A PRELIMINARY SURVEY OF FISHERIES INFORMATION COLLECTED BY FOREST COMPANIES OPERATING IN COASTAL B.C.

by

Peter Bruce and Associates
31 May, 1992

Acknowledgements

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1.0 Introduction

The Fisheries Inventory Task Force is one of a number of groups established by the provincial Resources Inventory Commission. The function of the Task Forces is to assess the status of inventory of specific renewable resources, to develop procedures and standards for inventory data collection, and to identify vital information needs. The overall objective of this process is to develop standardized inventory systems which will lead to improved levels of integrated resource management.

An initial action of the Fisheries Inventory Task Force was to review current inventory programs conducted by provincial and federal agencies, and by external groups such as native groups, B.C. Hydro, and by the forest industry. This report deals specifically with fisheries data collected by the forest industry on coastal tenures in B.C.

A questionnaire was used to assemble information from forest companies prior to a Resource Inventory Commission workshop at the end of May 1992. The main targets of the questionnaire were forest companies operating on Vancouver Island and the adjacent mainland, following which a number of companies operating in the mid and north coast were contacted. This was due to the relatively short period of time in which to receive responses, and also to assess the adequacy of the questionnaire.

The focus of the questionnaire was entirely on fresh water drainages, which may also include lakes.

2.0 Questionnaire Layout

After reviewing a number of questionnaires used to solicit various agencies, an abbreviated format was chosen. This was partly due to the generally negative response to the requests for completion of numerous lengthy forms. This is a prevalent attitude within forest companies.

The questionnaire asked the following:

- which companies have collected fisheries information?

- for which tenures has fisheries data been collected?

- what type of inventory data was collected?

- what level of detail was the data collected at?

- at what scale was the data collected?

- who collected the information?

- where are the data stored?

The questionnaire consisted of 2 pages. First a page of explanation for each of the above questions, followed by a table to be filled out. Sample sheets are shown in appendix I.

Prior to sending the questionnaire, a short telephone interview was made to locate an appropriate contact person and inform them of the nature of this project, and to form a general idea about the companies involvement in resource data collection. District Offices of the Ministry of Forests were very helpful in supplying the names of companies operating within their districts.

3.0 Results

The objective of non-timber resource inventories conducted by forest companies is generally one or more of the following:

- to comply with government regulations or requirements in order to be able to log an area, usually in the context of the referral process. The Coastal Fish/Forestry Guidelines are an example.

- to develop longer term planning or watershed development, usually at a 5-year plan level, or more.

- to respond to specific problems that could jeopardize the opportunity to continue logging. As opposed to inventories, these are usually brushfire situations.

- to permit calculations of withdrawals of sensitive sites from the AAC. These sites include terrain/fisheries sensitive sites, riparian management areas and biodiversity corridors for example.

- to provide data for operability studies.

In the referrai process, in which 5-year plans are reviewed by Ministry of Environment (MOE) and Department of Fisheries and Oceans (DFO), data collection may be required of the forest companies by the Ministry of Forests (MOF) on the advice of these agencies. The MOF Small Business Program is significant in that timber sale or quota areas are administered by the MOF, which is also responsible for the assembly of the required resource information.

A summary of the types of responses to each question are given below.

Question A - Areas of Tenure for which fisheries information has been collected?

This question requested a listing of the tenures held by specific companies, which mainly includes Tree Farm Licenses, Forest Licenses, and Timber Licences.

Tenure was used rather than watershed names due to the large number of watersheds that could be included in a license area. A listing of ail streams for which some level of information was available, would be too onerous a task at this stage of review.

Several complications arose with respect to the use of tenures as a location device for collected data.

- Tenure boundaries often cut across watersheds so that several companies may be operating within it; an example is Walbran Ck. with MacMillan Bloedel operating in the upper reaches, while Fletcher Challenge operates in the middle reaches, with the lower reaches within Pacific Rim Park.

- Forest tenure boundaries are shown on a digital base only at a scale of 1:20,000, and for only Duncan and Port Alberni and part of Kalum Forest Districts. Mapping is almost complete for the Queen Charlottes but the rest of the coast has not been started. For these other areas, the scales vary considerably -2 mi to 1 in, 1 mi to 1 in, 40 chains to 1 in, etc.- and some of the maps are very old. Development of a GIS system is under study, but still some distance off. (pers. comm. - P. Nakken, Timber Harvesting Branch, MOF).

