

FEDERAL AID IN FISH RESTORATION  
STUDY D-1

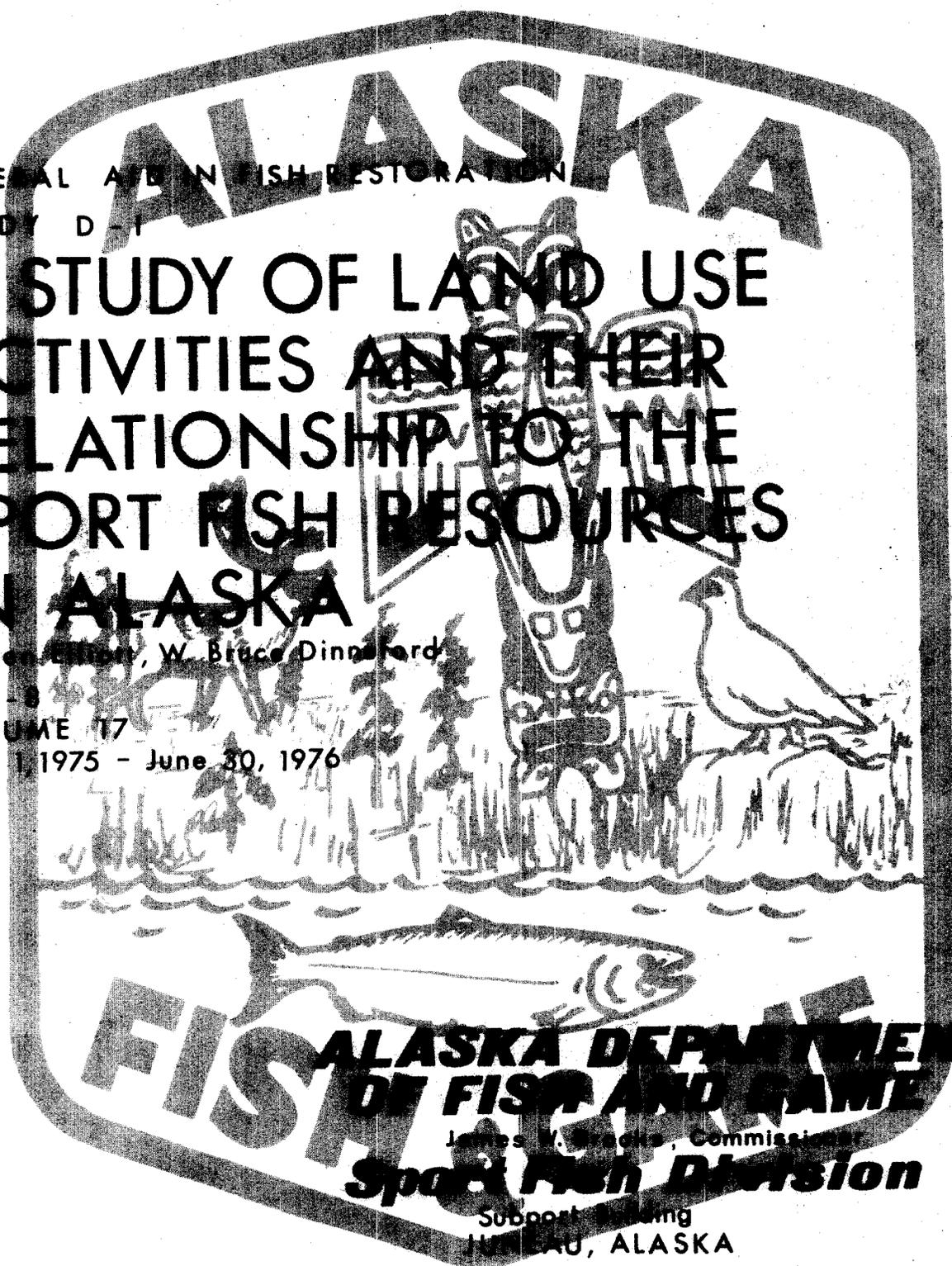
# A STUDY OF LAND USE ACTIVITIES AND THEIR RELATIONSHIP TO THE SPORT FISH RESOURCES IN ALASKA

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JUNEAU, ALASKA

STATE OF ALASKA

*Jay S. Hammond, Governor*



Annual Performance Report for

A STUDY OF LAND USE ACTIVITIES  
AND THEIR RELATIONSHIP TO THE  
SPORT FISH RESOURCES IN ALASKA

by

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## RESEARCH PROJECT SEGMENT

State: ALASKA Name: Sport Fish Investigations  
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Study No.: D-I Study Title: A STUDY OF LAND USE ACTIVITIES  
AND THEIR RELATIONSHIP TO THE  
SPORT FISH RESOURCES IN ALASKA  
Job No.: D-I-A Job Title: Establishment of Guidelines  
for Protection of the Sport  
Fish Resources During Land  
Use Activities

