) it may be worthwhile to give more fishing time in order to get a better indication of Chum stock strength

- Seines closed to conserve immature Chinook.

- this is normally be too early for a commercial Sockeye fishery in the DCGNA (8-8). If consideration is to be given to conservation of Dean River steelhead it would be appropriate to keep Dean Channel closed.

Others:

- look for hatchery marks (fin clip) on Chum caught in the commercial net fishery in F/FH.

- The commercial fishing activity in other Areas may influence the magnitude of the fishing effort in Area 8. For example, Rivers and Smith Inlets may draw much of the gillnet fleet from the Area 8 Sockeye fishery.

- Dean Channel test fishery continuing

WEEK 29: July 12 - 18, 1987

IFF:

- Begin to look for presence of Chum salmon in the Bella Coola River IFF. The actual Chum catch is not significant as the effort is directed on Sockeye. Chum catch will be incidental but is an indication of run timing.

- Chinook are still an incidental catch in the Bella Coola River IFF

- Although still intense, this should be the last week for the Bella Coola River IFF on Sockeye.

- Sockeye catch in the IFF is an indicator of stock strength and is important in managing the commercial Sockeye fishery in BCGNA.

Sport Fishery:

- Non-tidal in the Atnarko River same as in previous week until July 15th closure.

- Tidal water sport fishery also unchanged from previous week, however, Hakai Pass sport catches of Pink are now an important consideration in management (as an index of abundance) of the commercial fishery. This Pink catch may not show up in sport catch records since most will be released if more desireable species are being caught. A sportfish patrolman is essential in the collection and compilation of this type of information.

Commercial Net Fishery:

General:

- Beginning in 1985, catch data for Fisher Channel (8-5) and Fitz Hugh Sound (8-2,3,4 & 16) have been kept separate because of the disparate nature of the two areas. In order to consider historic information, these two areas will be discussed jointly herein, but will be separated wherever possible.

- In even years Pink and Chum now dominate this week's management in F/FH, however, Sockeye may still be considered in the management of the BCGNA and DCGNA. If, for example, Sockeye returns were poor and Chum returns warranted fishing, Sockeye could be protected with a minimum mesh size restriction of 149 mm.

- In odd years, with Pink being about one week to ten days later, Sockeye would continue to dominate the management in Area 8.

- the strength of Area 8 Chum may be indicated by catches in Area 7 - Seaforth Channel (7-12)

- Because it is felt that a portion of Area 8 Chum migrate through Seaforth Channel (7-12) in Area 7, this sub-area should be managed in conjunction with Fisher Channel (8-5). The desireability of this situation is questionable. Area 7 staff feel that this has a detrimental affect on their local Sockeye stocks.

- Normally, this is the first week for a seine fishery, which has been previously closed to conserve juvenile chinook.

Fisher/Fitz Hugh:

Sockeye

- Tail end of Kimsquit River Sockeye in Fisher Channel.

- Management Units (MU) 8-2 and 8-16 are dealt with in the Rivers Inlet Sockeye management until late July. There are no other Area 8 Sockeye in Fitz Hugh Sound that warrant management considerations.

- Whidbey Point (MU 8-3 and 8-16 boundary) can produce high incidental seine catches of Sockeye, believed to be destined for Rivers Inlet. It has been reported that southwest winds will push these Sockeye into lower Fitz Hugh Sound where they can be caught.

Pink

- Size of Pink in seine catches is of interest, in that small fish (3 to 3.5 lbs.) may be indicative of a large run. Conversely, large fish (4-6 lbs.) may indicate a small run or the presence of passing stocks.

- Pink jumpers in Hakai Pass, F/FH, and Humpback Bay (immediately south of Farewell Pt., East Coast Denny Island opposite Evans Inlet) and occasional large seine set may indicate abundance.

- In even years, with good expectations and good fishing conditions the seine daily average catch should be in the order of 1000 pieces per day. In odd years, Pink just start to show.

- with a fleet size of 100+ seines total catch per day is more meaningful than CPUE because of gear saturation.

Chum

- Seine catch averages in Fisher Channel are becoming significant. It is important to note that the fleet is targeting on chum salmon and if catches are low the fleet will move to other areas to fish Pink.

- Fisher Channel (8-5) may not be open this week if there are concerns for the strength of Kimsquit River Chum.

DCGNA:

Sockeye

- Peak week for Kimsquit River Sockeye. There should be signs of Sockeye in the Kimsquit River.

- If Sockeye catches are low, some fishermen may switch to Chum nets (6 to 6.5 inch mesh), therefore, when collecting catch average data, it is important to ensure that mesh size is also noted.

- Dean Channel test fishery continuing

Pink

- Pink are not actively managed in the DCGNA. Any surpluses destined for streams in this Sub-area will be harvested incidentally in other Area 8 fisheries.

- if there is a good return to the Kimsquit River it will not necessarily cause a targetted Pink fishery on this stock because interest will be directed to harvesting Chum and Sockeye with a select mesh size.

Chum

- Catch averages in the DCGNA will give an early indication of Chum stock strength.

- Scale sampling should begin this week to determine age composition.

- First appearance of Chum in the Kimsquit River may occur this week, as noted by the sport fishing guide on the river.

BCGNA:

Sockeye

- Although the peak of the Atnarko Sockeye has passed, some fishermen may still be using Sockeye nets. It is not too late for last minute conservation of Sockeye in North Bentinck Arm (closure or mesh restrictions).

Pink

- Should begin to see some early indication of Pink in catches in Burke and Labouchere Channels, and some off the mouth of the Bella Coola River.

Chum

- Scale sampling should begin this week to determine age composition.

- If Sockeye catches are low, some fishermen may switch to Chum nets (6 to 6.5 inch mesh), therefore, when collecting catch average data, it is important to ensure that mesh size is also noted.

Other:

- If open, Seaforth Channel (Area 7) net catches may be of interest as a preliminary indicator of incoming Area 8 Pink and Chum.

- Trollers operating in the outside portions of Areas 7 and 8 may reflect incoming Area 8 Pink and Chum run strength in their catches.

- Dean Channel Test Fishery should be continuing and becoming more important in indicating stock strength for Sockeye and Chum.

- Atnarko River Pink migration routes may become apparent this week (ie. Pink catches in Burke vs. Labouchere Channels). Also note "fleet talk" in Labouchere Channel.

- Fleet size is a major consideration (if greater than 60 gillnets) in the management of the fishery in the DCGNA, that being catchability and movement of gear. In addition, a larger fleet represents a problem with the enforcement of both the upper and lower DCGNA boundaries.

- Start to look for hatchery marks (fin clip) on Chum caught in the commercial net fishery primarily in F/FH but also looking in all other fishing areas.

- Snootli Hatchery crew would be putting in fences this week in the Bella River system. Check with hatchery crew for their impressions of run strength.

WEEK 30: July 19 - 25, 1987

IFF:

- Effort will be light but catch information is useful as an indication of Pink and Chum strength.

Sport Fishery:

- Same as previous weeks.

- Atnarko River Chinook fishery now closed, but requires enforcement checks to ensure compliance, especially during the first week.

Commercial Net Fishery:

General:

- Managing Pink and Chum only this week, except DCGNA where Sockeye are also considered (just past peak).

- Commercial catch data is relied upon heavily for indications of stock strength.

- Seine fisheries for Sockeye in Johnstone Strait, which usually peak in the third week of July, can draw the seine fleet away from F/FH. Conversely, if other areas such as Johnstone Strait and Area 6 have poor expectations or poor fishing, the F/FH seine fleet could increase. If activities in Johnstone Strait reduced the seine effort in F/FH, it may be necessary to consider more fishing time. If other Area's activities were such that the F/FH seine fleet was increased then the fishery and field staff may have to be adjusted accordingly.

- Look for hatchery marks (fin clip) on Chum caught in the commercial net fishery. This could be an indication of the contribution of the hatchery stock to the commercial fishery. This information is required in-season to be of any use as a management tool.

F/FH:

Sockeye

- No longer actively managed. Consider incidental catch of Area 9 Sockeye in 8-16.

Pink

- Commercial net fishery approaching the peak this week for even years, and in odd years showing increasing Pink catches as the run begins.

- In even years, with good expectations and good fishing conditions the seine daily average catch should be in the order of 2500 per day. In odd years, under similar conditions, these catches should be 1000 per day.

