

**The Babine River Watershed: An Annotated  
Bibliography of Inventory, Monitoring, Research  
and Planning Reports**

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## **Introduction**

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This bibliography was completed to provide an information base to the Babine Watershed Monitoring Group. This group is being established to coordinate monitoring of resource management plans and activities in the Babine River watershed, in North Central BC.

The Babine River watershed is recognized internationally for its high value natural resources. The Babine River itself is known for its superb steelhead fishery, and is a substantial producer of other fish species. The Babine sockeye salmon run supports a commercial fishery at the mouth of the Skeena River. The area sustains wildlife species including a large grizzly bear population. The Babine watershed has extensive areas of commercially important forests, and is also valued for its non-timber forest products. High quality recreational opportunities and important cultural heritage values are present in the area.

When timber extraction began in the area, potential for resource use conflicts became apparent. Research and planning projects were designed to inventory the resources and develop strategies for sustaining values while providing land and resource use opportunities. Many of the reports and publications resulting from these projects are included in this bibliography.

Strategic land use planning processes, usually initiatives of the BC provincial government, have evolved over the years. Initial planning was concerned with potential access routes on the north and east side of the Babine River. The first formal planning process resulted in the Local Resource Use Plan (LRUP), which encompassed a corridor along the length of the Babine River. This was followed by the Kispiox and Bulkley Land and Resource Management Plans (LRMPs), and the Babine and Nilkitkwa Landscape Unit Plans (LUPs). In 2004, the West Babine Sustainable Resource Management Plan (SRMP) was finalized. Descriptions of these systematic planning processes are available on the Internet or through related government ministries. Many of the resultant planning documents are cited in this bibliography.

## **Sources of Information**

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This bibliography lists selected documents related to natural resource management in Bulkley and Kispiox TSA portions of the Babine River watershed. Documents were obtained from natural resource professionals and organizations in government and private industry. On-line databases and local libraries were searched for applicable material. The original intent was to compile a listing of monitoring and research reports pertaining to the watershed. The scope was expanded when it became apparent that the bibliography should include all available inventory, monitoring, research and planning documents with relevance to the subject area.

Annotations are provided for a number of the documents. Documents not available for retrieval are noted as "not seen". These papers are included in the bibliography but there are no annotations.

Publications listed in the bibliography are available at various locations. They can be obtained by contacting the agencies, libraries, or individuals noted. Some citations include agency file numbers for ease of retrieval. Many are also available on-line, with current Internet addresses included. Collected paper copies have been filed with the Ministry of Sustainable Resource Management, in Smithers, BC, and electronic copies are on a CD that accompanies this report. Reports on the CD are marked with a (CD) in the citation.

Operational planning documents and reports dealing with cutblocks or road segment level assessments of fish habitat, wildlife habitat, archaeology, and watershed assessments are generally not included in this bibliography. These documents are available from Forest Company and BC Timber Sales offices.

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## 1.0 Archaeology

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- Mohs, G. 1974. **Babine Lake archaeological survey project.**  
Area: Babine Lake  
Report Location: MOF, Smithers, Skeena Stikine FD; MSRM, Victoria, Archaeology Branch (not seen)
- Mohs, G. 1976. **Babine Lake archaeological survey project.**  
Area: Babine Lake  
Report Location: MOF, Smithers, Skeena Stikine FD; MSRM, Victoria, Archaeology Branch (not seen)
- Albright, S.L. 1987. **Archaeological evidence of Gitxsan and Wet'suwet'en history.**  
Area: Babine Watershed  
Report location: Gitxsan Treaty Office Library, Hazelton (not seen)
- Wilson, I.R. 1994. **Archaeological assessment proposed forestry haul road crossing Babine River and Sam Green Creek.**  
Area: Sam Green Creek  
Report Location: MOF, Smithers, Skeena Stikine FD; MSRM, Victoria, Archaeology Branch (not seen)
- Wilson, I.R. 1994. **Archaeological inventory and impact assessment, Kispiox TSA, the Hazeltons, Babine River and Sam Green Crossings, and CP 413 Blocks 47 and 48.**  
Area: Several  
Report Location: MOF, Smithers, Skeena Stikine FD; MSRM, Victoria, Archaeology Branch (not seen)
- Wilson, I.R. 1994. **Archaeological overview Kispiox TSA, the Hazeltons, Lower Shedin Creek Area.** Heritage Inspection Permit 1994-39.  
Area: Shedin Creek  
Report Location: MOF, Smithers, Skeena Stikine FD; MSRM, Victoria, Archaeology Branch (not seen)
- Wilson, I.R. 1995. **Archaeological inventory and impact assessment, Kispiox TSA, the Hazeltons, proposed Babine River Crossing, Option B.**  
Report Location: MOF, Smithers, Skeena Stikine FD; MSRM, Victoria, Archaeology Branch (not seen)
- Millenia Research. 1995. **Overview mapping of the archaeological resource potential in the Bulkley and Kispiox LRMP areas.** 72 pages.  
Area: Babine Watershed  
Report Location: MOF, Smithers, Skeena Stikine FD

This project produced two datasets that were mapped at a scale of 1:250,000. Dataset 1 gives prehistoric archaeological resource potential, and dataset 2 contains the locations of known archaeological sites. It is recommended that traditional use studies be completed to complement this report.

Anfossi et al. 1999. **Archaeological inventory and impact assessment for Skeena Cellulose Inc, forestry developments north and west of New Hazelton.** Heritage Inspection Permit 1998-093 (not seen).  
Area: Shedin Creek

A summary of this report is given in "The past into the present" (Rabnett 2000). This report describes the Atna Pass Trail, which extended from Kisgegas to Bear Lake. Culturally modified trees were found during this study and the Shedin forest road was moved as a result.

Howe, D.G. 2000. **Proposed forestry developments Nilkitkwa Lake east side: Bulkley Cassiar Forest District archaeological impact assessments and overview assessment.** Heritage Inspection Permit 1999-331.  
Area: Nilkitkwa Lake  
Report location: MOF, Smithers, Skeena Stikine FD; MSRM, Victoria, Archaeology Branch

Rabnett, K., Suskwa Research. 2000. **The past into the present: Cultural heritage review of the Bulkley Timber Supply Area.** 76 pages.  
Area: Babine East  
Report Location: MOF, Smithers, Skeena Stikine FD; MSRM, Smithers, Babine monitoring files

The objective of this project was to review known archaeological resources, traditional use studies and sites, and ethnographic references within and adjacent to the Bulkley TSA and to compile the findings. The author stresses that this report is not an archaeological overview assessment, nor an archaeological inventory or traditional use study. The report describes the study area and presents an ethnographic background before providing the cultural heritage resource assessment. There are some references to studies in the Babine watershed, and some information on traditional trails that traversed the Babine area. Recommendations for adequate management of cultural heritage resources in the TSA are given.

Wilson, I.R. 2000. **Archaeological inventory and impact assessment, Skeena Cellulose Inc. forestry developments north and west of New Hazelton, BC.**  
Report Location: MOF, Smithers, Skeena Stikine FD; MSRM, Victoria, Archaeology Branch (not seen)

Ball, E. 2001. **Insightful speculations: petroglyph at Anlagasmde'ek.** 24 pages.  
Area: Babine River  
Report Location: BC Parks, Smithers resource atlas – Babine River box

This report describes a petroglyph on a rock in the Babine River, and includes some discussion of its possible history and meaning. It also presents some First Nations history of the area.

Howe, D.G. 2001. **DFO Babine River fish hatchery road – archaeological impact assessment.** Heritage Inspection Permit 2000-282.  
Area: Babine Fish Hatchery  
Report location: MOF, Smithers, Skeena Stikine FD; MSRM, Victoria, Archaeology Branch (not seen)

Matthews, D., & Wilson, I.R. 2001. **Archaeological inventory and impact assessment, Skeena Cellulose Inc. proposed forestry developments near New Hazelton.** Heritage Inspection Permit 2000-186.  
Report location: MOF, Smithers, Skeena Stikine FD; MSRM, Victoria, Archaeology Branch (not seen)

## 2.0 Berries

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Haeussler, S. 1987. **Ecology and berry chemistry of some food plant species used by Northwest British Columbia Indians. Opinion Evidence for: *Delgamuukw et al v. the Queen*.**

Area: General

Report Location: Gitxsan Treaty Office library (not seen)

Burton, P., Burton, C., & McCulloch, L. 2000. **Exploring options for the management of wild berries in the Kispiox Forest District: Phase one of a pilot project focusing on the Suskwa River area.** 52 pages plus maps and appendices.

Area: Babine West

Report Location: Symbios Research and Restoration, Phil Burton; CD. Associated papers also on CD.

This project used Gitxsan traditional knowledge to identify traditional berry harvesting areas, focusing on the Suskwa River area, but extending into the Babine watershed. The species included were: black huckleberry, oval-leaved blueberry, soapberry, and high-bush cranberry. Habitat descriptions and habitat capability maps were produced for each of the species. Draft management guidelines designed to protect, maintain or enhance berry-producing areas are presented.

Oikos Ecological Research. 2001. **Exploring options for the management of wild berries in the Kispiox Forest District: Phase two of a pilot project focusing on the Suskwa River area. For Prince Rupert Forest Region** (not seen).

Area: Babine West

Wintergreen Consultants. 2001. **Footsteps among the berries: Field reconnaissance of selected Gitxsan huckleberry sites: Case study summaries. For Prince Rupert Forest Region** (not seen).

Area: Babine West

## 3.0 Cultural Heritage

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Brown, W. 1826. **Report of the Babine Country. Hudson's Bay Company Archives. Post Records HBCA B 11/e/2 fol. 2,3,4. Winnipeg, Man: HBCA.**

Report Location: Gitxsan Treaty Office library, Hazelton (not seen)

Morice, A.G. 1893. **Notes Archaeological, Industrial and Sociological on the Western Dene with an Ethnographic Sketch of the Same. Transactions of the Canadian Institute.**

Report Location: Gitxsan Treaty Office library, Hazelton (not seen)

Helgerson, H. 1906. **Department of Marine and Fisheries, Thirty-Eighth Annual Report. Ottawa, Ont.**

Report Location: DFO Stock Assessment library, Prince Rupert (not seen)

Hackler, J.C. 1958. **Factors Leading to Social Disorganization Among The Carrier Indians at Lake Babine.** MA Thesis, San Jose State College.

Area: Babine Lake

Report Location: Gitxsan Treaty Office library, Hazelton (not seen)

Turnbull, C.J. 1966. **Report on Moricetown and the Babine Lake.**

Report Location: Canadian Museum of Civilization, Ottawa; Gitxsan Treaty Office library, Hazelton (not seen)

- Kobrinsky, V. 1973. **Ethnohistory and Ceremonial Representation of Carrier Social Structure.** PhD Thesis, UBC.  
Report Location: Gitxsan Treaty Office library, Hazelton (not seen)
- Morice, A.G. 1978. **The History of the Northern Interior of British Columbia.** Toronto, Ont: W. Briggs.  
Report Location: Gitxsan Treaty Office library, Hazelton (not seen)
- Gottesfeld, L.M.J., & Anderson, B. 1988. **Gitksan traditional medicine: herbs and healing.** *Journal of Ethnobiology*, 8(1), 13-33.  
Report Location: NWCC library, Terrace (not seen)
- Newell, D. 1993. **Tangled webs of history: Indians and the law in Canada's Pacific Coast fisheries.** Toronto, Ont: University of Toronto Press.  
Report Location: Gitxsan Treaty Office library, Hazelton (not seen)
- Gottesfeld, L.M.J. 1994. **Conservation, territory, and traditional beliefs: an analysis of Gitksan and Wet'suwet'en subsistence, Northwest British Columbia, Canada.** *Human Ecology*, 22 (4).  
Report Location: NWCC library, Terrace (not seen)
- Rabnett, K., Suskwa Research. 1998. **Babine Trail Improvement Project assessment report.**  
Report Location: MOF, Smithers, Skeena Stikine FD (not seen)
- This report includes an historical overview of the Babine trail; describes trail features; and assesses problems, prescriptions, and costs involved in trail improvement.
- Rabnett, K., Suskwa Research. 1998. **Babine Trail: Draft Management Plan.**  
Report Location: MOF, Smithers, Skeena Stikine FD (not seen)
- This plan describes cultural heritage values and establishes heritage, First Nations, recreation, and landscape objectives in the area of the Babine Trail.
- Rabnett, K., Suskwa Research. 2000. **Cultural heritage resources adjacent to Nilkitkwa Lake.**  
Report Location: MOF, Smithers, Skeena Stikine FD (not seen)
- Rabnett, K., Suskwa Research. 2000. **Cultural heritage within portions of the North Nilkitkwa Chart.**  
Report Location: MOF, Smithers, Skeena Stikine FD; Gitxsan Treaty Office library, Hazelton (not seen)
- Rabnett, K., Suskwa Research. 2000. **Cultural heritage within portions of FL A16829 Kotsine Chart, Skeena Cellulose Inc, Smithers Operations.**  
Report Location: MOF, Smithers, Skeena Stikine FD; Gitxsan Treaty Office library, Hazelton (not seen)
- Rabnett, K., Suskwa Research. 2001. **Nilkitkwa Lake cultural heritage survey.**  
Report Location: MOF, Smithers, Skeena Stikine FD (not seen)
- Rabnett, K., Suskwa Research. 2001. **Gitksan cultural heritage within portions of the Shelagyote Chart.**  
Report Location: MOF, Smithers, Skeena Stikine FD; Gitxsan Treaty Office library, Hazelton (not seen)
- Rabnett, K., Holland, K., & Gottesfeld, A. 2001. **Dispersed traditional fisheries in the upper Skeena watershed. Hazelton, BC: Gitksan Watershed Authorities.**  
Report Location: Gitxsan Treaty Office library, Hazelton (not seen)



Rabnett, K., Suskwa Research. 2002. **Cultural heritage resource recce's and CMT surveys, SBFEP Bulkley Cassiar.**  
Report Location: MOF, Smithers, Skeena Stikine FD; Gitxsan Treaty Office library, Hazelton (not seen)

Rabnett, K., Suskwa Research. 2002. **Wud'at'u'ten cultural heritage adjacent to Nilkitkwa Lake and upper Babine River.**  
Report Location: MOF, Smithers, Skeena Stikine FD; Gitxsan Treaty Office library, Hazelton (not seen)

Rabnett, K., Suskwa Research. 2002. **Wud'at'u'ten Cultural Heritage Backgrounder.**  
Report Location: DFO Stock Assessment library, Prince Rupert (not seen)

This report summarizes Wud'at'u'ten cultural heritage interests and values in the area of the DFO counting fence and camp.

#### 4.0 Fisheries – All species

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DFO. 1930-60. **Department of Marine and Fisheries, Annual Narrative Reports, Babine-Morice Area, District #2, BC.**  
Area: Babine Watershed  
Report Location: DFO Stock Assessment library, Prince Rupert (not seen)

Morrell, M. 1985. **The Gitxsan and Wet'suwet'en fishery in the Skeena River system.**  
Hazelton, BC: Gitxsan-Wet'suwet'en Tribal Council.  
Area: Babine Watershed  
Report Location: Gitxsan Treaty Office library, Hazelton (not seen)

DFO. 1991. **Stream summary catalogue Subdistrict # 4D Smithers (Volume 1), Upper Skeena-Babine.**  
Area: Babine Watershed  
Report Location: MWLAP library, Smithers; DFO Stock Assessment library, Prince Rupert

This report summarizes available fisheries information on streams in the area of concern. This information is available on-line at the Fish Information Summary System (FISS) and Fish Wizard websites.

Roulston, R. 1992. **Summary report of fish collecting activities for the production characteristics of the Babine River and its tributaries, 1987.** (BC Fisheries project report No. FAIU 09). Victoria, BC: Recreational Fisheries Branch. (not seen).  
Area: Babine Watershed

DeGisi, J.S. 2000. **BC Parks Skeena District, fisheries information summary. Volume 3, management strategies supplement, and volume 4 - park summaries supplement.**  
Area: Babine River  
Report Location: BC Parks, Smithers

These documents provide a detailed overview of the fisheries resources within the Babine River Corridor Park. Volume 3 presents strategies to guide management of impacts and use of aquatic features within the park. Volume 4 describes fisheries related resources including: drainage patterns, fish populations, species at risk, and aquatic features (access, recreational use, and commercial use). Issues, information availability, and immediate information needs are discussed. An earlier Volume 1 provides general information regarding the management of impacts and uses of park aquatic systems, and additional description of sources and methods.