Period Covered: July 1, 1975 to June 30, 1976

## ABSTRACT

The fourth year of work on the Land Use Project included assisting the U.S. Forest Service in a multi-disciplinary team (MDT) study in the Yakutat Forelands. Thirty-two freshwater systems were analyzed for their contribution to present and future sport fisheries and potential land use conflicts. A rating of fishery habitat and opportunity was developed and applied to those systems surveyed. Ten "exceptional" systems received the recommendation of no development, five "excellent" systems were recommended for development under constraints, and seven "good" systems received recommendations to allow development with a minimum of negative disturbance.

Resurveys of watersheds previously studied by MDT methods were carried out in each of the three U.S. Forest Service Districts in Southeast Alaska. Watersheds logged at Corner Bay, north Kuiu Island, and Naukati Bay were evaluated for (1) the implementation of Sport Fish Division recommendations, (2) the effectiveness of these recommendations, and (3) the general impression regarding stream crossings and streamside logging. Of the 29 recommendations made originally, 11 were considered ineffective, 10 were considered effective and 8 were considered inconclusive.

## BACKGROUND

Project History

The land use guidelines project began in 1970 with a job entitled Dolly Varden Sport Fishery - Juneau Area (Reed and Armstrong, 1971).

Future direction is alluded to on page three where the authors state: "Housing developments, pollution, improper culvert placement, and other land use activities are evident along many of these streams. Continued misuse of the natural stream's physical and biological features can eventually reduce or eliminate their fish production."

By fiscal year 1971-1972 the job title was "Effects of Logging on Dolly Varden" (Reed and Elliott, 1972), and the objectives were changed accordingly. The abstract reads in part:

"Twenty-two logged watersheds located throughout Southeast Alaska were surveyed. Familiarization and photographic documentation of the most common logging damage to streams was obtained.

Comparisons were made between logged and unlogged areas, which revealed a decrease in species diversity within the altered stream sections."

Job titles were written for 1972-1973 as "Establishment of Guidelines for Protection of the Sport Fish Resources During Logging Operations" and "Ecology of Rearing Fish" (Elliott and Reed, 1973). This change allowed for input to land managing agencies of recommendations based on project findings.

"Guidelines" abstract summarizes the 1972-1973 year's work:

"This report presents the results of the first year of study on the effects of logging on the sport fish resources in Alaska. Study emphasis included: serving as members of Forest Service Multi-Disciplinary Teams on prelogging surveys, designating important sport fishing waters in Southeast Alaska, presentation of educational programs at logging camps, and publication of a pamphlet on logging and its effect on fish habitat."

The first logging resurvey, as well as a request for 13 stream protection measures was seen in the 1973-1974 study (Elliott and Reed, 1974). Briefly:

"Eight Multi-Disciplinary Team prelogging resource inventory surveys were conducted in cooperation with the Forest Service. Recommendations, based on field observations, were made on methods of protecting the sport fish resources during logging operations. One evaluation survey was carried out in a logging area which had received a prelogging survey."

Last year's work (Dinneford and Elliott, 1975) continued much in the same vein as the preceding two years. Logging continued to be the major activity that the project was involved with, primarily on U.S. Forest Service lands. Job title wording was changed from "...Logging Operations" to "...Land Use Activities" this year. The abstract states:

"Fifteen major watersheds were surveyed and recommendations were made to protect sport fish values during logging and associated construction (camps, dumps, and roads). These recommendations

included following stream protection measures listed in "Logging and Fish Habitat"; employing leave strips in braided-channel areas, erosion prone streambanks and high recreational angling locations; locating bridges and roads where sediment introduction into streams would be minimized; locating log dump sites where the chemical and physical impact on shellfish, schooling salmon, and high-use recreation areas would be reduced."

#### RECOMMENDATIONS

1. Land Use biologists should provide technical information to the U.S. Forest Service, Division of Lands, and other land managing agencies on the importance and methods of protecting the sport fish resource.

Cooperation of planning teams identifying priority factors, will allow designation of the waters most important to the sport fish resource.

2. Evaluation will be made possible by continued resurveys of logging areas previously studied by MDT methods.
3. A refined Fishery Habitat and Opportunity Index for Southeast Alaska should be developed. Such an index would facilitate making protective recommendations concerning the sport fish resource to land managing agencies.

