

ALASKA LEGISLATURE COMMITTEE FILES, 1989-1990 8672  
6007 HOUSE RESOURCES

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In 1976, the NMFS Alaska Region issued a policy statement calling for mandatory buffer zones of riparian vegetation along all salmon streams. Extensive research on buffer zones and salmonid habitat requirements resulted in a revision of the NMFS Policy in May 1988. This revision, which was based on a greater understanding of the importance of buffer zones, specifies a minimum no-harvest protective buffer zone along all streams in Alaska that are important to anadromous fish.

It states:

"In order to maintain optimum production of anadromous salmonids the NMFS policy is to advocate the protection of riparian habitat through the retention of buffer zones along all anadromous fish streams and their tributaries in Alaska. NMFS will seek to ensure that a minimum buffer zone width of 30 meters (100 feet) be maintained on each side of the stream, and should consist of the natural/existing undisturbed forest. This policy addresses only the minimum buffer zone width. In some cases a wider zone is necessary to protect fisheries resources. Additional research is needed from which more site-specific prescriptions can be developed."

The buffer width recommendation is based on scientific evidence compiled from research conducted in Alaska under the auspices of the Alaska Working Group on Cooperative Forestry/Fisheries Research which is comprised of State, Federal, and private entities and from the extensive research conducted in the last 10-15 years throughout the Pacific Northwest. Scientists and managers agree that the natural undisturbed riparian vegetation adjacent to streams is a critical and integral component of fish habitat. Salmonid habitat depends on riparian vegetation in the old-growth forest to provide large woody debris (LWD), shade and

cover, temperature moderation, streambank erosion protection, and to maintain water quality. LWD is the single most important component responsible for forming the majority of habitat (e.g., pools, undercut banks, instream cover, stable spawning beds, channel morphology, etc.) critical to the production of salmonids in the Pacific Northwest and Alaska. Research in Alaska has shown that nearly all (99%) of the LWD in streams comes from trees growing within 30 meters (100 feet) of the streambank. Nearly 1/2 of the LWD was from trees that had stood on the lower bank (less than 1 meter away), and 95% was from trees within 20 meters of the stream. The distance to LWD sources, however, differ between stream channel types. The quantity of LWD in these pristine streams is high and is directly correlated with the abundance of salmonid habitat. This stream habitat sustains optimum egg-to-fry survival, provides nursery areas for juveniles, serves as overwintering refuge, and yields smolts (outmigrating juvenile salmon) which ultimately generate the adult salmon returns from the ocean.

Because the natural depletion rate of LWD resulting from decay, fragmentation, stream export, and other events is relatively high (1-3 percent per year), a continuous supply of wood from the riparian zone is needed to offset the natural loss and maintain salmonid habitat. If these streams are logged down to the streambank without leaving any buffer to replenish the natural loss of LWD, then we predict that the level of LWD will be reduced by at least 70 percent in 90 years. The abundance of

rearing salmonids would likewise be reduced over a similar time. Recovery of LWD to the original pre-logging level from the regeneration of second-growth trees next to the stream would take about 250 years. Stream productivity would also be reduced during the period of regeneration and canopy closure. It is our opinion that, as a consequence, habitat and salmonid abundance would be significantly and irreparably damaged over this period of logging and recovery.

The riparian sources of LWD on tributary streams (streams used by only resident fish or those important for water quality) upstream of anadromous streams must also be protected because these streams contribute LWD and influence water quality in important downstream habitats. Buffer zones on these streams maintain the integrity of side slopes, streambanks, and stream channels and thus reduce the threat of landslides and debris torrents which can cause excessive downstream sedimentation. In essence, old growth riparian vegetation controls and maintains the natural integrity of a stream's characteristics critical to salmonid production.

Research has shown that clearcutting to the streambank without retaining an adequate zone of riparian vegetation adversely affects fish habitat, which in turn affects fish production on both a short- and long-term basis. Short-term (1-20 years) degradation of riparian habitat can result from increased sedimentation, altered temperature and streamflow regimes, and

reduced quantity of LWD. Long-term degradation of habitat (20-200 years) can result from closure of the second-growth canopy, reduced input of LWD by the second-growth trees, changes in stream channel morphology, and chronic sedimentation from streambank erosion, landslides, and roads.

The NMFS policy advocates the use of a minimum 30-meter buffer on each side of all salmon streams and their tributaries as a recommended method of curtailing both short-term and long-term detrimental impacts on fish habitat from timber harvest. Land managers should recognize that the minimum 30-meter zone of riparian vegetation adjacent to salmon streams and tributaries represents the "out-of-stream" habitat required to protect and maintain "in-stream" habitat at optimum levels. NMFS established the 30-meter minimum because buffers less than 30 meters will not adequately maintain fish habitat. Buffers wider than 30 meters may be needed in some situations to protect the "minimum" from particular hazards such as blowdown, braided stream channels, or landslides.

The NMFS Policy of protecting the riparian habitat of all anadromous streams and their tributaries by retaining a minimum 30-meter no-harvest buffer zone applies to all Class I, most Class II, and a few Class III streams in southeast Alaska. These categories are defined as follows:

Class I streams include any natural freshwater body of water (including lakes and ponds) containing anadromous fish or eggs or high value resident sport fish or with habitat having reasonable enhancement opportunities for anadromous fish.

Class II includes streams, tributaries, and ponds with resident fish of limited sport value generally occurring in steep gradients or upstream of migration barriers.

Class III streams are tributaries which do not have fish populations but have potential water quality influence or downstream habitat.

Class II streams are of great importance because they maintain water quality and supply LWD for downstream habitat in Class I streams. Class III streams which can significantly influence water quality on downstream Class I and II streams because of their size, or have high risk for side-slope and/or streambank failure, may require the protection of a full buffer zone.

We do not intend the Policy to apply to Class III tributaries which are either ephemeral (seasonal) or intermittent or have a gradient generally greater than 8 percent. In other words, the Policy does not apply to high gradient tributaries or storm drainages which do not have salmonids or do not have continuous flow. Also, it is not necessary to require buffer zones on Class II and III streams which do not flow into a Class I stream because they do not provide habitat for anadromous fish. These streams only require harvest according to best management practices to maintain water quality standards. The high gradient and storm channels which comprise the majority of Class III streams account for the greatest amount of acreage in a watershed.

In summary, research has demonstrated the importance of the riparian zone as fish habitat and that timber harvest within 30 meters of the streambank in this zone can cause long-term damage to salmonid habitat and production. The NMFS therefore, advocates retention of a minimum 30-meter no-harvest buffer zone along both sides of all anadromous fish (Class I) streams, most resident fish (Class II) streams, and a few significant water quality influence (Class III) streams in the forest of southeast Alaska. We are prepared also to assist in defining those Class II and III streams where buffer zones would be appropriate.

The NOAA policy would provide reliable protection of fish habitat during and after timber harvest. It would also set a bottom line that will facilitate decision making. The policy is relatively simple to apply. Protection of important anadromous streams would be far less compromised by lack of expertise, inadequate data, personnel or budget limitations, or competing interests. The minimum buffer standard would provide planners with an advance knowledge of harvest limitations. It would also provide an enforceable standard that lends itself to monitoring. The ease with which this standard can be implemented, monitored, and enforced should encourage compliance by managers and industry.

We do not view the timber retained in a buffer as "lost" from timber production, but rather, as timber required for fish habitat in the true sense of multiple-use. Commercial, recreational, and subsistence fisheries share the forest as a

common base for their existence. Thus, we believe retaining a small but critical portion of the forest for production of fish is the basic precept of wise use and progressive stewardship of the land.

Mr. Chairman, this completes my prepared statement. I will be glad to answer any questions.



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
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## NATIONAL MARINE FISHERIES SERVICE, ALASKA REGION

### POLICY

### FOR RIPARIAN HABITAT PROTECTION IN ALASKA

1988

#### INTRODUCTION

National Marine Fisheries Service (NMFS) issued a policy statement in 1976 on the "Protection of Fisheries Resources During Logging Operations in Alaska". This policy called for a mandatory buffer zone of riparian vegetation along both banks of all salmon streams; buffer width was to be based on resource values, topography, wind-firmness, and stream size. Some management activities (e.g., selective harvesting) could be allowed within the prescribed buffer zone. The policy was issued because of the importance of anadromous salmonids in Alaska's economy and because of continuous degradation of fisheries habitat by logging activities. New information and experience suggests that our policy be revised. What follows is our revised statement of policy and the supporting background information.

#### THE POLICY

In order to maintain optimum production of anadromous salmonids the NMFS policy is to advocate the protection of riparian habitat through the retention of buffer zones along all anadromous fish streams and their tributaries in Alaska. NMFS will seek to ensure that a minimum buffer zone width of 30 meters (100 feet) be maintained on each side of the stream, and should consist of the natural/existing undisturbed forest. This policy addresses only the minimum buffer zone width. In some cases a wider zone is necessary to protect fisheries resources. Additional research is needed from which more site-specific prescriptions can be developed.



## DISCUSSION

Research conducted under the auspices of the Alaska Working Group on Cooperative Forestry/Fisheries Research has confirmed that riparian vegetation is an important and essential component of anadromous salmonid habitat. This streamside zone is required to sustain optimum egg-to-fry survival, smolt yield, and adult returns. Riparian vegetation left along streams protects salmonid habitat from the effects of clearcutting by maintaining the natural temperature regime, maintaining channel stability, maintaining undercut banks and instream habitat, preventing erosion and sedimentation, providing cover for winter habitat, and permitting adequate sunlight for food production. In essence, riparian vegetation controls and maintains the natural integrity of a stream's characteristics which have evolved in harmony with the development of the old-growth forest for hundreds of years.

Clearcutting without retention of an adequate zone of riparian vegetation can affect habitat, which in turn affects fish production on both a short- and long-term basis. Short-term (1-20 years) impacts can result from increased sedimentation, altered temperature and flow regimes, and reduced quantity of large woody debris. Long-term impacts (20-100 years) can result from closure of the second-growth canopy, reduced input of large woody debris, changes in stream channel morphology, and continued sedimentation from bank erosion, landslides, and roads.

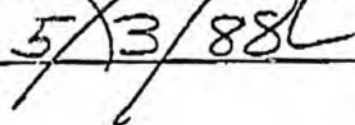
Properly designed buffer zones are an effective management tool for protecting riparian vegetation and can help prevent both short- and long-term adverse impacts on fish and wildlife habitat. Current research by NMFS shows that nearly all of the large woody debris in streams of southeastern Alaska originates from trees within 30 meters (100 feet) of the streambank. Other research shows that canopy shading necessary to maintain natural stream temperature regimes also comes from trees within 30 meters of the stream. These two factors, large woody debris and canopy cover, control stream characteristics essential to salmonid habitat. They also are directly related to the quantity and quality of trees within the riparian zone. There are indications that situations exist where a 30-meter buffer zone is not adequate. There are also special situations in which removal of riparian vegetation is considered a fishery habitat management option to open the forest canopy. In the absence of definitive research findings, buffer zone width in these areas should be set through an interdisciplinary team approach. Team members should take into account wind-firmness, topography, values of fisheries and wildlife habitat, and other resource uses.

Special techniques for selective harvesting of timber within the prescribed boundaries of the buffer zone may be beneficial in some cases for enhancing aquatic productivity; however, prescriptions for stream-side harvest of timber are premature pending research to determine whether there might be long-term impacts on fish habitat.