- with a fleet size of 100+ seines total catch per day is more meaningful than CPUE because of gear saturation.

- In even years, there should be indications of the presence of Pink in many parts of the area this week, such as jumpers, "fish balls", and schools.

- Hakai Pass Sport catch (including those released) of Pink can be an important indicator of abundance of even year stocks, as well as an indicator of arrival of odd year stocks.

- Pink should be in Kwatna Bay by the end of this week and there should be jumpers evident in Burke Channel and especially Burke Narrows.

- Size of Pink in seine catches is of interest, in that small fish (3 to 3.5 lbs.) may be indicative of a large run. Conversely, large fish (4-6 lbs.) may indicate a small run or the presence of passing stocks.

- By the end of this fishery in even years, the seine Total To Date (TTD) for Pink should be approximately 300,000, given normal expectations for Pink. If this catch is not reached by the end of the second day and returns appear to be as predicted, an extension will be considered unless there is evidence that the fleet size might substantially increase.

Chum

- If an extension is warranted for the harvest of Pink it may only be in Fitz Hugh Sound (8-3, 8-4) in order to conserve Chum in Fisher Channel (8-5). This is especially important if some seines are targeting on Chum salmon in 8-5.

DCGNA:

Sockeye

- If Sockeye catches are low, some fishermen may switch to Chum nets (6 to 6.5 inch mesh), therefore, when collecting catch average data, it is important to ensure that mesh size is also noted.

Pink

- Pink are not actively managed in the DCGNA. Any surpluses destined for streams in this Sub-area will be harvested incidentally in other Area 8 fisheries.

Chum

- Kimsquit River should be given its first inspection for Chum by aircraft. There should be a presence of fish but in no significant numbers.

- Dean Channel Test fishery results important for indications of stock strength and run timing.

- Commercial net catch showing an increase toward the peak in Week 32.

BCGNA:

Sockeye
- No longer considered in this fishing area.

Pink
- Catches in the commercial fishery increasing over previous weeks.

- Some local fishermen may target on Pink with smaller mesh nets. This has the effect of skewing the catch averages and should be taken into account when evaluating them.

- Number of Pink salmon in the commercial gillnet catch in Labouchere Channel may help to indicate the migration route of Atnarko River Pink. This may have ramifications in the management of the Fisher Channel Pink and Chum fishery.

Chum
- There could be some milling of Chum in North Bentinck Arm, indicated by dark fish in the gillnet catches.

- In the event of poor Chum expectations, North Bentinck (8-11) could be closed this week.

Other:
- Snootli Hatchery crew should be busy this week with Chum egg-takes. Check with crew for impressions of Chum run strength. Check with hatchery crew for their impressions of run strength.

- Atnarko River Counting Tower is the principal indicator of Pink escapement to the Atnarko River, and should start on July 25th in even years and on August 1st in odd years. This tower count is a critical factor in the development of preseason Expectations and subsequently the developement of the season's Management Plan. Note that the tower has not been operated in some years due to budgetary constraints. Given the economic value of the Atnarko River Pink run it is very important that this program continues on a yearly basis in the future.

- check IFF at Stuie for presence and strength of Pink salmon.

- the Bella Coola River and Atnarko River Guardians combine their efforts towards getting escapement information on the Bella Coola/Atnarko Rivers. Their efforts are no longer directed towards monitoring the IFF and sport fisheries.

WEEK 31: July 26 - August 1, 1987

IFF:

- Effort will be light but catch information is useful as an indication of Pink and Chum strength.

- Pink salmon not the target species. Effort in the Bella Coola River is dependent on the availability of desireable species (Sockeye and Coho).

Sport Fishery:

- Tidal water sport fishery proceeding as in previous weeks.

- Hakai Pass sport catch of Pink still of interest in getting an indication of Pink run strength.

Commercial Net Fishery:

General:

- Commercial catch data is relied upon heavily for indications of stock strength. Pre-season expectations are given very little consideration for currently managed stocks.

- This week Area 8 is managed for Atnarko River Pink, Bella Coola River Chum, and Kimsquit River Chum. This is a key week for Chum in deciding whether to continue fishing or not. This is first week that Dean Closed Sub-area Chum may appear in the fishery in F/FH, and the last week for Kimsquit Sockeye in the DCGNA. Neither of the two latter stocks are actively managed this week.

- This may be the last week for the Rivers Inlet and Smith Inlet Sockeye fisheries. Therefore, gillnet fleet movement to other areas including Area 8 should be anticipated.

- Look for hatchery marks (fin clip) on Chum caught in the commercial net fishery. This could be an indication of hatchery stock component in the commercial fishery. This information is required in-season to be of any use as a management tool.

F/FH:

Pink

- Peak week for Atnarko River Pink in Fitz Hugh Sound during the even years.

- In both even and odd years, with good expectations and good fishing conditions the seine daily average catch should be in the order of 2500 per day.

- with a fleet size of 100+ seines total catch per day is more meaningful than CPUE because of gear saturation.

- In odd years, there should be indications of the presence of

Pink in many parts of the area this week, such as jumpers, "fish balls", and schools.

- Hakai Pass Sport catch of Pink can be an important indicator of abundance of odd year stocks.

Chum

- likey to be peak week of Kimsquit River Chum in Fisher Channel (8-5).

DCGNA:

Sockeye

- This is the tail end of the Kimsquit Sockeye run through the DCGNA and some fishermen may still be targeting on this species.

- it is still possible to conserve some Kimsquit River Sockeye using a mesh restriction of 149 mm minimum mesh.

Pink

- Pink are not actively managed in the DCGNA. Any surpluses destined for streams in this Sub-area will be harvested incidentally in other Area 8 fisheries.

Chum

- Kimsquit River should be given its second inspection for Chum by aircraft. There should be a greater presence of fish over the previous week, but still in no significant numbers.

- Dean Channel Test fishery results important for indications of stock strength and run timing.

- Commercial net catch showing an increase toward the peak in Week 32.

- Monitor the recruitment of fresh Chum migrating to the Kimsquit River at the outer boundary of the DCGNA (8-8).

- Monitor fish quality (colour) in the DCGNA, especially the inner boundary, where dark fish may indicate milling.

BCGNA:

Pink

- Atnarko River Tower count will be of interest as a preliminary evaluation of the run and the fishery to date.

- There should be a good showing in North Bentinck.

- Pink should be moving in to the lower end of the Kwatna River this week.

- On years of good returns North Bentinck Arm should be opened to harves Pink.

- There may be some signs of milling (dark-coloured) Pink in North Bentinck Arm.

Chum

- In the outer portion of 8-15 (near Kwatna Inlet) this week there will be approximately half-a-dozen boats fishing. One or two boats should have good catches (300-350 per day) indicating the movement of fresh fish into the gillnet area.

- There may be some signs of milling or holding Chum in North Bentinck Arm.

Other:

- There should be Chum in the Bella Coola River side channels, and the Snootli Hatchery egg-take should be well underway. Check with hatchery crew for their impressions of run strength.

WEEK 32: August 2 - 8, 1987

IFF:

- Effort will be light but catch information is useful as an indication of Pink and Chum strength.

- Pink salmon not the target species. Effort in the Bella Coola River is dependent on the availability of Coho.

Sport Fishery:

- Tidal water sport fishery proceeding as in previous weeks. In even years the Hakai Pass Pink catches may start declining.
- In years of large pink returns Hakai Pass sport fish guides report observations of pinks near kelp beds in Hakai Pass.

Commercial Net Fishery:

General:

- This week Area 8 is managed for Atnarko River Pink, Bella Coola River Chum, and Kimsquit River Chum. This is the first week that Koeye River Pink may appear in the fishery in F/FH. The latter stock is not actively managed this week.

- It is felt that Dean Closed Chum may be present in Fisher Channel (8-5) this week but they are not actively managed. Still early to consider these Chum in the management of the fishery but the expectations coupled with the trend elsewhere in Area 8 may give an early indication of what to expect.

- Rivers Inlet and Smith Inlet Sockeye fisheries are finished this week, therefore, major gillnet fleet movement to other areas including Area 8 should be anticipated.

- Looking for hatchery marks (fin clip) on Chum caught in the commercial net fishery.

- Water levels are of concern this week. If low, holding and milling of fish may occur in upper Dean Channel (8-8) and North Bentinck Arm (especially Big Bay). This can increase the exploitation rate substantially.