#### OBJECTIVES

1. To designate waters important to the sport fish resource and make recommendations to protect this resource during land use activities.
2. To determine the effectiveness of recommendations made to the land managing agencies in protecting sport fish values during land use activities.
3. To advise industry of the importance of fish habitat and the methods needed to protect this habitat during land use activities.

#### TECHNIQUES USED

##### MDT Studies

The MDT approach to land use planning (also referred to as Inter-Disciplinary Team or IDT) is outlined in detail in the U.S. Forest Service Manual (U.S.D.A. Forest Service, 1973). Sport Fish Division

input into U.S. Forest Service planning typically begins after U.S. Forest Service personnel establish locations to be covered by planning teams. At this time, dates for coordinated fieldwork are established. Such coordinated work minimizes transportation costs and other logistical problems and hopefully eliminates overlap of effort.

Data collected by Land Use Project biologists measure the angling potential and physical parameters of sport fish habitat. Much of the information gathered compliments Catalog and Inventory work; for this purpose Lake and Stream Survey Summary forms are employed. The balance of data taken is more qualitative in nature, following the outline presented in Table 1, of Numerical Rating of Fishing Habitat and Opportunity. This fishery opportunity index is a development of a 1973 West Chichagof-Yakobi Study (Schmidt, 1974). Total possible score has been increased since 1973 from 15 to 50 points for increased resolution. In addition, the Fishery section was expanded to include ratings on present use sensitivity and potential use.

During a MDT survey, project biologists observe waters aerially and on foot. Fry traps are employed to determine the presence of fish and, if any, species present. Inch-to-the-mile topographic maps are used to designate (1) fragile land areas subject to erosion that may degrade stream or lake habitat, (2) important spawning and rearing habitat found in the system, and (3) outstanding angling locations that deserve recommendations to protect fisherman access and aesthetics.

All information collected is presented to the U.S. Forest Service planning team to make sport fish values known for inclusion in environmental impact statements or other such reports. These dictate the use of various segments of land.

#### Logging Resurvey Studies

Areas studied, as outlined above, are subject to resurveys carried out by Division biologists. The purpose of these resurveys, three of which were accomplished this year, is to evaluate the effectiveness of past recommendations made following MDT efforts. Aerial reconnaissance and foot surveys were made of stream crossings, logging near streambanks and areas where special care during operations was requested.

Specific observations were made of the following:

1. Road culverts: Was the culvert blocked by debris or did it have a drop at the downstream end, causing a block to migrating fish?
2. Logging along streambanks: Where this occurred, what was the damage to fish habitat?
3. Were recommendations made during MDT studies carried out? If so, did the request appear effective in protecting fish habitat and/or angling facilities?

Table 1. Rating System Used During 1975 Yakutat Foreland Resource Inventory

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NUMERICAL RATING OF FISHING HABITAT AND OPPORTUNITY

PARAMETER

I. Water Quality

A. Pollution

1. Water is free of domestic, industrial (including thermal), agricultural pollution. . . . . 6
2. Some form of pollution present, no noticeable effect. . . . . 4
3. Water polluted or changed from its natural state as evidenced by changes in plankton or benthos populations or conditions present which may be detrimental to fish eggs, insect larvae, etc. . . . . 2
4. Water polluted to extent that fish kills are likely, i.e., heat wastes, acids, resins, oxygen blocks, etc. . . . . 0

B. Limnology

1. Physical, chemical, and biological conditions such that water is or has potential of being productive throughout the year. (Good pool-riffle complex in streams or productive littoral area in lakes. Chemical parameters remain within tolerances of cold water fishes. Plankton and benthos present to support healthy fish populations). . . . . 6
2. Above conditions not optimum . . . . . 4
3. Limnological conditions limiting during some period of the year, but support special use of fish (overwintering, seasonal rearing, spawning, etc.). . . . . 3
4. Limnology conditions limiting so area not capable of supporting fish life (acid bog lakes, sterile waters, etc.) 0

II. Aesthetics

A. Environment

1. Environment (land, water, wildlife) is spectacular, inspirational, very scenic, has some unique environmental conditions (geological, historical, archaeological) . . . . 6

Table 1. (Con't) Rating System Used During 1975 Yakutat Forelands Resource Inventory.