- There have been recent major changes in tenure, such as Western Forest Products now operating in areas formerly held by Doman's, and Interfor operating in areas previously held by Fletcher Challenge. The complete transfer of inventory information has not been completed in many cases.

- The main drawback is that the description of an information source is not specific; respondents sometimes answered that "most streams in this tenure had been looked at". This has to be weighed against a relatively fast retrieval of information which may not otherwise have been accomplished.

Question B - Type of Resource Data?

The type of information collected by forest companies was nearly entirely about fish distribution, or physical habitat descriptions. One company indicated limited information on resource use (Cant or), and one company had looked at water quality in one area (Weldwood of Canada).

Question C - Level of Inventory?

The level of detail of inventory information was divided into 5 classes. These were:

1) local knowledge
2) air photo only
3) spot sampling for fish presence for Fish/Forestry Guidelines
4) Reconnaissance. An overview of the drainage with spot sampling of fish and habitats - Biophysical surveys. (The spot sampling may be frequent. Drainages are usually divided into reaches, with a number of them field checked.)
5) Detailed. Extensive sampling of fish and habitat within drainage. The same information would be collected as in 4) but the intensity of sampling is higher - all reaches would be field checked, with sampling carried out in most.

Most companies reported the level of data collection as 3) or 4), spot sampling for Fish/Forestry guidelines, or recce). Only a few companies have carried out detailed inventories; 2 of the companies had biologists on staff (Fletcher Challenge and MB), while other companies occasionally retained consultants. The Recce and Detailed level of information are usually similar in content, differing mainly in the degree of sampling effort. The information collected usually includes physical habitat descriptions, with basic measurements, and fish species distribution information often with length measurements.

Both the Recce and the Detailed level of information discussed here would be generally equivalent to the Reconnaissance level defined in "Fisheries Conservation and Management, Inventories for the Future" (B.C. Resources Inventory Committee, Fisheries Task Force, May 19, 1992).

Occasionally, site specific information is collected in greater detail, usually in co-operation with or resulting from a direct request from the fisheries agencies.

Air photo work was seldom identified as a source of inventory data. It is perhaps a difficult category to identify, as the sole source of data, as levels 4 and 5, and often 3, would all involve air photo interpretation.

Somewhat surprisingly, a number of companies reported that the basis of much of their information was local knowledge with spot sampling. This very basic information was usually augmented DFO Stream Summary Catalouges

Question D - Scale?

Fisheries agencies, and frequently consultants have generally presented information at a scale-of 1:50,000. For instance, the Stream Summary Catalogues are mapped at 1:50,000, the same scale as the old escapement catalogues that they replace.

The most common scale for Development Plans in coastal forest companies is 1:20,000, while operational information is usually presented at 1:5,000. The bulk of the information collected in the last few years has been associated with the Fish/Forestry Guidelines, which has generally been put onto maps at these last two scales.

Question E - Collected by?

This question attempted to qualify the reliability of data by categorizing the 'training' of the collectors. The information collected by biologists should (presumably) be of greater reliability than data collected by untrained personnel.

Three companies employed biologists on staff (MB, Fletcher Challenge, and Canfor). Consultants (unidentified) were employed to conduct inventories by several companies. Only a few companies appear to employ environmental technicians. Most often, stream classification and spot sampling for Fish/Forestry Guidelines have been collected by company foresters or engineers.

Question F - Where is the information stored?

Only two companies (Canfor and WFP) have been trying to move their data onto a GIS system, with Canfor's system apparently in use. Only a couple of companies prepare their own data reports (usually watershed inventory reports), while the data collected by consultants is also usually delivered as a report.

All companies report putting their information on maps; the scale used for 5 year plans is 1:20,000, while the scale for Cutting Permits is usually 1:5,000. Also, many companies make mylar or paper copies of their tenures on which are drawn stream classification information. These maps are kept at the companies Divisional offices, as well as being given to the local fisheries agencies offices (MOE and DFO) and often the district office of MOF.

Only a few companies reported using stream cards (presumably those of MOE); very few companies keep active files of fish information, and more frequently, this data is appended to Cutting Permits.

4.0 Discussion

To summarize, all the forest companies contacted had collected fisheries information on their operating areas. Some of the companies appear to have collected a lot of data from a substantial area of their tenures, while others have collected relatively minimal information.