APPROVED BY:

  
ROBERT W. MCVEY, Director, Alaska Region

Date:

  
5/3/88

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TESTIMONY OF ROBERT W. LOESCHER  
before the  
JOINT HOUSE/SENATE RESOURCES COMMITTEE  
regarding revisions to the Forest Practices Act

January 31, 1990

MY NAME IS ROBERT W. LOESCHER AND I AM EXECUTIVE VICE PRESIDENT OF SEALASKA CORPORATION. SEALASKA HAS BEEN AN ENTHUSIASTIC SUPPORTER OF THE CONCENSUS PROCESS FOR ADDRESSING POSSIBLE CHANGES TO ALASKA'S FOREST PRACTICES ACT SINCE ITS INCEPTION IN LATE 1987. SEALASKA HAS DEDICATED CONSIDERABLE TIME AND RESOURCES WORKING WITH OTHER STEERING COMMITTEE PARTICIPANTS TO CRAFT CONCENSUS LEGISLATION, AND HAS WILLINGLY COMPROMISED ON A BROAD RANGE OF MATTERS OF SUBSTANTIAL CORPORATE IMPORTANCE. THE RESULTS OF OUR EFFORT, AND THE EFFORTS OF OUR COLLEAGUES, APPEAR IN SB 317, AND ITS HOUSE COUNTERPART HB 331. AS WE HAVE SAID BEFORE, SEALASKA SUPPORTS THAT LEGISLATION AND URGES THE LEGISLATURE TO ENACT IT THIS SESSION.

SEALASKA RECOGNIZES THAT DIFFERENCES REMAIN ON TWO IMPORTANT ISSUES. THE FIRST IS THE APPLICATION OF THE ACT'S NEW STANDARDS TO FEDERAL LANDS; THE SECOND INVOLVES THE DEGREE OF RIPARIAN PROTECTION APPROPRIATE FOR STATE LANDS. IT IS OUR HOPE THAT THOSE PRINCIPALLY INVOLVED IN THIS ISSUE CAN QUICKLY REACH AN AGREEMENT THAT WILL LEAVE ALL STEERING COMMITTEE PARTICIPANTS SATISFIED WITH THE LEGISLATION AS A WHOLE.

OVER THE PAST SIX MONTHS, THE STATE HAS BEGUN THE ARDUOUS TASK OF WRITING IMPLEMENTING REGULATIONS TO THE LEGISLATION, AND SEALASKA HAS SUPPORTED THAT EFFORT. INEVITABLY, THAT EXERCISE HAS ALERTED THE STEERING COMMITTEE TO THE NEED FOR A NUMBER OF TECHNICAL CHANGES TO THE LEGISLATION. A NUMBER OF THESE CHANGES HAVE BEEN DISCUSSED BY THE STEERING COMMITTEE, AND ALL THE PARTICIPANTS AGREE THAT TECHNICAL AMENDMENTS CAN AND MUST BE MADE TO THE LEGISLATION WITHOUT JEOPARDIZING THE UNDERLYING CONSENSUS.

FOR EXAMPLE, SB 317 PROVIDES THAT THE LEGISLATION'S RIPARIAN PROTECTION REQUIREMENTS CANNOT RESULT IN THE FORCED RETENTION OF MORE THAN 5% OF AN OPERATOR'S TIMBER. THE BILL CURRENTLY PROVIDES THAT THIS CEILING WILL BE MEASURED ON A SO-CALLED "BASAL AREA" BASIS--A BASIS WHICH THE STEERING COMMITTEE NOW CONCEDES IS A CUMBERSOME MEASURE THAT ADEQUATELY PROTECTS NO ONE'S CONCERNS. AS A RESULT, PARTICIPANTS HAVE AGREED TO AN AMENDMENT WHICH WOULD ESTABLISH THE MEASURE AS EITHER BASAL AREA, OR ANY "OTHER COMPARABLE MEASURE." THE TECHNICAL TASK OF DEVISING AN APPROPRIATE ALTERNATIVE MEASURE WILL THEN BE DONE IN THE DEPARTMENT OF NATURAL RESOURCES' REGULATIONS.

FURTHER, THE STEERING COMMITTEE AGREED TO ESTABLISH A TECHNICAL AMENDMENT PROCESS, UNDER WHICH COMMITTEE MEMBERS WOULD FORWARD PROPOSED TECHNICAL AMENDMENTS TO THE PRINCIPAL STATE AGENCIES INVOLVED. THE RESULT, HOPEFULLY, WILL BE A

PACKAGE OF TECHNICAL AMENDMENTS THAT WILL YIELD A BETTER BILL WITHOUT GENERATING ADDITIONAL CONTROVERSY.

OBVIOUSLY, THE LEGISLATURE IS GOING TO EXERCISE ITS INDEPENDENT JUDGMENT ON THIS LEGISLATION. IN THE COURSE OF DOING SO, IT WILL BE ASKED TO CONSIDER AMENDMENTS BOTH TECHNICAL AND SUBSTANTIVE. I'M SURE THAT ALL STEERING COMMITTEE PARTICIPANTS WILL RECOGNIZE THAT THIS DEBATE IS AN INHERENT PART OF THE LEGISLATIVE PROCESS. THE FOREST, WE HOPE, WILL NOT BE LOST FOR THE TREES. WHILE STEERING COMMITTEE PARTICIPANTS WILL INEVITABLY DISAGREE OVER WHETHER A PARTICULAR AMENDMENT IS A TECHNICAL IMPROVEMENT, OR A REOPENER, I HOPE THAT NONE OF US LOSE SIGHT OF THE OVERALL GOALS WE ARE DEDICATED TO ACHIEVING. THE STRUCTURE OF THE LEGISLATION, AND ITS PRINCIPAL ELEMENTS, ARE A SOUND, CREATIVE, AND WORKABLE COMPROMISE. AND, IT IS MY HOPE THAT THE REMARKABLE ATTRIBUTES OF THIS LEGISLATION ARE NOT LOST IN THE MORE TECHNICAL DEBATE THAT BEGINS TODAY.

THANK YOU FOR THE HARD LOOK THAT I KNOW YOUR COMMITTEES WILL GIVE THIS LEGISLATION, AND SEALASKA LOOKS FORWARD TO WORKING WITH YOU IN THE COMING MONTHS.

Testimony of Thyas Shaub  
For The Alaska Loggers Association  
Joint House-Senate Resources Committee Hearing  
January 31, 1990  
Juneau, Alaska

Senator Fahrenkamp, Representative Menard and Davidson, and members of the Committee, my name is Thyas Shaub. I am director of governmental affairs for the Alaska Loggers Association (ALA).

The Alaska Loggers Association formed in 1957 as a private, non-profit organization comprised of companies related to Alaska's forest products industry. Currently there are 115 regular member companies and 180 associate member companies. The regular members companies alone have over 4000 employees who are directly involved in timber operations.

My testimony before you today will be very similar to the message I gave you last May and at the joint hearing held in Palmer in October. We still have two major concerns: 1) the effect of this legislation on the management of federal timberlands and 2) the mandated 30 meter no harvest zone on state lands south of the Alaska range.

The Alaska Loggers Association is part of the newly formed Forest Alliance. You all received information packets about the Forest Alliance last week. The Forest Alliance members are currently working on a few amendments including the federal and state land issues I have mentioned.

Regarding the coastal zone management issue on federal lands - as we understood it, the revision of the act was to apply to private, state and municipal lands only. It was understood that it would be neutral to federal lands. However, because the Forest Practices Act serves as the standard for the Coastal Zone Consistency process, federal lands were affected.

Although the Alaska Loggers Association has been through several draft amendments to remedy this problem, we have not yet landed on the solution. We could easily have an amendment that would satisfy the industry but our goal is to forward an amendment to you that is acceptable to the Forest Service and the State of Alaska. We have begun meetings that will hopefully lead us to that end.

Regarding the buffer issue on state land we have a problem with a rigid 30 meter no harvest zone. We recognize the importance of the protection of fish habitat and water quality. We believe this can be achieved with a more flexible

standard that would allow for site specific decision making by the regulating agencies. The original steering committee agreement allowed for this type of flexibility on state land. If necessary, a flexible standard could be made more stringent on a local level through the land planning process. During legislative drafting this standard for state land was changed to a 30 meter no harvest zone. We would like to see the flexibility restored.

I would like to emphasize that through alot of hard work and dedication by all who were involved, the Forest Practices Steering Committee came very close to consensus. However we did not reach complete consensus. As I have explained, we still have a couple problem areas to fix before the Alaska Loggers Association can fully support this legislation.

I will keep you informed as to the progress of the amendment language regarding these issues.

Thank you for the opportunity to testify.

TESTIMONY OF THYES SHAUB  
FOR THE ALASKA LOGGERS ASSOCIATION  
FOR THE HOUSE RESOURCES COMMITTEE

Representative Menard and Davidson, and members of the Committee, my name is Thyes Shaub. I am director of governmental affairs for the Alaska Loggers Association (ALA). The ALA supports the consensus process established by Governor Cowper and we believe it will ultimately result in legislation we can support. The legislative proposal before you represents hard work by many individuals in a sincere effort to reach a compromise on a wide variety of issues. That process, however, is not yet complete. There are still unresolved issues which need to be addressed and which can be addressed during the time between sessions so that a reasonable Forest Practices Act can be passed in the next session of the Legislature.

One key issue which is not yet resolved is the impact the legislation before you would have on federal lands through the Federal Coastal Zone Management Act and Section 27 of this proposed legislation (as found on page 25 of the bill). When the consensus process was still in the formulative stage, the ALA was advised by Department of Natural Resources (DNR) officials that the State Forest Practices Act would have no impact on federal land. On that basis, the federal operators and the Forest Service were not invited to join the Steering Committee which produced this legislation. There was a serious debate within the DNR about whether the ALA should be on the Steering Committee because there was to be no impact on federal lands. Ultimately, the ALA was added as a member of the Steering Committee because so many of the

loggers it represents harvest timber on private lands - it was not granted entry because of any intended impact on federal lands.

The ALA has served on the Steering Committee throughout this process and participated in all the discussions. The ALA participation was based on the presumption that the State Forest Practices Act would not apply to federal land.

Upon receipt of the legislative language, we notified the Steering Committee that the understanding going in had not been kept, and that indeed, the legislation did apply to federal lands through consistency determinations. We presented a proposal to deal with the issue. Since that proposal was unacceptable to the personnel from the Division of Governmental Coordination, we prepared an alternative proposal which is attached. Through April 30, 1989, we were in touch with members of the Division of Governmental Coordination regarding a compromise.

Section 27 of the proposed legislation states as follows:

Section 27. AS 41.17.900(b) is repealed and re-enacted to read:

(b) The degree of resource protection on federal land shall be no less than that provided by this chapter for state land. However, the specific provisions of this chapter and its implementing regulations are not applicable to federal land either directly or for purposes of compliance with the Coastal Zone Management Act. (emphasis added)

This clearly impacts federal lands to the same extent State lands are impacted by the proposed legislation.

Accordingly, to deal with this issue, ALA's federal timber operators needed to participate on the Steering Committee to review the proposals for State land. Since the proposed legislation is now going to affect federal land, it is only fair that we have the time to explain these issues to you and show you the need for such amendments prior to your passage of this bill.

The approach taken in the proposed legislation is far more prescriptive than that previously taken with respect to management of public resources in Alaska. On federal land, the operating management philosophy is multiple-use. Up to this point, the standards on federal land under multiple use have been much tighter than under the existing Forest Practices Act and we believe more than adequate to protect resources on federal land. In short, we do not need the change in management philosophy represented in this bill to apply to federal land. The ALA should have the opportunity to bring before you its members who operate on federal land, including the Forest Service which manages it, to describe to you why these changes which may be needed for private land are not needed for the federal public land.

Should you elect to go forward with this legislation anyway, we would urge that the bill be amended to strike Section 27 and in lieu thereof, insert the language for a new Section 405(b) which is attached to this testimony. That language would require that operations on federal land achieve the higher of existing federal requirements on the National Forest or the standards from the Coastal Zone regulations which existed prior to the time those

regulations were preempted by the passage of the State Forest Practices Act in 1978. .