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2.	Environment is very scenic, inspirational, but nothing unique in this area . . . . .	5
3.	Environment pleasing, stimulating, relaxing . . . . .	2
4.	Environment is not as above, but drab, uninteresting, spoiled, or artificial . . . . .	1
III. <u>Fishery</u>		
A. Size and Number		
1.	Supports a high population of one or more species of cold water game fish or supports an unusual population of sporting fish or provides critical habitat for some species, i.e., wintering area for Dolly Varden . . . . .	5
2.	Supports a high population of game fish or has potential of supporting high population of game fish . . . . .	4
3.	Supports a good population of a single species . . . . .	3
4.	Supports a low population of game fish . . . . .	2
5.	Supports no fish . . . . .	0
B. Present Use Senitivity		
1.	Waters are overfished, and fishery is in a distressed state	4
2.	Waters being fished with no reduction in sustained yield; no immediate problem . . . . .	3
3.	Fish populations under-utilized . . . . .	2
4.	No fishing pressure at this time . . . . .	0
C. Potential Use		
1.	Area capable of supporting a significant increase in angler pressure . . . . .	5
2.	Area capable of supporting a fair amount of increased angling pressure . . . . .	3
3.	Area incapable of supporting more than existing angling pressure . . . . .	0

Table 1. (Con't)

D. Rearing Potential

1. Capable of rearing large number of individuals and/or species . . . . . 8
2. Capable of supporting good number of fish . . . . . 6
3. Capable of fair rearing potential . . . . . 4
4. Rearing potential poor; food organisms minimal or absent; escape cover nonexistent or damaged; chance for rehabilitation slim . . . . . 2

IV. Accessibility

A. To Area

1. Access to area is appropriate (if by boat, good anchorage, by vehicle--turnouts present, by aircraft--adequate landing and take-off area, by foot--passable trails) . . . . . 2
2. Access difficult but possible . . . . . 1
3. Inaccessible . . . . . 0

B. Within Area

1. Shoreline or stream banks can be walked and fished from with ease, or boats available . . . . . 3
2. Perimeter or area difficult to negotiate or fish from, boat required . . . . . 2
3. Shoreline or stream banks impossible to walk or fish from, boat required . . . . . 1
4. Inaccessible . . . . . 0

V. Recreational Importance

1. This is the only recreational area of its kind in the vicinity . . . . . 5
2. This area has recreational values similar to several systems in the vicinity . . . . . 3
3. The area has recreational values not uncommon to the vicinity . . . . . 1

Total Points Possible . . . . . 50

## FINDINGS

### Yakutat Forelands MDT

The Yakutat Forelands is one of 13 planning units in the Tongass National Forest. As part of the MDT, the Sport Fish Division joined U.S. Forest Service personnel in gathering resource information for U.S. Forest Service planning. In addition and more importantly, this is a method by which waters important to the sport fish resource of Southeast Alaska can be identified.

Field surveys in the Yakutat Forelands yielded information on 32 watersheds. The following is a summary of these initial surveys. A complete report entitled "A Recreational Resource Inventory of the Sport Fish Related Assets of the Yakutat Forelands" is on file at the Sport Fish regional office in Juneau.

#### Akwe River (182-40-010):

The Akwe River was identified as having exceptional sport fish values. It should remain free of development along its length. Chinook, Oncorhynchus tshawytscha (Walbaum), coho, O. kisutch (Walbaum), chum, O. keta (Walbaum), and sockeye salmon, O. nerka (Walbaum), as well as Dolly Varden, Salvelinus malma (Walbaum); cutthroat, Salmo clarki Richardson, and steelhead trout, S. gairdneri Richardson; and eulachon, Thaleichthys pacificus (Richardson), use this system. The crossing of Forest Highway Ten should be placed in a location having stable soils.

#### Akwe Lake Inlet No. 1:

This system and Akwe Lake should receive the highest form of protection available due to exceptional aesthetics. This system should be maintained as an area for the backpacking fisherman.

#### Cannery Creek (182-30-040):

The primary value of this system is not in angling value for sport fish but in the production of important species. Dolly Varden fry were observed here. Any land developments along Cannery Creek should follow stream protection measures \* to produce the minimum of stream disturbance.

\* Found in Logging and Fish Habitat. U.S. Forest Service, Alaska Department of Fish and Game, and Alaska Department of Natural Resources. Revised 1976.

Doame River (182-10-010):

Cutthroat trout and sockeye salmon were seen as far upstream as the lower lake. Excellent spawning and rearing areas were observed downstream to the mouth.

The Doame was therefore classed as an exceptional system, and development should be discouraged along it. In addition, this river should be considered as an established canoe route.

East Fork Itadio River (182-50-100):

This stream should be afforded the highest degree of protection because of its potential importance as a canoe route. This system could easily be floated in conjunction with the Akwe River, Triangle Lake, and the main Itadio. No development should occur along this stream until the feasibility of this canoe route is definitely determined.

Gassy Creek:

This tributary to the Tanis River only rates good for sport fish potential; stream protection measures should however be adhered to in future nearby developments.

While good angling pools were observed, evidence of fish presence was minimal.