- Commercial catch and preliminary escapement data for the actively managed systems (Bella Coola/Atnarko pink and Chum, Kimsquit Chum) will be heavily relied upon for indications of stock strength. By now an overall picture of the season should be developing. Pre-season expectations are given little or no consideration for currently managed stocks.

- Depending on fishing activities in Johnstone Strait, the fishing fleet in F/FH may range from 30 to 80 seines and from 75 to 100 gillnets for this week. Fishing patterns in other areas on the North Coast may also affect gear distribution dramatically.

F/FH:

Pink

- Koeye River Pink beginning to show in Koeye Bay and vicinity probably later in the week.

- Unless late, even year Atnarko River Pink should be just past the peak in F/FH. This is the peak week in F/FH for odd year Atnarko River Pink. In odd years, with good expectations and good fishing conditions the seine daily average catch should be in the order of 2500 per day.

Chum

- Kimsquit River and Bella Coola River Chum are just past the peak in F/FH.

DCGNA:

Chum

- Should be the peak week for Kimsquit River Chum.

- Dean Channel Test fishery should give definite information regarding run timing and strength for Kimsquit River Chum.

- The Kimsquit River should have received its third inspection by this week. Escapement of Chum should be building and now can be compared to those of previous years. This should give the first indication of run strength (in conjuction with CPUE and catch TTD).

- Monitor fish quality (colour) in the DCGNA, especially the inner boundary (Ironbound Island), where dark fish will indicate milling.

Sport Fishery:

- Tidal water sport fishery proceeding as in previous weeks, except that the Hakai Pass Pink catches are normally declining. In years of extremely high abundance (1986) catches will maintain or even increase.

Commercial Net Fishery:

General:

- This week Area 8 is managed for Atnarko River Pink, Koeye River Pink, Bella Coola River Chum, Kimsquit River Chum, and Dean Closed Chum.

- Area 8 could be closed to all commercial fishing this week if there were severe conservation problems.

- With respect to the Koeye River Pink, this week would give the best indication of stock strength.

- Low water levels in streams could be a concern throughout the Sub-district this week.

- Key streams should be monitored closely this week.

F/FH:

Pink

- Target fishery this week on Koeye River Pink by the seine fleet.

- Monitor seine sets in the Koeye area for signs of dark Pink as an indicator of fish milling in and around Koeye Bay.

- Because Koeye River Pink have no natural geographic sanctuary, a triangular boundary (the "Koeye Triangle", 8-3) was created some years ago to serve this purpose. This boundary could be implemented this week in extremely low abundance (expectations, other Area 8 trends, and poor seine cathes). One must be cautious when implimenting this boundary as it will eliminate the opportunity to catch Koeye River Pink. Once these fish arrive at Koeye Bay they colour quickly resulting in a quality problem.

- Odd year Pink are normally past the peak, however, in years when they are late, this could be the peak fishing week on Atnarko River and Kwatna River Pink in F/FH.

- Early for Pink salmon destined for outside streams in F/FH although some may appear this week in the F/FH commercial fishery (evident by dark fish).

Chum

- F/FH gillnet catches of Kimsquit River and Bella Coola River Chum are normally tapering off.

Sport Fishery:

- Tidal water sport fishery declining in Hakai Pass.

- Non-tidal effort insignificant

Commercial Net Fishery:

General:

- This is the beginning of the "wind-down" in Area 8.

- Gillnet morning catch averages may be influenced by the presence of phosphorescence in the water at night which reduces efficiency and effort.

- This week should have a greater emphasis on stream monitoring for escapement enumeration, since any fisheries next week will be dependent on this information.

F/FH:

Pink and Chum

- There may only be about 15 seines operating in F/FH this week. Fishing may be slowing down with 1000 Pink and 100-200 Chum per day.

- The gillnet fleet will be scattered and catch may be about 75 Chum per day.

- Koeye triangle boundary should be in place for this week's fishery to protect large schools of Pink moving in and out of Koeye Bay. The half-mile radius boundary is insufficient.

- Pink should be colouring indicating presence of local F/FH stocks.

- Stream water levels are an important consideration this week.

DCGNA:

Chum

- The escapement to the Kimsquit River this week should represent at least 50% of what to expect as a final escapement. This should be approximately 30,000 or more if the target of 60,000 is to be achieved.

- If there is a commercial fishery this week, quality is expected to be poor in DCGNA above Skowquiltz Point.

BCGNA:

Pink and Chum

- If there is a commercial fishery this week, quality is expected to be poor in North Bentinck Arm and upper Burke Channel.

Other:

- Atnarko tower count should indicate whether or not the target escapement will be met.

- Kwatna River Pink should be all in the river with some starting to spread out.

WEEK 35: August 23 - 29, 1987

IFF:

- Any effort in the Bella Coola River is dependent on the availability of Coho.

Sport Fishery:

- Tidal water sport fishery declining.

- There may be a few fishermen trying to catch a coho in the BCR as the Atnarko is still closed.

Commercial Net Fishery:

- Potential fisheries in the terminal areas are dependent upon whether or not escapement targets for Bella Coola River, Kimsquit River, and Dean Closed area Chum stocks appear to be met. Consideration must also be given to opening Fitz Hugh Sound if one or two are strong.

- Only outside Area 8 Pink stocks are considered in the management of the fishery this week.

- In even years the Atnarko tower count is nearing completion. Except for the tail end of the run, or in years when the run may be late, the bulk of the Atnarko River Pink escapement should be known by the end of this week. Despite the fact that the tower count can no longer influence fisheries management in the current season, it is important that complete escapement figures are known in order to properly develop future fishing plans and assess the current season's managment success. In the past the Atnarko River tower counting program has been prematurely terminated in this week because of budgetary constraints.

- Atnarko tower should have 50% of the Atnarko River Pink escapement recorded by August ~~25~~ 27/28th in odd years. confirm w/ Coast Mtn 4/

- This is the last week of the Dean Channel Test Fishery Program. Once calibrated, the test fishery will provide an index of Chum escapement to the Kimsquit River by now.

- The monitoring of the build-up of escapements of Pink and Chum should be continuing this week.

- There could be a commercial fishery this week if warranted by stock strength. If there was a commercial fishery this week it would target on known Chum surpluses to escapement in the BCGNA and the DCGNA. Fish quality may be less than desirable;

and Coho conservation may be a major consideration. Because of Departmental allocation policies, Fitz Hugh Sound would also likely be open. This is not desirable because local Pink and Chum stocks in F/FH, many of which are severely depressed, will be heavily impacted upon.

WEEK 36: August 30 - September 5, 1987

IFF:

- If Bella Bella residents are food fishing for Chum off Sunny Island (Fisher Channel, 8-5) it may give an indication of early Chum arrival to the Martin River. In the absence of food fishing, visual indications of the presence and abundance of Chum can be made in Fisher Channel and Cousins Inlet.

- Bella Coola River IFF targeting on Coho.

Sport Fishery:

- Tidal water sport fishery is dependent on weather conditions. Only two or three Hakai charter boats may be operating.

- Non-tidal sport fishery in the Bella Coola, Atnarko, and Kwatna Rivers beginning to target on Coho.

Commercial Net Fishery:

- There could be a commercial fishery this week, targeting on known Chum surpluses to escapement in the BCGNA and the DCGNA. Fish quality will be less than desireable, and Coho conservation will be a major consideration. Because of Departmental allocation policies, Fitz Hugh Sound would also likely be open. This is not desirable because outside Pink and Chum stocks in F/FH, many of which are severely depressed, will be heavily impacted upon.

Other:

- There should be visual indications of the presence of Chum in Fisher Channel (destined for lower Dean Channel streams and the Martin River)

- Stream surveys are the highest priority this week.

WEEK 37: September 6 - 12, 1987

IFF:

- Occasional food fishing for Chum off Sunny Island (Fisher Channel, 8-5)

- Bella Coola River IFF targeting on Coho.

Sport Fishery:

- Tidal water sport fishery is dependent on weather conditions. Hakai charter boats gone by week's end.

- Non-tidal sport fishery in the Bella Coola, Atnarko and Kwatna

Rivers targeting on Coho.

Commercial Net Fishing:

- Monitoring presence of Chum in Fisher Channel (IFF and visual signs) in preparation for a possible commercial net fishery on Martin River Chum in the following week. The presence and abundance of these Chum can be made by visual observations in Fisher Channel and Cousins Inlet.