In addition to the concern about impact on federal lands described above, our members are also concerned about the impact on State lands under AS 41.17.118. That section precludes timber harvest in certain areas of the State within 30 meters of "anadromous or high value resident fish water body" and requires unspecified forms of protection 30 to 90 meters from the water body. While there is no question that maintenance of fish and game habitat is of equal importance with timber as part of multiple use management, it has always been the case that trade-offs are left to the discretion of the land managers. The proposed prescription takes that discretion away. This issue needs careful examination prior to passage of this legislation.

Regrettably, there has been a lot of discussion about what might happen if the legislation introduced two days ago is not enacted this year. Specifically, there has been talk of habitat regulations and regulations under Section 319 of the Clean Water Act being promulgated. Such sanctions should not be applied unless and until the process breaks down. The Steering Committee should be reassembled, with the ALA included, and a determination made whether or not this legislation is going to affect federal lands. If it is not intended to affect federal lands, then language should be worked out between the Division of Governmental Coordination and the ALA and the Steering Committee, which will resolve the problem. If it is determined that the legislation is to affect federal

lands, then the pulp mills, the Forest Service, and at least one sawmill should be made part of the Steering Committee and the entire proposed action be reviewed to determine what changes should be made in the proposed legislation to account for that. In any event, the process should continue.

Thank you for the opportunity to testify.

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The Honorable Bettye Fahrenkamp  
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The Honorable Curt Menard  
The Honorable Cliff Davidson  
Co-Chairmen, House Resources  
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Dear Senator Fahrenkamp, Representative Menard and  
Representative Davidson:

You had asked for a short memorandum in layman's terms describing the difference between what is presently proposed in Section 27 of the proposed State Forest Practices Act and what is proposed in the Alaska Loggers Association's (ALA's) attached amendment with respect to application of the proposed State Forest Practices Act to federal land. This is an extremely complicated subject, and thus the shorter and more general the explanation, the more likely one is to fall into technical error. With this caveat in mind, we make the following points:

(1) What the Federal Coastal Zone Management Act Requires. National Forest and other federal lands are excluded from the Alaska Coastal Zone. However, Section 307(a) of the Federal Coastal Zone Management Act of 1972 requires:

Each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs (emphasis added).

Senator Bettye Fahrenkamp  
Representative Curt Menard  
Representative Cliff Davidson  
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The term "consistent to the maximum extent practicable" is defined in 15 C.F.R. Sec. 930.32, which states in pertinent part in subsection (a):

Accordingly, when read together, Sections 307(c)(1) and (2) and 307(e) require federal agencies, whenever legally permissible, to consider state management programs as supplemental requirements to be adhered to in addition to existing agency mandates.

In California Coastal Commission v. Granite Rock, 480 U.S. 572 (1987), the United States Supreme Court found that these requirements even extended to obtaining state permits where they did not conflict with federal law.

In short, the ALA believes that, absent some explicit direction from the Alaska Legislature, the Federal Coastal Zone Management Act will require the application of the State Forest Practices Act to National Forest land through CZM consistency determinations.

(2) What Section 27 of the Proposed Act Requires.  
Proposed Section 27 would repeal AS 41.17.900(b) and re-enact it to read as follows:

(b) The degree of resource protection on federal land shall be no less than that provided by this chapter for state lands, however, the specific provisions of this chapter and its implementing regulations are not applicable to federal lands either directly or for purposes of compliance with the Coastal Zone Management Act. (emphasis added)

The underlined language makes it explicit that the State Forest Practices Act, as it applies to state land is the standard which the federal program must meet "to the maximum extent practicable." The language which is not underlined states that the federal agencies only have to meet the substantive standards of the State Forest Practices Act, not the procedural requirements. Thus, reading the entire section together, it makes the proposed State Forest Practices Act the standard for federal land even though the procedural requirements of the State Forest Practices Act would not apply.

Federal land timber operators are gravely concerned about what may emerge as the State standards when regulations are promulgated pursuant to the directions of the proposed State Forest

Senator Bettye Fahrenkamp  
Representative Curt Menard  
Representative Cliff Davidson  
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Act. The proposed Forest Practices Act moves away from normal multiple use management, as heretofore practiced on State lands and presently practiced on federal lands, to a more prescriptive type approach (see proposed Sec. 14). The requirement in the law for the 30 meter no harvest zones along streams and the prescriptive regulations which will be written under new AS 41.17.080 on state lands could result in preventing timber development on the approximately 32 million acres of state forest land.<sup>1</sup> While the Alaska Legislature may see this as necessary to protect state resources, federal timber operators believe that federal resources on the Tongass National Forest have been well managed under the multiple use system. They want to keep a system which uses the expertise of land managers in making site specific determinations of multiple use trade offs pursuant to performance based standards rather than replace it with centrally drawn regulations, produced at someone's desk, which may or may not apply to site specific situations.

Federal timber operators have no idea what regulations will be promulgated under the prescriptive direction of AS 41.17.080. Further, there is no question that they will be subject to lawsuits on consistency grounds to determine whether or not harvesting in the riparian zone on federal lands meets the same standards as would be achieved on State lands with its 30 meter no harvest zone.

(3) What the ALA Proposal Would Do. The ALA proposal first would make a finding that for consistency purposes, it is in the public interest to have a different system (multiple use) on federal land than the system on state lands (prescriptions).

In subsection (b), the amendment states that the standards the State will use for purposes of consistency determinations will be the higher of what is in the Forest Service's Federal Forest Management Program or what had been the State Coastal Zone regulations for timber processing prior to passage of the State Forest Practices Act in 1978 (which preempted those regulations). This will assure the continued high standard that the Forest Service has achieved on National Forest, but retain the existing multiple use management approach.

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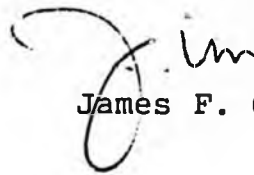
<sup>1</sup> Unlike the provision for private lands in the proposed State Forest Practices Act, there is no 5% cap on the amount of timber on State or municipal lands which can be precluded from harvest.

Senator Bettye Fahrenkamp  
Representative Curt Menard  
Representative Cliff Davidson  
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The ALA reasonably believed going into this process that there would be no fundamental change in the way National Forest lands are managed were the proposed State Forest Practices Act to become law. The attached amendment would enact that commitment into law. While it is true that language could be crafted which would prevent the proposed State Forest Practices Act from applying to National Forest land without nailing down what the new standard would be in statute, the ALA is opposed to this approach. The standard for consistency with the State Forest practice standards is set forth in the existing Forest Practices Act and the 5% protection for private landowners is in the statute. Accordingly, it would be unfair for our federal timber operators to give up their present statutory protection and be left to the vagaries of what the ACMP might do in the future by way of regulation.

Thank you for the opportunity to provide this information. Please let me know if there are any questions we can answer.

Yours very truly,



James F. Clark

JFC:sd/506  
Attachments

PROPOSED ALASKA LOGGERS ASSOCIATION AMENDMENT  
SETTING FORTH THE STANDARDS FOR DETERMINING  
THE CONSISTENCY OF THE STATE  
FOREST PRACTICES ACT ON NATIONAL FOREST LAND

The material now in Section 27 of the proposed bill is deleted and new Section 27 would read as follows:

AS 41.17.900(b) is repealed and re-enacted to read

(b)(i) The Legislature finds that it is in the public interest that the standards set forth in subsection (ii) be the State standards for purposes of 16 U.S.C. Sec. 1456(c) (Section 307(c) of the Coastal Zone Management Act of 1972, P.L. 92-583) and the Alaska Coastal Zone Management Act, AS 46.40.010 et seq. (Sec. 1, Ch. 108 SLA 1978), even though the standards set forth in subsection (ii) may be different from the standards for the protection of forest resources under this Act.

(ii) For purposes of 16 U.S.C. Sec. 1456(c) (Section 307(c) of the Coastal Zone Management Act of 1972, P.L. 92-583) and the Alaska Coastal Zone Management Act, AS 46.40.010 et seq. (Sec. 1, Ch. 108 SLA 1978), standards incorporated in applicable federal land and resource management plans promulgated pursuant to the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended, (16 U.S.C. 1601 et. seq.) shall serve as the forest management standards, policies, and guidelines developed under the Alaska Coastal Management Act, AS 46.40.010 et seq. (Sec. 1 Ch. 108 SLA 1978), for activities on National Forest Lands so long as those standards and policies meet or exceed the following standards:

(A) the location of facilities and the layout of logging systems must be sited so as to minimize adverse environmental impacts;

(B) free passage and movement of fish in coastal water must be assured; and

(C) timber harvest and timber management activities must be planned so as to protect streambanks and shorelines, minimize adverse impacts on fish resources and habitats, and minimize adverse impacts on wildlife resources and habitats.

(D) onshore storage of logs must be encouraged;

(E) sites for in-water dumping and storage of logs must be selected and these activities conducted so as to minimize adverse effects on the marine ecosystem, minimize conflicts with recreational uses and activities, be safe from storms, and not constitute a hazard to navigation;

(F) roads for log transport and harvest area access must be planned, designed, and constructed so as to minimize mass wasting, erosion, sedimentation, and interference with drainage, and must be adequately maintained until they are returned to their pre-road natural drainage patterns (put-to-bed); and

(G) stream crossings, including bridges and culverts, must be kept to a minimum number, must be designed to withstand seasonal high water and flooding, and must provide for the free passage and movement of fish.



# Sport Fishing Alaska

1401 Shore Drive, Anchorage, Alaska 99515 (907) 44-8674

January 29, 1990

Page 1 of 1

To: ~~Representative Curt Menard, FAX #907-463-5661~~  
Chairman, House Resources Committee

Note: Please distribute to Senator Fahrenkamp, Chairman, Senate Resources and the members of both the Senate and House Resource Committees

Attn: Senator Betty M. Fahrenkamp, Representative Curt Menard, Co-Chair  
1/31/90 Joint Meeting House State Resource Committees

Re: Revision to State Forest Practices Act

From: Russ Redick, FAX #907-349-4330

I am writing to express my support for the substantial changes to the present Forest Practices Act which are being considered for your committee. I support including a requirement for substantial mandatory buffers of undisturbed forest along fish streams in SB 317 and HB 331 because the maintenance of stream vegetation is necessary to maintain stream productivity and ultimately the states commercial, recreational, and subsistence fisheries. I have two concerns about the present bill. First, the 15 meter no cut and 15 meter selective cut buffers on state and borough lands in many cases will not be adequate to maintain stream productivity. As most Alaskans know, even our small streams meander across their flood plain and many will move more than 50 or 100 feet in the 80 to 100 years it takes to regenerate mature spruce, birch, and cottonwood trees after stream banks have been cut. Many of our larger streams move laterally more than 100 feet in one year! This means that the source of large woody debris and ultimately stream productivity will be lost very early in the rotation period unless larger buffers are provided. These small buffers will also not provide enough of a visual screen from clear cut areas to maintain a high quality sport fishery and sport fishing business in areas where extensive clear cutting occurs. Because of the visual impact of clear cuts, businessmen offering sport fishing trips will not be able to attract clients who demand a "wilderness" type experience.

A second problem is that as currently written, the maintenance of even these token buffers is at the discretion of the State Division of Forestry. I am very concerned that the Division of Forestry will be inclined to delete those buffers rather than maintain them. The present wording only appears to give the Department of Fish and Game, which has the responsibility and expertise to protect fisheries resources, an advisory role when the land owner or land manager requests a waiver under the statute. To maintain a proper balance between logging and state's fishing industries, I request that the wording be changed to require Department of Fish and Game concurrence on any waivers from these buffers.

I am also very concerned that the logging industry has apparently decided to renege on agreements made in the Forest Practices Act negotiation process and is requesting that the Legislature delete mandatory buffers on private lands and limit the buffer zones on public lands to the same 15 meters required on private lands for the reasons previously expressed. I am also very concerned that the logging industry is attempting to limit or remove the Department of Environmental Conservation and Department of Fish and Game current authority to regulate forest practices to protect fisheries habitat and water quality on private and public forest lands. I urge you not to make any of these changes in the draft legislation.