Harlequin Lake Inlet No. 1:

This system, including the stream and lakes at its headwaters, should receive the benefit of stream protection measures. While angling value would be classed moderate, production of sockeye salmon is considered excellent. Development in the area should therefore be carried out with caution.

Humpback Creek (183-40-10):

The lower portion of Humpback Creek should be protected through cautious development because it is a spawning area for pink salmon, O. gorbuscha (Walbaum). Stream protection measure should be applied and leave strips should be left along the spawning habitat.

Itadio River (182-50-010):

A wind-firm stand of timber should be left along the entire length of the Itadio River. This is an exceptional system and should have no development along it to reduce the quality of angling. Excellent late coho salmon runs occur here as well as all other species of salmonids that occur in Southeast Alaska.

Lost River (182-80-010):

Due to the fact that Lost River has been second only to the Situk in the sport harvest of coho salmon in the Yakutat area, it is rated exceptional and should have no more development along its length.

Miller Creek:

This glacial system should receive all stream protection measures possible so disturbance of the stream would be minimal. Braided areas should be avoided if crossings are to be made. Clear water tributaries may offer the most spawning and rearing habitat on this system and should thus be fully protected during any development.

Old Situk Creek:

The sockeye salmon run to this system should be protected by leaving wind-firm strips of timber above the highway bridge. All stream protection measures should be followed.

Pike Lakes:

These lakes are considered exceptional because they have the only known population of northern pike, Esox lucius Linnaeus, in Southeast Alaska. No development should be allowed in the area north of the highway toward these lakes, with the possible exception of an access trail. Advertisement of such a trail should be discouraged as it is felt the fish population could easily be reduced.

Gravel Ponds:

Three gravel borrow pits along Forest Highway Ten have had coho salmon fry introduced. Two of these are proving to be good rearing sites. It is recommended these ponds continue to be managed for fry production or a char/trout fishery.

Redfield Lake:

Since Redfield Lake was found to support rearing coho salmon, Dolly Varden, and rainbow trout, S. gairdneri Richardson, in abundant numbers, it is felt to be exceptional in angling potential. No development should be allowed to occur at this lake except for the possible exception of placing boats for the use of fishermen.

Situk River (182-70-010):

The Situk is the single best sport fishing system in the Yakutat Forelands. Perhaps the most important steelhead trout fishery in Southeast Alaska is on this river.

The Situk should receive classification from the U.S. Forest Service to remove it from any future land development along its entire length,

including Situk Lake. In addition, stakes from the Fish and Wildlife Service weir should be removed from the river to enhance boater safety.

Sockeye Creek:

This is a system that should have all stream protection measures applied to it and have leave areas left along its margin. This recommendation is made due to the exceptional number of rearing fry near the road crossing and the fact that a large school of spawning coho salmon was documented at its mouth.

Square Lake:

The value of Square Lake lies in its excellent rearing habitat. Dolly Varden and cutthroat trout were found in abundance. Stream protection guidelines should be followed to alleviate negative impacts on the lake.

Tanis Mesa Lake No. 1:

While rearing fry were abundant in this small lake no recommendations were made due to difficult fisherman access and its remote location. As with all fish-bearing waters, however, stream protection measures should be used.

Tanistay River:

This is another example of a system with exceptional rearing habitat (Dolly Varden in this case) and minimal angling waters. All stream protection measures should be incorporated in event of any land use activity near the rearing habitat.

Tawah Creek (182-80-030):

The good sport fishing potential here should be protected by using stream protection measures during streamside activity. The broken-down railway bridge should be removed to enhance boating and spawner migration.

Williams Creek (182-30-180):

The recommendation for this system is to employ stream protection measures during any nearby development. That portion of the creek known for excellent char and trout angling (pers. comm. Richard Marriott, Alex Brogle, and Steve McGraw, July, 1975) should receive the special attention of these guidelines.

Results of the initial Yakutat surveys are summarized in Table 2. These recommendations have been forwarded to U.S. Forest Service MDT leaders. Treatment of these systems by the U.S. Forest Service will not be known until release of the plan for the Yakutat area.

Table 2. Recommendation Code as Applied to Systems Evaluated in the Yakutat Area.

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Recommendation Code

1. Exceptional: 41 to 50

Watersheds from a fisheries and recreational standpoint of exceptionally high quality: To preserve the high-quality fishing experiences of these watersheds, it is recommended that no development or increased access be allowed.

Designated systems: Akwe River and Akwe Lake Inlet No. 1, Situk River, Lost River, Doame River, East Fork of the Italio, Italio River, Sockeye Creek, Pike Lakes, Redfield Lake.