- In years of strong returns there is the potential to fish the terminal areas to harvest Kimsquit and Bella Coola River Chum.

Other:

- Stream surveys remain a high priority for Pink, and Chum.

- Atnarko River Counting Tower Program terminates September 10 in even years.

WEEK 38: September 13 - 19, 1987

IFF:

- Monitoring Bella Coola IFF for Coho for indication of returning run strength.

Sport Fishery:

- Monitoring Bella Coola, Atnarko and Kwatna Rivers for Coho catches.

Commercial Net Fishery:

- Fisher Channel (8-5) may open for gillnets and seines depending upon good signs of fish in Cousins Inlet (Martin River). If indications are poor may wait until next week to have a fishery, however fish quality will be a major concern.

- Fishery is unlikely to be more than one day, and will be during daylight hours only as a means to conserve Coho.

- There should be a good showing of jumpers and surface schools of Chum in Cousins Inlet prior to commercial fishing. The presence of milling fish on the top boundary (Rattenbury Pt. to Boscowitz Pt.) may indicate that the fish are not moving into the sanctuary area, but are milling in Upper Fisher Channel.

- In years of strong returns there is the potential to fish the terminal areas to harvest Kimsquit and Bella Coola River Chum.

Other:

- Stream surveys remain a high priority for Pink, and Chum.

- Atnarko River Counting Tower Program terminates September 15 in odd years.

WEEK 39: September 20 - 26, 1987

IFF:

- Monitoring Bella Coola IFF for Coho for indication of returning run strength.

Sport Fishery:

- Monitoring Bella Coola, Atnarko and Kwatna Rivers for Coho catches.

Commercial Net Fishery:

- May fish this week if didn't fish last week on Martin River Chum, otherwise Area 8 will close for the balance of the season.

Other:

- Final assessment of Atnarko River Sockeye escapements.
- Final assessment of Koeye River Sockeye escapements occuring this week.
- Kimsquit River Sockeye enumerated from mid-October to late November.
- Coho assessment on accessable streams continues through to mid-January.
- F/FH Pink, Chum, and Sockeye escapement information finalized by mid-October.
- Martin River Chum escapement finalized (mid November), Coho late December.

Salmon Expectations
Area 8 - Bella Coola Sub-district

Salmon expectations are the beginning of the process that ultimately leads to the development of an annual salmon fishing plan. They are designed to provide a preliminary indication of the what will be available for harvest during the upcoming fishery, and are based on brood year escapements, age composition and standard or average return rates.

Since the origin of the expectations in the early 1960's, this exercise initially consisted of simple brood and catch year comparisons, evolving to calculations using brood year escapements, brood age composition, and age class specific rates of return. Throughout this time all stocks were more or less managed on an Area-wide basis. This had the effect of masking weaker stocks, or those in need of special considerations within the Area.

Since the beginning of the pilot project in the Central Coast District in 1983 ("Record of Management Strategies"), Statistical Areas have been sub-divided into what have become known as Sub-areas. These divisions were chosen to delineate areas with distinctly separate management regimes or areas where escapements should be separated in order to evaluate stock status properly. Another major development within this period was the identification of stream and species specific escapement targets, and Key Indicator streams within the Sub-areas.

Using these recent innovations in the development of expectations and fishing plans reduces this masking effect and identifies the existence of previously undetected surpluses.

In developing expectations, there are three areas of uncertainty where assumptions must be made. These are:

1. Accuracy of brood year escapements estimates;
2. Age class specific brood year age composition;
3. The rate of return, or the number of adult returning to the fishing area per spawner in each age class.

The most sensitive of the three is the return rate, which accounts for overwintering and ocean survival, as well as any exploitation which occurs prior to the stock arriving in the fishing area. The source of escapement estimates is the Annual Report of Salmon Stream and Spawning Grounds ("BC 16") from the Sub-district Fishery Officer. Normally, age composition is derived from scale or otolith data.

Snootli Hatchery contributions of Chum and Chinook have been calculated separately and have simply been added to the calculated total stock numbers.

The following are definitions of some of the terms used in the expectations worksheets:

"N/O" - None observed (inspected but nothing seen).

"N/I" - Not inspected.

"Others" - refers to non-key streams in a Sub-area.

"Surplus" - that portion of the total returning stock not required for escapement.

"Deficit" - indicates an anticipated shortfall in escapement requirements.

OPERATIONAL REQUIREMENTS (GENERAL)

The Area 8 - Bella Coola Sub-district is a remote coastal area with limited access, for the most part by water and by air.

With the exception of a road into Bella Coola, 300 miles West from Williams Lake, and some secondary logging roads in the Bella Coola valley, there are no roads in this Sub-district. Consequently, the commercial fisheries, and the habitat and enforcement activities must be conducted using boats and aircraft in order to access the fishing areas, and all but the Bella Coola valley salmon spawning streams.

The size of the Sub-district might be illustrated by the fact that there are over 250 miles of channels. The overall area of the Sub-district, including drainages, is slightly over 9000 square miles.

Each Fishery Sub-district has specific needs that relate to normal operations during the course of a salmon season in order to fulfil the Departmental mandate of maintaining the fishery resource for the greatest benefit for the people of Canada. These requirements are based on the tasks and information requirements necessary to maintain the salmon resource and its associated benefits in a Fisheries Sub-district through the careful management of various fisheries.

With detailed, pre-season planning involving both Area- and seasonally-specific needs, the resources required to operate the Sub-district for the salmon season can be easily identified (what, how long, how much). These Operational Requirements include the following:

1. Seasonally chartered Patrolmen with boats are necessary to collect data pertaining to catch and effort as well as to provide protection and a Departmental enforcement presence in isolated areas during the fishing season. They are also critical in the success of the spawning and escapement assessment program for their portion of the Sub-district.

2. Seasonally hired Guardians serve a similar purpose to Patrolmen, however, they are land-based and are concerned more with the production side of the Sub-district operation, with the protection of brood stocks in sanctuary and spawning areas, and the protection of their habitat. Guardians are also heavily relied upon for spawning and escapement estimating.

3. Clerical support during the peak load period is essential to the Fishery Officer so that he may concentrate on resource management. This peak period in Area 8 runs from early June to late October.

4. Government patrol vessels are required as dictated by species-timing and planned fisheries, as well as other duties such as habitat and logging referrals. In addition to the smaller Sub-district vessels, there will be occasional requirements for larger watch-keeping vessels with round the clock patrol capabilities for outside areas and specific

troublesome fishing boundaries. In most cases, watch-keeping vessel requirements are of short duration and can be predicted prior to the season. Sub-district patrol vessels are normally layed up in Prince Rupert over the winter months.

5. Aircraft charters are required for gear counts on some fishery openings. The calculation of daily catch can be dependent upon an exact gear count when catch figures and deliveries are difficult to obtain. Other uses include the movement of personnel during the course of the season, attending in-season District fisheries management meetings, enforcement, protection, and in-season escapement estimates during critical periods and for inaccessible areas. In most cases, charters are utilized in such a way as to cover a variety of the above tasks in single flight where possible.

6. Capital replacement of equipment (and the associated planning process) is essential to minimize "down time" during peak periods. Worn out equipment such as outboard engines, boats, and Guardian cabins can hamper operations during critical periods. This could mean loss of essential data which ultimately affects future fishery management, or the reduction or loss of protection of the resource.

A seasonal staff consisting of Patrolmen, Guardians and clerical support is required in addition to the full time compliment of Fishery Officers and Departmental patrol vessels because data is required from a large area in a concentrated time frame over the course of the season. In the Bella Coola Sub-district - Area 8, this period is roughly from mid-May to early October each year. The Sub-district Fishery Officer cannot alone collect all the information required for fishery management as has been the case since 1978-79, when much of the seasonal patrol staff in Pacific Region was lost (NOTE: Seasonal Guardians and Patrolmen have been reduced from a Region strength of 150 to 40). This situation has resulted in harvestable surpluses being lost to the fishing industry, and the adverse effects of over-fishing on future fisheries potentials. The concept of using full-time staffing as a replacement for seasonal positions for a fishery that lasts eight or nine weeks (Area 8), is imprudent. No matter how dedicated, no Fishery Officer can be in two places at one time. Where a Departmental patrol vessel must be used to replace lost Patrolmen, the effect is to replace a $275 per day charter with a $635 per day three-man Government vessel, as well as limiting the Fishery Officer's flexibility by removing the vessel from his use.