Thank you for your consideration.



UNITED STATES DEPARTMENT OF COMMERCE  
The Under Secretary for  
Oceans and Atmosphere  
Washington, D.C. 20230

DEC 13 1989

Mr. F. Dale Robertson  
Chief, Forest Service  
U.S. Department of Agriculture  
12th and Independence, S.W.  
Washington, D.C. 20090-6090

Dear Mr. Robertson:

Thank you for your letter explaining the Forest Service's (FS) approach to balancing timber harvest practices and riparian fish habitat protection in the Tongass National Forest. We recommend, however, that the FS adopt the National Marine Fisheries Service's (NMFS) riparian habitat protection policy, which requires minimum 30-meter no-harvest buffers on all anadromous fish streams and their tributaries. The advantages of the NMFS policy are that it provides reliable protection of fish habitat, sets a bottom line that should reduce conflict among in-field decisionmakers, and is easy to enforce.

Based on our knowledge of the old-growth forest ecosystem in Alaska, riparian vegetation is a critical component of fish habitat. Research has shown that salmonid habitat and stream channel stability depend on the old-growth trees within 30 meters of the streambank to provide large woody debris, shade, temperature control, and streambank protection. Timber harvest in this zone will decrease salmonid production.

Your letter states that the FS "requires a no harvest buffer zone along streams when needed to maintain or enhance fish habitat and maintain water quality; the width of the buffer to be dependent on the on-site conditions." The NMFS agrees that site-specific evaluations are theoretically the best way to manage streamside zones. In reality, however, the FS policy has failed because it is too complex and relies on too many people variously interpreting FS guidance to protect riparian vegetation.

The major drawback of the FS site-specific approach is that it relies on field staff to decide the need for, and size of, any buffer, and to defend that recommendation against other competing interests. On-site field determinations require a high level of expertise in fish habitat requirements and an extensive data base. Experience has shown that the influence of timber harvest goals often results in inadequate buffers from a fish habitat perspective. On-site evaluations should play an important role in determining those situations where the fish resource or on-site conditions (e.g., soil, windthrow hazards, braided channels) require a greater than 30-meter buffer.

A minimum buffer standard has the added advantage of providing advance knowledge of harvest limitations, and being an



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enforceable regulation that lends itself to monitoring. The ease with which a buffer standard can be enforced should also encourage compliance by industry.

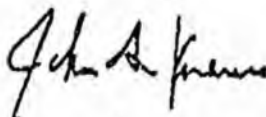
Your letter also states that the FS "allows for harvesting of trees within the streamside zone when such action will improve fish habitat or when there is little risk of damage to stream conditions." The NMFS policy recognizes the potential to enhance some fish habitat by selective timber harvest; however, there has been no research in Alaska to validate that selective harvest practices will improve salmonid habitat. In fact, the scientific evidence indicates that altering the natural stream temperature regime or the quantity/size of large woody debris will negatively impact salmonid production. The NMFS recommends that the FS develop habitat restoration techniques for salmon streams already impacted by logging rather than attempt to "improve" existing habitat through streamside timber harvesting.

The FS should compile statistics on the locations and widths of buffers that have been required over the past five years to provide an indication of the effectiveness of the site-specific approach that may require riparian habitat restoration. Without these data, it is not possible to assess the effectiveness of past decisions or defend the efficacy of the current FS guidance. We heartily recommend such a review commence immediately and offer our assistance toward the project.

As you note, NMFS personnel have spent considerable time working with Alaska Region FS representatives on the Southeast Area Guide, Tongass Land Management Plans, Southeast Alaska Multiresource Model, Aquatic Habitat Management Handbook, and other planning/guidance materials. The NMFS assisted the FS in preparation of these documents, but has never endorsed the FS guidance as the preferred approach to protect salmon habitat.

In summary, the NMFS' research has demonstrated that timber harvest within 30 meters of the streambank can cause irreparable damage to salmon habitat and production. Consequently, we urge the FS to adopt a 30-meter minimum no-harvest requirement on all anadromous fish streams and tributaries in the Tongass National Forest. This guideline would help the FS achieve their goal to "preserve the biological productivity of every fish stream on the Tongass" (Tongass Land Management Plan page 92).

Sincerely,



John A. Knauss



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
Silver Spring, Maryland 20910

JUL 28 1989

Honorable George Miller  
Chairman, Subcommittee on Water,  
Power and Offshore Energy Resources  
Committee on Interior and Insular Affairs  
House of Representatives  
Washington, DC 20515

Dear Mr. Chairman:

Thank you for your letter regarding the amount of commercial timber that would be typically included within a 100-foot or 30-meter streamside buffer zone within the Tongass National Forest.

We believe application of 100-foot or 30-meter buffers protect Alaska's salmon and trout habitat. The timber retained in a buffer for fish habitat should not be viewed as the amount "lost" to the timber industry, but viewed as what is required for fish habitat in the true sense of multiple-use. Salmonid fisheries and timber industries share the forest as a common base for their existence. Retaining a small but critical portion of the forest for the Nation's fisheries seems to us to be an example of wise use and management in its finest sense. We believe these buffers must be maintained for optimum production of fish. A detailed explanation is enclosed.

We look forward to working with the Subcommittee in the future on this or other issues relating to anadromous resources.

Sincerely,

/s/ James W. Brennan

James W. Brennan  
Assistant Administrator  
for Fisheries

Enclosure

cc: F; GCF; LA5-F(2); F/MB(Everett); F/CU(2); LA; F/AKR(Faris);  
F/PR; F/PR3(Risenhoover)  
CONTROL NMFS #11549  
F/PR3:ARisenhoover:427-2325:07/11/89:WPDISK2-MILLER



**NATIONAL MARINE FISHERIES SERVICE  
BUFFER STRIP USE AND ESTIMATED TIMBER SUPPLY IMPACTS**

The National Marine Fisheries Service (NMFS), Alaska Region issued a policy recommendation in 1988 for the protection of riparian vegetation stating that 30 m is the minimum width required to provide shade and future sources of large woody debris (LWD) necessary for instream habitat. NMFS' policy recommendation is based on extensive research which indicates that salmonid (trout and salmon) abundance is dependent on habitat derived from and influenced by the old-growth forest adjacent to streams, particularly the canopy for shade and temperature regulation and LWD. The quantity of LWD in these productive streams is high (60-80 pieces per 100 m length of channel) and is directly correlated with the abundance of salmonid habitat. Because the natural depletion rate of LWD resulting from decay, fragmentation, stream export, etc. is relatively high (1-3 percent per year), a continuous supply of wood from the riparian zone is needed to offset the natural loss and maintain salmonid habitat. If these streams are logged without leaving a buffer of at least 30 m to replenish the natural loss of LWD, it is estimated that the level of LWD will be reduced by 70 percent in 100 years. Recovery of LWD to the original pre-harvest amounts from the regeneration of second-growth trees next to the stream is estimated to take about 250 years. Riparian habitat, therefore, is the principal source of salmonid habitat and must be protected in order to maintain Alaska's salmon and trout at optimum production.

The amount of timber "retained for fish habitat protection" (i.e., loss of potential timber for industry) is dependent on the interpretation or definition of anadromous streams and tributaries. NMFS Alaska Region uses the U.S. Forest Service, Alaska Region (FS), Aquatic Habitat Management Unit (AHMU) definition of stream classes which are based on fish use. The FS Stream Classification System (Channel Typing) is also used by NMFS to identify and characterize stream channels from standard 1:1000 aerial photographs and to determine stream class designations. Under the AHMU system, streams are classed according to fish use:

- Class I- Streams with anadromous or high value resident sport fish or with habitat having reasonable enhancement opportunities for anadromous fish;
- Class II- Streams with resident fish populations of limited sport fish value generally occurring in steep gradients or upstream of migration barriers; and

Class III- Streams with no fish populations but have potential water quality influence on downstream habitat.

Most streams or reaches of a stream in a watershed are a mixture of Class I, II, and III, with Class I generally being the lower gradient valley bottom streams, Class II being the mid-slope streams, and Class III being the upper slope, high gradient tributaries.

The 30 m buffer policy of NMFS applies primarily to all Class I and II streams. The policy does not apply to Class III streams which are either ephemeral or intermittent or have a gradient generally greater than 8 percent; these can be very numerous and occur as drainage channels at higher elevations. Our policy does not require buffers alongside the numerous drainages which generally cannot be seen from aerial photographs or which are visible only following clear-cutting. These drainages constitute the most acreage of forest land and cause the greatest discrepancy of views on the "lost timber production" issue.

In this regard, an estimate of the amount of timber retained for fish habitat protection can be made by identifying stream channel types from aerial photographs, classifying them according to fish use, and then calculating the amount of timber by volume class in a 30 m buffer on both sides of the stream channel. The FS using its graphic information system has made some of these calculations and has presented its findings at several meetings involving NMFS personnel. For example, in a FS prepared document dated June 16, 1989, a quadrangle examined from north Kuiu Island on the Tongass (Port Alexander C-1) showed that only 9 percent of the productive forest volume would be contained within a 30 m buffer on all Class I and II streams. Anadromous streams most likely accounted for less than 4 (included in the 9) percent. The high gradient tributaries or intermittent drainages which do not need buffers, accounted for an additional 22 percent. Information presented by the FS on the 1989-94 Ketchikan Pulp Company Operating Area DEIS for Prince of Wales Island showed that the amount of timber retained by leaving 30 m buffer strips along Class I, Class II, and some Class III streams amounted to 10.7 percent. Both these estimates closely agree with a field survey conducted in 1978 by a Fisheries Task Force for the Tongass Land Management Plan. This survey found that 11 percent of the timber in the Tongass National Forest would be retained for salmonid habitat protection if 100-foot buffers were required.



National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
P.O. Box 21668  
Juneau, Alaska 99802-1668

January 5, 1990

Michael A. Barton, Regional Forester  
USDA Forest Service, Region 10  
P.O. Box 21628  
Juneau, Alaska 99802

Dear Mr. Barton:

The National Marine Fisheries Service (NMFS) Regional Office and Auke Bay Laboratory, have completed our review of the Final Supplement to the Environmental Impact Statement (SEIS) for the 1981-1986 and 1986-1990 operating periods for Alaska Pulp Corporation Long-Term Timber Sale Contract, dated November, 1989. These comments supplement our December 27, 1989, comments regarding the Record of Decision (ROD). We did not have an opportunity to review the Phase II Draft SEIS within the timeframe specified by the Forest Service, therefore, we feel it is particularly important that we provide feedback on the Final.

#### Riparian Management:

As you are aware, based on substantial research conducted by NMFS (e.g. Murphy *et al.*, 1986, and Murphy and Koski, 1990), we have concluded a minimum of 100 foot no-harvest riparian zones should be left on each side of class I and II salmon streams. Such buffer strips provide large woody debris for critical habitat, promote channel stability, protect water temperature and dissolved oxygen levels, and reduce sedimentation of streams. Anything less than 100-foot no-harvest buffers pose a significant long-term threat to water quality and fish habitat. In some situations buffers wider than 100 feet are needed to protect fish resources, such as where there are particular hazards to blow-down, braided channels, landslides, heavily logged drainages, and temperature sensitive streams. Class III streams typically do not provide habitat for salmonids, but, inadequate protection of these streams can cause landslides and debris torrents with excessive sedimentation on downstream fish habitat in Class I and II streams. Consequently, the integrity of the stream banks and side slopes of these streams must be maintained by applying Best Management Practices or including a minimum of 100 foot no-harvest zones, when necessary.