Inventories of large watersheds are not cheap, and conducting them indicates a desire to carry out long term planning.   The other end of the scale appears to be a piecemeal approach, with use of small scale (1:50,000) maps such as the DFO stream catalogues, and spot sampling by company personnel for the cutting permit of individual openings as required.   The difference in approach is probably a reflection of management philosophies, the type of tenure and agency management requirements, company economic situation, and the relationship with the local fisheries agencies.

Thus, the value of this body of fisheries information is variable.   A certain amount of inference has to be made from the questionnaire responses, short of actually visiting company offices.   There is unlikely to be a problem with the accuracy of the data contained in published reports prepared by biologists, whether company or consultants, as they are generally reviewed by fisheries agency personnel. It is unlikely that information from local knowledge or air photo interpretation alone would be considered as hardrd data without some field checking.   The main problem of data quality lies within the large volume of material being collected as part of the Fish/Forestry Guidelines.

Dealing with the reliability of the data is a somewhat thorny issue, as it deals with the amount of training or knowledge of the individuals conducting assessments.

- There is no way of assessing this through this questionnaire, but it is probably fair to say that training and knowledge in identifying fish species or fish habitat of most company engineers or foresters is inadequate.

- There are a number of pitfalls in the process of carrying out stream reach classification to apply the Fish/Forestry Guidelines, which can lead to incorrect conclusions.

- The main problem is that most of this data is shown only on maps. **There Is usually no Indication of who collected the data, and whether fish sampling was carried out, or whether the reach class was derived solely on the basis of gradient*** It may be possible to determine whether or' not fish sampling was done by digging out cutting permit paperwork, but this is uncertain.

- Most of the streams sampled for the Guidelines are tributaries or smaller streams, rather than mainstems or large rivers of known salmon use which have already been catalogued by DFO. There is still a problem though as the 1:50,000 scale used in the DFO maps often leaves out smaller units of habitat. Trying to mesh the data from the agency sources with field data collected by the companies has the potential for errors.

Because of the above factors, it is very difficult to discriminate between good and poor data collected for the Fish/Forestry Guidelines.

Another group of companies, which were not dealt with in this survey, are those involved in the MOF Small Business Program. These companies are usually smaller contractors who would have difficulty is affording resource inventories. This program accounts for a very small portion of cut in a Forest District. The MOF is responsible for carrying out the engineering, and silvicuiturai prescriptions, including the collection of non-timber resource information as required. The cutting plan is also reviewed by fisheries agencies as part of the referrai process.

The stream information used in this program appears to be based on either ESA mapping, or DFO catlogues. These sources provide basic information, but unless there is a field review of at least a sample of the openings by fisheries agencies, there is a potential for overlooking fish streams because of the small scale.

To avoid problems in this program, MOF staff should be given appropriate training to identify fish and fish habitat, and to classify streams, the same as company personnel, so that they can carry out the required assessments and assist the referrai process.

5,0 Conclusions

The majority of larger forest companies on Vancouver Island, and a number on the north coast were contacted regarding this survey, to which most have responded.

A large amount of data has been collected by the companies, which will be of varying usefulness in adding to the inventory information of the fisheries agencies.

There would be little difficulty in incorporating the Detailed and Recce information collected by the forest industry into the " Overview and Recce data" gathered by the fisheries agencies.

The focus of the fisheries information collected is on species distribution and habitat condition rather than on specific stock information such as fry density, overwintering survival, or smoit production and in this respect may be of more limited value to fisheries management programs based on stock assessment.

The most difficult data to deal with is the information collected under the Coastal Fish/Forestry Guidelines. The shortage of agency staff to carry out field inspections for the referral process was a factor resulting in the initiation of the Coastal Guidelines. The Coastal Guidelines are currently under review but certainly appear to be the future direction of Fish/Forest management.

However, because of the problems concerning-

- the expertise (training) of the collectors

and, - the inability to access the data other than by visual examination of hand colored maps,

the reliability and usefulness of the data to fisheries managers is variable.

To rectify this situation, there is an **urgent** need to:
- conduct training of stream classifiers (This is currently planned - but it should also include MOF personnel to bring them up to speed with other participants in the referral process.)