Gottesfeld, A.S., Rabnett, K.A., & Hall, P.E. 2002. **Conserving Skeena fish populations and their habitat**. Hazelton, BC: Skeena Fisheries Commission. 281 pages.  
Area: Babine Watershed  
Report Location: MOF, Smithers, Skeena Stikine FD

This report represents stage 1 of the Skeena Watershed Fish Sustainability Process (WFSP). A biophysical profile of the Skeena watershed is given including an overview of the status of salmon and fresh water fish species. More detailed profiles were developed for 11 sub-watersheds including the Babine River. These profiles included environmental setting, fisheries values and resources, development activities, and management issues. The WFSP is designed to help all fish conservation interests in the watershed work more effectively in the future. A good overview report.

Schell, C. 2004. **A review of the fisheries resources of Nichyeskwa Creek (WSC 480-370100)**. 17 pages.  
Area: Nichyeskwa Creek  
Report Location: Babine River Foundation; MSRM, Smithers, Babine monitoring files

This review of the fisheries resources of Nichyeskwa Creek shows that this is one of the most important tributaries to the Babine River. Its non-glacial origins are an important factor. The Nichyeskwa receives about 12% of the spawning steelhead in the Babine River system, with a larger percentage of the fry and smolts. It also is a significant coho producer, with small runs of chinook, pink and sockeye. The upper portion of the mainstem has the highest quality habitat. The many small tributaries contain rainbow (steelhead) and may contain coho. These creeks are the most vulnerable to poor logging practices.

## 5.0 Fisheries – Angler Survey

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Morten, K.L., & Parken, C.K., Cascadia Natural Resource Consulting. 1998. **A survey of upper Babine River steelhead anglers during the classified waters period of 1997**. (Skeena Fisheries Report 114). 72 pages.  
Area: Babine River  
Report Location: MWLAP, Smithers, library and website  
<http://wlapwww.gov.bc.ca/ske/fish/>

Recreational anglers' demographics, angling methods, and steelhead catch rates were surveyed in this study. Anglers' perceptions of the number of anglers and their access methods were determined. Perceptions were found to differ between resident and non-resident anglers. The catch rate was 1.15 steelhead per rod day.

## 6.0 Fisheries – Bull Trout

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Giroux, P.A. 2001. **Aspects of the life history of Shelagyote River adult bull trout (*Salvelinus confluentus*)**. (Skeena Fisheries Report 131). 22 pages.  
Area: Shelagyote River  
Report Location: MWLAP, Smithers, river files (Shelagyote River) and website  
<http://wlapwww.gov.bc.ca/ske/fish/>

The Shelagyote River, a major tributary to the Babine River, is currently inaccessible by road and is scheduled for forestry development in the near future. To assist with the planning process, and to address and possibly protect fisheries resources, bull trout studies were initiated in 2000. Adult Shelagyote River bull trout were sampled over two seasons by angling during suspected migration and over-wintering periods. A total of 38 bull trout were captured and handled over the course of the study. Staging and pre- and post-spawn habitats were identified; however, attempts to identify spawning locations were inconclusive. Bull trout immigration from the Babine River, staging, spawning and emigration were related to river water temperatures and

associated dates are presented. Shelagyote River bull trout spawning migrations appeared to be consistent with other studies that observed movement to spawning locations in association with water temperatures of 9 - 10°C. Management options for planning and population conservation are discussed.

Triton Environmental Consultants Ltd. 2003. **Bull Trout (*Salvelinus confluentus*) inventory in the Shelagyote Watershed.** (WSC 480-195700). 25 pages.  
Area: Shelagyote River  
Report Location: MWLAP, Smithers, river files (Shelagyote River)

The goals of this project were to: 1) determine bull trout distribution in the watershed, 2) document juvenile bull trout rearing areas, and 3) collect life history information on adult bull trout. Bull trout were the most widely distributed fish species in the watershed. The best habitat was found to be in the lower 9 kilometres of the river, but important habitats were found throughout the watershed. Recommendations for bull trout management in the watershed are provided.

## 7.0 Fisheries – Chinook

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Shepherd, B.G. 1975. **Upper Skeena chinook stocks: evaluation of the Bear - Sustut, Morice and lower Babine stocks.**  
Area: Babine River  
Report Location: DFO Regional Library, Vancouver (not seen)

Peacock, D., Spilsted, B., & Snyder, B. 1997. **A review of stock assessment information for Skeena River chinook salmon.** (PSARC Working Paper S96-7).  
Report Location: DFO Stock Assessment library, Prince Rupert (not seen)

## 8.0 Fisheries – Coho

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DFO. 1999. **Upper Skeena adult coho surveys.** 7 pages.  
Area: Babine Watershed  
Report Location: DFO, Vancouver (not seen)

## 9.0 Fisheries – Rainbow trout

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Narver, D.W. 1975. **Age and size of rainbow trout at the outlet of Babine Lake and in Babine River.** (Fisheries Research Board of Canada Manuscript Report Series No. 1350). 11 pages.  
Area: Babine River, Nilkitkwa Lake  
Report Location: MWLAP library, Smithers

This report documents the age and size composition of rainbow trout in the Babine River, Nilkitkwa Lake and North Arm, Babine Lake in 1969. It sets a pre-spawning channel development baseline for this species in these waters. It was thought that spawning channel development would increase food availability for rainbow trout, which could change their size or abundance.

## 10.0 Fisheries – Salmon

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Aro, K.V. 1961. **Summary of salmon enumeration & sampling data, Babine River counting weir, 1946-1960.** 63 pages.

Area: Babine River

Report Location: MWLAP library, Smithers

This is primarily a data report that presents the daily and annual counts of sockeye, spring, pink, coho, chum, and steelhead from 1946-1960 at the Babine River counting fence. More detailed information is also presented for sockeye, including length, sex and fecundity. There is some analysis of the data.

Jordan, F.P. 1967. **Summary of salmon enumeration & sampling data - Babine River counting fence 1961-1966.** (Fisheries Research Board of Canada Technical Report 24).

Area: Babine River

Report Location: MWLAP library, Smithers

This report is a continuation of Aro (1961). It presents daily and annual counts of sockeye, spring, pink, coho, chum and steelhead from 1961-1966 at the Babine River counting fence. More detailed information is also presented for sockeye, including length, sex and fecundity. There is some analysis of the data.

Jordan, F.P., & Smith, H.D. 1972. **Summary of salmon counts and observations from the Babine River counting fence 1967-71.** (Fisheries Research Board of Canada Technical Report 331).

Area: Babine River

Report Location: DFO, Prince Rupert, North Coast Division (not seen)

Hancock, M.J., Leaney-East, A.J., & Marshall, D.E. 1983. **Catalogue of salmon streams and spawning escapements of statistical area 4 (Upper Skeena River).**

(Canadian Data Report Of Fisheries & Aquatic Sciences 394).

Area: Babine Watershed

Report Location: DFO, Prince Rupert, North Coast Division (not seen)

Pendray, T. 1986. **Babine/Nichyeskwa/Nilkitkwa survey - August/85 summary of fish sampling results.** 5 pages plus map.

Area: Babine, Nichyeskwa & Nilkitkwa

Report Location: DFO (not seen)

Jakubowski, M.J. 1990. **A review of the Babine River counting fence biological program 1987-1988.** (Canadian Data Report Fisheries and Aquatic Sciences 792). 96 pages.

Area: Babine River

Report Location: MWLAP, Victoria (not seen)

DFO. Updated annually. **Babine River counting fence.**

Area: Babine River

Report Location: Website <http://www.pac.dfo-mpo.gc.ca/northcoast/counts/babine/babine.htm>

This website posts the annual counts at the Babine River counting fence. It currently includes daily and annual data from 1990 to 2003 for chinook, coho, pink and sockeye. The counting fence is located one kilometre downstream of Nilkitkwa Lake, which is 360 kilometres from the commercial fishing boundary at the mouth of the Skeena River. The counting fence was established in 1946 and is used to provide an accurate escapement count of sockeye and other species of salmon entering Babine Lake, where in excess of 90% of the Skeena River sockeye are produced.

## 11.0 Fisheries – Sockeye

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Pritchard, A.L. 1946. **Sockeye salmon migration in Babine River and Lake as indicated by tagging at Babine fence in 1946.** Fisheries Research Board of Canada. 8 pages plus appendix.

Area: Babine River

Report Location: MWLAP, Victoria (not seen)

Pritchard, A.L. 1947. **Sockeye salmon migration in Babine River and Lake as indicated by tagging at Babine fence in 1947.** Fisheries Research Board of Canada. 8 pages plus appendix.

Area: Babine River

Report Location: MWLAP, Victoria (not seen)

Johnson, W.E. 1956. **On the distribution of young sockeye salmon (*Oncorhynchus nerka*) in Babine and Nilkitkwa lakes, BC.** *Journal of the Fisheries Research Board of Canada*, 13, 695-708. 16 pages.

Area: Nilkitkwa and Babine Lakes

Report Location: DFO, Smithers

In this study the distribution of young sockeye salmon (age 0) was not even, with 67 – 88% of this age class of fish occurring in 11% of the lake area. The mean size was smaller here than in the more sparsely populated lake areas. This was likely the result of the distribution of the spawning parent population and limited dispersal of young fish from their points of entrance into the lake as fry.

Clarke, W.C., & Smith, H.D. 1972. **Observations on the migration of sockeye salmon fry in the lower Babine River.** *Journal of the Fisheries Research Board of Canada*, 29, 151-159.

Area: Babine River

Report Location: DFO, Vancouver, Habitat Management Division (not seen)

Smith, H.D., & Takagi, K. 1973. **Timing and rate of migration of Babine sockeye stocks through the Skeena and Babine R.** (Fisheries Research Board of Canada Technical Report 419). 17 pages plus figures and tables.

Area: Babine River

Report Location: DFO, Smithers

This report considers the rate of travel of sockeye through the Skeena and Babine Rivers and the order of passage according to their stream of origin. Variations in rate of travel and order of passage are discussed in relation to timing of spawning, body size, individual fish, and within year and between year differences. Variables influencing the migration rates are also discussed.

Smith, H.D., & Jordan, F.P. 1973. **Timing of Babine Lake sockeye salmon stocks in the North Coast commercial fishery as shown by several taggings at the Babine tagging fence and rates of travel through the Skeena and Babine Rivers.**

(Fisheries Research Board of Canada Technical Report 418).

Area: Babine River

Report Location: DFO Stock Assessment library, Prince Rupert (not seen)

Levy, D.A., & Hall, K.J. 1985. **A review of the limnology and sockeye salmon ecology of Babine Lake.** (Westwater Technical Report 27). Vancouver, BC: Westwater Research Center, UBC.

Area: Babine Lake

Report Location: DFO Stock Assessment library, Prince Rupert (not seen)

McKinnell, S., & Rutherford, D. 1994. **Some sockeye salmon are reported to spawn outside the Babine Lake watershed in the Skeena drainage.** (PSARC Working Paper S94-11). 52 pages.  
Area: Skeena Watershed  
Report Location: DFO Stock Assessment library, Prince Rupert (not seen)

Wood, C., Rutherford, D., Bailey, D., & Jakubowski, M. 1997. **Babine Lake sockeye salmon: Stock status and forecasts for 1998.** (CSAS Research Document 97/45). Nanaimo, BC: Fisheries and Oceans Canada, Pacific Biological Station.  
Area: Babine Lake  
Report Location: DFO Stock Assessment library, Prince Rupert (not seen)

## 12.0 Fisheries – Steelhead

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Taylor, G.D. 1968. **Report on the preliminary survey of the Skeena River drainage streams.** 42 pages.  
Area: Babine Watershed  
Report Location: MWLAP library, Smithers

This paper is a compilation of information known about steelhead in the Skeena River drainage at the time. Drainages included are: the Morice, Bulkley, Kispiox, Copper (Zymoetz) and Babine. It covers the commercial catch of steelhead, enumeration and tagging, analysis of the catches on the drainages covered, helicopter counts and gut sampling. The author reports that the information available was not sufficient to support management regimes for distinct stocks.

Narver, D. 1969. **Age and size of steelhead trout in the Babine River, British Columbia.** *Journal of the Fisheries Research Board of Canada*, 26, 2754-2760. 8 pages.  
Area: Babine River  
Report Location: MWLAP library, Smithers

In this study, steelhead sampling was done in 1967 and 1968 to obtain size and age data of these fish in the Babine River. The average age was 3.2 years, with males tending to remain in the ocean one year longer than females.

Pinsent, M.E. 1969. **Report on the steelhead trout (*Salmo gairdneri*) of Babine River, British Columbia.** 22 pages.  
Area: Babine River  
Report Location: MWLAP library, Smithers

This report is a compilation of information known about the Babine River steelhead fishery at the time. Part of the impetus for this report was the placement of a "fly-fishing only" regulation over part of the river. The information would enable assessment of the effect of this regulation on the fishery.

Pinsent, M.E. 1971. **Population size and some other characteristics of the steelhead in the Babine River, British Columbia.** 47 pages.  
Area: Babine River  
Report Location: MWLAP library, Smithers

This report details the results of a tag-recapture program undertaken on the Babine River in 1970. Steelhead were caught by recreational anglers, tagged and then released. Recaptures were recorded. The goals were to estimate steelhead population in the river, to quantify repeat captures by anglers, and to assess the amount of repeat spawning.

Pinsent, M.E., & Chudyk, W.E. 1973. **An outline of the steelhead of the Skeena river system (an initial basis for management).**

Area: Babine River

Report Location: MWLAP library, Smithers

This report gives an overview of steelhead in the Skeena system, and presents information known about each of the major tributaries to the Skeena. Some management concerns regarding the Skeena steelhead fishery are discussed.

Pinsent, M.E. 1973. **Incidental tag returns from a 1970 steelhead tagging program on the Babine River, BC.** 5 pages.

Area: Babine River

Report Location: MWLAP library, Smithers

This short paper presents information on 5 incidental tag returns in 1972 from a mark-recapture program in 1970. Details of the interpreted life history of these fish are given.

Whately, M.R. 1978. **Babine Steelhead - A Future.** (Skeena Fisheries Report 17). 15 pages.

Area: Babine River

Report Location: MWLAP, Smithers, river files (Babine River), library and website <http://wlapwww.gov.bc.ca/ske/fish/>

This report describes early steelhead smolt and adult tagging operations in the Babine River for enumeration purposes.

Whately, M.R., & Chudyk, W.E. 1979. **An estimate of the number of steelhead trout spawning in Babine River near Babine Lake, Spring, 1978.** (Skeena Fisheries Report 23). 17 pages.

Area: Babine River

Report Location: MWLAP, Smithers, river files (Babine River), library and website <http://wlapwww.gov.bc.ca/ske/fish/>

The purpose of this study was to estimate the size of the steelhead spawning population in Babine River. The Schnabel estimate was 2068 fish with an estimated confidence range at the 95 percent level of 1409 to 3559. The Schumacher estimate was 2183 fish with a range of 1392 to 5059.

Whately, M.R. 1979. **An estimate of the number of steelhead trout spawning in Babine River near Babine Lake, Spring 1978** (not seen).

Area: Babine River

Tredger, C.D. 1986. **Upper Skeena steelhead fry population monitoring, March 1986.** Steelhead Stock Monitoring Report.

Area: Babine River

Report Location: MWLAP, Victoria, Fisheries Branch (not seen)

Sebastion, D.C. 1988. **Steelhead production characteristics of the Babine River and tributaries, 1987.** (BC Fisheries Project Report FAUI-09). Victoria, BC: Recreational Fisheries Branch. 74 pages (not seen).

Area: Babine Watershed

Beere, M.C. 1991. **Radio telemetry investigations of Babine River steelhead, Spring 1990.** (Skeena Fisheries Report SK 71). 15 pages.

Area: Babine River

Report Location: MWLAP, Smithers, library and website

<http://wlapwww.gov.bc.ca/ske/fish/>

Fifteen Babine River steelhead were radio tagged between 52 and 83 kilometres upstream of the Babine-Skeena River confluence on April 11, 1990. Tagged fish were tracked over a series of four aerial flights to determine time and location of spawning. Eleven of fifteen tagged fish migrated upstream to the Boucher Creek confluence area near the Nilkitkwa Lake outlet.

Bison, R.G. 1993. **Estimating the abundance of adult steelhead in the Babine River using mark recapture methods 1992-1993.** (Skeena Fisheries Report 91). 16 pages.