The streamside protection measures adopted in the SEIS and ROD, in our opinion, are inadequate, and will result in irreparable long-term harm to anadromous fish habitat and significant impacts to water quality. The Forest Service has treated buffer widths as negotiable, rather than establish a minimum protective width. The SEIS calls for buffers of less than 100 feet on numerous Class I and II streams. In Analysis Areas II and III, over 50



percent of salmon streams have buffers of significantly less than 100 feet. Moreover, the SEIS presents no buffers of over 100 feet, although these will be needed to adequately protect many streams. As far as we are aware, there is no evidence to support the conclusion that buffers of less than 100 feet will adequately protect fish habitat in Alaska, particularly over the long term, whereas there is substantial research demonstrating that buffer strips of at least 100 feet are effective.

The SEIS says little about what protective measures will be used on Class III streams, except to note that they will involve "usually leaving 10 percent of the adjacent stand." (SEIS, Vol. AA12 at 4-33). Such limited measures may not be adequate to protect many Class III Streams. Those Class III streams can significantly influence water quality on downstream Class I and II streams because of their size, or have the potential for side-slope and/or streambank failure, therefore, may require full buffer strip protection. Most Class III streams, however, will only require Best Management Practices to protect side-slope and streambank stability for maintenance of water quality standards.

Equally concerning as the inadequate width of proposed buffer strips, is the fact that the SEIS authorizes selective harvesting of 20 percent of the trees in buffer zones. Thus, even the streams with 100-foot buffers do not meet NMFS's minimum recommendations since selective harvest may be allowed within that zone. There has been no research done in Alaska which shows selective harvest in a buffer zone, even if done with extreme care, affords adequate long-term protection to salmon habitat. The scientific evidence indicates it will usually have negative effects on salmonid production. Moreover, selective harvesting is operationally difficult and can damage the remaining trees in the buffer strip. In our opinion, selective harvest within buffer zones of 100 feet or less will generally result in inadequate stream protection. Selective harvest outside 100-foot buffers, however, might be a sound management practice to insulate buffers and make them more wind firm.

If the Forest Service wishes to examine the effectiveness of narrower buffer widths or selective harvest within buffers, it should do so through a carefully controlled research study where valid scientific measurements can be made. The use of 50-foot buffers and selective harvest in buffers throughout the contract area, on the other hand, will likely result in inadequate protection of fish habitat and no scientific validation of their effectiveness.

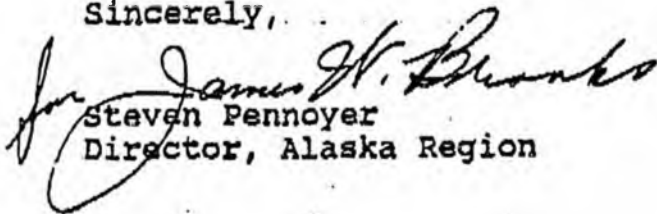
#### Monitoring:

Certain logging and roading practices can have significant impacts on fish habitat and water quality. For the past decade, the Forest Service has indicated their streamside management

practices in Alaska would insure minimal impacts to fish habitat and would protect water quality. We are not aware of any Forest Service research or monitoring in Alaska supporting this assertion. Contrary to this, the NMFS-Auke Bay Laboratory and others have shown through research, that certain Forest Service practices in Alaska have likely caused irreparable long-term damage, including reduced fish production, impaired water quality, and damaged fish habitat (See, Murphy et al., 1986).

The Forest Service has done very little monitoring to measure the impacts of timber activities in Alaska on fish habitat and water quality, or to measure the effectiveness of Forest Service streamside management practices in protecting fish habitat. There continues to be a need for such information. Without it, it is difficult to evaluate the true effectiveness of the Forest Service streamside management prescriptions for protecting fish habitat and water quality. In our opinion, these practices are often inadequate to protect fish habitat and insure compliance with water quality standards. The Forest Service has the primary responsibility for ensuring that fish habitat and water quality are not impacted by logging on National Forest lands, and that the effectiveness of Forest Service management practices are adequately researched and monitored. We would be glad to assist in developing such monitoring or research programs.

Sincerely,

  
Steven Pennoyer  
Director, Alaska Region

## LITERATURE CITED

Murphy, M.L., J. Heifetz, S.W. Johnson, K V. Koski, and J.F. Thedinga. 1986. Effects of clear-cut logging with and without buffer strips on juvenile salmonids in Alaskan streams. Can. J. Fish. Aquat. Sci. 43:1521-1533.

Murphy, M.L., and K V. Koski. In press 1990. Input and depletion of large woody debris in Alaska streams and implications for streamside management. North American Journal of Fisheries Management, American Fisheries Society, Bethesda, MA.

SUMMARY OF NMFS AUKE BAY LABORATORY RESEARCH  
ON STREAMSIDE MANAGEMENT ISSUES

Prepared by K V. Koski and Michael Murphy, January 1989

Auke Bay Laboratory (ABL) has been involved in research on the effects of logging since the mid-1950s when it launched the first major study on the west coast at Hollis, Alaska, with the Fisheries Research Institute (University of Washington) and the Northern Forest Experiment Station. Since that time, ABL has done extensive research on the two major issues of concern: Salmonid habitat in streams and bark deposition at log transfer facilities.

Research on streams in the last 10-12 years has focused on the habitat of salmonids that require extended rearing in streams for one or more years (e.g. coho salmon) because these fish may exhibit cumulative effects from logging activities.

The Alaska Working Group of Cooperative Forestry-Fisheries Research, which had its beginning in 1979, has been instrumental in bringing researchers, managers, and industry representatives together to identify, prioritize, and investigate issues of greatest concern. Accomplishments of this group have been recognized coast-wide and have led to the best cooperation and progress towards resolving conflicts between fisheries and logging ever seen in Alaska.

Guidelines were developed for log transfer facilities which were adopted by the Governor's Timber Task Force and now are currently used by EPA and the Corp of Engineers in the Permit Process. Streamside management also was identified as a major issue and has been the focus of research by ABL, ADF&G, and Forest Science Laboratory (FSL) since 1982. Results of much of this research have been published and either implemented or under consideration by USFS and Native Corporations. Unfortunately, some study results have been misinterpreted; consequently, a summary of the results of each pertinent report prepared by NMFS has been paraphrased and attached to this document (Attachment No. 1).

Basically, ABL's research has shown that (1) buffer zones are highly effective in protecting fish habitat in southeastern Alaska from potential damage by logging activities; (2) woody debris is an essential component of stream channel morphology and forms important habitat for salmonids; (3) winter habitat (e.g. pools with woody debris cover) are critical to overwinter survival of salmonids; (4) "channel-type" stream classification is a valuable tool for determining streamside management prescriptions; (5) most (i.e. 98%) of the woody debris in a stream comes from within 30 m of the stream; and (6) woody debris can form stable habitat (e.g. pools and riffles) for at least 200 years. Based on these findings and results from other research along the Pacific Coast, NMFS prepared a policy statement (Attachment No. 2) in May 1988 for "Riparian Habitat Protection in Alaska" to document the need for protecting salmon habitat and to clarify results of NMFS research.

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Attachment No. 1

SUMMARY OF NMFS AUKE BAY LABORATORY RESEARCH REPORTS  
ON EFFECTS OF LOGGING AND STREAMSIDE MANAGEMENT

Buffer Zone Effectiveness

1. Effects of clear-cut logging with and without buffer strips on juvenile salmonids in Alaskan streams. Michael L. Murphy, Jonathan Heifetz, Scott W. Johnson, K V. Koski, and John F. Thedinga. 1986. Canadian Journal of Fisheries and Aquatic Sciences, 43:1521-1533.

Buffer strips used in Southeast Alaska are effective in protecting fish habitat. Buffer strips allow increased primary (periphyton) and secondary (invertebrate) production, and provide a source of additional new woody debris after logging. In the short term, buffers can increase the recruitment of fry (young-of-the-year), and sustain survival of both fry and parr (one or more years of age) through winter. In the long term, buffers provide a source for recruitment of new debris for the stream and thus maintain stream channel integrity and fish habitat indefinitely. Blowdown of trees in a buffer zone provides valuable rearing habitat; however, excessive number of trees could impair fish passage or damage spawning habitat.

Clear-cutting without buffers damages fish habitat by reducing the amount of undercut banks, canopy density, pool volume, and woody debris. Coho fry density was higher in summer in clear-cut streams than in either old-growth or buffered streams because of higher periphyton and invertebrate production; however, this higher density was not sustained through the winter because of the reduced habitat. There were significantly fewer coho parr in clear-cut streams because of damaged winter habitat resulting from a loss of woody debris and pools, collapsed undercut banks, and a destabilized or sedimented substrate.

Most pools were formed by woody debris, and pool volume and debris volume in streams were directly related.

2. Effects of logging on the abundance and seasonal distribution of juvenile steelhead in some southeastern Alaskan streams. Scott W. Johnson, Jonathan Heifetz, and K V. Koski. 1986. North American Journal of Fisheries Management, 6:532-537.

During summer, steelhead fry were largest and most abundant in clear-cut streams, which had more sunlight, higher temperatures, and higher periphyton and invertebrate production than did buffered and old-growth streams. In winter, fry density in clear-cut streams declined 79% because of unsuitable habitat. Densities of parr were also highest during summer in the clear-cut streams, probably because of the increased food; however, the reduction in parr density during

winter and the increase in parr density in buffered and old-growth streams in winter imply that parr migrated to areas of preferred habitat (i.e., areas with pools and abundant cover). Any benefits derived from canopy removal by clear-cutting were negated by a reduction in the amount of critical winter-rearing habitat.

3. Effects of logging on winter habitat of juvenile salmonids in Alaskan streams. 1986. Jonathan Heifetz, Michael L. Murphy, and K V. Koski. North American Journal of Fisheries Management, 6:52-58.

Most wintering coho salmon, Dolly Varden, and steelhead trout occupied deep pools with cover (i.e. upturned tree roots, accumulations of logs, and cobble substrate). Riffles, glides, and pools without cover were not used. Seventy-three percent of all pools were formed by woody debris. Streams in clear-cut areas without buffer strips had significantly less area of pool habitat than streams in old-growth areas. Buffer strips protected winter habitat of juvenile salmonids by maintaining pool area and cover within pools and provide future sources of woody debris. Concerns about effects of blowdown in first- to third-order streams may be unfounded because blowdown in these streams often bridges the channel creating additional habitat. On larger streams, buffer strips should be designed to minimize potential damage from blowdown yet ensure long-term sources of debris.

4. Evaluation of buffer strips for protection of salmonid rearing habitat and implications for enhancement. K V. Koski, Jonathan Heifetz, Scott Johnson, Michael Murphy, and John Thedinga. 1984. In: Thomas J. Hassler, Ed. Proceedings of Pacific Northwest Stream Habitat Management Workshop, Humboldt State University, Arcata, CA.

Buffer strips were effective in protecting rearing habitat of salmonids from the impacts of clear-cut logging in southeastern Alaska. The rearing capacity of a given stream is illustrated by the concept of limiting factors or "bottleneck". In this study, a bottleneck occurred in clear-cut streams in fall and winter: densities of fry, which were high in summer when food was abundant, decreased in winter because habitat was inadequate. In streams in old-growth forest, the bottleneck occurred during summer: abundance of food was too low to maintain high densities of juvenile salmonids and, consequently, excellent winter habitat was not used. High food production in summer produced high densities of juvenile salmonids in the buffered streams, and the densities remained high throughout the winter because the critical habitat was maintained. Manipulation of the canopy cover to increase fish production is a logical enhancement measure provided critical habitat is maintained or improved. Buffer strips could become a useful tool for stream management.

5. Effects of logging on size and age composition of juvenile coho salmon in Southeast Alaska. John F. Thedinga, Michael L. Murphy, Jonathan Heifetz, K V. Koski, and Scott W. Johnson. In Press.