- develop a standardized method and form for recording and reporting the data from Fish/Forestry sampling. Ideally this data would show at least:

- where and when the data was collected (Watershed code and site identifier - distance from mouth etc.),

- who collected the data (accreditation),

- whether fish sampling occurred, and how

- what fish species were found,

- the Class of reach that was assigned, and why

- finally, the data should be in a format that is easy
     to enter (eventually) into a GIS system.

     Ideally, this data record should be instituted as soon
as possible.

Data Utility - A personal comment

     The following comments have not risen directly from
this survey, but from observations made over the years since
the initiation of the Coastal Guidelines, and should be
taken as a personal concern on the part of the author rather
than the views of others.

     A large volume of stream reach assessment information
currently exists that has been collected by personnel
generally unfamiliar with fisheries biology, without any
hard copy of data collected. It is not unreasonable to
suspect that some of this information may be viewed, by at
least some agency personnel, as being of dubious value in
managing the fisheries resource. If this issue does
materialize, a very sensitive situation could result through
the rejection of information collected in good faith.

     One suggestion may be to rely on District Fisheries
Staff to identify mapped areas that they feel confident
about, and those that they think might require re-checking.
As time goes on, opportunities to carry out verification of
the unqualified areas will have to be made to complete the
map base.

     An important point is to include an identifier on the
mapped, classified reaches for which there is a data record
to avoid writing off a potentially useful body of data.

     Failure to do so will also lead to an inability to
discriminate between the original stream classification data
collected, and that collected following the proposed
training program which intends to develop a standard of
competency for the users. There has been a lot of
information collected for areas of fish use, that would take
many years of effort by the fisheries agencies to actually
visit, if at ail. It would be a shame not to use this data
to the degree it could be.

     If some type of discriminator is not used, this
situation could lead to a distrust of the data in general,
and its usefulness will become limited. If this occurs, the
waste of the large expenditure of effort made to date could
undermine the good faith built up between the forest
industry and the government agencies.

Appendix 1. Sample of questionnaire; a page of explanation followed by a table to be filled out.

Peter Bruce
R.R.#3 Tieau Rd.
LADYSMITH, B. C.
VOR 2EO

TEL/FAX: 722-3705

Here is the questionnaire I discussed with you. The objective is to consolidate the substantial volume of fisheries resource information that has been collected by the forest industry over the years.

This information will augment that gathered by other groups, which will be collated by the Fisheries Inventory Task Force of the provincial Resources Inventory Committee.

The results will identify vital information needs concerning renewable resource management. I thank you for your participation.

The attached sheet is designed to take as little of your time as possible and yet give a basic outline of the information your company has. Please fill out the form and return it by FAX as soon as possible.

Thank you.

Peter Bruce

An explanation of each column follows; select the appropriate comment or add your own if needed.

A. AREA - Name of tenure(s) - TFL, TL, TSA, etc., and major watersheds if applicable.

B. TYPE OF RESOURCE DATA - 1) Biological - fish, aquatic   plants, etc.

                          2) Physical Habitat - streams, lakes, marine foreshores

                          3) Water Quality

                          4) Resource Use - Angler Days, catch level

C. LEVEL OF INVENTORY
                    1) Local knowledge

                    2) Air photo only

                    3) Spot sampling for fish presence for fish/forestry guidelines

                    4) Recce overview of drainage with spot sampling of fish and habitat

                    5) Detailed- extensive sampling of fish and habitat within drainage

D. SCALE AT WHICH DATA WAS PRESENTED - 1:50,000, etc.

E. COLLECTED BY: 1) Company foresters/engineer/technicians
                   2) Company biologists
                   3) Consultants

F. WHERE IS THE INFORMATION STORED
     1) in files   6) Inventory Reports
     2) stream CARDS   7) on maps
     3) cutting permits   8) local MOE offices
     4) 5 year plans   9) Other_____
     5) G.I.S.

Appendix 2. Sample of fisheries information in forest companies responding to survey questionnaire.

Company: _____

Contact Person: _____

FOREST INDUSTRY FISHERIES INVENTORY STATUS

A Areas of Tenure for Which Fisheries Information has been Collected	B Type of Resource Data	C Level of Inventory	D Scale	E Collected By	F Where is the data stored?

Company: Fletcher Challenge Canada Ltd.