Area: Babine River

Report Location: MWLAP, Smithers, river files (Babine River), library and website

<http://wlapwww.gov.bc.ca/ske/fish/>

A mark recapture study was conducted by angling on the upper 20 kilometres of the Babine River in an attempt to estimate the abundance of overwintering adult steelhead. Three Petersen estimates with 95% confidence limits were 4077, 3623, and 4660. Three multiple census estimates were consistently lower than the Petersen estimates. From a stock monitoring perspective, the most serious problem in estimating the overwintering population of the Babine River was the uncertainty about annual variability in the distribution of the population. For this reason, an annual census of the overwintering population in the Upper Babine alone may be of limited use for stock monitoring purposes. It is recommended that an attempt be made to operate the Babine River counting fence during the spring. If a large and constant proportion of the total river spawning population does, as assumed, utilize the spawning area immediately upstream of the fence, fence operation should provide a useful index of abundance.

Saimoto, R.S. 1995. **Babine River steelhead, 1993/94: population estimate and weir assessment.** (Skeena Fisheries Report 92). 28 pages.

Area: Babine River

Report Location: MWLAP, Smithers, library and website

<http://wlapwww.gov.bc.ca/ske/fish/>

The study includes a population estimate of upper Babine River steelhead and a trial operation using the Babine River weir to enumerate upper Babine River and Boucher Creek populations. The population was estimated at 4185 fish. The existing sockeye traps at the fence were unsuitable for trapping steelhead. Steelhead were monitored in a 2.5 metre opening in the fence. Recommendations are made on how to improve enumeration methods.

Beere, M.C. 1996. **Movement of summer run steelhead trout tagged with radio transmitters in the Babine River during spring, 1994.** (Skeena Fisheries Report 94). 39 pages.

Area: Babine River

Report Location: MWLAP, Smithers, library and website

<http://wlapwww.gov.bc.ca/ske/fish/>

Radio telemetry was used to determine the proportion of the wild adult summer run steelhead migrating through the Babine River weir. Spawning locations were located for all tagged fish. Twelve tagged fish (48%) migrated upstream of the weir. The mainstem of the Babine River upstream of the weir was identified as a major spawning area in the watershed.



Beere, M.C. 1997. **Movements of wild summer run steelhead tagged with radio transmitters in the Babine River during fall, 1994.** (Skeena Fisheries Report 96). 21 pages.  
Area: Babine River  
Report Location: MWLAP, Smithers, library and website  
<http://wlapwww.gov.bc.ca/ske/fish/>

Radio telemetry was used for the second consecutive migration year to determine the proportion of wild Babine River adult summer run steelhead migrating through the Babine River weir. The purpose of this investigation was to assess the feasibility of using the weir in conjunction with radio telemetry to conduct annual population estimates for the Babine stock. Five steelhead (12.8%) migrated upstream of the weir and are assumed to have spawned near the outlet of Nilkitkwa Lake. Due to the annual fluctuations in the proportion of Babine steelhead spawning upstream of the weir and the fact that some steelhead migrate through the weir during fall, spring weir counts are not recommended for annual population estimates for the Babine stock.

DeGisi, J.S. 1997. **Babine River steelhead: Summary of current data and status review.** (Skeena Fisheries Report 103).  
Area: Babine River  
Report Location: MWLAP, Smithers (not seen)

### 13.0 Geology

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Tipper, H.W. & Richards, T.A. 1976. **Geology of Smithers map-area, British Columbia.** Open File 351, map 1:250,000. Geological Survey of Canada.  
Area: Babine Watershed  
Report Location: Ministry of Energy and Mines library, Smithers (not seen)

Gottesfeld, A. 1985. **Geology of the northwest mainland: the geology and paleontology of the Skeena, Nass and Kitimat drainages of British Columbia.** Kitimat, BC: Kitimat Centennial Museum Assoc. 114 pages.  
Area: Babine East  
Report Location: NWCC library, Smithers, Terrace

This book gives details of the geology of the area of interest, but doesn't cover the lower Babine River.

Hannigan, P., Lee P.J., & Osadetz, G.G. 1995. **Oil and gas resource potential of the Bowser-Whitehorse area of British Columbia.** Geological Survey of Canada report for BC Energy, Mines and Petroleum Resources, Victoria, BC.  
Report Location: Ministry of Energy and Mines library, Smithers (not seen)

Hastings, N., Plouffe, A., Struik, L.C., Turner, R.J.W., Anderson, R.G., Clague, J.J., Williams, S.P., Kung, R., & Tacogna, G. 1999. **Geoscape Fort Fraser, British Columbia.** (Geological Survey of Canada, Miscellaneous Report 66). 1 sheet.  
Report Location: Ministry of Energy and Mines library, Smithers (not seen)

### 14.0 Geomorphology

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White, W.H. 1953. **Supplementary geological report on the Babine slide** (not seen).  
Area: Babine Slide

Godfrey, H., Hourston, W.R., Stokes, J.W., & Withler, F.C. 1954. **Effects of a rock slide on Babine River salmon.** (Fisheries Research Board of Canada Bulletin 101). Ottawa, Ont. (not seen).  
Area: Babine Slide

Dyson, J.B. 1955. **The Babine earth and rock slide.** Thesis, UBC. (not seen).  
Area: Babine Slide

White, W.H. 1964. **Re-examination of the Babine slide** (not seen).  
Area: Babine Slide

Weiland, I., & Schwab, J. 1991. **Nilkitkwa Area, Bulkley TSA slope stability and surface erosion assessment.** 8 pages (map missing).

Area: Nilkitkwa River  
Report Location: DFO, Smithers

Slope stability and soil erosion hazard for the soil associations of the Nilkitkwa area are presented. Air photos were used to identify presently active erosion sites and drainage.

Fox, J., Madrone Environmental Services. 1992. **Terrain stability and sediment transfer hazard evaluation for the Leclair Creek chart area.** 28 pages plus maps.

Area: Leclair Creek  
Report Location: BCTS Skeena Business Area, Hazelton Field Office; Babine Morice watershed library, Houston

Terrain and terrain stability mapping (at a scale of 1:20,000), was conducted over approximately 7,500 hectares in the Leclair Creek area along the north side of Babine River. The objective was to identify areas of potential slope instability or surface erosion prior to forest harvesting. The mapping was done on the basis of air photo interpretation with some field checking of steep ground. Assessment of slope stability was made on the basis of surface investigation only.

Butt, G., Madrone Environmental Services. 1993. **Terrain stability and sediment transfer hazard evaluation, Big Slide chart area.** 28 pages plus maps.

Area: Big Slide  
Report Location: BCTS Skeena Business Area, Hazelton Field Office; Babine Morice watershed library, Houston

This project covered 6,000 hectares within the Kispiox TSA. Described are: mapping methods, physical environment, and slope and sediment transfer hazards. Mapping was carried out to identify areas prone to geologic hazards, in particular, open slope failures and debris torrenting in gullies. General recommendations for management of different classes of terrain hazard are presented. The map area is considered to be of moderate geomorphic activity, with a high potential for sediment delivery due to unstable slopes along incised streams, active aggradations, and channel widening. The author states that with careful planning to avoid sensitive areas, and adherence to sound watershed management principles, timber harvesting need not add significantly to sedimentation.

Moore, D. 1993. **Babine River – Slide hazard assessment.** 18 pages.

Area: Babine River  
Report Location: DFO, Smithers

The risk of future rockslides on the Babine River was assessed as a result of the 1951 slide that blocked fish passage up the river. Most of the risk lies within a 3 kilometre stretch of river upstream from the location of the 1951 slide. Within this section of river it was determined that it is almost certain additional rockslides will occur sometime in the next few decades. Whether or not these slides will block the river was more difficult to predict. Planning an effective response in the event of a slide is one way to minimize slide impact. More detailed geological mapping, hazard assessment, and monitoring the areas visually and photographically could assist in providing warning of a future slide.

Weiland, I. 1993. **Sediment source mapping in the Nilkitkwa River and Nichyeskwa Creek area - Interim Report.** 8 pages plus appendices (map missing at DFO).  
Area: Nilkitkwa / Nichyeskwa  
Report Location: PIR, Smithers, Dave Ripmeester; DFO, Smithers

This report presents an inventory of natural sediment sources in the Nichyeskwa Creek and Nilkitkwa River areas. This promotes understanding of the natural sediment regime in these two systems.

Feltham, K., & Butt, G. 1995. **Terrain stability and erosion potential eighteen charts in the Hazelton area.**  
Report Location: MOF, Smithers, Skeena Stikine FD (not seen).

This report describes terrain types, terrain hazard classes, and sediment potential, and includes 1:20,000-scale maps for Shedin, Big Slide, and Babine Slide charts.

Butt, G., Madrone Environmental Services. 1995. **Terrain stability assessment: Cataline Creek area, Kispiox Timber Supply Area.** 10 pages plus appendices & maps.  
Area: Cataline Creek  
Report Location: MOF, Smithers, Regional Service Centre, J. Schwab; Babine Morice watershed library, Houston

Terrain and terrain stability mapping (at a scale of 1:20,000), was conducted over approximately 9,000 hectares in the Cataline Creek area along the south side of Babine River. The objective was to identify areas of potential slope instability and surface erosion and to evaluate the sediment transfer hazard prior to forest harvesting. The mapping was done on the basis of air photo interpretation with some field checking of steep ground. Assessment of slope stability was made on the basis of surface investigation only.

Oden, M., Madrone Environmental Services. 1996. **Terrain stability and sediment transfer hazard evaluation of Gail Creek, Kispiox Timber Supply Area.** 20 pages plus appendices & maps.  
Area: Gail Creek  
Report Location: BCTS Skeena Business Area, Hazelton Field Office

Terrain and terrain stability mapping (at a scale of 1:20,000), was conducted over approximately 16,000 hectares in the Gail Creek and Nichyeskwa Creek areas along the south side of Babine River. The objective was to identify areas of potential slope instability or surface erosion prior to forest harvesting. The mapping was done on the basis of air photo interpretation with some field checking of steep ground. Assessment of slope stability was made on the basis of surface investigation only.

Psutka, J.F., & Rapp, P.A. 1996. **Babine River slide hazard assessment – 1995.** 22 pages plus maps and figures.  
Area: Babine River  
Report Location: DFO, Smithers

This report details a slide hazard assessment done between Shedin and Thomlinson Creeks on the Babine River, and describes an effective method to monitor the slopes. Though there was no imminent danger of rockslides at the time of inspection, four sites were identified that require annual monitoring as their situation could rapidly change. Failure of these areas would likely result in fine-grained debris that could be removed by river flows, though larger debris blocking the river could not be ruled out. Details of a slope-monitoring program that was established are presented.

Psutka, J.F. 1996. **Babine River slopes inspection – 24 April 1996 inspection.** 7 pages plus maps and figures.  
Area: Babine River  
Report Location: DFO, Smithers

This document reports that no significant movements have occurred at the inspected sites since the last inspection. It recommends that the area be inspected annually following methods in Psutka and Rapp (1996). A slope stability specialist should review the inspection results after 5 years. If significant movement occurs, an immediate review should be conducted.

Irene Weiland Terrain Services, & Maloney, D. 1997. **Review of surface erosion potential ratings – Nilkitkwa Area, Bulkley TSA.** 7 pages plus appendices and maps.  
Area: Nilkitkwa  
Report Location: PIR, Smithers, Dave Ripmeester

This is a review of two different studies related to surface erosion potential. The first, by D. Maloney in 1996, identified areas with fine textured soils and high water tables. The second, by Weiland and Schwab (1991), rated areas as having high, moderate, or low surface erosion potential. Both studies were based on the soil association maps of Wittneben (1984).

Wilford, D.J., Sakals, M., DeBeck, H., & Marleau, G. 2000. **Tsezakwa Creek fan.** 8 pages plus appendices.  
Area: Tsezakwa Creek  
Report Location: MOF, Smithers, Regional Service Centre, D. Wilford; CD

This study investigated water quality and flow problems, and geomorphology on Tsezakwa Creek following a spring flood and related mortality of coho fry at Babine River hatchery. The history of forest harvesting, road construction and creek channel movements is documented through a series of air photos and on-site visits. It was concluded that the flooding and distributary channeling are natural processes occurring on a hydrogeomorphically active fan, and that there is no connection between forest harvesting or road building and the problems on the fan.

Weiland, I. for SCI, Smithers. 2000. **Terrain Classification, terrain stability and surface erosion potential in the Kotsine, Van, and Nilkitkwa Partial chart areas, Bulkley Forest District, British Columbia.** 30 pages plus maps and appendices.  
Area: Nilkitkwa River  
Report Location: MOF, Smithers, Regional Service Centre, J. Schwab

The objective of this project was to map terrain and terrain stability, describe surficial geology and geomorphic processes, describe soil drainage and slope steepness, and develop criteria for terrain stability and surface erosion interpretations from disturbed sites in the study area. The report gives good descriptions of surficial geology and surficial materials in the area.

Oden, M., Madrone Environmental Services. 2001. **Terrain classification and terrain stability mapping – Babine Project area.** 36 pages.  
Area: Nichyeskwa, Nilkitkwa, Bairnsfather & Tsezakwa watersheds  
Report Location: PIR, Smithers, Dave Ripmeester

The main objective of this project was to identify areas prone to geologic and geomorphologic hazards, specifically landslides and surface erosion. The report includes a description of the physical environment of the area, surficial materials present, identified terrain hazards, and management concerns. General management recommendations are made, as are specific recommendations for road construction and timber harvesting.

Oden. M., Madrone Environmental Services. 2002. **Terrain classification and terrain stability mapping – Babine II Project area.** 50 pages.  
Area: Parts of Nichyeskwa, Bairnsfather, and Tsezakwa watersheds  
Report Location: PIR, Smithers, Dave Ripmeester

The main objective of this project was to identify areas prone to geologic and geomorphologic hazards, specifically landslides and surface erosion. The area is adjacent to the area covered by Oden (2001). It includes a description of the physical environment of the area, surficial materials present, identified terrain hazards, and management concerns. General management recommendations and specific recommendations for road construction and timber harvesting are presented.

## 15.0 Inventory – Ecosystem

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Oikos Ecological Services. 1998. **Terrestrial ecosystem mapping for two 1:20,000 mapsheets in the Nilkitkwa River drainage (2 volumes).** For MWLAP. Includes map.  
Area: Nilkitkwa River  
Report Location: Babine Morice watershed library, Houston (not seen)

This report presents Terrestrial Ecosystem Mapping (TEM) for mapsheets 93 M 076 and 086. Management units for grizzly bears were created that were consistent with other TEM mapping done in the area. In addition, wildlife habitat suitability and capability assessments and ranking, and geographic information systems (GIS) thematic map projections were done.

Trowbridge R., & Trowbridge A., Boreal Research & Development. 2002. **Development and calibration of PEM knowledge tables for the Bulkley Timber Supply Area.**  
Area: East Babine  
Report Location: MSRM, Smithers, B. Love

A Predictive Ecosystem Mapping (PEM) base and inventory adjusted Knowledge Tables (KT) were developed and calibrated for the Bulkley TSA. The test data set was used to validate base KT's and to calibrate successive KT iterations, until the estimated reliability met or exceeded goals set by the Ministry. Using the test data set, the final KT's (KT Version 3) obtained results of 72% and 85% scores for dominant PEM label (map entity) correct, and for dominant combined with acceptable adjacent PEM labels, respectively.

Trowbridge, R., & Banner, A. 2002. **Field guide supplement to the identification of high elevation ESSF woodland subzones and site units of the Bulkley Timber Supply Area (supplement No. 2 to Land Management Handbook No. 26: A field guide to site identification and interpretation for the Prince Rupert Forest Region).**  
Area: East Babine  
Report Location: MOF, Smithers, Regional Service Centre, A. Banner

This project examined options for placement of an upper elevation operability line for forest planning, modeling, and operational activities within the Bulkley TSA. In continuation of the pilot project of 2000 and 2001, it was proposed to use plant species composition and structure to: 1) describe a biogeoclimatic unit and site classification that would identify this transition zone of low forest productivity, and 2) use this biogeoclimatic unit as the upper elevation limit to industrial forestry operations. Under Provincial biogeoclimatic correlation, all similar high elevation ESSF transition zones in the Province have recently been designated as "woodland" subzones (ESSFw). This field guide gives details on how to identify ESSFw site units in the field.

## 16.0 Inventory – Forestry

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Laing and McCulloch Forest Management Services Ltd. 1992. **Babine River LRUP watershed unit area, volume report.**

Area: Babine River

Report Location: BC Parks, Smithers resource atlas - Babine River binder

This report presents timber volumes for map areas by biogeoclimatic unit. In addition, it contains volume figures for wildlife habitat areas. No maps or text provided.