Short-term effects of logging on age composition and size of juvenile coho salmon were studied in 18 streams in Southeast Alaska in 1982-3. The number of fry (age 0) in summer and winter was proportionately higher in buffered and clear-cut streams than in old-growth streams, whereas parr (age 1 and older) size did not differ among treatments. Fry and parr were larger in southern Southeast Alaska than in the northern region of Southeast. Size was directly related to periphyton biomass and benthos density in the streams. However, the larger fry in buffered and clear-cut streams compared to old-growth streams was probably due primarily to earlier fry emergence that resulted from increased stream temperatures. The advantages of earlier emergence and increased abundance of food in summer to fry in logged streams were negated in parr, possibly because their diet, growth rate, and habitat preferences change with age and size. The maintenance of critical overwintering habitat is essential to optimum smolt production.

#### Streamside Management Issues

1. Relationship between stream classification, fish, and habitat in Southeast Alaska. M. L. Murphy, J. M. Lorenz, J. Heifetz, J. F. Thedinga, K V. Koski, and S. W. Johnson. 1987. USDA Forest Service, Wildlife and Fisheries Habitat Management Note No. 12.

The Channel Type System (CTS) for classifying streams, based on geomorphic, hydrologic, and vegetative features on aerial photographs, was evaluated to test whether it could allow managers to control variability among streams by grouping reaches with similar habitat. Salmonid abundance and habitat characteristics differed significantly between channel types, indicating that the CTS can be used effectively to control variability among streams. Large woody debris (LWD) was most abundant in large floodplain channels, and least abundant in large bedrock-controlled channels. Nearly all (98%) LWD in the streams came from trees rooted within 30 m of the stream bank. Windthrow and undercutting by the stream accounted for 75% of the LWD in the streams. Differences in salmonid populations and habitat, however, were inconsistent between regions of Southeast Alaska. Regional inconsistency may have resulted because fish populations or habitat differed between regions or because personnel in each region classified stream channels differently. With further development, the CTS should be an excellent tool for more effective management of fish habitat.

2. Input and depletion of large woody debris in Alaska streams and implications for streamside management. M. L. Murphy and K V. Koski. (in Press) North American Journal of Fisheries Management.

Natural rates of input and depletion of large woody debris (LWD; >10 cm diameter) in Southeast Alaska streams were studied to provide a basis for managing streamside zones to maintain LWD for fish habitat after timber harvest. In 32 stream reaches in old-growth forest, LWD was inventoried by size and state of decay, and its age was determined from the age of trees growing on it. Age of LWD ranged from 1 to 226 years, and persistence of LWD in the streams was directly related to LWD bole diameter. Assuming steady-state conditions in old-growth forest, LWD input and depletion were calculated from the abundance and age of LWD in decay classes. Annual depletion from biological decay and export by the stream ranged from 0.3% of large (>60 cm diameter) LWD in small muskeg channels to 2.7% of small (10-20 cm diameter) LWD in large bedrock-controlled streams. Based on the depletion rate of LWD, a model was developed to determine the number of trees needed in streamside zones to maintain natural quantities of LWD after timber harvest.

3. Large woody debris in forested streams in the Pacific Northwest: Past, Present, and Future. P. A. Bisson, R. E. Bilby, M. D. Bryant, C. A. Dolloff, G. B. Grette, R. A. House, M. L. Murphy, K V. Koski, and J. R. Sedell. 1987. Pages 143-190 In Streamside management: Forestry and fishery interactions. College of Forest Resources, University of Washington, Seattle.

This paper reviews the form, function, and management of large woody debris (LWD) in streams, and reaches three major conclusions: (1) LWD enhances the quality of fish habitat in all sizes of stream. (2) Removal of most trees from the streamside zone during logging, combined with thorough stream cleaning and short-rotation timber harvest, has altered the sources, delivery mechanisms, and distribution, size, and stability of LWD in streams, leading to reduced overwinter survival of salmonids and changes in salmonid abundance and species composition. (3) There is an urgent need for studies that focus on protection of existing LWD in stream channels and recruitment of new debris from the streamside forest.

4. Influences of forest practices on aquatic production. S. V. Gregory, G. A. Lamberti, D. C. Erman, K V. Koski, M. L. Murphy, and J. R. Sedell. 1987. Pages 143-190 In Streamside management: Forestry and fishery interactions. College of Forest Resources, University of Washington, Seattle.

Timber harvest potentially alters solar radiation, water temperature, sediment, nutrients, litter, woody debris, and channel structure--all of which influence the productivity of streams. Periphyton production generally is enhanced by canopy removal and increases in nutrients

and temperature that often accompany timber harvest. Microbial processes also may be enhanced by increases in nutrients, detrital quality, and temperature. Aquatic invertebrates and fish may increase in response to the increased abundance of food. These potential benefits, however, may be negated if temperature tolerances are exceeded, if spawning habitat becomes sedimented, or if winter habitat is damaged. Furthermore, after about 15 to 20 years, the second-growth forest densely shades small streams and may reduce aquatic productivity to below levels in old-growth forest.

5. Die-offs of pre-spawn Adult pink salmon and chum salmon in southeastern Alaska. Michael L. Murphy. 1985. North American Journal of Fisheries Management 5:302-308.

About 300 pre-spawn adult pink salmon and chum salmon died in August 1981 in the intertidal reach of Porcupine Creek, a small stream in old-growth forest on Etolin Island, southeast Alaska. A combination of low stream flow and neap tides triggered the die-off, and the mortality represented about 1% of the 1981 adult return of pink and chum salmon to Porcupine Creek. Anoxia, rather than high temperature, caused most of the deaths because the maximum stream temperature was 19°C--well below lethal temperatures. Conditions similar to those in 1981 recur in Porcupine Creek about once every 8 years. This type of die-off also appears to be common in other streams in southeastern Alaska and can be predicted from the number of salmon returning, amount of precipitation, and height of tide.

6. Fine sediment and salmonid production: a paradox. F. H. Everest, R. L. Beschta, J. C. Scrivener, K V. Koski, J. R. Sedell, and C. J. Cederholm. 1987. Pages 98-142 In Streamside management: Forestry and fishery interactions. College of Forest Resources, University of Washington, Seattle.

Laboratory studies have demonstrated potential negative effects of fine sediment on invertebrates, salmonid egg-to-fry survival, and salmonid growth, but field studies of logging generally have failed to isolate effects of fine sediment from other habitat changes. A more holistic view of the role of sediment in stream ecosystems is needed. Undisturbed forest streams have stored abundant sediment in their channels and maintained an equilibrium between sediment input and sediment routing. An abundance of large woody debris in old-growth forests played an important role in the storage and routing of sediments. Throughout much of the western United States, forest management has broadly changed sediment storage and equilibrium, with a concurrent loss of roughness elements and accelerated routing of sediment through fluvial systems. Stable channels containing stored sediment and large woody debris are more productive at every trophic level than either degraded channels mainly devoid of sediment or channels that are aggraded and unstable. Thus there is a middle ground between too much and too little sediment in salmonid streams.

The long-term emphasis of forest practice rules on control of water quality and fine sediment must be expanded to a more holistic view. Protection of streamside vegetation and physical structure of salmonid habitat must be given equal weight.

7. History of studies of fisheries and forestry interactions in southeastern Alaska. D. R. Gibbons, W. R. Meehan, K V. Koski, and T. R. Merrell, Jr. 1987. Pages 297-329 In Streamside management: Forestry and fishery interactions. College of Forest Resources, University of Washington, Seattle.

Studies of fishery-forestry interactions in Alaska have evolved through four phases. In the first, prior to 1950, there was little concern about the effects of logging on fish habitat until the late 1940s, when the pulp industry began to develop rapidly. The second phase, from early 1950s to mid-1960s, was a period of research on the spawning and incubation requirements of pink and chum salmon. Studies were concentrated near Hollis, on Prince of Wales Island. Effects of logging on sedimentation and streambed stability were studied, and techniques were developed to sample intragravel egg and fry populations and to determine physical and chemical features of the streambed. In the third phase, from the mid-1960s through the 1970s, logging expanded rapidly, giving rise to concerns about effects on salmon species, such as coho, that spend lengthy periods rearing in streams. Emphasis was on habitat requirements of rearing salmonids. The fourth phase, from about 1980 to the present, has been characterized by two important changes: (1) emphasis on extensive, quantitative comparisons of fish productivity in many logged and undisturbed streams, and (2) a new spirit of cooperation and compromise between forestry and fishery agencies and their industrial counterparts. Out of this has come the formation of the Alaska Working Group on Cooperative Forestry-Fisheries Research, which has listed and prioritized research, facilitated shared logistic support of field studies, and coordinated studies by different organizations working on similar problems.



## UNITED COOK INLET DRIFT ASSOCIATION

BOX 4649 - KENAI, ALASKA 99611

January 30, 1990

Bettye Fahrenkamp, Chair  
Senate Resources Committee  
Room 125, Capitol Building  
Juneau, AK 99811

Curt Menard, Co-Chair  
Cliff Davidson, Co-Chair  
House Resources Committee  
Room 125, Capitol Building  
Juneau, AK 99811

Dear Senator Fahrenkamp, Representative Menard, and Representative Davidson:

Since the joint House and Senate Resource Committees will be discussing Forest Practices Act legislation introduced by the Governor, the United Cook Inlet Drift Association (UCIDA) Board felt it might be timely to pass on a few initial comments to committee members.

UCIDA supports the Governor's legislation with the following conditions:

First, any deviation from the "consensus" agreement proposed by the timber industry will necessitate UCIDA withdrawing all support and pressing for alternative legislation. This is especially true of buffer strips on state land and Federal consistency provisions.

Secondly, the site specific nature of the "agreement" on private lands makes funding of the legislation an integral part of the overall plan to institute this agreement. Indeed, as stated in the Final Report (June, 1989) of the Alaska Forest Practices Act Review (p. 4) "The parties' agreement is to the entire plan, not to individual parts of it. Thus, if the agreement is changed, including failure to pass funds to implement it (emphasis ours), the parties are not bound to continue their support."

Given the importance of funding, UCIDA respectfully requests your insight **as soon as possible** into the probability of funding being provided should the bill pass.

Finally, the first draft regulations by the Department of Forestry to implement the Forest Practices Act agreement were totally unacceptable. They merely served to water down provisions seen by the fishing industry as essential to implement the "spirit and intent of the agreement." UCIDA regards the proper wording of implementing regulations as a vital part of the agreement.

In conclusion, UCIDA appreciates the joint Resources Committees taking the time to review the Forest Practices Act agreement. At this time, UCIDA supports the Governor's bill and requests its passage as submitted. Our major concern early in this legislative session is that attempts to alter the agreement, a lack of funding or indeed failure to pass any legislation simply furthers the interests of those in the timber industry who are quite satisfied with the status quo. In that event, both Alaska's forests and our attempts to foster a working relationship with the timber industry will suffer.

Sincerely,

*Theo Matthews*  
MB

Theo Matthews  
President

- cc: Governor Cowper
- Senator Fischer
- Senator Szymanski
- Senator Kerttula
- Representative Swackhammer
- Representative Navarre
- United Fishermen of Alaska

Klukwan Forest Products' Testimony To the Joint House and  
Senate Resource Committees Hearings on the Proposed  
Amendments to the Alaska Forest Resources and Practices Act  
HB 331 and SB 317

January 31, 1990

Senator Fahrenkamp, Representative Menard, Representative Davidson, and members of both House and Senate Resource Committees, I am Ronald R. Wolfe, Chief Forester for Klukwan Forest Products, and it is my pleasure to offer testimony on behalf of Klukwan Forest Products and on behalf of its parent corporation Klukwan, Inc.

As you know we participated extensively in last year's effort to review the Forest Practices Act. Substantial Corporate resources have been devoted to this review, in a sincere effort on our part to resolve resource conflicts in a way that allows our industry to continue to develop, and at the same time protect the other valuable resources (such as fish and water quality).

The forest industry has the potential to help diversify the State's economy, provide revenues to the State from the sale of State timber, provide good paying jobs, improve access

and transportation systems, provide benefits to other resources (such as wildlife and fish), and lastly maintain the health of Alaska's forests. A healthy forest is less likely to be devastated by epidemic populations of bark beetles, which also creates a virtual time bomb for catastrophic wildfire to follow.