The continuous and consistent stream of historical data (catch, escapement, migration patterns and timing, etc.) that these seasonal positions have provided over the years is important in the management of the local fishery and has proven invaluable in the development of both short term operational and long term strategic planning for Area 8. In recent years the loss of seasonal positions has created gaps in the data which can never be recovered.

TASKS AND DATA REQUIREMENTS

The tasks and collection of data as outlined below are a necessity

for comprehensive fisheries management and protection. This work is dictated by the migration timing of the various stocks and should not be considered optional.

Indian Food Fishery (IFF)

There are four major tasks in the management of the Indian Food Fishery. These are: issuance of permits for both fresh and salt water; the monitoring of fishing activity for enforcement of permit conditions (time, place, gear, boundaries); enforcement of sanctuary areas for protection of fisheries potentials (broodstock); and the collection of catch and effort information. The catch by these fisheries can approach commercial fishery proportions while supplying food fish to numerous families.

The protection of fisheries potentials is especially critical in salt water with permits issued where commercial seine and gillnet gear is used. This gear, particularly seines (length 220 fathoms or 1320 feet, depth 28 fathoms or 170 feet) have the capability of destroying an entire escapement when salmon are schooled at the mouth of a stream prior to freshwater migration.

In fresh water these tasks can be accomplished on foot, by vehicle, and by river boats. In salt water, however, it is necessary to use both Government patrol vessels and chartered seasonal patrolman.

Effort and catch information from both fresh and salt water fisheries is weighted heavily in the management of the commercial fishery as an indicator of run strength and migration timing. The continuity of effort and catch data will be important in future allocation issues.

Sport Fishery

Tasks related to the freshwater sport fishery include: catch and effort data collection, and enformcement of closed seasons, closed areas, and gear restrictions.

In salt water the tasks are similar to the above with the exception that effort and catch success by species is used as an important indicator for commercial fishery management.

Commercial Fishery

The commercial net fishery generally requires a great deal of data collection over a large area within a short period of time (June, July, August, and early September). This data is crucial in fishery management in order to:

-verify the expectations,
-conduct the fishery as planned, or to adjust as necessary,
-attain escapements to perpetuate the run, and
-harvest available surpluses of the five salmon species.

Information used to accomplish the above can vary in importance from low to high depending upon the week of the fishing season. Subtle changes are important indicators to the fishery manager and must be monitored closely as they can have great effects on the outcome of fisheries management. (eg. a slight shift in average weight, incidental catch, a change in fish quality, etc.). In a given week, data requirements may be any number of combinations of the following:

- Catch (CPUE, weekly, Cummulative)
- Escapement
- Weather
- Average Weight (and/or change)
- Fleet size (gear counts)
- Run timing
- Visual signs
- IFF
- Gear movement
- Fleet talk
- Boundaries
- Fishing (how where what)
- Incidental catch
- Fish quality
- Trends in other Areas
- Sport fishery

Protection of Fisheries Potentials

This includes maintaining the integrity of boundaries (both fishing area and sanctuary area), closed times, and closed seasons, for the protection of escapement (brood stock) requirements for the future. The money and time spent on a well managed fishery is all wasted if the sanctuary areas or creek boundaries are violated and the brood stock lost.

Enforcement

Enforcement is one of many management tools necessary to ensure regulations or special restrictions are adhered to for orderly fishery management. In addition to the protection of fisheries potentials, the enforcement of mesh size restrictions, other gear restrictions (length, depth, gear type), and fishing boundaries, etc. is the tool that helps ensure the management strategies have the desired effect.

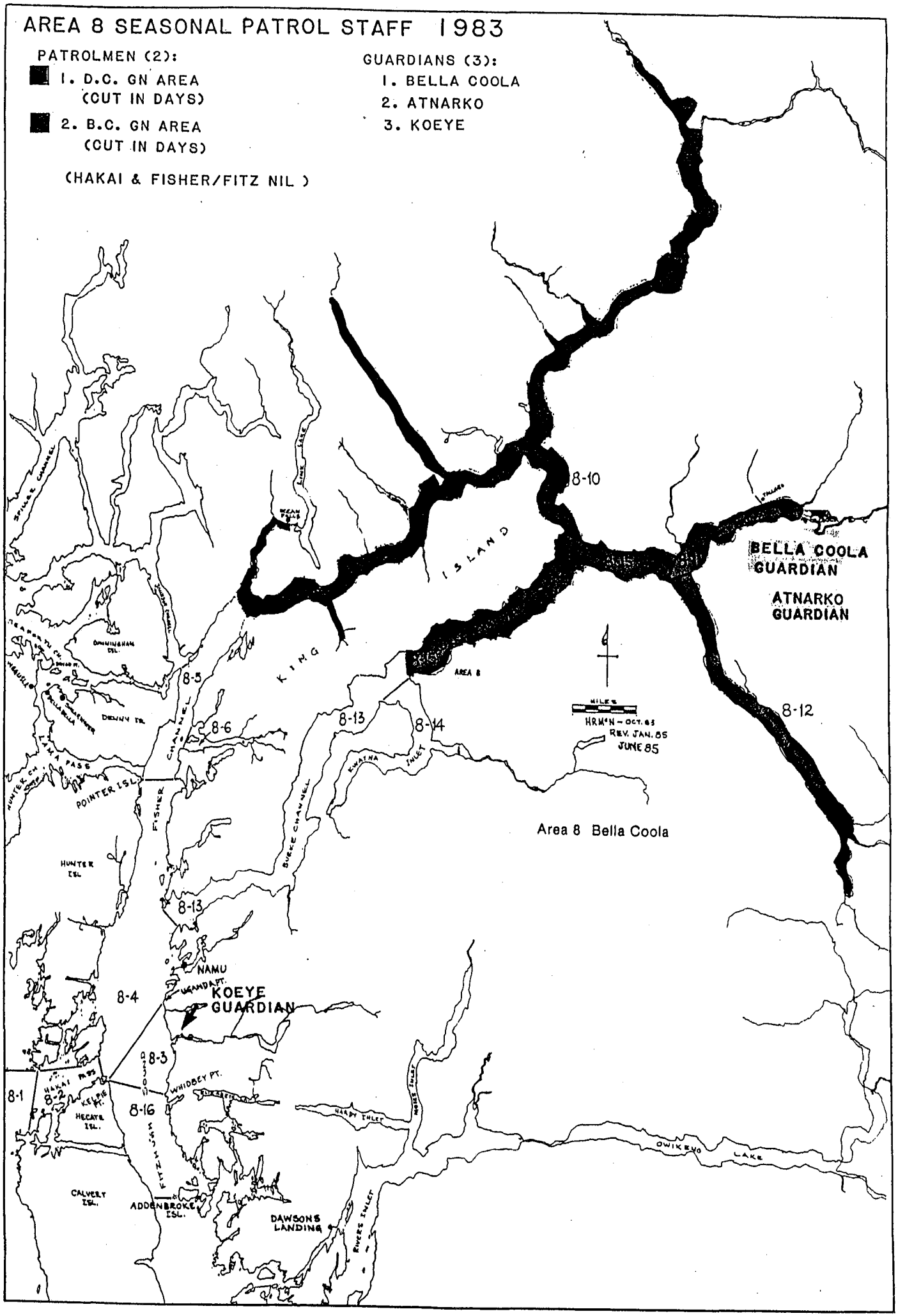
Spawning and Stream Assessment

Escapement data are the basis of the whole fisheries management regime, beginning with the expectations of returning stocks based on brood year escapements through to the development of future fishing plans, according to the species and cycle of return. Obviously, neither pre-season planning nor computer stock modelling and run reconstruction or any other long-term strategic planning exercise is possible without this information.

As with data collection during the commercial fishing season, spawning and spawning ground assessment for the five salmon species must take place over large areas in a relatively short period of time. The number of streams, the distance between them (running time), accessability (road, air only, water only), the required method of inspection, the time required for inspection, species of salmon, and the timing of runs, are factors that influence the operational requirements to perform this extremely important task.