## 17.0 Inventory – Lake

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Tredger and Burns. 1975. **Lake survey data forms for Gunanoot Lake.**

Area: Gunanoot Lake

Report Location: MWLAP, Smithers, lake files

This survey provides information on basin characteristics, limnology, bathymetry, and fauna. The lake covers 26 hectares, has a maximum depth of 16 metres, and contains rainbow trout and lake chub.

Tredger and Burns. 1975. **Lake survey data from Onerka Lake.**

Area: Onerka Lake

Report Location: MWLAP, Smithers, lake files

This survey provides information on basin characteristics, limnology, bathymetry, and fauna. The lake covers 40 hectares and has a maximum depth of 17 metres. The lake contains kokanee, Dolly Varden, coho, mountain whitefish and finescale sucker.

Coombes, D.M.V. 1983. **A reconnaissance survey of Sucker Lake.**

Area: Sucker Lake

Report Location: MWLAP, Smithers, lake files

This survey provides information on basin characteristics and development, limnology, bathymetry, water chemistry, flora, and fauna. The lake covers 95 hectares, has a maximum depth of 14.5 metres, and contains rainbow trout and longnose sucker.

Coombes, D.M.V. 1983. **A reconnaissance survey of Acorn Lake.**

Area: Acorn Lake

Report Location: MWLAP, Smithers, lake files

This survey provides information on basin characteristics and development, limnology, bathymetry, water chemistry, flora, and fauna. The lake covers 171 hectares, and has a maximum depth of 5 metres. The lake has a number of fish species including cutthroat trout, longnose sucker, and mountain whitefish.

DeGisi, J.S., & Schell, C. 1997. **Reconnaissance inventory of unnamed "Beta" Lake (WSC 480-1957-344-620-03).** 18 pages plus appendices.

Area: Shelagyote River

Report Location: MWALP, Smithers, lake files

This survey provides information on basin characteristics and development, bathymetry, water chemistry, flora, and fauna. Fisheries management concerns are presented. The lake covers 33 hectares, has a maximum depth of 12 metres, and contains rainbow trout and Dolly Varden. All methods followed RISC standards where applicable.

DeGisi, J.S., & Schell, C. 1997. **Reconnaissance inventory of unnamed lake (WSC 480-2413-458-01)**. 19 pages plus appendices.  
Area: Hanawald Creek  
Report Location: MWALP, Smithers, lake files

This survey provides information on basin characteristics and development, bathymetry, water chemistry, flora, and fauna. Fisheries management concerns are presented. The lake covers 43.3 hectares, has a maximum depth of 10.6 metres, and contains rainbow trout and lake chub. All methods followed RISC standards where applicable.

DeGisi, J.S., & Schell, C. 1997. **Reconnaissance inventory of Damsumlo Lake (WSC 480-0278-657-01)**. 18 pages plus appendices.  
Area: Damsumlo Lake  
Report Location: MWALP, Smithers, lake files

This survey provides information on basin characteristics and development, bathymetry, water chemistry, flora, and fauna. The lake covers 103.3 hectares, and has a maximum depth of 16.5 metres. No fish were captured or fish sign seen during the survey. All methods followed RISC standards where applicable.

DeGisi, J.S., & Schell, C. 1997. **Reconnaissance inventory of unnamed lake (WSC 480-1957-046-01)**. 19 pages plus appendices.  
Area: Shelagyote River  
Report Location: MWALP, Smithers, lake files

This survey provides information on basin characteristics and development, bathymetry, water chemistry, flora, and fauna. The lake covers 45.7 hectares, and has a maximum depth of 7.2 metres. No fish were captured or fish sign seen during the survey. All methods followed RISC standards where applicable.

DeGisi, J.S., & Schell, C. 1997. **Reconnaissance inventory of unnamed "Alpha" lake (WSC 480-1957-491-01)**. 18 pages plus appendices.  
Area: Shelagyote River  
Report Location: MWALP, Smithers, lake files

This survey provides information on basin characteristics and development, bathymetry, water chemistry, flora, and fauna. The lake covers 44.7 hectares, and has a maximum depth of 36.0 metres. No fish were captured or fish sign seen during the survey. All methods followed RISC standards where applicable.

DeGisi, J.S., & Schell, C. 1997. **Reconnaissance inventory of unnamed "Gamma" lake (WSC 480-1957-344-01)**. 19 pages plus appendices and maps.  
Area: Shelagyote River  
Report Location: MWALP, Smithers, lake files

This survey provides information on basin characteristics and development, bathymetry, water chemistry, flora, and fauna. The lake covers 75 hectares, and has a maximum depth of 35 metres. No fish were captured or fish sign seen during the survey. All methods followed RISC standards where applicable.

DeGisi, J.S., & Schell, C. 1997. **Reconnaissance inventory of "Lone Island" Lake (WSC 480-2413-192-01)**. 19 pages plus appendices.  
Area: "Lone Island" Lake  
Report Location: MWALP, Smithers, lake files

This survey provides information on basin characteristics and development, bathymetry, water chemistry, flora, and fauna. Fisheries management concerns are presented. The lake covers 44.6 hectares, has a maximum depth of 8.3 metres, and

contains rainbow trout and lake chub. All methods followed RISC standards where applicable.

Klohn-Crippen Consultants Ltd. 1997. **A reconnaissance inventory of Clota Lake (WSC 480-4026)**. 41 pages plus appendices and maps.

Area: Clota Lake

Report Location: MWALP, Smithers, lake files

This survey provides information on basin characteristics and development, bathymetry, water chemistry, flora, and fauna. Fisheries management concerns are presented. The lake covers 57 hectares, has a maximum depth of 11 metres, and is dominated by non-sport fish including longnose sucker, northern squawfish, and redbreast shiner. Two cutthroat trout were also captured. All methods followed RISC standards where applicable.

Klohn-Crippen Consultants Ltd. 1997. **A reconnaissance inventory of Boucher Lake (Alias) (WSC unknown)**. 43 pages plus appendices and maps.

Area: Boucher Lake

Report Location: MWALP, Smithers, lake files

This survey provides information on basin characteristics and development, bathymetry, water chemistry, flora, and fauna. Fisheries management concerns are presented. The lake covers 38 hectares and has a maximum depth of 8.3 metres. The lake has a number of fish species including cutthroat trout, burbot, longnose sucker, northern squawfish, and redbreast shiner. All methods followed RISC standards where applicable.

Klohn-Crippen Consultants Ltd. 1997. **A reconnaissance survey of Twin Lake (Alias) (WSC unknown)**. 43 pages plus appendices and maps.

Area: Twin Lake (Alias)

Report Location: MWALP, Smithers, lake files

This survey provides information on basin characteristics and development, limnology, bathymetry, water chemistry, flora, and fauna. The lake covers 32 hectares and has a maximum depth of 6.2 metres. The lake has a number of fish species including cutthroat trout, Dolly Varden, longnose sucker, and northern squawfish. All methods followed RISC standards where applicable.

BioLith Scientific Consultants Inc. 1998. **Reconnaissance inventory of fish and fish habitat for unnamed lake - waterbody identifier 01023BABR**. 13 pages plus appendices.

Area: Brandt Lake

Report Location: MWALP, Smithers, lake files

This survey provides information on basin characteristics, limnology, and fish. The lake covers 25 hectares, has a maximum depth of 4.5 metres, and contains peamouth chub and rainbow trout. All methods followed RISC standards.

BioLith Scientific Consultants Inc. 1998. **Reconnaissance lake inventory of Hanawald Lake**. 14 pages plus appendices.

Area: Hanawald Lake

Report Location: MWALP, Smithers, lake files

This survey provides information on basin characteristics, limnology, and fish. The lake covers 50 hectares, has a maximum depth of 9 metres, and contains rainbow trout. All methods followed RISC standards.



BioLith Scientific Consultants Inc. 1998. **Reconnaissance lake inventory of unnamed lake (Alias b32)**. 14 pages plus appendices.  
Area: Unnamed lake  
Report Location: MWALP, Smithers, lake files

This survey provides information on basin characteristics, limnology, and fish. The lake covers 31 hectares, has a maximum depth of 9.5 metres, and contains Dolly Varden. All methods followed RISC standards.

BioLith Scientific Consultants Inc. 1998. **Reconnaissance lake inventory of unnamed lake (Alias b33)**. 13 pages plus appendices.  
Area: Unnamed lake  
Report Location: MWALP, Smithers, lake files

This survey provides information on basin characteristics, limnology, and fish. The lake covers 25 hectares, has a maximum depth of 7.5 metres, and contains Dolly Varden. All methods followed RISC standards.

## 18.0 Inventory – Soils

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Wittneben, U. 1984. **Soils of the Hazelton map area (NTS93M NW, NE, SE)**. (BC Ministry of Environment, MOE Technical Report 7, BC Soil Survey, Report 47). Kelowna, BC: Survey and Resource Mapping Branch. Maps.  
Area: Babine Watershed  
Report Location: PIR, Smithers, Dave Ripmeester (with Weiland and Maloney 1997)

Describes and maps soil associations within the mapped area.

## 19.0 Inventory – Stream

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Smith, H.D., & Lucop J. 1966 & 1969. **Catalogue of salmon spawning grounds and tabulation of escapements in the Skeena River and Department of Fisheries Statistical Area 4**. (Fisheries Research Board of Canada Manuscript Report Series No. 882 & 1046). Biological Station Nanaimo (not seen).  
Area: Babine Watershed

Graham, C.C., McIndoe, R.A., & Meyers, D.N. 1976. **Biophysical stream survey of several streams in the Babine-Nilkitkwa Area**. (Data Report Series PAC/D-76-3). Northern Operations Branch Pacific Region: Environment Canada. 45 pages.  
Area: Nilkitkwa River and Nichyeskwa Creek  
Report Location: MWLAP, Smithers, river files (Babine River)

Provides brief biophysical data on the Nilkitkwa and Nichyeskwa watersheds.

Taylor, J.A. 1994. **Synoptic surveys of habitat characteristics and fish populations conducted in lakes and streams within the Skeena River watershed**.  
Area: Babine Watershed  
Report Location: DFO, Nanaimo (not seen)

Saimoto, R.S., SKR Consultants Ltd. 1996. **Literature review for stream inventory in the Bulkley Forest District**. 21 pages.  
Area: Bulkley TSA portion of Babine Watershed  
Report Location: MWLAP, Smithers, river files (Babine River)

This report was a precursor to detailed stream classification in the Bulkley FD. It divided streams into those that were known to be fish bearing, those known to be non-fish bearing and those where there was uncertainty over the status of fish. This helped prioritize detailed stream classification.

Gilchrist, A., Grieve G., Seifried L., BioLith Scientific Consultants Inc. 1996. **Stream inventory and classification in the Kispiox Forest District.** 157 pages.  
Area: Lower Babine River  
Report Location: Bulkley Morice watershed library, Houston; BCTS Skeena Business Area, Hazelton Field Office; and website  
[ftp://datashare.gis.unbc.ca/datashare/fish\\_inventory/1996/kispiox/biolith/reports/final\\_rpt.doc](ftp://datashare.gis.unbc.ca/datashare/fish_inventory/1996/kispiox/biolith/reports/final_rpt.doc)

Part of this study considered a group of streams that are tributary to the Babine River and generally located between Kisgegas Village and 3 kilometres east of Shenismike Creek. Most are un-named and are described as LP5 through to LP15. All of these creeks had similar features in that, in their lower reaches, their channels were incised and bedrock controlled, and they descended over precipitous cascades and falls near their confluences with the Babine River. With the exception of what appeared to be an isolated population of lake chub in a perched pond, no fish were found in any of these streams during the first pass sampling of this study. Few of these streams could be sampled immediately above the supposed barriers. Recommendations are made that more ground time be allowed in future work for crews to be able to visit such portions of these streams.

Macaulay, J. 1997. **Fish survey – Cataline Creek (Babine Watershed) August 25, 1997.** 8 pages.  
Area: Cataline Creek  
Report Location: MWLAP, Smithers, river files (Cataline Creek)

This small fish trapping project in Cataline Creek found a high abundance of rainbow and steelhead trout.

Macaulay, J. 1997. **Fish survey - Gail Creek and Nichyeskwa Creeks (Babine Watershed), for the Small Business Forest Enterprise Program.**  
Area: Gail and Nichyeskwa Creeks  
Report Location: BC Fisheries Headquarters, Victoria (not seen)

Triton Environmental Consultants Ltd. 1998. **Reconnaissance level fish and fish habitat inventory in the Bulkley TSA (Working Unit #3 – Nichyeskwa).**  
Area: Nichyeskwa Creek  
Report Location: Website  
[ftp://datashare.gis.unbc.ca/datashare/fish\\_inventory/1996/bulkley/pir\\_triton/reports/nichyeskwa.doc](ftp://datashare.gis.unbc.ca/datashare/fish_inventory/1996/bulkley/pir_triton/reports/nichyeskwa.doc)

This report summarizes historical and field data collected in working unit 3, which covers the entire Nichyeskwa watershed. The objectives were to describe fish distribution and habitat characteristics, and to provide stream classifications according to the Forest Practices Code. The 1:20,000 scale TRIM sheets that cover unit 3 are: 93 M 036, 93 M 045, 93 M 046, 93 M 047, 93 M 055, 93 M 056. The Nichyeskwa is a highly productive stream, with few apparent limits to fish distribution. A list of recommended sites for future sampling is provided. In particular, reaches 2 and 3 of the very large tributary flowing into the mainstem should be intensively surveyed as the confinement indicates potential barriers below the 10 metre falls identified on this system.

Triton Environmental Consultants Ltd. 1998. **Reconnaissance level fish and fish habitat inventory in the Bulkley TSA (Working Unit #4 – Boucher).** 53 pages.  
Area: Boucher Creek  
Report Location: MWLAP, Smithers, river files (Babine River); and website  
[ftp://datashare.gis.unbc.ca/datashare/fish\\_inventory/1996/bulkley/pir\\_triton/reports/boucher.doc](ftp://datashare.gis.unbc.ca/datashare/fish_inventory/1996/bulkley/pir_triton/reports/boucher.doc)

The report documents the results of the inventory of working unit 4, which consists of the Boucher Creek watershed and the tributaries to Nilkitkwa Lake. The goals of this study were to describe fish distribution and habitat characteristics, and to provide stream classifications according to the Forest Practices Code. Fish distribution in unit 4 has fewer gradient based limitations than many of the other working units. A large number of fish were caught in this unit and many other areas were classified as fish bearing despite the fact that no fish were caught in the sampling areas. Many of the tributaries to Boucher Creek drain fair sized lakes, which appear to provide suitable rearing and overwintering habitat. Additionally, some of the tributaries to Nilkitkwa Lake, which supports many different populations of fish, have low gradients high up into the watersheds.

Triton Environmental Consultants Ltd. 1998. **Reconnaissance level fish and fish habitat inventory in the Bulkley TSA (Working Unit #1 – Nilkitkwa).** Volumes 1 and 2.  
Area: Nilkitkwa River, Charleston Creek  
Report Location: MWLAP, Smithers, river files (Nilkitkwa River); and website  
[ftp://datashare.gis.unbc.ca/datashare/fish\\_inventory/1996/bulkley/pir\\_triton/reports/nilkitkwa.doc](ftp://datashare.gis.unbc.ca/datashare/fish_inventory/1996/bulkley/pir_triton/reports/nilkitkwa.doc)

This report summarizes the historical and field data collected in working unit 1, consisting of the entire Nilkitkwa watershed. The goals were to describe fish distribution and habitat characteristics, and to provide stream classifications according to the Forest Practices Code. The TRIM sheets that cover this working unit are: 93 M 047, 93 M 057, 93 M 058, 93 M 066, 93 M 067, 93 M 068, 93 M 075, 93 M 076, 93 M 077, 93 M 085, 93 M 086, 93 M 095, 93 M 096. This unit is highly productive and fish were caught or observed at over 40% of the sites.

Triton Environmental Consultants Ltd. 1998. **Reconnaissance level fish and fish habitat inventory in the Bulkley TSA (Working Unit #2 – Babine).**  
Area: Babine River  
Report Location: MWLAP, Smithers, river files (Babine River); and website  
[ftp://datashare.gis.unbc.ca/datashare/fish\\_inventory/1996/bulkley/pir\\_triton/reports/upr\\_babine\\_tribs.doc](ftp://datashare.gis.unbc.ca/datashare/fish_inventory/1996/bulkley/pir_triton/reports/upr_babine_tribs.doc)

This report summarizes historical and field data collected in unit 2, which covers the section of the Babine River and its tributaries occurring below Nilkitkwa Lake, downstream of the Bulkley FD boundary. The objectives were to describe fish distribution and habitat characteristics, and to provide stream classifications according to the Forest Practices Code. The 1:20,000 scale TRIM sheets that cover this working unit are: 93 M 047, 93 M 057, 93 M 067, 93 M 056, and 93 M 066. The limitations to fish distribution in this area are associated with steep side slopes of the Babine River. Some of the tributaries sampled in this unit have steep gradients and are sometimes quite confined near the mouth, making fish use unlikely or impossible. Compounding this problem is a lack of medium- to large-sized lakes in some of these systems that could support resident populations.