2. Excellent: 30 to 40

Watershed having very good fisheries and recreational value; aesthetic values and fishing experience of lesser value than above: Development allowed but under constraints; exercise caution in development and mandatory use of protective measures for retention of fisheries productivity and sport fishing values.

Designated systems: Harlequin Lake Inlet No. 1, Humpback Creek, Old Situk Creek, Tawah Creek, Williams Creek.

3. Good: 20 to 30

Watersheds having a moderate to good sport fishing or recreational value: Development of the area should be planned to have the minimum of negative disturbance.

Designated systems: Cannery Creek, Gassy Creek, Miller Creek, Gravel Ponds, Square Lake, Tanis Mesa Lake No. 1, Tanistay Creek.

4. Fair: 11 to 20

Watersheds having a low fisheries and recreational value but may have potential for enhancement or rehabilitation.

5. Poor: 0 to 10

Watersheds with negligible value as a sport fishing or recreational area: Opportunity for enhancement or rehabilitation is nil.

Designated systems: None surveyed.

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## Logging Resurveys

Evaluations were made of three logging operations that were studied by MDT's prior to the inception of construction activities. A statement of the original recommendation is necessary to judge the findings of the resurvey.

### Corner Bay:

At Corner Bay the recommendation made following the 1972 MDT effort included the following:

1. A leave strip no less than 1/2 mile wide should be left around Kook Lake with foot access only allowed in this area.
2. Clear-cuts should not be visible from Kook Lake.
3. A leave strip no less than 500 feet wide should be left on each side of the most southerly inlet stream to Kook Lake.
4. Logging should be away from all tributaries, using split settings.
5. Plank-type bridges should be used.
6. Logging along the more northerly inlet streams to Kook Lake (streams "B" and "C") should be confined to tableland above the streams.
7. The south inlet stream to Kook Lake (stream "A") should be crossed below the braided area.

Following July resurveys, the evaluation of previously made recommendations was:

1. Kook Lake will have a 1/2 mile leave strip left from these operations, but the harvest of blowdown timber from the Basket Bay side will be the 1/2 mile distance. Thus, the recommendation as made is considered effective for the area that was included in the original survey. It would be a good idea in future initial surveys to observe and make recommendations for entire watersheds rather than impose artificial sale barriers.
2. Cutting Unit 22-A will be visible from Kook Lake. However, the importance of the recommendation is questioned since evidence of logging will be visible at the east end of the lake due to the operation harvesting blowdown timber. To be able to fish from a lake and not have to see active logging operations or scars from previous logging is a real value, but the MDT process has not allowed for such safeguards to be established. The recommendation is considered ineffective.

3. Stream "A," the most southerly inlet to Kook Lake, will have cutting within 500 feet in Units 23, 29, and 30. The most critical of these is in Unit 29, where the stream shows a great deal of braiding. It is obvious we are still a long way from having leave strips an accepted protective measure. The recommendation is considered ineffective.
4. One fish stream has been yarded across and a second has had trees felled into it and will need to be yarded across. In the second instance, the logs have evidently been in the stream for over a year. The recommendation has not been effective.
5. Plank-type bridges will probably never be used in Southeast Alaska. The cost of milled timber is considered prohibitive for such construction, and it is doubtful that plank bridges would be built "tight" enough to keep all fine sediment from entering the waterway involved. The recommendation is considered ineffective in preventing the introduction of sediment into streams.
6. Cutting unit boundaries were not observed along the entire length of streams "B" and "C"; the cutting unit map indicates infringement upon the streams in two poor locations. Corners of Units 22 and 22-A approach the streams in landslide-prone areas. The recommendation is not considered effective.
7. Stream "A" will be bridged in two locations, one above and one below the worst part of the braided channels. The upper bridge site (No. 7) may add sediment to the stream, but the braided portion of the stream will not be bridged. The recommendation is considered effective.

North Kuiu Island:

The north Kuiu Island resurvey was carried out in September, 1975. The original MDT study was in 1971. Sport fish resources and potential logging conflicts were listed for Rowan Bay, Dean Creek, Security Creek, and Cool Lake/Ledge Lake systems. Following are the initial recommendations and resurvey results for each watershed.

Rowan Bay:

Initial Recommendations

1. Protect designated fish streams
2. Relocate dump away from coho salmon schooling areas in bay
3. Consider well water in place of damming R-44 to protect rearing coho salmon above falls

### Resurvey Evaluations

1. In the Rowan Bay watershed, as in others in the north Kuiu area, many fish as well as nonfish streams had culvert-associated problems. This appeared more a result of faulty design rather than improper installation. Round culverts as used are considered ineffective in protecting designated fish streams.
2. The existing dump in Rowan Bay is just south of where schooled coho salmon were seen by Reed in 1971. This is considered to be in compliance with our recommendation. While it would have been better to locate the dump site farther from a known schooling area, it would also have been worse to use the originally planned location rather than the one settled for.
3. As suggested in the MDT report, a dam was not built across stream R-44. The pressure system well that is present has more than adequately protected salmon habitat. In fact, chum salmon were observed spawning adjacent to the pumphouse. The recommendation is considered effective.