Contact Person: Dave Lindsay

FOREST INDUSTRY FISHERIES INVENTORY STATUS

A Areas of Tenure for Which Fisheries Information has been Collected	B Type of Resource Data	C Level of Inventory	D Scale	E Collected By	F Where is the data stored?
TFL 46 – South Island Division (Renfrew, Caycuse, Lake Cowichan Haddon, Walbran, San Juan,	Fish, Biophysical	Recce / Detailed / spot checks, air photo	1:20,000 / 1:5,000	company biologist	files
Nanaimo Lakes –½ private/½ TFL 47	Fish, biophysical	air photo, some recce and stream class.		Company biologists	mostly Map info
TFL 47 Beaver Cove Division Bonanza Lake	Fish and habitat	air photo, spot sampling, recce (minnow traps)	1:20,000	Company biologists	maps & files
Kyuquot – TL's – Artlish Scattered TL's on West Coast –Nootka Sound	Fish & Biophysical	spotty info, detailed only on Deserted Lake, Hisnit Inlet		Company biologists	maps & files
TFL 47 Johnstone Strait Division Scattered blocks on Islands & coastal mainland	Fish & Biophysical	Recce or spot checks for guidelines (Broughton, Cracroft Call Inlet) Recce–Tom Brown,Glendale Detail–Gray Ck. (Loughborough) –Kwalate	1:20,000	Company biologists	maps & files
South Island – Private Lands – Koksilah Cowichan, McKay Lk, Parksville	Scant, fish & biophysical for Cowichan	Spotty Info.	1:50,000	Company biologists & Consultants	maps & files
Courtenay Division –private–Comox Lk	None	None			
Elk River – Private	biophysical	Most is recce. some detailed for upper Quinsam & Oyster	1:20,000 some 1:5,000		maps

Company: MacMillan Bloedel Limited

Contact Person: Bill Pollard

FOREST INDUSTRY FISHERIES INVENTORY STATUS

A Areas of Tenure for Which Fisheries Information has been Collected	B Type of Resource Data	C Level of Inventory	D Scale	E Collected By	F Where is the data stored?
TFL 44 Atleo River, Black/Darling/Michigan, Bulson Ck., Carmanah, D'Alessio Ck., Clayoquot R. (draft), Megin R., Klanawa R., Tofino Ck., Walbran Ck.	Fisheries/biophysical (marine foreshore reconnaissance has been carried out in a number of areas – not included)	Detailed	1:20,000	Company biologists	inventory reports with 1:20,000 maps, on file
Taylor R., Nootka Island, Matlset Ck., Meares Is., Lease Lot 617 – Kennedy River, McBride Ck., Flores Island	"	Recce	1:20,000	Company biologists	inventory reports with 1:20,000 maps, on file
All of TFL 44	"	fish/forestry stream classification (ongoing)	1:5,000 1:20,000	Company personnel	In cutting permit files and on divisional and 5 year maps
All of TFL 39	"	"	"	"	"
TFL 39 McClinton & Ira Cks, Mamin R., Memekay R., Namu area, Pam/Sheila & Marie Lks., Security & Jason Cks., Survey Ck., Yakoun Lk & Tributaries Kermode Ck.	"	Detailed	1:20,000	Company biologists	Inventory reports with 1:20,000 maps on file.
Tsitika Watershed, Stewart Lk., Kelsey Bay Division, Hecate Woodlands, Haans and Sachs Cks., Awun/Datlamen & Yakoun	"	Recce	1:20,000	Company biologists	"
Vancouver Island, QCI and Coastal mainland – scattered TL's	Fisheries/biophysical	Recce – Shawnigan Div	1:20,000	Company biologists	report & maps
		Fish/forestry guidelines (ongoing)	1:5,000 1:20,000	Company Personnel	Divisional & 5 year plan maps

Company: WESTERN FOREST PRODUCTS LTD.