Triton Environmental Consultants Ltd. 1998. **Reconnaissance (1:20,000) fish and fish habitat stream inventory of Shedin Creek.** 13 pages.  
Area: Shedin Creek  
Report Location: MWLAP, Smithers, river files (Shedin Creek); and website  
[ftp://datashare.gis.unbc.ca/datashare/fish\\_inventory/1997/kispiox/shedin/shed\\_rpt.doc](ftp://datashare.gis.unbc.ca/datashare/fish_inventory/1997/kispiox/shedin/shed_rpt.doc)

The purpose of this inventory was to describe watershed-wide fish distribution and habitat characteristics for the project area. Dolly Varden as well as threespine stickleback were captured in the Shedin Creek watershed. Barriers throughout the watershed limit fish distribution. This study is the third sampling attempt to have been completed for the Damsumlo Lake sub-basin, which concluded that there were no fish present.

Triton Environmental Consultants Ltd. 1998. **Reconnaissance (1:20,000) fish and fish habitat stream inventory of Goathead Creek.** 11 pages.

Area: Goathead Creek

Report Location: MWLAP, Smithers, river files (Goathead Creek)

Dolly Varden were captured in the mountain plateau area of Goathead Creek and many of its tributaries. A waterfall near the mouth of Goathead Creek may limit upstream migration from Shed in Creek.

Triton Environmental Consultants Ltd. 1998. **Reconnaissance (1:20,000) fish and fish habitat stream inventory Kispiox Forest District.**

Area: Shed in Creek

Report Location: SCI, Hazelton; BC Fisheries, Victoria (not seen)

Triton Environmental Consultants Ltd. 1999. **1:5,000 fish and fish habitat inventory of tributaries to Nilkitkwa Lake and Nichyeskwa Creek: Working Units 3 (Boucher) and 4 (Nichyeskwa) cutting permits 578, 580 and 584.** 75 pages.

Area: Nilkitkwa Lake and Nichyeskwa Creek

Report Location: MWLAP, Smithers, river files (Babine River); CD

This study reports that very few fish were captured while conducting electro fishing in August and October 1998. Fish species captured or observed included juvenile rainbow trout and juvenile Dolly Varden. No other fish were captured during the 1998 inventory survey in the vicinity of CP 578, 580, and 584. In general, fish distribution within these third and fourth order tributaries to Nilkitkwa Lake is limited to the low gradient reaches upstream of the lake. Fish distribution is limited by steep gradient channels, permanent waterfalls, and cascade barriers over which fish cannot pass. No resident fish populations were found to exist above permanent barriers.

Triton Environmental Consultants Ltd. 1999. **1:5,000 fish and fish habitat inventory of unnamed tributaries to the Babine River between Nilkitkwa River and Shahnagh Creek Working Unit 2 (Babine) cutting permits 633 and 639.** 75 pages.

Area: Babine River

Report Location: MWLAP, Smithers, river files (Babine River); CD

Streams and stream reaches were sampled throughout the areas of Cutting Permits 633 and 639. Previous inventories had identified Dolly Varden, cutthroat trout and rainbow trout in the study area. See "Reconnaissance level fish and fish habitat inventory in the Bulkley TSA (Working Unit #2 – Babine)", (Triton, 1998). The historical information indicates the presence of sockeye, coho, pink, and chinook salmon, Dolly Varden, mountain whitefish, rainbow trout, cutthroat trout and steelhead in the Babine watershed. No fish other than two cutthroat trout (100mm, 113mm fork length) captured in ILP 2170 at the 487 road crossing were captured.

Triton Environmental Consultants Ltd. 1999. **1:5,000 fish and fish habitat inventory of unnamed tributaries to Mero Creek and the Nilkitkwa and West Nilkitkwa Rivers: Working Unit 1 cutting permits 395, 396 and 397.** 59 pages.

Area: Mero Creek, Nilkitkwa & West Nilkitkwa rivers

Report Location: MWLAP, Smithers, river files (Nilkitkwa River); CD

Small streams and stream reaches were sampled throughout the areas of proposed CPs 395, 396 and 397. A Dolly Varden (80 mm) caught in a tributary to Mero Creek, which flows through the western edge of cutblock CP 396-5M82, was the only fish captured.

Brookes, D., & Kossman R., Silvicon Services Inc. 2002. **Fish-stream site assessment on an unnamed stream (WSC 480-397200-29600) in the Nilkitkwa Lake sub-basin (CP 523-3)**. 16 pages.

Area: Nilkitkwa Lake

Report Location: DFO, Smithers

This stream was investigated to determine if channel location changes were the result of harvesting practices. It was determined that the stream was on a low gradient active alluvial fan and that harvesting played little or no role in channel shifts. Rerouting the stream into its original location was investigated but the likelihood of this failing was high so no action was taken and the stream was let to stabilize naturally.

Triton Environmental Consultants Ltd. 2002. **Reconnaissance 1:20,000 fish and fish habitat inventory in the Nichyeskwa Watershed**. 24 pages.

Area: Nichyeskwa Creek

Report Location: Website

[ftp://datashare.gis.unbc.ca/datashare/fish\\_inventory/2001/Bulkley/pir/nichyeskwa/Report/Nichyeskwa.doc](ftp://datashare.gis.unbc.ca/datashare/fish_inventory/2001/Bulkley/pir/nichyeskwa/Report/Nichyeskwa.doc)

The study area included a number of tributaries flowing into Nichyeskwa Creek and the Babine River. Fisheries values within the sites sampled are largely associated with the limited occurrence of suitable spawning and rearing habitats for fish species. The prevalence of high gradients (>20%) and cascade/pool morphology appeared to be the primary limiting factors for spawning and rearing habitats within the sampled reaches. No critical fish habitats such as staging areas or large spawning grounds were identified.

Triton Environmental Consultants Ltd. 2002. **Reconnaissance 1:20,000 fish and fish habitat inventory in the Nilkitkwa Watershed**. 27 pages.

Area: Nilkitkwa River

Report Location: MWLAP, Smithers, river files (Nilkitkwa River); and website

[ftp://datashare.gis.unbc.ca/datashare/fish\\_inventory/2001/Bulkley/pir/nilkitkwa/Report/Nilkitkwa.doc](ftp://datashare.gis.unbc.ca/datashare/fish_inventory/2001/Bulkley/pir/nilkitkwa/Report/Nilkitkwa.doc)

The Nilkitkwa study area included the Boucher Creek watershed as well as tributaries flowing into Nilkitkwa Lake. Fisheries values within the sites sampled are largely associated with the limited occurrence of suitable spawning and rearing habitats for fish species. The prevalence of high gradients (>20%), cascade/pool morphology and waterfall barriers appeared to be the primary limiting factors for spawning and rearing habitats within the sampled reaches. No critical fish habitats such as staging areas or large spawning grounds were identified. Fish species were captured in 6 of the 14 reaches classified as fish bearing.

Triton Environmental Consultants Ltd. 2003. **Reconnaissance (1:20,000) fish and fish habitat inventory of the Shelagyote River (Shelagyote River Planning Area). Volumes 1, 2 and 3**.

Area: Shelagyote River

Report Location: MWLAP, Smithers, river files (Shelagyote River)

This report covers the Shelagyote River and several small right bank tributaries to the Babine River. All fish bearing streams and lakes were mapped, and stream reaches were characterized. Several bull trout staging, spawning and overwintering areas were identified. Adult coho were captured throughout the Shelagyote River. No high value sport fishing opportunities were identified.

## 20.0 Inventory - Vegetation

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de Groot, A., & Bartemucci, P. 2003. **Vegetation inventory analysis for protected areas in the Skeena Region.** 127 pages plus maps.

Area: Babine River Corridor Park

Report Location: BC Parks, Smithers

This report recorded and analyzed what was known about rare plants and plant communities in protected areas throughout the Skeena Region. There are no records of rare plant species or communities in the park, but the park has not had a vegetation inventory, or been examined by botanists. The park contains the riparian forests of the Babine River, but these forest types are not listed as being rare.

Rankings of inventory priority in protected areas are given with this park in the second priority group of parks.

## 21.0 Management - Access

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Stephen, J., & Nyers, F., Ministry of Forests and Lands, Engineering Branch. 1986. **Babine - Nilkitkwa investigation.** 9 pages.

Area: Babine / Nilkitkwa

Report Location: PIR, Smithers, Dave Ripmeester

This short report concerns two options for accessing timber on the north side of the Babine River in the Nilkitkwa watershed. The two proposals are not significantly different in their costs for construction and maintenance.

MOF, Babine Working Group. 1987. **Babine River integrated management overview assessment.** 53 pages.

Area: Babine River

Report Location: PIR, Smithers, Dave Ripmeester

This report examines the fisheries and management implications of bridge access options in the Babine River corridor. It concludes: 1) that substantial measures are needed to protect the unique steelhead fishery and the quality of the fishing experience, 2) construction of the upper Babine bridge should proceed only after certainty is established that a quality angling experience can be maintained, and 3) construction of the Gail Bridge should proceed as planned.

MOF, Prince Rupert Forest Region. 1988. **Upper Babine Bridge assessment recreational river rafting, kayaking, and canoeing report.** 11 pages.

Area: Upper Babine Bridge

Report Location: PIR, Smithers, Dave Ripmeester

This report examines the implications of two different bridge options for commercial and non-commercial rafting, kayaking and canoeing activity on the Babine River. It concludes that bridges are not compatible with users' expectations of a wilderness river, and breaking the river into shorter sections will degrade the extended river experience.

Upper Babine Inter-ministry Planning Team. 1988. **Access options in the Upper Babine Area – conclusions and recommendations.** 14 pages.

Area: Upper Babine

Report Location: PIR, Smithers, Dave Ripmeester

This is a study of two options for accessing timber in the upper Babine Area: either constructing a new bridge, or upgrading the existing bridge and upgrading the Nilkitkwa Forest Service Road. It recommends that the existing bridge be upgraded. Other recommendations are made regarding resource management in the area.

Mitchell, A.S., for MOF, Integrated Resources Branch. 1988. **Forest transportation arteries from Highway 16 in vicinity of Hazelton northward to Babine River.** 11 pages.

Area: Lower Babine River

Report Location: PIR, Smithers, Dave Ripmeester

This paper examines options for accessing wood in the Shed in and Shelagyote watersheds. It determines that 3 bridges across the Babine River are required to make accessing this timber economically viable.

Greer, A., for MOF, Integrated Resources Branch. 1988. **An economic review of existing research on timber access options in the Babine River area.** 35 pages.

Area: Babine River

Report Location: PIR, Smithers, Dave Ripmeester

This report reviews existing papers associated with the various bridge options for accessing timber north of the Babine River, and concentrates on the issue of logging transport costs. It concludes that these studies are not good enough to base resource management decisions on. This is due to problems with the definition of options and the exclusion of preservation values on the forestry side.

Bowden G.K., Clayton Resources Ltd. 1988. **Economic analysis of forest access bridges across the Babine River.** 26 pages plus summary.

Area: Babine River.

Report Location: BCTS Skeena Business Area, Hazelton Field Office (copy at this location also contains much background material); PIR, Smithers, Dave Ripmeester

This is a lengthy memorandum looking at the economics of various bridge options over the Babine River to access timber north of the river. The author compares the various bridge options with the cost or benefit to recreational fisheries on the Babine River.

Reid, Collins and Associates, for MOF. 1989. **Babine River development and transportation study.** 7 pages plus appendices.

Area: Babine River

Report Location: PIR, Smithers, Dave Ripmeester

This is a study of alternative routes to access timber north of the Babine River, and compares their cost effectiveness. It recommends the Suskwa-Gail route but the authors were unable to conduct field reconnaissance work and recommend that this be done before pursuing any route.

T.M. Thomson & Associates Ltd., Victoria. 1990. **Babine development and transportation study.** 13 pages plus appendices and maps.

Area: Shed in and Shelagyote watersheds

Report Location: PIR, Smithers, Dave Ripmeester

This report examines potential access routes into the Shed in and Shelagyote drainages. It examines costs of road building and haul costs but does not consider impacts on other resource values. A bridge at Gail Creek that allows access to the Shelagyote drainage via the Shenismike drainage is seen as the lowest cost option.

MOF, Min. of Environment, Babine Technical Advisory Team. 1991. **Options for the Babine River area.** 29 pages plus appendices and map.

Area: Babine River

Report Location: BC Parks, Smithers resource atlas - Babine River Box

The purpose of this planning process was to produce a resource management strategy that took into account numerous resource values. These included: the steelhead

fishery, rafting, grizzly bears, forestry, clean water, and other resources. The planning area is focused on a 10 kilometre wide strip running the length of the Babine River. The report details the resource values, three management and access options, the consequences of these options and the consensus option.

Majestic Forest Management Services & Crane Management Consultants Ltd. 1998. **Multiple accounts assessment north of Babine River road options.**

Area: Babine River

Report Location: Gitxsan Treaty Office library, Hazelton (not seen)

Bernard, A., & Reviakin A. 1998. **Road access options for the North Babine River area, Timber Supply Analysis Report.** Hazelton, BC: Ministry of Forests.

Area: Babine River

Report Location: MOF, Smithers, Skeena Stikine FD (not seen)

Kispiox FD Access Management Planning Technical Group. 2000. **Access management direction for the Babine watershed – Kispiox Forest District.** 9 pages plus appendices.

Area: Babine Watershed

Report Location: Kispiox FD

This document provides direction for access management in the Babine watershed. This direction will be modified as more information becomes available during the drafting of an access management plan. The intent of this process is to manage the impacts of access for resource development on other resource values.

## 22.0 Management – Forestry

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Environment & Land Use Committee. 1976. **Terrace-Hazelton regional forest resources study.** Environment and Land Use Committee Secretariat.

Area: Babine Watershed

Report Location: NWCC Terrace library (not seen)

Overstall, R. 2002. **Gitxsan Treaty Office response to 2002 Timber Supply Review.**

Report Location: Gitxsan Treaty Office library, Hazelton (not seen)

Silvicon Services Inc, for Bulkley TSA DFAM Committee. 2003. **Bulkley DFAM forest health strategy 2004/2005.** 35 pages plus appendix.

Area: Bulkley TSA

Report Location: PIR, Smithers, Dave Ripmeester

This is a forest health strategy for the DFAM in the Bulkley TSA. It is designed meet the obligations of forest managers in regards to forest health. It addresses forest health at two levels: 1) bark beetle suppression, and 2) stand management (non-bark beetle).

## 23.0 Management – Planning

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Sieffert, B. 1987. **Babine River Integrated Management Overview Assessment.**

Ministry of Forest and Lands.

Area: Babine River

Report Location: MOF, Smithers, Skeena Stikine FD (not seen)



Friends of the Babine. 1988. **Babine River land issue and position paper.** 14 pages.  
Area: Babine River  
Report Location: PIR, Smithers, Dave Ripmeester; BC Parks, Smithers resource atlas - Babine River binder

The authors propose that a number of steps be taken to maintain the non-timber values of the Babine watershed. Their case is made both on economic and ecological grounds.

Careless, R., Ethos Consulting. 1989. **Babine Wild River proposal resource values analysis.** 65 pages.  
Area: Babine River  
Report Location: PIR, Smithers, Dave Ripmeester

This paper proposes that a protective management corridor be placed over the Babine River. This corridor would have a 1 kilometre wide preservation zone on each side of the river and a 4 kilometre wide coordinated access management zone on each side of the river. The report addresses the resource use implications of implementing this corridor, and the preferred means of accessing wood north of the Babine corridor.

Newhouse, F., Pacific Regeneration Technologies. 1990. **Alternative silviculture systems analysis for the Babine River LRUP.** 38 pages.  
Area: Babine River  
Report Location: PIR, Smithers, Dave Ripmeester

This paper describes the potential use of alternative silvicultural systems in the Babine River area. It looks at seed-tree, shelterwood, selection, partial cutting, and smaller cutblocks. The objective is to optimize non-forestry resource objectives. These resources are grizzly bears, recreational fisheries, and the wilderness values of the river. The seed-tree system was the most common to be favoured. Shelterwood systems were feasible on the high elevation ESSF stands, with strip thinning being favoured on steeper terrain. Access was a major constraint to logging.