In the cut-backs that have occured since the late 1970's, this

aspect of overall fishery management has suffered the most, it being easier to cut the ends off charters, especially the tail-ends, which are probably the more important sector when so much weight is being placed on escapement numbers.


AREA 8 SEASONAL PATROL STAFF 1983
PATROLMEN (2):
1. D.C. GN AREA (CUT IN DAYS)
2. B.C. GN AREA (CUT IN DAYS)
(HAKAI & FISHER/FITZ NIL)
GUARDIANS (3):
1. BELLA COOLA
2. ATNARKO
3. KOEYE
8-10
BELLA COOLA GUARDIAN
ATNARKO GUARDIAN
8-12
8-5
8-6
8-13
8-14
8-13
8-4
8-3
8-2
8-1
8-16
KOEYE GUARDIAN
NAMU
Area 8 Bella Coola
HRM'N – OCT. 85
REV. JAN. 85
JUNE 85
KING ISLAND
FISHER CHANNEL
BURKE CHANNEL
POINTER ISL.
HUNTER ISL.
HECATE ISL.
CALVERT ISL.
ADDENBROKE ISL.
DAWSONS LANDING
WHIDBEY PT.
OWIKENO LAKE

AREA 8 SEASONAL PATROL STAFF

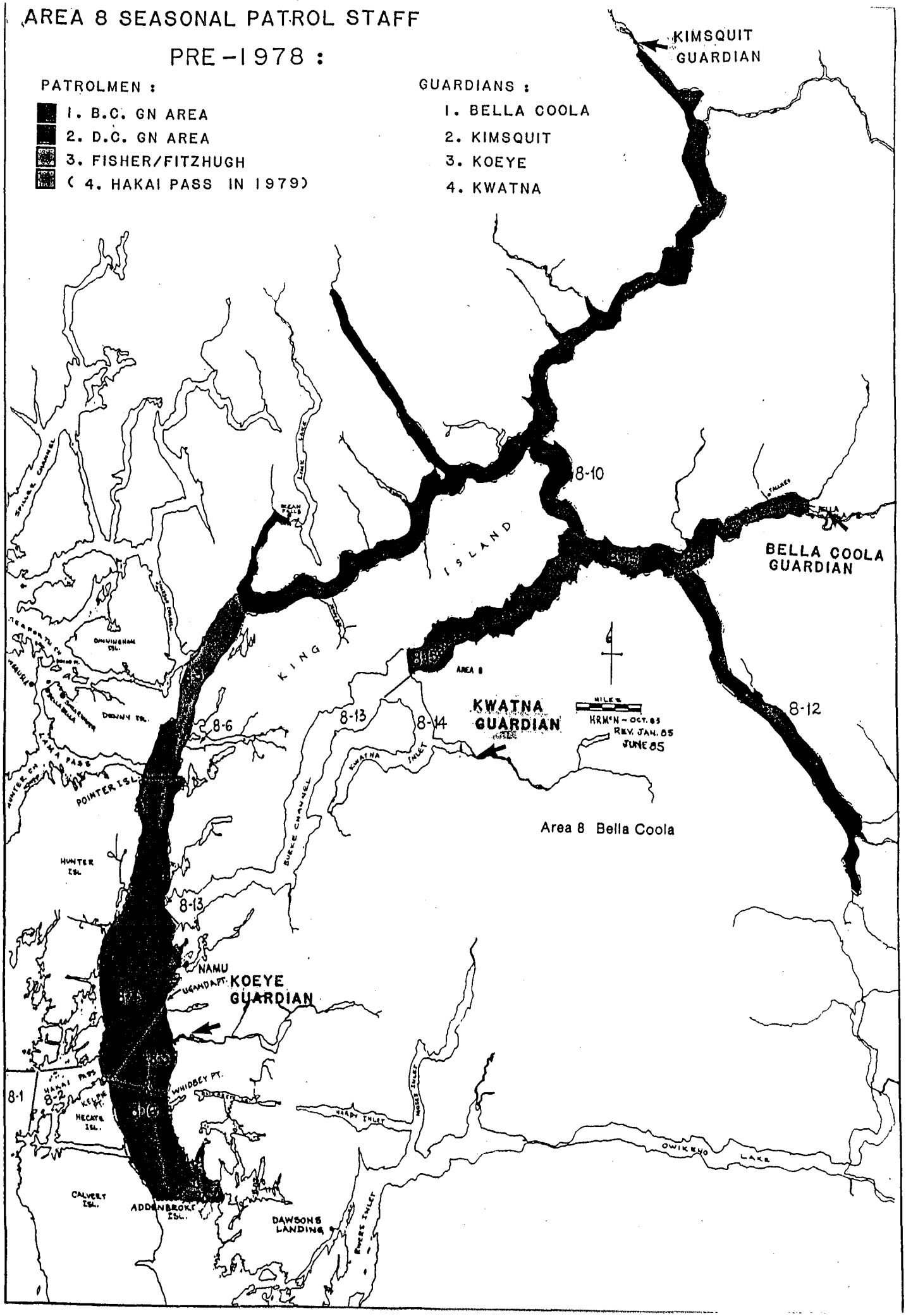
PRE-1978 :

PATROLMEN :

1. B.C. GN AREA
2. D.C. GN AREA
3. FISHER/FITZHUGH
(4. HAKAI PASS IN 1979)

GUARDIANS :

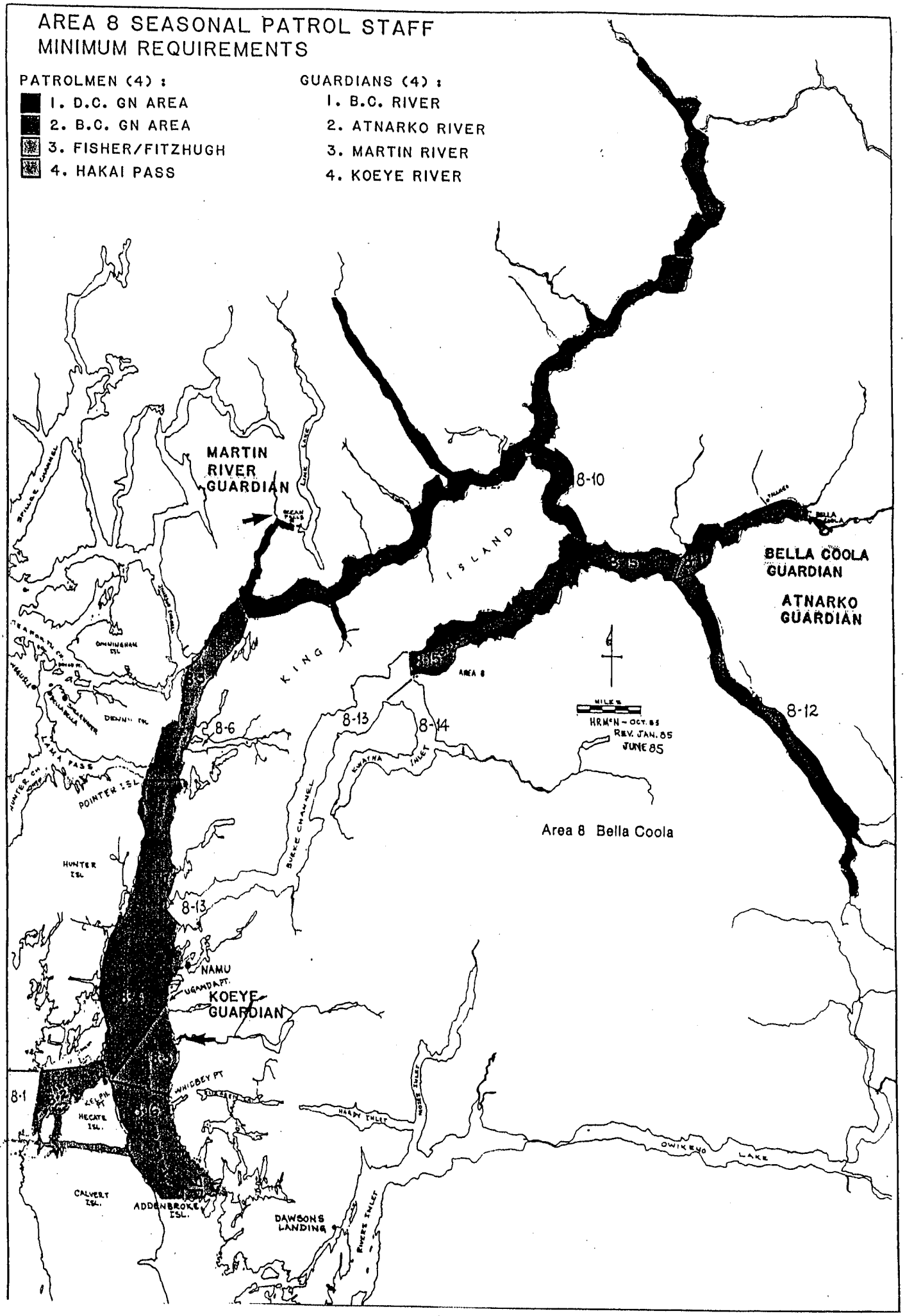
1. BELLA COOLA
2. KIMSQUIT
3. KOEYE
4. KWATNA