Contact Person: Brian Clark

FOREST INDUSTRY FISHERIES INVENTORY STATUS

A Areas of Tenure for Which Fisheries Information has been Collected	B Type of Resource Data	C Level of Inventory	D Scale	E Collected By	F Where is the data stored?
TFL 24 – Block 1 & Block 2 Moresby Island (Block 1 currently not active)	1, 2 – DFO catalogues of salmon streams & spawning escapements 1990-91 fish trapping in major streams in block 2 Coastal Fish/Forestry Guidelines	1, 3, 4	1:5000 operational 1:20 000 Dev. Plans	1, 3	Maps & reports at operation, Corporate office and agencies (MOF, MOE, DFO) 1, 4, 7, 8
TFL 25 – Block 2 Loughborough Inlet (Heydon Bay, Fraser Bay, Stafford & Apple Rivers) (Apple River inactive, Dev. Plans for Fraser /Stafford, Heydon – active)	1, 2 – DFO catalogues Coastal Fish/Forestry Guidelines	1, 3, 4	1:20 000 Dev. Plans	1, 3	Maps at Corporate Office & agencies (MOF, MOE, DFO) 1, 4, 7, 8
TFL 25 – Block 5 (Midcoast)	1, 2 – DFO catalogues, Fish Trapping in Crab River Coastal Fish/Forestry Guidelines	1, 2 DFO with air photo enhancements	1:20 000 Dev. Plans 1:15 000 inventory maps	1, 3	Maps & Reports at Corporate Office and agencies (MOF, MOE, DFO) 1, 4, 7, 8
F.L. A19237 – Nootka Island (Doman Industries)	1, 2 – DFO catalogues Coastal Fish/Forestry Guidelines	1, 2	1:20 000 Dev. Plans	1, 3	Maps only at Operation, Corporate Office & agencies (MOF, MOE, DFO) 4, 7, 8
F.L. A16845 (Mid Coast) Kimsquit River, Washwash/Tzeo Rivers Milton River, Ellerslie Lake, McNair Creek Piper/Rhind (Doman Industries)	1, 2 – DFO catalogues Coastal Fish/Forestry Guidelines	1	1:20 000 Dev. Plans	1, 3	Operation, Corporate Office, All agencies (MOF, MOE, DFO) 4, 7, 8

FOREST INDUSTRY FISHERIES INVENTORY STATUS

A Areas of Tenure for Which Fisheries Information has been Collected	B Type of Resource Data	C Level of Inventory	D Scale	E Collected By	F Where is the data stored?
TFL 41 - Major watersheds including: Kitimat River (upper portion), Wedeene River, Chist Creek, Dals River, Kildala River, Kemano River, Kitlope River and its tributaries	fish habitat and use. Most rivers were classified under MoF, ESA classification system Included reaches, numbers, species, etc.	local knowledge, air photo, spot sampling, recce.	1:50,000 & 1:100,000	Consultants and maps.	Inventory report ESA reports. Copies at Regional MoF office at Smithers. We have copies also.

Company: __Fletcher Challenge Canada Ltd__

Contact Person: __Gary Lawson - Sandspit QCI__

FOREST INDUSTRY FISHERIES INVENTORY STATUS

A Areas of Tenure for Which Fisheries Information has been Collected	B Type of Resource Data	C Level of Inventory	D Scale	E Collected By	F Where is the data stored?
TFL 47 Block 18 Watershed: Copper River Tribs, Kagan Penninsula : Government Creek & tribs : Deena River tribs Forest Licence FLA16870 Watershed: Creeks flowing into Long Inlet, Trounce Inlet Skidigate Channel Timber Licences 189, 207, 253 Watershed: same as FLA16870 plus Miller Creek	physical habitat, stream reach classification as per Coast Fish Forestry Guidelines	spot sampling - visual classification with some baited minnow traps in areas that weren't obvious	1:5,000	Company Engineer	On 1:5,000 maps which are submitted to agencies as part of cutting permit applications

Company: Weldwood of Canada Ltd.

Contact Person: Bill Mack

FOREST INDUSTRY FISHERIES INVENTORY STATUS

A Areas of Tenure for Which Fisheries Information has been Collected	B Type of Resource Data	C Level of Inventory	D Scale	E Collected By	F Where is the data stored?
Mid Coast Forest District					
FL A16849 – Security Bay, Hardy Inlet, Moses Inlet	Biological, physical, water quality	local knowledge (MoE/DFO & Company)	1:20,000	Company and DFO/MoE Personnel	5 year plans, MoE offices, DFO Offices
Kingcome Forest District					
Gilford Island – report prepared 1981	Biological, physical	air photo, spot sampling, Recce, detailed sampling	1:20,000	Consultants	Prepared report – data used for 5 year plans
Thompson Sound – report prepared 1972	biological, physical	local knowledge, air photo, recce	1:20,000	MoF/MoE/DFO/ Company Personnel	Prepared report – "Resource Folio" – Data used for 5 year plans.