A well balanced Forest Practices Act is necessary for these good things, and others, to occur. This Act must meet or at least help meet the needs of the Forest Industry so it can continue to grow and be successful. Our industry has certain fundamental needs, among them are:

1. Timber.
2. Single agency administrative review.
3. Commensurate benefits to costs.
4. Sensible enforcement measures.

I offer the following to elaborate on these needs, and would like to emphasize Klukwan Forest Products is interested in publicly owned timber as well as privately owned timber.

#### TIMBER

Private land owners must not be prohibited from harvesting their timber in an economical manner. Public timber must be available for the industry to purchase on a rational

economic basis and process. Both sources of timber must be available to the industry in a manner that recognizes the market place in which we compete.

#### **SINGLE AGENCY ADMINISTRATIVE REVIEW**

In order to respond to our markets and conduct our business in an economical manner, an efficient administrative process is necessary. This concept is true for both private and public sources of timber. Klukwan Forest Products understands we must have agency review and input to operate in a responsible manner. However, this must occur efficiently.

#### **COMMENSURATE BENEFITS TO COSTS**

Each standard, regulation, administrative process or where applicable, each authorization obtained from the State represents a cost to the industry either directly, indirectly or a forgone opportunity cost. To justify these costs the protection attained must offer a commensurate level of protection or benefit to other valuable resources.

#### **SENSIBLE ENFORCEMENT MEASURES**

The single state enforcement strategy is necessary to create a sense of fairness.

Fortunately, Klukwan Forest Products is able to support most of SB 317/HB 331. Unfortunately, we are not able to support all of the provisions. However, we are working with our industry counterparts, and with appropriate Agency representatives to prepare technical amendments that will clarify aspects of the bill which we can't support.

One substantive problem exists with the relationship of the Forest Practices Act to the Coastal Zone Management Program on public lands. We are in the process of meeting with Agency representatives seeking to find an agreeable compromise to all affected parties. We remain hopeful this will be successful.

Lastly, Klukwan Forest Products supports stream protection as we have testified before Congress on Tongass reform legislation. However, we do not support provisions in SB 317/HB 331 for State lands south of the Alaska Range. In our view it is excessive and is unfounded scientifically. Much of the research was conducted here in Southeast Alaska, and the process that prepared the protection measures was focused on Southeastern.

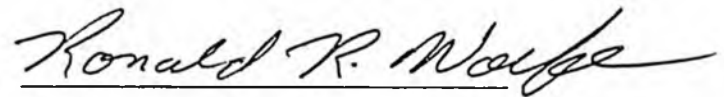
This was recognized and a separate requirement was developed for the Interior Forests which is Region IIb. Region IIa is

entitled to riparian protection based on good science and a focused process to identify necessary protection measures.

Klukwan Forest Products will continue to work for a successful Forest Resource and Practices Act which we can fully support.

Thank you for this opportunity to testify.

I would be happy to answer any questions you may have.

A handwritten signature in cursive script, reading "Ronald R. Wolfe". The signature is written in dark ink and is positioned above a horizontal line.

Ronald R. Wolfe

Chief Forester



## **STREAMSIDE IMPACTS**

As Related To  
Alaska's Forest  
Practices Act  
Of 1979;  
The Need For  
The Passage  
And  
Implementation  
Of More  
Effective  
Legislation

Natzuhini Creek Tributary  
Hydaburg  
1986

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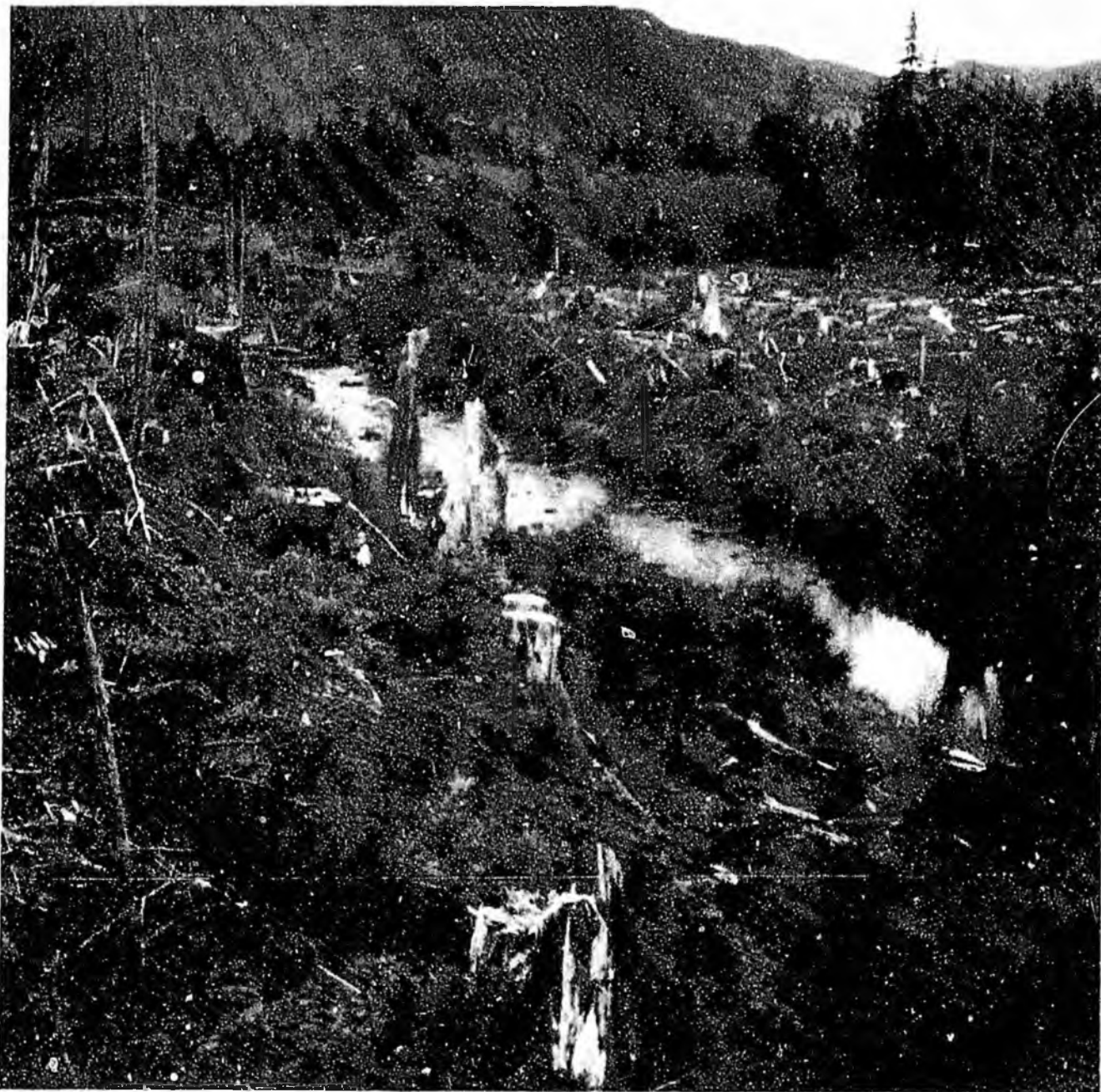
This booklet was produced by:  
**Alaska Conservation Foundation,  
Southeast Alaska Seiners Association, and  
Tongass Conservation Society**

Pictured on cover:  
**MASSIVE SOIL FAILURES**

Numerous landslides and massive soil failures have been caused by road construction and logging that destabilized soils on steep slopes. The debris torrent in this stream ended where coho spawning and rearing habitat begin.

## INADEQUATE STREAMSIDE BUFFERS

Stable stream conditions are necessary for good fish production. Logging adjacent to streams disrupts the natural state. Young salmon lose their protective cover and, water flow levels and stream channels are altered. Reduced shade in summer and freezing winds in winter can significantly change water temperatures. Silt and logging debris easily enter the stream.



Election Creek  
Klawock  
1987

Stream # 103-60-10270

# **CORRECTION**

**THIS DOCUMENT  
HAS BEEN REPHOTOGRAPHED  
TO ASSURE LEGIBILITY**

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Numerous landslides and massive soil failures have been caused by road construction and logging that destabilized soils on steep slopes. The debris torrent in this stream ended where coho spawning and rearing habitat begin.

## Introduction

### **HISTORY AND BACKGROUND**

Under current state statutes and regulations, there are no existing enforceable requirements for buffer strips which would limit streamside logging.

The Fish Passage Act (AS 16.05.840) and the Anadromous Fish Act (AS 16.05.870) were passed many years ago, before extensive drainage-wide logging on state or private lands. Under these acts, the Alaska Department of Fish and Game (ADFG) requires permits to assure fish passage and can put conditions on the amount of activities within a stream, but does not have authorities that extend beyond the active catalogued stream floodplains. The Alaska Department of Natural Resources also does not enforce the retention of standing streamside timber. The 1979 Forest Practices Act, administered by ADNR, requires no significant streamside or habitat protection beyond that legislation passed decades ago.

Biologists from the natural resource agencies such as the National Marine Fisheries Service, the Alaska Department of Fish and Game, the U.S. Fish and Wildlife Service, and the United States Forest Service agree unanimously that buffers of standing trees are needed for maintaining stable stream ecology and salmon productivities in streams scheduled for logging.

Bank-to-bank streamside clear-cutting and the lack of adequate buffer strips on salmon streams became standard operating procedures following the private-lands logging boom which began in Southeast Alaska in the early 1980's. Due to a number of factors an enforceable solution has never been become state law. Uniform and enforceable minimum standards are needed for the long-term protection of Alaska fisheries habitats.

Enforceable buffer strip standards, legislated by our state government, are important to the state of Alaska. They are important for both it's people and for the long-term fresh-water life stages of these invaluable fisheries.

### **PHOTOGRAPHIC EXAMPLES**

#### **HOW LAND MANAGEMENT PRACTICES AFFECT FISHERIES HABITATS**

The following photographs show some ways in which current land management practices in Southeast Alaska affect fisheries habitats and stream ecology. It is the intent of this booklet to give the viewer a general overview of a complex subject and to show stream related impacts under the present Forest Practices Act. These photos of logging-induced stream impacts were taken during 1986, 1987, and 1988 on privately-owned lands on Prince of Wales Island in southern Southeast Alaska. Some impacts are short-term, while others may not occur for several years, or even decades, following logging. In such cases effects on streams are not only very difficult to quantify, but may go undocumented. The full effects of long-term changes in stream ecology depend on many factors. These effects may not emerge until researchers gather data throughout an entire logging rotation. Much of the impact to fisheries, however, can be reduced by leaving adequate buffers along fish streams.

#### **HOW LAND MANAGEMENT PRACTICES AFFECT WILDLIFE**

The fragmentation and reduction of important forest habitat seriously affects wildlife in Southeast Alaska. However, as the focus of this publication is only upon streamside impacts, wildlife concerns will not be discussed within the context of this booklet.

## INADEQUATE STREAMSIDE BUFFERS

Stable stream conditions are necessary for good fish production. Logging adjacent to streams disrupts the natural state. Young salmon lose their protective cover and, water flow levels and streams channels are altered. Reduced shade in summer and freezing winds in winter can significantly change water temperatures. Silt and logging debris easily enter the stream.



Election Creek  
Klawock  
1987

Stream # 103-60-10270

## DRAINAGE WIDE CLEAR-CUTS

Drainage-wide clearcuts have significant impacts to both fish and wildlife in Alaska. Most long-term effects on fisheries of the removal of all timber from entire drainage systems are still largely unknown. The buffer strip shown here is inadequate because it does not provide the necessary cover, bank stability, and protection from blowdown.