AREA 8 SEASONAL PATROL STAFF
MINIMUM REQUIREMENTS

PATROLMEN (4) :
1. D.C. GN AREA
2. B.C. GN AREA
3. FISHER/FITZHUGH
4. HAKAI PASS

GUARDIANS (4) :
1. B.C. RIVER
2. ATNARKO RIVER
3. MARTIN RIVER
4. KOEYE RIVER



Operational Requirements
Salmon Season
Area 8 - Bella Coola Sub-district

These operational requirements are based on both the expected 1986 fishery, and the inherent "rules" and conditions specific to the Sub-district which change little, if any, annually.

Patrolmen

1. Dean Channel Patrolman

This patrol area includes the Dean Channel Gillnet Area (DCGNA), the closed portions of Dean Channel, Cousins Inlet, Cascade Inlet, and Labourchere Channel. The patrol area is approximately 65 miles long, with an additional 25 miles of channels and inlets. (Management Units 8-7, 8, 9, & 10). Sub-areas: two - Dean Channel Closed and Upper Dean Channel.

Key Indicator Streams - five: Kimsquit River, Cascade River, Elcho Creek, Jenny Inlet Creeks, and the Martin River. There are seven other creeks.

Duties - this Patrolman is essential in supplying daily catch and effort in the DCGNA and Labouchere Channel. This has a direct influence on the management of Atnarko River Sockeye and Pinks, Bella Coola River Chums, and to a greater extent the management of Lower Dean Channel and Kimsquit River Chums. Information gathered by this Patrolman influences the commercial seine and gillnet fishery in Fisher Channel and Fitz Hugh Sound, approaches to and below his patrol area. In addition, an extensive sanctuary area must be maintained in the lower and upper thirds of Dean Channel. This Patrolman collects scale samples from the commercial fishery, monitors the sport fishery in this patrol area. He is the DFO representative in this portion of the Sub-district.

This area requires a Patrolman and his boat from June 25 to October 15: 119 days @ $295 per day (all inclusive charter): Total cost $35,105.00

This area is only accessible by boat.

2. Bella Coola Gillnet Area Patrolman

This patrol area includes upper Burke Channel, and North and South Bentinck Arm which is approximately 65 miles of channel. (Management Units 8-11, 12, & 15). Sub-areas: three - North Bentinck, South Bentinck, and Burke Channel.

Key Indicator Streams - Two: Bella Coola/Atnarko River and Kwatna River. Note: the Bella Coola River is monitored by the Bella River and the Atnarko River Guardians. Kwatna river Guardian was lost after the 1978 season.

Duties - this patrolman is responsible for patrolling and reporting on the terminal commercial gillnet fishery on Bella Coola/Atnarko River Chinooks, Sockeye, Pink, and Chum. The commercial net fishery on Chinook in May and June requires the coverage of a large area (in conjunction with departmental staff and patrol vessels) with gear spread throughout North Bentinck Arm, Labouchere Channel, Burke and Dean Channels, and Fisher Channel and Fitz Hugh Sound, a distance of about 125 miles of channnel with the gillnet fleet, although not large, scattered throughout. The Chinook fishery timing can flow into that of the small mesh net fishery for Sockeye in early July. South Bentinck Arm, although closed in past years for the protection of depressed stocks, has been cited for the enhancement of Chum salmon. This channel is 25 miles long and would require an additional Patrolman position if future potentials are to be realized. Also monitors the IFF (using commercial gilllnet gear) in North Bentink Arm.

This area requires a Patrolman and his boat from May 15 to September 10: 119 days @ $295 per day (all inclusive charter): Total cost $35.105.00

This area is only acessible by boat.

3. Fisher Channel/Fitz Hugh Sound

This patrol area includes Fisher Channel and Fitz Hugh Sound, a distance of more than 45 miles in length, with nearly half of the area being five miles in width from the mouth of Burke Channel south to Addenbroke Lighthouse. This is the approach area for Bella Coola salmon stocks and is the primary fishing area in the Sub-district, a history of fishing that dates back to the turn of the century. (Management Units 8-2, 3, 4, 5, & 16).

Key Indicator Streams - Koeye River (this is looked after by the Koeye River Guardian). There are ten other streams.

Duties - this patrolman's main responsibility lies in the commercial seine and gillnet fishery, a source of data and information for the management of the Bella Coola Sub-district salmon stocks. This responsibility is usually shared with the Sub-district patrol vessel and Fishery Officer, the area being so large, and the information so critical to fishery management in the area. The information gathered here concerns the exploitation of all of the Area 8 salmon stocks during the period of the commercial fishery. This patrol position is essential for coverage of the Indian Food Fishery for Sockeye at Koeye and Namu in June and July. Pre-season inspections of spawning grounds are required for barriers or blockages to salmon migration, including their removal, if any, and Fall inspections for spawning and escapement data for Pink, Chum, and Coho. Assists the Dean Channel Patrolman and the Koeye River Guardian in Fall spawning inspections, this being done for their mutual safety. This Patrolman monitors the sport fishery in this patrol area. He is the DFO representative in this portion of the Sub-district.

This area requires a Patrolman and his boat from June 10 to October 6: 119 days @ $295 per day (all inclusive charter): Total cost $35.105.00

This area is only accessible by boat.

4. Hakai Pass Patrolman

This patrol position is required for Hakai Pass and the sport fishery that has developed and escalated there since the late 1970's. There are no spawning streams in this area, but information gathered there is used in records for that fishery as well as important indicators for the commercial net fishery on Atnarko Pink in Fisher Chanel, Fitz Hugh Sound, and the BCGNA for Pink salmon exploitation.

Duties - gathering effort and catch information and enforcement on the Hakai Pass sport fishery. Gathering of commercial net fishing data when Hakai Pass is open to net fishing for the harvest of Atnarko Pink salmon. He is the DFO representative in this portion of the Sub-district.

This area requires a patrolman and his boat from mid-June to September 10: 87 days @ $295 per day (all inclusive charter):Total cost $25,655.00

This area is only accessible by boat.

Total cost - four chartered Patrolmen: $130,970.00

L 30 19 1967 = 442 days

Guardians

These positions are seasonally filled using man-days allotted to Districts and Sub-districts from a Regional Man-year pool. Man-day coverage is 5 days per week including statutory holidays, between starting and finishing dates. Currently there are no allowances for overtime although it is often required in order to complete the tasks.

1. Koeye River Guardian

The Koeye River is a Key Indicator Stream, and supports an Indian food fishery with its Sockeye, and a targeted commercial net fishery with its Pink stocks. It has a special triangular boundary which is annually implemented to protect stocks which otherwise have no natural sanctuary area and which are extremely vulnerable during the period between arrival and freshwater migration.

Duties - this Guardian is responsible for the protection of required escapements of salmon in the sanctuary area, for information concerning arrival and freshwater migration timing, for escapement and spawning data and monitoring the IFF and commercial net fishery around Koeye. Assists F/FH Patrolman in stream inspections.

This Guardian should be in place by June 15th for the protection of Koeye Sockeye, and to observe this species' migration from the bay to freshwater around June 25th. He is required until Fall escapement monitoring has been completed by September 30th.

Requirement: June 15 - September 30: Total 77 man-days

2. Bella Coola River Guardian

The Bella Coola River is a Key Indicator Stream and with its tributaries is the major river system in the Bella Coola Sub-district. It supports all five species of salmon which provides an Indian Food Fishery, a commercial seine and gillnet fishery, and a freshwater sport fishery.