FOREST INDUSTRY FISHERIES INVENTORY STATUS

A Areas of Tenure for Which Fisheries Information has been Collected	B Type of Resource Data	C Level of Inventory	D Scale	E Collected By	F Where is the data stored?
TFL 6, TFL 25 Blocks 1, 3, 4, FL A19240 - information on all major watersheds and many minor ones.	Fish species presence/distribution	local knowledge, review of existing data(i.e. MoE,DFO) spot sampling for fish presence.	1:20,000	Consultant: Heather Jones	stored in a file and on maps at NDA office of Western Forest Products Also mylar overlays of stream classes for use with 5 year plans are with all agencies who review plans.

Company: __International Forest Products__

Contact Person: __Richard Slaco__

FOREST INDUSTRY FISHERIES INVENTORY STATUS

A Areas of Tenure for Which Fisheries Information has been Collected	B Type of Resource Data	C Level of Inventory	D Scale	E Collected By	F Where is the data stored?
VANCOUVER ISLAND					
TFL 54, Clayoquot Sound	inventory, stream class	air photo, Recce, detailed sampling	1:50,000	Company biologists	files, maps
FLA19235 Mooyan Bay area	part inventory, stream class	spot sampling	1:20,000	"	"
TL 182 Hoiss Creek	part inventory, stream class	Recce	1:10,000	"	"
TL259 Hishit Inlet	"	Recce	1:10,000	"	"
TL 193 Kleeptee Creek	"	spot sampling	1:10,000	"	"
FLA19238 Clean Creek	stream class	spot sampling	1:20,000	Company Foresters, Engineers	maps
FLA19232 Kyuquot Sound (west)	stream class	spot sampling	1:20,000	"	maps
Menzies Bay area (east)	stream class	spot sampling	1:20,000	"	maps
LOWER COAST					
FLA19224 Homathko River	stream class	spot sampling	1:20,000	"	maps
FLA19220 Jervis Inlet Area	stream class	spot sampling	1:20,000	"	maps
TFL 45 Knight Inlet area	part inventory, stream class	spot sampling, detailed sampling	1:50,000	Company biologists	maps, files

Company: Canadian Pacific Forest Products

Contact Person: Brian McCutcheon

FOREST INDUSTRY FISHERIES INVENTORY STATUS

A Areas of Tenure for Which Fisheries Information has been Collected	B Type of Resource Data	C Level of Inventory	D Scale	E Collected By	F Where is the data stored?
TFL 19 FL A19231	Physical habitat of streams	Local Knowledge, Spot sampling	1:20,000	Company Foresters & Engineers (MoE Tech)	Stream cards, FFG Stream Class Maps

Company: Canadian Forest Products Ltd.

Contact Person: John Chittick

FOREST INDUSTRY FISHERIES INVENTORY STATUS

A Areas of Tenure for Which Fisheries Information has been Collected	B Type of Resource Data	C Level of Inventory	D Scale	E Collected By	F Where is the data stored?
TFL 37 Nimpkish	Fish, Physical Habitat, Resource Use	GIS Stream Classification, Recce	N/A	Company foresters & biologists, Consultants	GIS DFO reports
FL A11923 Artlish/Tahsish TL T0716 Atluck Tahsish	Fish, Physical Habitat	GIS Stream Classification, Recce	N/A	Company Foresters & Biologists, Consultants	GIS
TL T0816 LeMare Lake	Fish, Physical Habitat	Recce	1:20,000	Company Foresters	Maps

FOREST INDUSTRY FISHERIES INVENTORY STATUS

A Areas of Tenure for Which Fisheries Information has been Collected	B Type of Resource Data	C Level of Inventory	D Scale	E Collected By	F Where is the data stored?
Forest Licences A16872 - Naden A16869 - Husby Naden Harbour area, which includes the: . Naden River . Davidson Creek . Starley Creek . Lignite Creek . Roy Creek . NoName Creek Also Hanes and Cave creeks which drain to the west coast of the Q.C.I.'s.	biological: Fish species, also notes on physical habitat (eg. slope, substrate, surrounding timber type & water quality and surrounding terrain layout	Detailed sampling in all areas of drainage. Using minnow traps with overnight soak. I record species nose to fork length, numbers of fish, water temperature, slope, substrate.type, and size, average depth and wetted width.	1:5,000	environmental Technician	. field notes . maps . cutting permits . MoF, MoE, . DFO in Queen Charlotte City.