Dean Creek:

### Initial Recommendations

1. Protect tributaries and main stream during logging
2. Make considerations for slide and siltation problems
3. Consider recreation corridor along main stream for angler access
4. Check falls for stream improvement project for fish passage above that point

### Resurvey Evaluations

1. Along Dean Creek similar problems with road culverts were noticed as in Rowan Bay; washing at the downstream end of approximately 80-90% of the observed circular culverts had displaced bedload, formed pools, and created sometimes fish-stopping falls. Round culverts as installed are not effective in protecting tributary streams.
2. 3. & 4. No problems with silt or sediment were observed in main Dean Creek or any of its tributaries. Aerial observations led us to conclude that the falls could be equipped with a steep pass fairly easily. Recommendations are considered effective.

Security Bay:

### Initial Recommendations

1. Protect designated rearing streams

2. Check beaver dams on C-41 (Band Cove) to determine if they are total blocks (check at low flows)
3. Check siltation problems from those tributaries on stream No. 109-45-10 not marked as fish streams
4. Beaver dams 2 3/4 miles upstream should be left in place for rearing habitat

#### Resurvey Evaluations

1. Designated rearing streams along road 6402 had culvert problems similar to other areas on north Kuiu Island.
2. Band Cove is well removed from any logging activity. No survey of the beaver dams here were made.
3. Road 6402 passes within 1/2 mile to the east of Security Bay. The bridge crossing main Security Creek (109-45-10) infringes on the stream channel on the south side. This was done intentionally to "protect" the north bank, which is considerably undercut. There was loose sand and mud on the south side beneath the bridge. While adult pink salmon were spawning in the near vicinity, no spawning was occurring directly under the bridge.
4. Siltation problems on Security Creek and its tributaries were not encountered except as mentioned regarding the main stream bridge. Many tributaries originally mentioned in Reed's report, however, were not observed. Similarly, rearing habitat created by the beaver dam 2 3/4 miles upstream from the mouth of Security Creek was not observed.

#### Cool Lake and Ledge Lakes:

##### Initial Recommendations

1. Leave a strip of timber 500 feet wide along Cool Lake
2. Check tributaries to lake for siltation problems
3. Consider observed clay throughout system
4. Consider recreational potential

##### Resurvey Evaluations

1. During the August resurvey a road was within one mile of Ledge Lake. It appears that the requested 500-foot wide buffer strip will be left around Cool Lake. The recommendation is considered effective.
2. 3. & 4. No specific action has taken place on these recommendations.

## General Observations

A couple of problems were found that were not specifically mentioned during the MDT study on north Kuiu Island. What has been called E-Road Creek, along road 6404, has been logged to the water's edge. Subsequent overcleaning and flood level waters of 1974 contributed to displacement of bedload materials. During a relatively low flow level in August, water could not be seen below the bridge; that is, the flow, in its entirety, was subterranean. After a night of rain, a torrential flow over the displaced rubble was observable.

A creek that splits into three distinct channels was found close to the road from the Rowan Bay Camp just before road 6402. A leave strip left along the middle channel was apparently not wide enough to serve its purpose; the entire fringe of timber blew down and dumped much slash into the creek. Clearing of the channel was only partly effective, as much debris was still on the flood plain.

### Naukati Bay:

Naukati Bay on Prince of Wales Island was the other location of a resurvey in 1975. Following field observations made by a Sport Fish Division representative in May, 1972, recommendations were made to the U.S. Forest Service to protect the sport fish and associated recreational resources. These recommendations were as follows:

1. Relocate the system road east of Long Lake
2. Leave a wind-firm stand of timber along outlet stream of Long Lake and lower reaches of tributary to outlet stream
3. Locate spur road crossing of tributary to Long Lake outlet stream 200 yards or more below forks
4. Leave wind-firm stand of timber around Long Lake
5. Fell and yard trees away from Yatuk Creek and all its tributaries
6. Fell and yard trees away from all streams along the outside coast of the sale unit
7. Fell and yard trees away from Naukati and Gutchi creeks and all their tributaries and lakes

Our resurvey of July, 1975 showed cooperation with stream protection measures and initial recommendations were good in the observed portion of the Naukati area. The following action has taken place on the original Sport Fish Division recommendations:

1. The road near Long Lake was relocated and presently lies east of the lake. The closest the road comes to the lake is 1/2 mile. The recommendation is considered effective in contributing to the reduction of future impact upon the lake.