Duties - this Guardian is responsible for patrolling the Bella Coola River and a number of its salmon-bearing tributaries in its 30 mile length. This patrolling intails enforcement of regulations with respect to the IFF and sport fishery, reporting of catch and effort for these fisheries, reporting on migration and timing of stocks, collecting scale samples and reporting on spawning and escapements over a period from early August to late October. Information from this person with respect to escapements, migration, the timing of stocks, and catch and effort in the IFF is critical to the management of the commercial net fisheries in Fisher Channel, Fitz Hugh Sound, and the Bella Coola and Dean Channel Gillnet Areas.

This Guardian must be in place by May 1st when the IFF and sport fishery begins in the river with the commencement of the Chinook migration. He is required until Fall escapement monitoring has been completed by late October.

Requirement: May 1 - October 24: Total 127 man-days

3. Atnarko River Guardian

The Atnarko River is tributary to the Bella Coola River and is the main spawning grounds for the Sockeye, Chinook and Pink in Area 8.

Duties - this Guardian's duties include enforcement of regulations on an intense sport fishery, monitoring an IFF (Chilcotins), reporting of catch and effort for this fishery, reporting on migration and timing of stocks, and reporting on spawning and escapements over a period from early August to late October. He must also enforce special regulations for the protection of spawning Chinook salmon with respect to the sport fishery, and maintain a large closed area for the protection of these same fish.

This Guardian must be in place by May 15th with the commencement of the Chinook migration, and is required until Fall escapement monitoring has been completed by late October.

Requirement: May 15 - October 24: Total 117 man-days

4. Office Clerk

Clerical support is required during the salmon season when the Fishery Officer is dedicated to the management of fisheries.

Duties - maintain a service to the public, and look after

telephones, radio-telephones, telex, mail, and the issue of licences and permits. This can be accomplished with five half-days per week from June 1st to October 30th.

Requirement: Total 55 man-days

Total requirement: Guardians, Clerk - 376 man-days

Other Requirements

1. Fixed-wing Aircraft Charter

Chartered flights are required for gear counts at the beginning of commercial fisheries, for in-season and post-season escapement evaluation, for in-season meetings with Industry and Departmental staff, habitat and logging referrals, and for the movement of Sub-district personnel.

Locally based Cessna 185 on floats costs $250 per hour. DH Beaver on floats costs $275 per hour.

Gear Counts

Require 8 Sunday opening counts for the 1987 commercial net fishery of 2 hours duration each ($4000.00).

Management Meetings

Require 8 flights for Fishery Officer to attend weekly in-season management meetings in the 1987 season of 2 hours duration each (this includes return) ($4000.00).

Meetings With Industry

Required as part of the consultative process with fishermen and industry. Require 6 flights - Bella Coola to Namu, drop off and pick up - total 2 hours duration each: ($3000.00).

Spawning Inspections

Because of the size of the Sub-district and the remoteness of many of its streams, it is necessary to assess escapements by air, both for in-season management and final escapement enumeration.

The Kimsquit River Chum requires 3 flights from late July to the end of August - 2 hour duration each: ($1500.00).

Tanya Lake/Takia River (Dean River system) Chinook escapement requires 1 flight timed at the peak of spawning (mid-August) - note: this flight is for access and the escapement enumeration is done on foot - duration 2 hours: ($500.00).

Atnarko and Koeye River Sockeye inspections in late September involve a series of relay flights between lakes and rivers with up to 10 personnel. This requires the use of a DH Beaver and C185 for a day, total cost: ($2200.00).

Two Kimsquit Sockeye inspections are required (one in late October and one in mid-November) to count lake spawners in Kimsquit Lake. This involves 2 hours flying time and 3 hours holding time each: total ($1500.00).

Total fixed-wing aircraft charter required in 1987: $16,700.00

2. Helicopter

Atnarko River requires 2 flights of 2.5 hours duration each to be used in conjuction with the Chinook escapement estimations gained through regular means (walking, floating, tower count, etc.). First flight - early September, second flight - mid September. In addition to being a Key Indicator Stream in Area 8, the Atnarko River is a Regional key indicator for Chinook in terms of the Canada/US International Agreement: (Hughes 500D - $650.00 per hour) total: $3250.00.

Dean River requires 2 flights of 2 hours duration each to enumerate Chinook in the lower 18 miles of river in late August and early September. In some years water levels in September may allow this second escapement monitoring to be accomplished with the use of river boat. Total: $2600.00.

Koeye River requires 1 flight of 2 hours duration for a final Pink enumeration in mid-October (by this time the Departmental patrol vessels are usually laid up for the Winter in Prince Rupert, and Seasonal staff have been terminated). Total: $1300.00.

3. Capital Replacement Program

The following should be replaced prior to the 1988 salmon season:

Koeye Guardian Cabin - 14 X 20 ft. Panabode: total $10000.00. (needs replacing prior to 1988 season).]

The following motors should be replaced on a 2-3 year basis:

75 hp jet motor and jet unit $4,200.00

50 hp outboard motor, Koeye River Guardian $2,500.00

9.9 hp motor, Koeye River Guardian $1,400.00

9.9 hp motor, "Atnarko" Speedboat Kicker. $1,400.00

4.5 hp motor, Fly in motor for enumeration $900.00

Volvo leg on "Atnarko" speedboat (rebuild or replace) $5,000.00

Volvo engine "Atnarko" speedboat (4 yr rebuild or replace) $7000.00

Avon 12 ft rubber raft: $3,000.00

4. Atnarko Counting Tower Operation

This important operation has not had assured funding through the Sub-district in recent years but has received last minute funding and manpower through CEIC programs. In 1983 the tower was not operated because this was not available, making the 1983 Atnarko River Pink escapement (and therefore the 1985 expected returns) questionable.

This operation requires that the counting tower be manned 7 days per week during daylight hours from July 25 until September 10 (even years). To estimate the cost, the 1985 program cost $22,500 ($12,500 SEP manageablility, remainder MILAP).

5. Fuel Requirements - Patrolmen

It is estimated from past records that fuel requirements for four Patrolmen are as follows: Diesel fuel - 7000 gal. @ $2.50 - total: $17,500.00. Gasoline - 1500 gal. @ $2.95 - total: $4495.00. Total all: $21,925.00. Diesel $40/day

6. Patrol Vessel requirements

Two Departmental patrol vessels are permanently assigned to the Bella Coola Sub-district, the FPV "Temple Rock" and the FPV "Gull Rock", and are annually allotted maximum operational days by Ships Division. These are 184 and 144 days respectively, of which 35 to 40 are consumed during the Roe Herring fishery in March each year. The Sub-district Fishery Officer in charge must therefore carefully manage the use of the vessel's time in order ensure the required coverage between early May and the Fall wrap-up in mid to late October, otherwise the allotment could be spent by the time the spawning and escapement is at its height. The FPV "Temple Rock" - required to be in the Sub-district in the beginning of Week 19 (May 3-9, 1986). The termination date often depends upon Fall weather conditions during escapement enumeration. If weather and stream conditions are favourable, the vessel would be required until October 31, 1987. The FPV "Gull Rock" is required in the Sub-district by the end of Week 22 (May 04-30, 1987). Termination date October 01, 1987.

Watchkeeping vessels - Required during years of large salmon returns to patrol outside areas, closed areas and boundaries.

7. Other

Overwintering (egg and fry) Hydraulic sampling and down-stream fry trapping: the program that the Snootli Hatchery crew have maintained since the mid-1970's has been an invaluable tool in the development of salmon expectations and fishing patterns for Atnarko Pink. This information (eg.1983 brood and resultant 1985 return) improves the reliability of predicting the strength of returning stocks and thereby reduces the uncertainty involved in developing fishing plans. Expanding this program to a select number of other representative Area 8 streams should be given future consideration.

DCGNA Test Fishery: This first began in 1984 and was designed to develop an index of abundance of Sockeye and Chum destined for the Kimsquit River system. Should begin late in Week 27 and terminate in the end of Week 35. The charter was paid for on the basis of a bid system with fish taken during the test fishery in addition to directed payment fishing. Cost involved in this program arise out of the need for a technician aboard the test boat to record data. In the past these costs have been covered through office assistance programs provided by SEP and North Coast Management Biology. The costs amount to about $8000.00 annually in 1984 and 1985. The program was cancelled in 1986 as a result of poor support by the fishing industry.