Gagne, J. 1992. **Babine River planning process: public involvement summary and Babine River options report: letters from groups and individuals.** 44 pages.  
Area: Babine  
Report Location: PIR, Smithers, Dave Ripmeester

This report summarizes public input and its incorporation in the Options for the Babine River Area planning document.

Anonymous. 1993. **Interim forest development guidelines for the Babine River planning unit.** 53 pages.  
Area: Babine River  
Report Location: BC Parks, Smithers resource atlas - Babine River binder

This report follows the Options for the Babine Area (1992) report. It identifies specific resource values and gives objectives and management constraints that will assist in meeting the chosen option.

MOF & Min. of Env, Lands and Parks. 1993. **Babine River interim Local Resource Use Plan.** 68 pages plus maps.  
Area: Babine Corridor  
Report Location: BC Parks, Smithers resource atlas - Babine River box

This plan pre-dated the LRMPs in the Kispiox and Bulkley FDs. It was recognized that the LRMPs when completed might have alternative strategies for land and resource management in the area. As part of this plan a joint monitoring committee was formed. The annual reports of this committee are referenced elsewhere in this

bibliography. One of the management zones established by the plan was a wilderness zone along both sides of the Babine River.

Crane Management Consultants Ltd. 1996. **Bulkley LRMP socio-economic impact analysis.** 164 pages.

Area: Bulkley TSA

Report Location: MOF, Smithers, Skeena Stikine FD

The purpose of this report was to analyse the impacts of the LRMP management direction in the Bulkley TSA, and to propose strategies to facilitate community economic transition.

Kispiox Land and Resource Management Planning Team. 1996, amended 2001. **Kispiox Land and Resource Management Plan.** 104 pages.

Area: West Babine Watershed

Report Location: MSRM; <http://srmwww.gov.bc.ca/ske/lrmp/kispiox/index.htm>

The Kispiox LRMP guides management of the public land and resources in the Kispiox plan area, which has the same boundaries as the former Kispiox Forest District. The LRMP was important in the establishment of the Babine River Corridor Park. It also set out land use special resource management zoning in the Babine watershed.

Bulkley Valley Community Resources Board & Interagency Planning Team. 1998. **Bulkley Land and Resource Management Plan.** 148 pages.

Area: East Babine Watershed

Report Location: MSRM

The Bulkley LRMP guides management of the public land and resources in the Bulkley plan area, which has the same boundaries as the former Bulkley Forest District. The plan is the result of a process spanning over 5 years of study and consultation by the Bulkley Valley Community Resources Board. Of significance to the Babine River area was the recommendation to establish the Babine River Corridor Park and a Special Management Zone surrounding the park.

Bulkley Cassiar FD. 1999. **Babine Landscape Unit Plan.** 45 pages.

Area: Babine Landscape Unit

Report Location: MSRM

Landscape Unit Plans (LUPs) are used to implement the operational practices set forth in the LRMPs. LUPs focus on objectives and strategies for biodiversity, wildlife, fish, special management zones, timber, recreation, visual quality and access. Also presented are guidelines for implementation, monitoring and review.

Bulkley Cassiar FD. 1999. **Nilkitkwa Landscape Unit Plan.** 32 pages.

Area: Nilkitkwa Landscape Unit

Report Location: MSRM

Landscape Unit Plans (LUPs) are used to implement the operational practices set forth in the LRMPs. LUPs focus on objectives and strategies for biodiversity, wildlife, fish, special management zones, timber, recreation, visual quality and access. Also presented are guidelines for implementation, monitoring and review.

Environmental Stewardship Division, BC Parks. 2000. **Management Direction Statement for Babine River Corridor Provincial Park.** 24 pages.

Area: Babine River Corridor Park

Report Location: BC Parks, Smithers; and website

[http://wlapwww.gov.bc.ca/bcparks/planning/mgmtplns/mgmtexisa\\_f.htm](http://wlapwww.gov.bc.ca/bcparks/planning/mgmtplns/mgmtexisa_f.htm)

Management direction statements (MDS) provide strategic management direction for protected areas that do not have approved management plans. MDSs also describe protected area values, management issues and concerns, management strategy focused on immediate priority objectives and strategies, and direction statements from other planning processes. Babine River Corridor Park is a high priority park for the development of a management plan.

Gitxsan Treaty Office, Watershed Planning Group. 2002. **Babine watershed sustainability plan – Gitxsan values and interests: Draft 2.0.** 47 pages.

Area: Babine River

Report Location: BC Parks, Smithers resource atlas - Babine River box

This report profiles the Gitxsan interests and values within the Babine watershed. This recognizes the Gitxsan chiefs and their House members as stewards of the House territories.

Pacific Analytics Inc., & O.R. Travers Forestry Consultants Inc. 2002. **The economic value of the Babine River Corridor Park with and without a protective buffer.** 24 pages.

Area: Babine River

Report Location: Babine River Foundation; MSRM, Smithers, Babine monitoring files

This report advocates for converting the Special Management Zone (SMZ) surrounding the park into a Resource Stewardship Zone (RSZ) with no forest harvesting, and creating a new SMZ around this new RMZ. It does this by comparing the economic value of commercial tourism operations in the Babine River Corridor Park with the value of forestry operations in the area.

O.R. Travers, O.R. Travers Forestry Consultants Inc. 2002. **From problem to opportunity: sustaining high quality wilderness angling in the Babine River corridor.** 52 pages.

Area: Babine River

Report Location: Babine River Foundation; MSRM, Smithers, Babine monitoring files

This report describes the problems surrounding maintenance of wilderness tourism in a long linear park with forestry operations building roads close to the park boundary. It includes proposals for changes in land management practices that will contribute to maintaining a high value wilderness experience on the river.

MSRM. 2004. **Xsu gwin lik'l'inswx: West Babine Sustainable Resource Management Plan.** 121 pages.

Area: West Babine River

Report Location: MSRM; and website <http://srmwww.gov.bc.ca/rmd/srmp/index.htm>

The West Babine Sustainable Resource Management Plan (SRMP) was developed to manage the many unique and important values of the lower Babine watershed in a sustainable manner. The plan provides for economic opportunities while sustaining ecological integrity. Important values that are managed for include First Nations, fisheries, wildlife, tourism, hunting, berry picking and mushrooms. The SRMP is intended to implement the objectives of the Kispiox LRMP and the Babine Interim LRUP.

## 24.0 Monitoring – General

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Laing and McCulloch Forest Management Services Ltd. 1994. **Babine River LRUP monitoring study: 1993 results.** 29 pages.

Area: Babine LRUP area

Report Location: MSRM, Smithers, file 17610-50/BABIR-AR, v1; MWLAP, Len Vanderstar

This report documents the recreational use of the river during 1993 including commercial and non-commercial rafting, fishing, hunting, forestry operations, and grizzly bear habitat usage. It has some photos and descriptions of the campsites D. Herchmer visited in his 1993 raft trip report. The report includes recommended strategies for maintaining quality wilderness recreational experiences and grizzly bear populations.

Harris D., Hillcrest Recreation Consulting. 1995. **Babine River LRUP monitoring study 1994 results.** 39 pages.

Area: Babine LRUP area

Report Location: MSRM, Smithers, file 12600-20/Babine Mon

This report presents the results of several monitoring activities in the Babine watershed for 1994. Forestry is monitored for compliance with road permits, harvesting guidelines and treatment unit prescriptions. Road construction, maintenance and shutdown recommendations are made with respect to managing sediment, but no data are presented. Access management and monitoring activities are reported. Visitor compliance with fish and wildlife regulations were monitored by federal and provincial enforcement agencies. Recreational visitor use information collected at a kiosk and from commercial operators is presented. Recommendations are made for all sections.

Quanstrom, C. 1995. **Babine River Interim Local Resource Use Plan – annual report of the monitoring committee 1995.** 15 pages.

Area: Babine LRUP area

Report Location: MSRM, Smithers, file 12600-20/Babine Mon, 610-50/BABIR AR, V1; MWLAP, Len Vanderstar

This report presents a summary of monitoring activities in 1995, some of which are presented in more detail in other reports. Areas covered are: access management, forestry activities, commercial and recreational licensees, grizzly bears, human/bear interactions, sediment, and kiosk operation.

Quanstrom, C. 1995. **Babine River Interim Local Resource Use Plan – annual report of the monitoring committee 1994.** 13 pages.

Area: Babine LRUP area

Report Location: MSRM, Smithers, file 17610-50/BABIR-AR, v2; MWLAP, Len Vanderstar

This report presents a summary of monitoring activities in 1994, some of which are presented in more detail in other reports. Areas covered are: forestry activities, grizzly bears, kiosk operation, sediment, and recreation.

LRUP Monitoring Committee. 1996. **Annual report of the monitoring committee 1996.** 21 pages.

Area: Babine LRUP area

Report Location: MSRM, Smithers, file 12600-20/Babine Mon; MWLAP, Smithers, Len Vanderstar; PIR Smithers, Dave Ripmeester

This report presents an overview of monitoring activities in 1996. Areas covered are: sediment, grizzly bears, forestry activities, guide outfitting, resident hunting and conservation.

Saimoto, R., & Rysavy, S., SKR Consultants Ltd. 1996. **Babine LRUP and CAMP monitoring results 1995.** 104 pages.  
Area: Babine LRUP area  
Report Location: MSRM, Smithers, files 12600-20/Babine Mon, and 17610-50/BABIR-AR, v3

The objectives of this project were to monitor compliance with the Babine River LRUP and coordinated access management plan (CAMP). This was done through field visits, MOF audit files, meetings with enforcement officers, and kiosk operations. The results of a questionnaire gauging perceptions of the LRUP and CAMP guidelines are presented. Covered are forestry activities, commercial and recreational activities, access management and monitoring, and kiosk operations. Sediments are cursorily treated.

Cuell, J., & Mellor, L. 1998. **Babine LRUP monitoring committee – summary of 1997 activities.** 2 pages.  
Area: Babine LRUP area  
Report Location: MSRM, Smithers, file 17610-50/BABIR-AR, v3

Provides brief summaries of the grizzly bear monitoring, Terrestrial Ecosystem Mapping (TEM), and stream classification activities in the Babine watershed.

Baldwin, B. 2000. **Babine River Corridor Park report 2000.** 22 pages.  
Area: Babine River Corridor Park  
Report Location: BC Parks, Smithers resource atlas – Babine River box

Gives details of park rangers' activities in the park during the summer of 2000. Includes use numbers for non-guided angling, rafting, and enforcement.

Baldwin, B. 2001. **Babine River Corridor Park report 2001.** 22 pages.  
Area: Babine River Corridor Park  
Report Location: BC Parks, Smithers resource atlas – Babine River binder

Gives details of park rangers' activities in the park during the summer of 2001. Includes use numbers for non-guided angling, rafting, and enforcement.

Cuell, J. 2001. **Biodiversity indicators in the Bulkley Landscape Units – Part 1: landscape level analysis.**  
Area: Bulkley TSA portion of Babine River  
Report Location: MSRM, Smithers, James Cuell

This report is the first attempt to determine how the biodiversity objectives in LUPs are being met in the Bulkley TSA. Landscape level biodiversity indicators are examined, with the stand level and fine filter levels to be reported later. Indicators examined are: seral stage distribution, patch size distribution, ecosystem network (core ecosystems and landscape riparian corridors), rare and endangered plant communities, and species diversity.

MOF, Skeena Stikine FD. 2004. **State of the Forests report.**  
Area: Bulkley TSA portion of Babine River  
Report Location: MOF, Smithers, Skeena Stikine FD

This report is the first state of the forests report monitoring the implementation of LUPs for the Bulkley TSA. It covers biodiversity, wildlife habitat, watershed integrity, timber management, visual quality, cultural heritage resources, access, and range.

Where possible the results are presented by landscape unit to enable analysis at this level.

## 25.0 Mushrooms

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Kranabetter, J.M., Trowbridge, R., Macadam, A., McLennan, D., & Friesen, J. 2002. **Ecological descriptions of pine mushroom (*Tricholoma magnivelare*) habitat and estimates of its extent in northwestern British Columbia. *Forest Ecology and Management*, 158, 249-261.** 13 pages.

Area: Western portion of Babine Watershed

Report Location: Journal article available in libraries

This paper describes the typical habitat type 21 highly productive pine mushroom areas, and relates this to biogeoclimatic ecosystem classification. All sites were in the Interior Cedar Hemlock (ICH) zone on zonal sites. Four areas of ICH covering 60,000 hectares were assessed for mushroom habitat using air photography. Some of this area was in the western portion of the Babine watershed. Mushroom habitat covered between 4.3 and 21.5% of the forests inventoried.

Friesen, J. 2002. **Pine mushroom habitat mapping in the Babine watershed.** 6 pages plus appendices and maps.

Area: Babine Watershed

Report Location: MSRM, Smithers; CD

The objective of this study was to map pine mushroom habitat in the Babine watershed. The study area was defined by the boundaries of the Interior Cedar-Hemlock moist cool subzone Nass variant (ICHmc1) and the Interior Cedar-Hemlock moist cool subzone Hazelton variant (ICHmc2). These subzones surround the Shedin Creek drainage, the lower half of Sam Green Creek, the easternmost section of the Babine River as it flows into the Skeena River, and Shegistic Creek. The total study area within the ICH zone covered 35,300 hectares. Of that area, 41.6 hectares were identified as Pine Mushroom Management Zones, covering less than 1 percent of the total area.

## 26.0 Recreation

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Herchmer, D. 1993. **Babine River raft trip.** 6 pages plus map.

Area: Babine River

Report Location: MSRM, Smithers, file 17610 BABIR V1

This report describes the condition of campsites along the Babine River that were visited during a 6-day raft trip. No standardized monitoring information was collected and no photos were included, so its use is limited.

Harris, D., Hillcrest Recreation Consulting. 1995. **Human/Bear interaction in the vicinity of the Babine bridge and fish weir area: A summary of recommendations for recreation site development, fish and wildlife viewing, and bear and human safety.** 21 pages.

Area: Babine bridge and weir area

Report Location: MSRM, Smithers, file 17610-5-/BABIR-WEIR; MWLAP, Smithers, Len Vanderstar; BC Parks, Smithers resource atlas – Babine River box.

This report examines options for minimizing negative bear/human interactions in the vicinity of the Babine River weir. It recommends development of a Forest Service recreation site for fish and wildlife viewing, safety in the Babine bridge area, and bear/human issue management.

MacHutcheon, A.G. 1998. **Bear hazard evaluation at campsites on the Babine River, BC.** 44 pages.

Area: Babine River

Report Location: MWLAP, Smithers, Len Vanderstar; BC Parks, Smithers resource atlas – Babine River Box

The potential for bear/human conflict at campsites along the Babine River was evaluated using qualitative indicators. These include visibility concerns, bear travel concerns, other sensory concerns and seasonal habitat potential. General management recommendations and recommendations for each campsite are given.

Cichowski, D., Macdonald A., and Gawalko, L. 1998. **Babine River BRIM survey.**

Area: Babine River

Report Location: BC Parks, Smithers, Babine Area Supervisor, and Babine River box. Also available on CD

This survey used a standardized Backcountry Recreation Impact Monitoring (BRIM) method to assess the level of impact at 16 campsites along the Babine River. This is a baseline report to which future assessments can be compared to determine changes in campsite condition. Includes photos and diagrams of each campsite.

Hillcrest Recreation Consulting; Dr. Ray Chipeniuk; Davis, Lack and Associates. 2001.

**Recreation capacity in Babine River Corridor Provincial Park.** Volume 1: Main report, 41 pages; Volume 2: Appendices.

Area: Babine River Corridor Provincial Park

Report Location: MWLAP, Smithers, Len Vanderstar

This report covers three recreational activities: steelhead angling, rafting and kayaking, and sockeye angling. Each activity is described and spatial distribution, user demographics, and social carrying capacity determined. The social and physical factors affecting this capacity are discussed. The results indicated that in all three activities the social carrying capacity was already being approached or was exceeded. A number of management options are presented that could be used to alleviate this situation. Monitoring options are also presented.

MacHutcheon, A.G., & Wellwood, D.W. 2002. **Assessing the risk of bear/human interaction at river campsites.** *Ursus*, 13, 293-298. 5 pages.