- 2 & 3. These requests were accepted by the U.S. Forest Service, and it is doubtful if any activity will occur within the requested leave area during any entry. The main-line road crosses the tributary to the outlet stream roughly 1,000 feet upstream from the outlet stream and 1 1/4 mile below the fork. The recommendation is considered effective.
4. All timber will be cut around Long Lake during the three entries planned, with 20 to 30 years between each entry. Since a Department biologist observed felled trees in the lower end of Long Lake earlier in 1975, the recommendation is considered ineffective.
- 5, 6, & 7. At the time of the resurvey no logging has occurred on Yatuk, Naukati, or Gutchi creeks, so evaluation was impossible. Similarly, road construction has not progressed to the outside coast, thus no logging has occurred in that area.

#### General Observations

Problems with culverts were found. Situations were noticed where fish passage would be completely blocked because the outlet end of culverts were above the level of the stream channel, thus creating waterfalls. In others, shot rock was placed under the elevated outlet end of the culvert so the entire flow of the stream disappeared below the rocks placed in the stream.

Another instance was noted where rock overburden, mostly shot rock, was being introduced into the stream channels. On three log-stringer bridges we found brow logs had been deleted during construction. A brow log is the topmost log running the length of the bridge; it is, in effect, a "curb." The result of not including these brow logs was that several yards of overburden material entered streams.

Table 3. Summary of Treatment of Recommendations Made During N.D.T. Survey and Subsequently Resurveyed.

Recommendation Type and Number Made	Effectiveness and Comments
Leave Strips (7)	2 effective, 3 ineffective. 2 inconclusive due to progress of operations
Screen cuts from angling waters (2)	1 ineffective, 1 inconclusive
Log away from streams (4)	2 ineffective, 2 inconclusive - Use of leave strips could remedy problem.
Plank bridges (1)	Ineffective - Considered too expensive by industry

Table 3. (Con't) Summary of Treatment of Recommendations Made During N.D.T. Survey and Subsequently Resurveyed.

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Specific road and bridge locations	(3)	3 effective in avoiding braided stream channels and eliminating heavy fishing pressure
Dump Location	(1)	Effective in protecting schooling salmon
Well instead of dam construction	(1)	Effective - No block for rearing of adult fish
Stream improvement	(2)	1 effective, 1 inconclusive
Fish stream protection	(3)	Recommendation too general. Evaluation of culverts resulted in 3 ineffective recommendations.
Check siltation	(4)	1 effective, 1 ineffective, 2 inconclusive - Difficult to evaluate except during operations at locations
Beaver dam/rearing habitat protection	(1)	Effective due to being removed from active logging

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LITERATURE CITED

- Dinneford, W. Bruce and Elliott, Steven T. 1975. A study of land use activities and their relationship to the sport fish resources in Alaska. Alaska Dept. of Fish and Game. Fed. Aid in Fish Restoration, Annu. Rep. of Performance, 1974-1975, Proj. F-9-7, 16(D-I-A).
- Elliott, Steven T. and Reed, Richard. 1973. A study of land use activities and their relationship to the sport fish resources in Alaska. Alaska Dept. of Fish and Game. Fed. Aid in Fish Restoration, Annu. Rep. of Prog., 1972-1973, Proj. F-9-5, 14(D-I-A).
- \_\_\_\_\_. 1974. A study of land use activities and their relationship to the sport fish resources in Alaska. Alaska Dept. of and Game. Fed. Aid in Fish Restoration, Rep. of Performance, 1973-1974, Proj. F-9-6, 15(D-I-A).
- Reed, Richard D. and Armstrong, Robert H. 1971. Dolly Varden sport fishery - Juneau area. Alaska Dept. of Fish and Game. Fed. Aid in Fish Restoration, Annu. Rep. of Prog., 1970-1971, Proj. F-9-3, 12(R-IV-C).

Reed, Richard D. and Elliott, Steven T. 1972. Effects of logging on Dolly Varden. Alaska Dept. of Fish and Game. Fed. Aid in Fish Restoration, Annu. Rep. of Prog., 1971-1972, Proj. F-9-4, 15(R-IV-B).

Schmidt, Artwin E. 1974. Inventory and Cataloging of the sport fish and sport fish waters in Southeast Alaska. Alaska Dept. of Fish and Game. Fed. Aid in Fish Restoration, Annu. Rep. of Performance, 1973-1974, Proj. F-9-6, 15(G-I-A).

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