Area: Babine River

Report Location: BC Parks, Smithers resource atlas – Babine River box

This is a published version of an earlier report on this study. The potential for bear/human conflict at campsites along the Babine River and the Tatshenshini/Alsek rivers were evaluated using qualitative indicators. These included: visibility concerns, bear travel concerns, other sensory concerns and seasonal habitat potential. This paper discusses the rating method and management actions that should be taken as result of the ratings.

## 27.0 Tourism

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Meredith and Associates. 2002. **Kispiox Forest District tourism opportunity study.** 226 pages.

Area: Kispiox TSA

Report Location: Ministry of Small Business, Tourism and Culture

This study covers the Gitxsan First Nation territory and the Kispiox FD. It gives an overview of the present state of tourism in the area, and of the Gitxsan First Nation and tourism. A strength, weakness, opportunity and threat (SWOT) analysis is done by Gitxsan Watershed Administrative Unit, including the Babine. The report also

analyses the opportunities for air tours, lodges/huts, fresh water activities, front and mid-country use, cultural heritage interpretation, cross-country and backcountry skiing, road touring, and hiking. Opportunities in the Babine watershed include hiking trail development, ski touring, front and mid country usage, kayaking/rafting, destination lodge/hut and air tours.

Meredith and Associates. 2002. **Bulkley Cassiar Forest District, Bulkley plan area, tourism opportunity study.** 226 pages plus map.

Area: Bulkley TSA

Report Location: Ministry of Small Business, Tourism and Culture

This study covers the Wet'suwet'en First Nation territory and the Bulkley FD. It gives an overview of the present state of tourism in the area, and of the Wet'suwet'en First Nation and tourism. A strength, weakness, opportunity and threat (SWOT) analysis is done by Wet'suwet'en clan/house unit. The report also analyses the opportunities for air tours, lodges/huts, fresh water activities, mountain biking, mountaineering, front and mid-country use, cultural heritage interpretation, cross-country and backcountry skiing, snowmobiling, and hiking. Opportunities in the Babine watershed include air tours, destination lodge/hut, kayaking/rafting, mountaineering, cultural heritage interpretation, ski touring, snowmobiling and hiking.

Meredith and Associates, & The Office of the Wet'suwet'en. 2002. **Gitxsan, Wet'suwet'en and Gitanyow regional tourism strategy - Phase I: findings report (draft for discussion and refinement leading to Phase II recommendations).** 110 pages.

Area: Babine Watershed

Report Location: Gitxsan, Wet'suwet'en and Gitanyow First Nations; Meredith and Associates, Telkwa, Greg Meredith

This report gives an overview of the BC and regional tourism industry, and an inventory of existing First Nations tourism ideas and initiatives in the region. Tourism statistics, markets and trends for BC and the region are then given with recommendations for a Phase II study. A strength, weakness, opportunity and threat (SWOT) analysis is done by Wet'suwet'en clan/house unit and Gitxsan Administrative Unit. These are taken from previous studies referenced above. Some of this analysis covers the Babine watershed.

Meredith and Associates, & Helios Leisure Planning Group. 2003. **Towards the development of a regional tourism strategy – Skeena Region (Volume 1, final report, Volume 2, annexes).** Volume 1: 54 pages; Volume 2: 117 pages.

Area: Babine Watershed

Report Location: MSRM, Smithers

This broadly based document covers the entire Skeena Region with a specific focus on government's regional capability, suitability, and feasibility of assisting with the development of tourism on crown land. Regional strategic land use plans are analyzed for their effect on tourism in the region. Volume 2 profiles tourism products by activity, covering customer profile, key trends, product components and success factors, operator characteristics and examples of best practices.

## 28.0 Watershed Restoration

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McElhanney Consulting Services Ltd. 1997. **Tsezakwa Creek, Nichyeskwa Creek, and Northwest Babine Watersheds level one integrated watershed restoration plan.**

Area: Nichyeskwa and Bairnesfather Watersheds

Report Location: PIR, Smithers, Dave Ripmeester



The impacts of forestry development on these watersheds were assessed using maps, aerial photography and physical inspections. Assessment procedures included use of the Interior Watershed Assessment Procedures (IWAP). Four impact categories are discussed: peak flow, surface erosion, riparian buffers, and mass wasting. A sediment source survey was conducted, surface geology was reviewed, and an access management plan was developed. Rehabilitative measures to control sediments are proposed for a number of sites.

Beaudry, P., P. Beaudry and Associates Ltd. 2000. **Watersheds assessments for eight selected watersheds in the Bulkley TSA.**

Area: Boucher, Bairnesfather, Clota Lake, and Nilkitkwa Lake Watersheds  
Report Location: PIR, Smithers, Dave Ripmeester

These watersheds were assessed for cumulative effects of forest harvesting on the aquatic environment. The three main potential effects investigated were: 1) changes to peak flows, 2) changes to the watershed sediment budget, and 3) changes to the supply of in-channel large woody debris. A risk assessment approach was then used to determine if these changes could have a significant negative impact on the fisheries resource. Ratings for risk to the aquatic resource and fisheries habitat were mostly very low or low. One moderate and one high rating occurred. Recommendations for forest harvesting and watershed restoration activities are given.

Kossmann, R., Enns, C., & Kroschel J., Silvicon Services Inc. 2002. **Fish passage – culvert inspections – West Babine, Tsezakwa Creek, Nilkitkwa Lake, and Nichyeskwa Creek sub-basins.** 24 pages plus maps and figures.

Area: Nilkitkwa, Nichyeskwa basins  
Report Location: DFO, Smithers

Culverts on fish bearing streams that were constructed prior to the implementation of the Forest Practices Code were inspected for their ability to allow fish passage. Sites were priority ranked according to fish species, habitat values, barriers, and length of new habitat. Five sites had high priority rankings. The majority had moderate or low rankings.

## 29.0 Water Quality – General

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Remington, D. 1996. 316 pages. **Review and assessment of water quality in the Skeena River watershed, British Columbia, 1995.** (Canadian Data Report of Fisheries and Aquatic Sciences 1003).

Area: Babine River  
Report Location: MWLAP library, Smithers

The Babine portion of this report focuses on the impacts on lakes from mining activities. It contains some historical information about the area regarding forestry and settlement, river discharge data, and planning processes.

Dyken, T., & Rysavy, S., BC Conservation Foundation. 1998. **Operational inventory of water quality and quantity of river ecosystems in the Skeena Region: 1997 field season interim report.**

Area: Nichyeskwa, Nilkitkwa, and Cataline Watersheds  
Report Location: MWLAP, Smithers, Ian Sharpe; CD

Several methods were tested for their possible inclusion in a toolbox being developed to detect potential impacts to aquatic ecosystems from forest harvesting. This initial project covered sedimentation, channel morphology, water quality, water quantity, and stream productivity in watersheds from the Morice to the Queen Charlottes. Some sample sites were included in the listed watersheds.

Dyken, T., & Rysavy, S., Bio Logic Consulting. 1999. **Operational inventory of water quality and quantity of river ecosystems in the Kalum, Kispiox and North Coast Forest Districts - 1998 field season.** 61 pages.

Area: Nichyeskwa Creek

Report Location: MWLAP, Smithers, Ian Sharpe; CD

This report is a continuation of the interim report by Dyken and Rysavy (1998). Modifications were made to the 1997 methods tested for their possible inclusion in a toolbox being developed to detect potential impacts to aquatic ecosystems from forest harvesting. This project covered sedimentation, channel morphology, water quality, water quantity, and stream productivity in watersheds from the Morice to Queen Charlottes. In the Nichyeskwa Creek watershed three sites were monitored to assess the impact of a culvert replacement on the stream. Impacts from the culvert replacement were detected but were expected to be short-term. Recommendations are made for 1999 re-assessment.

Harper, J., AGRA Earth and Environmental Limited. 1999 and 2000. **Aquatic impact assessment of rivers ecosystems - Bulkley, Morice and Lakes Forest Districts, Skeena Region of the Ministry of Environment, Lands and Parks, British Columbia.** Two reports, 1999 and 2000.

Area: Nichyeskwa and Nilkitkwa Watersheds

Report Location: MWLAP, Smithers, Ian Sharpe; CD

The Rivers Project objective was to develop a toolbox of impact assessment methods that can be used to measure changes in the aquatic ecosystem. The impact assessment approach compares upstream and downstream results to quantify changes to the aquatic ecosystem due to forestry activities. The 1998 study reported here focused on identifying and completing reconnaissance surveys on all new bridge crossings in the three forest districts. Two bridge crossings in the Babine watershed were assessed and further recommendations for these sites are made. One bridge crossing from 1998 was reassessed in 1999 and no impacts from the crossing were found.

Bennett, S., Bio Logic Consulting. 2001. **Expansion and recalibration of the Kispiox benthic invertebrate index of biological integrity: field season 2000.** 37 pages plus appendices.

Area: Nichyeskwa and Gail Creeks

Report Location: MWLAP, Smithers, Ian Sharpe; CD

The goal of this project was to develop an adaptive forest management monitoring and evaluation framework for assessing the condition of aquatic resources. Benthic invertebrates were used as an index. This document is a progress report and summarizes two years of results. Sites in the Nichyeskwa and Gail Creeks are included as sample sites in this project.

Bennett, S., & Hewgill, K., Bio Logic Consulting. 2001. **Assessment of forest harvesting impacts on aquatic ecosystems in the Kispiox and Kalum Forest Districts: field season 2000.** 27 pages plus appendices.

Area: Nichyeskwa Creek

Report Location: MWLAP, Smithers, Ian Sharpe; CD

Two sites in the Nichyeskwa watershed were among those used to test for correlations between substrate size sampling results and benthic invertebrate sampling results. Not enough samples were obtained to make a conclusive comparison between the two measures. This was mostly due to difficulty finding suitable sites for McNeil core sampling in the Kispiox FD. This was the only aspect of this study carried out in the Babine watershed.

Chaplin, J., & Torunski, L., McElhanney Consulting Services Ltd. 2002. **Rivers ecosystems east field season 2001 report - Operational inventory of water quality and quantity of rivers ecosystems in the Bulkley, Lakes and Morice Districts of the Skeena Region, northwest British Columbia.**

Area: Nichyeskwa and Nilkitkwa Watersheds

Report Location: MWLAP, Smithers, Ian Sharpe; CD

As part of this project water temperature was recorded in a number of streams including some in the Nilkitkwa and Nichyeskwa watersheds. The purpose was to collect baseline information on maximum summer water temperatures in known high value fish habitat and to develop a classification system to identify temperature-sensitive streams in these forest districts. The two streams with higher than optimal temperatures for salmonids (18 and 23°C) were in the Nilkitkwa watershed, indicating that these streams may require temperature sensitivity management.

Bennett, S., & Rysavy, K., Bio Logic Consulting. 2003. **A benthic invertebrate index of biological integrity for streams in the Kispiox Forest District: field season 2002.** 48 pages.

Area: Gail, Cataline and Nichyeskwa Creeks

Report Location: MWLAP, Smithers, Ian Sharpe; CD

This project built on the work of previous seasons in calibrating the natural variability in benthic invertebrate communities in order to separate natural and human-induced changes in community structure. This was done to continue development of a benthic index of biological integrity for streams. Sample sites in the Gail, Nichyeskwa, and Cataline watersheds are included in the report. An implementation strategy for using the index is proposed.

### 30.0 Water Quality - Sediment

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Maloney, D., Wilford, D., and Schwab J. 1995. **Suspended sediment survey in the Nilkitkwa and Nichyeskwa Watersheds.** (Extension Note 11). Forest Sciences, Prince Rupert Forest Region. 5 pages.

Area: Nilkitkwa and Nichyeskwa

Report Location: MWLAP, Smithers, Len Vanderstar

This report summarizes sediment monitoring activities from 1992 to 1994 in these two watersheds. It details the source of suspended sediments, both natural and forestry related. Some recommendations for reducing forestry related sedimentation are made.

Maloney, D. 1997. **1995 survey of TSS concentrations in headwater streams of the Nilkitkwa and Nichyeskwa Watersheds.** (See also a draft on file titled - 1995 Nilkitkwa / Nichyeskwa Small Tributary Study). 48 pages.

Area: Nilkitkwa and Nichyeskwa

Report Location: MSRM, Smithers, file 12600-20/Babine Mon

Total suspended solids (TSS) were monitored in 1995 (June – October) in four tributaries to the Nilkitkwa and Nichyeskwa Rivers. The sediment source for the few samples with elevated levels of TSS was the running surface of active forest roads constructed with improper surface materials.

Schell, C., McElhanney Consulting Services Ltd. 2003. **Review of water quality monitoring in upper Nichyeskwa Creek – total suspended solids: May – July 2003.** 12 pages and appendix.

Area: Nichyeskwa Creek

Report Location: Babine River Foundation; MSRM, Smithers, Babine monitoring files

This report presents the results of an investigation of a sediment plume that was noticed coming from Nichyeskwa Creek in the fall of 2002. In May 2003, the source of the sediment was found and ground surveys were done to evaluate erosion and paths of sediment transport. Monitoring of water quality above and below the site was conducted. No increased sediment loads to Nichyeskwa Creek were found. This may have been caused by incorrect location of sample collection points due to snow deposits. Other factors were the time since road construction and the relatively dry weather during sampling. Recommendations are made for actions if future incidents are noticed.

### 31.0 Wildlife - General

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Madrone Environmental. 1994. **Ecosystem mapping and wildlife interpretations: Big Slide study area.** 34 pages plus maps.

Area: Big Slide

Report Location: BCTS Skeena Business Area, Hazelton Field Office

The objective of this project was to produce ecosystem maps and wildlife interpretations for the approximately 6,000 hectares in the Big Slide chart area of the Small Business Program. Biodiversity recommendations are also included in the report.

Strategic Watershed Analysis Team. 1999. **General biodiversity project – taking stock II: Sam Green and Shedin watersheds wildlife inventory and habitat assessments (draft A).** 46 pages.

Area: Sam Green and Shedin Creeks

Report Location: MSRM, Smithers; Gitxsan Treaty Office Library, Hazelton

The goal of this project was to inventory and assess the distribution of selected wildlife species and groups. Wildlife inventory was gathered by relative abundance transects and by traditional ecological knowledge. Special emphasis was placed on tailed frog, with numerous other species also mentioned. No evidence of tailed frog was found in the area.

Hawkes, V.C., & Neal, M. 1999. **Kispiox Forest District wildlife habitat suitability modeling and mapping.** Hazelton, BC: Ministry of Forests. 88 pages plus appendices (not seen).

Area: Babine West

### 32.0 Wildlife – Grizzly

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Lea, E.C., & Kowall, R.C. 1989. **Biophysical habitat units of the Babine River study area.**

Area: Babine River

Report Location: MWLAP, Smithers, Len Vanderstar and Tom Smith

This report gives detailed descriptions of the biophysical units of the area and describes successional trends of species composition, and potential winter forage for ungulates and summer forage for bears.

Steciw, J. 1990. **A compilation of high grizzly and fish use areas in the Babine River & tributaries.**

Area: Babine River & tributaries

Report Location: PIR, Smithers, Dave Ripmeester; BC Parks, Smithers resource atlas – Babine River binder

This report is a compilation of existing information on recreational fisheries and grizzly bear habitat in the Babine River area. It was gathered by interviewing people familiar

with the area. This information was later plotted on to 1:50,000 scale topographical maps.

Simpson, K., Keystone Bio-Research. 1990. **Seasonal use by grizzly bears in the Babine River drainage.** 30 pages.

Area: Babine River

Report Location: MWLAP, Smithers, Len Vanderstar and Tom Smith; BC Parks, Smithers resource atlas – Babine River binder

This report rates the biophysical habitat units identified by Lea and Kowall (1989) for their use by grizzly bears for foraging in spring, summer and fall. It describes what the bears fed on in the different seasons and provides some special management considerations regarding forestry developments.

Simpson, K., Keystone Bio-Research. 1992. **Grizzly bear habitats and biodiversity guidelines in the Babine River drainage.** 47 pages.

Area: Babine Watershed

Report Location: MWLAP, Smithers, Len Vanderstar and Tom Smith; BC Parks, Smithers resource atlas – Babine River binder

This report builds on the reports by Lea and Kowall (1989) and Simpson (1990). It identifies movement corridors between high use habitats, gives areas for each habitat type, assesses the adequacy of the habitats reserved for grizzly bears and wilderness values for meeting biodiversity objectives, and recommends suitable additional areas required to meet biodiversity objectives.

Hatler, D. 1995. **Grizzly bear monitoring in the Babine LRUP Area: 1994 project final report.** 118 pages.

Area: Babine LRUP area

Report Location: MSRM, Smithers, file 12600-20/Babine Mon; MWLAP, Smithers, Tom Smith; BC Parks, Smithers resource atlas – Babine River box

This report describes initial grizzly bear monitoring efforts, which had their primary value in problem analysis. It contains a literature review on grizzly bear management, monitoring, access development and conflicts. It also describes field studies conducted in 1994 (August to den-up). The report describes seasonal patterns of bear activity and measures of bear use for the defined area, and includes a list of sites and corridors for future monitoring. It concludes that more information on patterns of landscape use, in particular, denning sites, is needed, and that more study of bear/fish relationships is needed. In addition, the report concludes that maintaining human use opportunities while preventing bear problems will be a considerable management challenge.

Hatler, D. 1996. **Grizzly bear monitoring in the Babine LRUP area – 1995 project final report.** 120 pages.

Area: Babine LRUP area

Report Location: MSRM, Smithers, file 17610-50/BABIR-MC; MWLAP, Smithers, Len Vanderstar and Tom Smith; BC Parks, Smithers resource atlas – Babine River box

This project was a continuation of 1994 field season activities. Its primary focus was the development of a consistent long-term monitoring program. A preliminary monitoring protocol was developed using several different survey methods. Recommendations for use of each survey method in an effective long-term monitoring procedure are presented.

MacHutcheon, A.G. 1996. **Babine River grizzly bear trapping project, fall 1996.** 12 pages.

Area: Upper Babine River

Report Location: MSRM, Smithers, file 17610-50 BABIR-AR, v3; MWLAP, Smithers, Tom Smith; BC Parks, Smithers resource atlas – Babine River box

In this project two bears were radio-collared, but problems due to possible bear/human encounters while trapping the bears were experienced. The author makes recommendations for future collaring projects, including habitats where efforts could be concentrated.

Turney, L., & Pankras, C., Pacific Cascades Consultants Ltd. 1996. **Mitigative measures to protect grizzly bears and moose: Babine River Bridge – Kispiox Forest District.** 7 pages.

Area: Babine River

Report Location: CD

A review of habitats and habitat use by grizzly bear and moose was conducted north and south of the Babine River crossing, along the forest road corridor, near the confluence of the Skeena and Babine Rivers. The objectives of the review were to assess the habitats crossed by the road, to assess habitat use by grizzly bear and moose, and to determine potential mitigative measures for reducing impacts to these species. The habitat types on the north and south sides of the Babine River crossing contain important feeding areas for both grizzly bears and moose. Mitigative measures to ensure that moose and grizzly bears are not disturbed by road activities or are not harvested illegally are recommended.

Turney, L., Pacific Cascades Consultants Ltd. 1996. **Potential impacts to grizzly bear habitats and populations in the Babine River watershed: A review of northern mainline options.** 7 pages.

Area: Babine River

Report Location: CD

The purpose of this review was to assess possible impacts of road location options on grizzly bear habitat in response to expressed concerns. Routes proposed were to access timber in the northern portions of the Kispiox and Bulkley FDs. Assessment of the impacts of the route options was found to be difficult, due to lack of detailed information on specific habitats that may be affected by road locations. Based on landscape level considerations and the available literature, potential impacts to grizzly bear habitats and populations appeared to be similar for all route options. Possible measures to mitigate impacts are presented.

Hatler, D. 1997. **Grizzly bear monitoring in the Babine LRUP area – 1996 project final report.** 85 pages.

Area: Babine LRUP area

Report Location: MWLAP, Smithers, Len Vanderstar and Tom Smith; BC Parks, Smithers resource atlas – Babine River box

In this report, results from the grizzly bear monitoring project of 1995 are compared to those of 1996. The results indicated that there was not a substantial change in the grizzly bear population between 1995 and 1996. Results provide a baseline for monitoring in other years. The author reports that efficacy of the Grizzly Bear Monitoring Index was still being evaluated.

Hatler, D. 1998. **Grizzly bear monitoring in the Babine LRUP area – 1997 project final report.** 58 pages.

Area: Babine LRUP area

Report Location: MWLAP, Smithers, Len Vanderstar and Tom Smith; BC Parks, Smithers resource atlas – Babine River Box

This report compares the Grizzly Bear Monitoring Index results from 1997 to those from the two previous years. There was a decline in the index, but this did not necessarily mean there was a decline in the bear population. A high number of scats in the spring indicated that bears were still in the area. Few fish, high water, and a good berry crop changed the food availability dynamics resulting in a drop in the number of bears sighted.

Shelton, G. 2000. **Managing human/bear conflict at the DFO Babine River counting fence and living compound.** 21 pages.

Area: Babine River weir

Report Location: Smithers, Debbie Wellwood

This report for the DFO gives advice as to how to manage interactions between grizzly bears and humans in the area of the Babine River counting fence. This was in response to an increase in interactions in the period before the report was written.

Mahon, T., & Marsland, M. 2001. **Babine LRUP treatment unit mapping extension Kispiox Forest District.** 31 pages.

Area: Babine West

Report Location: MWLAP, Smithers, Tom Smith

Key areas in the Kispiox FD without Treatment Unit mapping included mid and upper portions of the Shedin, Shelagyote, Gail and Hanawald watersheds. This Kispiox Treatment Unit mapping extension project developed and implemented an alternate method for grizzly bear habitat mapping, applied it to the outstanding portion of the Babine watershed within the Kispiox FD, and completed Treatment Unit zoning for those areas.

Edie, A. 2001. **Habitat suitability mapping for grizzly bears, Kispiox Forest District.**

BC Ministry of Forests, Kispiox District, Hazelton and BC Ministry of Environment, Lands and Parks, Skeena Region, Smithers. 35 pages plus appendices.

Area: Babine West

Report Location: MSRM, Smithers, Babine monitoring files

The goal of this project was to develop habitat suitability mapping for grizzly bear in the Kispiox FD at a scale of 1:20,000. These maps are intended to be used for: 1) deriving grizzly bear treatment units, 2) improving the forest development planning process, and 3) monitoring the implementation of the Kispiox LRMP with respect to habitat retention goals.

Wellwood, D., Raven Ecological Services. 2002. **Babine grizzly bear monitoring project - 2001 year end report.** 76 pages.

Area: Babine Watershed

Report Location: MWLAP, Smithers, Tom Smith; BC Parks, Smithers resource atlas – Babine River box

The objective of the Babine Grizzly Bear Monitoring Project is to detect and 'red flag' potential changes in grizzly bear abundance within the Babine LRUP area. This report is a continuation of four years (1994 to 1997) of the monitoring project, when the development of standardized methodology for the Grizzly Bear Monitoring Index (GBMI) was completed. The GBMI is comprised of five components: road surveys, a river survey, standard bear watch sessions, documentation of incidental bear observations and an investigation into reported human/bear conflicts and mortalities. For three years (1998 to 2000), data was not collected for all components because funding was not available. However, MWLAP staff collected river survey data in fall 1998 and 2000 and BC Parks staff collected bear observation data in the Babine counting fence area in fall 2000. In 2001, all five components of the standardized methodology were completed. GBMI yearly comparisons were calculated for 1997

versus 2001, 1996 versus 2001, and 1995 versus 2001. These totaled 19, -1, and 6 respectively. Possible contributing factors to the resulting values, and the efficacy of the GBMI, are discussed.

MacHutcheon, A.G., & Mahon, T. 2003. **Habitat use by grizzly bears and implications for forest development activities in the Kispiox Forest District - final report.** 74 pages.

Area: Babine West

Report Location: MWLAP, Smithers, Tom Smith; CD

The project objectives were to: 1) quantify habitat use by grizzly bears in local ICH, SBS, ESSF, and, possibly, CWH biogeoclimatic subzones, 2) examine how elements of forest development such as roads and cutblocks affect habitat use, that is, habitat effectiveness, 3) assess seasonal habitat use and movement patterns that can be incorporated into timing and access management components of higher-level plans, 4) examine stand level use of particular high value habitats and develop stand level management strategies or evaluate the appropriateness of existing strategies in maintaining bear use while minimizing timber development impacts, and 5) identify high value, site-specific habitat features such as trails, dens, and fishing sites.

None of these objectives were adequately met because of the limited duration and scope of the study compared to what was originally planned. Nevertheless, results were obtained that assisted in addressing objectives 1, 2, and 3. Due to the high use of roadsides and clearcuts for foraging in spring, the need for forest planning to minimize the potential for bear/human interactions in clearcuts and along roads is emphasized through road deactivation, seeding of non-palatable roadside vegetation, and access management plans.

Huntington, B. 2003. **Background report for proposed wildlife habitat area - Shenismike West WHA.** In preparation.

Area: Shenismike Creek

Report Location: MWLAP, Smithers, Anne Hetherington; CD

This paper puts forth a rationale for the establishment of a Wildlife Habitat Area (WHA) at Shenismike West. The proposed WHA would focus on grizzly bear security and forage habitat. The proposed WHA would assist in maintaining the ecological integrity of critical forage areas, provide security, and perpetuate critical trail linkage between the important habitat of Grizzly Drop on the Babine River and upland areas. The proposed WHA is located north of the Babine River and west of Shenismike Creek.

Mahon, T., MacHutcheon, A.G., Reid, D., Morgan, D., & Edie, A. March 2004 (draft).

**Predictive habitat mapping with grizzly bear habitat suitability ratings for the Kispiox and Cranberry Timber Supply Areas.**

Area: Babine West

Report Location: MWLAP, Smithers, Tom Smith

The overall goal of the project was to produce suitability mapping of grizzly bear habitat at a scale of 1:20,000 across the Kispiox and Cranberry TSAs. Suitability maps produced by the project are intended for: 1) deriving grizzly bear Treatment Units for as yet unmapped portions of the Babine LRUP, 2) identifying high value grizzly bear habitat complexes across the remainder of the district, and 3) monitoring habitat retention goals of the Kispiox LRMP.

The authors addressed 3 key objectives: 1) development of a base habitat layer that was appropriate for applying grizzly bear suitability ratings, 2) development of seasonal grizzly bear habitat suitability ratings for each habitat unit, and 3) verification and refinement of the habitat mapping and suitability ratings.



Wellwood, D., Raven Ecological Services. 2004. **Babine grizzly bear monitoring project, 2002 year end report.** 63 pages. In preparation.  
Area: Babine River  
Report Location: MWLAP, Smithers, Tom Smith

A management priority in the interim Babine LRUP and Babine River Corridor Provincial Park MDS is to ensure a healthy population of grizzly bears. The objective of the Babine Grizzly Bear Monitoring Project is to detect or "red flag" potential changes in grizzly bear abundance within the Babine LRUP area. In this study, monitoring of grizzly bears was continued in the Babine LRUP area and along the lower Babine River. The results of the monitoring are ambiguous to date with no clear trend being detected.

Wellwood, D., Raven Ecological Services. 2004. **Babine grizzly bear monitoring project, final report.** In preparation.  
Area: Babine River  
Report Location: MWLAP, Smithers, Tom Smith

This report will give details of the 2003 field season and will be the final report of this monitoring program.

### 33.0 Wildlife – Grizzly, Mountain Goat & Moose

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Turney, L., & Blume, R. 2000. **Habitat assessment and suitability mapping for grizzly bear and mountain goat in Tommy Jack Pass, Kispiox Forest District.** Hazelton, BC: BC Ministry of Forests, Kispiox Forest District. 14 pages plus appendices.  
Area: Tommy Jack Pass  
Report Location: BCTS Skeena Business Area, Hazelton Field Office; CD

The Tommy Jack Pass area is within the Shelagyote Special Management Zone of the Kispiox LRMP. Forest harvesting and road building are planned for the area. This study assessed grizzly bear and mountain goat habitat and mapped habitat suitability. The report provides management recommendations to minimize the impacts on important habitats in the area. Significant grizzly bear habitat was found. Less mountain goat habitat was found. Significant moose usage was observed in wetlands in the pass. The development of an access management strategy and road location options are needed to minimize impacts on grizzly bear and mountain goat habitat. Recreation management strategies are needed to minimize impacts on mountain goat winter use of the area.

### 34.0 Wildlife – Moose

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Marshall, R. 1999. **Kispiox stratified random block moose survey – first draft.** 30 pages.  
Area: Babine River  
Report Location: BC Parks, Smithers resource atlas – Babine River binder; MSRM, Smithers, Babine monitoring files

This moose survey covered the lower elevations of the Babine River watershed including a large portion of the Nichyeskwa River. This was the first moose survey to cover this area so population trends cannot be inferred. Recommendations are made regarding the management of the moose harvest in this area, especially in light of the lack of information on the herd harvest and seasonal distribution. (The resource atlas binder also has wildlife survey flight summaries from 1978 and 1975 that covered parts of the Babine Watershed).

## 35.0 Wildlife – Mountain Goat

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Hazelwood, G. 1981. **Goat Survey – Bait Range August 4, 1981.** 4 pages.

Area: Bait Range

Report Location: MWLAP, Smithers, Rick Marshall; MSRM, Smithers, Babine monitoring files

The details of a helicopter survey for mountain goat on the Bait Range are presented. An estimate of 80 animals was arrived at from a 2.5-hour survey of the range.

van Drimmelen, B. 1985. **1984 Bulkley Ranges mountain goat inventory.** 28 pages plus appendices.

Area: Bulkley Ranges

Report Location: MWLAP, Smithers, Rick Marshall; MSRM, Smithers, Babine monitoring files

This inventory covers a wide area, a small part of which is in the Mt. Thoen and Mt. Thomlinson area. The population estimates for the zones are based on extrapolations from stratified random surveys of portions of the available habitat. The population estimates from the 1990 survey are compared to this one to determine population trends for the area.

Schultze, G. 1990. **Mountain goat surveys for Limited Entry Hunting zones 608-A, B, E and 609-D.**

Area: Mt. Thomlinson, French Peak, Mt. Thoen

Report Location: MWLAP, Smithers, George Schultze; MSRM, Smithers, Babine monitoring files

This mountain goat survey covered parts of the southwestern Babine watershed. In areas 608A & B the population estimates were much lower than those from a 1984 survey. Recommendations include that the harvest objectives for these areas should be reviewed, and some areas be closed to hunting.

Schultze, G. 1994. **July 1994 inventory of the Bait and Driftwood Ranges mountain goat populations.**

Area: Bait Range

Report Location: MWLAP, Smithers, George Schultze; MSRM, Smithers, Babine monitoring files

The Bait Range was inventoried to determine the size of its mountain goat population and to record potential use conflicts. A population of 222 goats was estimated for the Bait Range. This was much higher than the estimate of 80 animals from a 1981 survey by G. Hazelwood. This could be partially due to a longer search time. There was no evidence of an overharvest.

Schultze, G. 1999. **Atna Range mountain goat population and distribution survey – March 1998.** 9 pages plus appendices.

Area: Atna Range

Report Location: MWLAP, Smithers, George Schultze; MSRM, Smithers, Babine monitoring files

This mountain goat survey covered an area between the Skeena River and Shelagote River. The purpose was to determine the size and structure of the population, record habitat use, and to review the harvest data for the area. Three blocks were surveyed: Shelf Ridge, Mt. Tommy Jack and Atna Range. A total population estimate of 267 animals was obtained, with a lower population density than other areas. There was evidence of overharvesting in one year on Mt. Tommy Jack. Recommendations are made for managing this mountain goat population.

## Abbreviations

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BCTS .....	British Columbia Timber Sales
CMT .....	Culturally Modified Tree
CP .....	Cutting Permit
CWH .....	Coastal Western Hemlock
DFAM .....	Defined Forest Area Management
DFO .....	Department of Fisheries and Oceans
ESSF .....	Engelmann Spruce-Subalpine Fir
FD .....	Forest District
FL .....	Forest Licence
ICH .....	Interior Cedar-Hemlock
LRMP .....	Land and Resource Management Plan
LRUP .....	Local Resource Use Plan
LUP .....	Landscape Unit Plan
MDS .....	Management Direction Statement
MSRM .....	Ministry of Sustainable Resource Management
MOF .....	Ministry of Forests
MWLAP .....	Ministry of Water, Land, and Air Protection
NWCC .....	Northwest Community College
PSARC .....	Pacific Scientific Advice Review Committee
PIR .....	Pacific Inland Resources
RISC/RIC .....	Resource Inventory (Standards) Committee
SBFEP .....	Small Business Forest Enterprise Program (now BC Timber Sales)
SBS .....	Sub-Boreal Spruce
SCI .....	Skeena Cellulose Inc.
TRIM .....	Terrain Resource Inventory Mapping
TSA .....	Timber Supply Area
UBC .....	University of British Columbia
WSC .....	Watershed Code