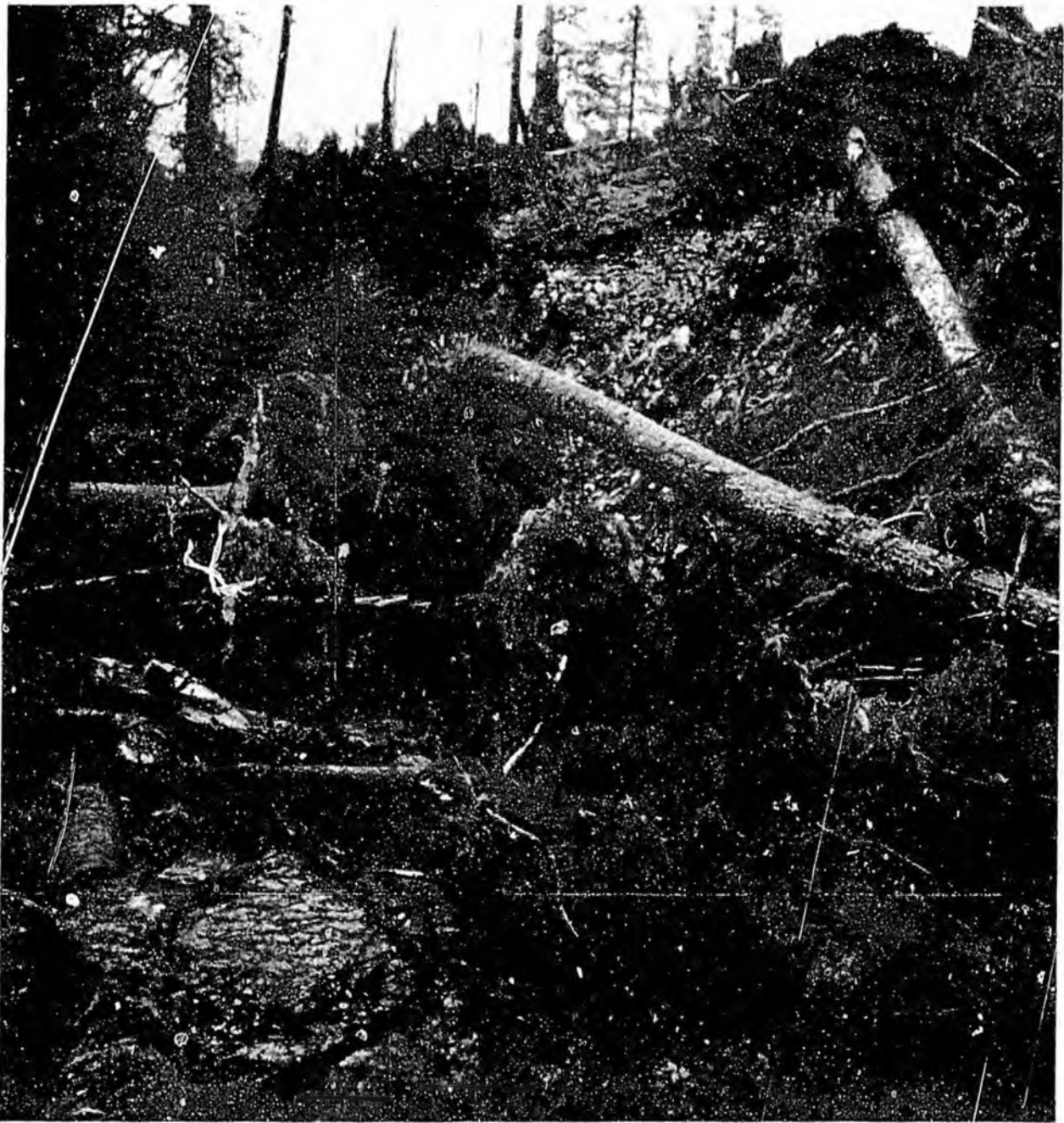


Natzuhini Creek  
Hydaburg  
1986

Stream # 103-40-10350

## LOSS OF SPAWNING AREAS

This one tree buffer strip near an estuary blew down into this high-density pink salmon spawning area. Gravels in the bottom of the stream are used by salmon to lay their eggs in summer or fall. The eggs remain there until spring of the following year. The results of this blow-down into the stream could be devastating to the salmon. The blow-down changes the shape of the stream by scouring in some places and forming sand bars in others.



Deer Creek  
Hydaburg  
1988

Stream #103-25-10150

## DIMINISHED WATER QUALITY-SEDIMENTATION

This photograph, taken in early June of 1987, shows siltation of a salmon stream during steelhead spawning and the later part of the silver salmon period of egg incubation. At this time the eggs of the adult salmon are in the gravels of the stream, and are especially sensitive to stream changes. The reduced water quality shown here is a result of road construction and improper drainage control.

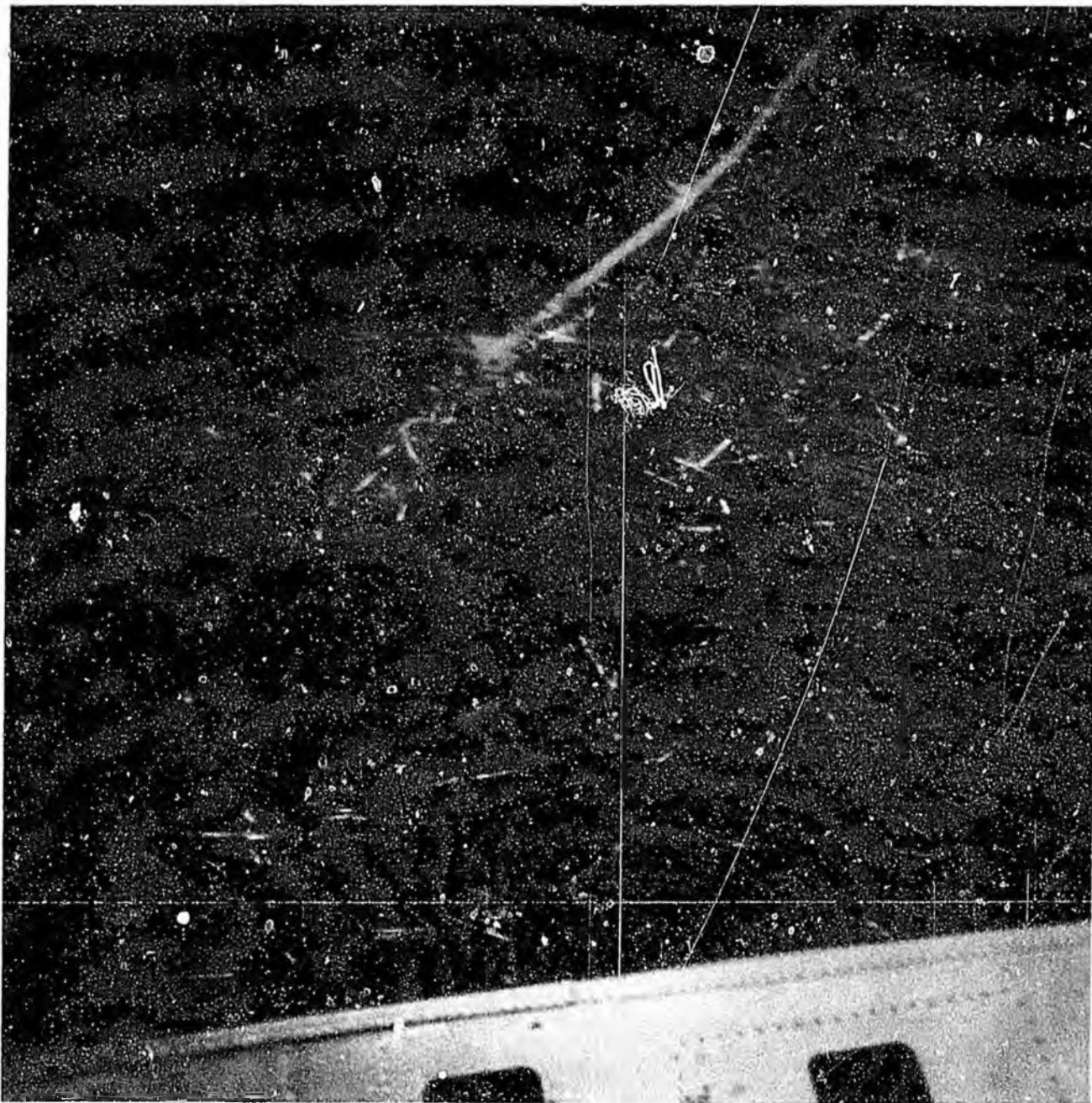


N.F. Deer Creek  
Hydaburg  
1987

Stream # 101-25-10150-2014

## DIRECT AND INDIRECT IMPACTS TO SMALL REARING TRIBUTARIES

Dense networks of small streams which are nurseries for small fish are highly impacted by the sometimes unavoidable felling of trees into the stream during logging. Other impacts from logging activities next to fish-rearing streams are the alteration of the streambank itself, yarding trees through the stream, and the loss of the vegetation along the streambank which gives it stability. Following the initial impacts, other consequences, especially related to sunlight and the temperature of the water may occur as the vegetation along the stream and the form of the stream change over time.



Crab Creek Tributaries  
Craig  
1987

Stream # 103-60-10500

## LOSS OF SALMON AND TROUT REARING AREAS

Portions of many streams, like Steelhead Creek, on Prince of Wales Island, have recently been logged to the streambank. About three-fourths of all pools in a stream are formed by large logs which fall into the stream. Fish then use these areas to rest and eat because in these pools they don't have to fight the current. As streams are logged, the large debris diminishes. Another consequence of removing trees from streambanks is the collapse of the streambank itself. Researchers have found that overhanging streambanks also provide salmon with rearing areas and that these areas can be reduced by at least 50% following logging activities.



Steelhead Creek  
Klawock  
1987

Stream # 103-60-10290

## HYDROLOGICAL CHANGES

With extensive removal of the tree and vegetative cover from an area, water run-off is rapid. High fluctuations in stream flow can result. Swift water from recurring flooding can cause reductions in the numbers of young salmon living in such streams. Reduced flows can also affect the quality of the stream or cause the loss of salmon of all age classes. Additionally, logging the upper reaches of a watershed can influence the stream in the lower reaches of the drainage system. It therefore becomes important to also consider the smaller streams that affect the entire drainage.



Natzuhini Creek  
Hydaburg  
1987

Stream # 103-40-10350

## UNAFFECTED STREAMS

The old growth timber found adjacent to unimpacted streams perform several essential functions for fisheries resources. Many major fishery-related conflicts in logging areas would be reduced if windfirm buffers were left on streams. The National Marine Fisheries Service Policy states that a minimum buffer zone width of 30 meters (100 feet) of natural existing undisturbed forest should be maintained on each side of all anadromous streams.



Blossom River  
near Ketchikan  
1988

## CONCLUSIONS

The fisheries resource of Southeast Alaska is dependent largely upon the continued quality of our streams and lakes. These waters are the habitat for several species of salmonid fishes, which contribute materially to the livelihood of the commercial fisheries industry. These streams and lakes are also prime habitat for sport fish, both anadromous and resident.

Numerous studies have demonstrated that timber harvest and roading operations affect fisheries habitats. Impacts can vary, depending on the type of streamside management. Factors associated with logging practices which can affect the habitat of anadromous and resident fish populations include large organic debris, channel stability, stream temperature, nutrient cycling, streamflow and sediment. These factors are often interrelated, and the total cumulative effects may have the greatest impact.

Salmon have specific requirements that are highly influenced by both land management and water quality. Logging and road-building can alter the habitat requirements that are critical to salmon. These activities can be compatible with the production of salmon only if adequate consideration is given to the aquatic environment during both planning and operational stages of road building and logging operations. The 1979 Forest Practices Act is inadequate for the protection of Alaska's valuable fisheries resources. A major deficiency is the lack of a uniform and enforceable minimum standard for streamside buffer-strip protection. Research has confirmed that riparian vegetation is an essential component of salmonid habitat. The National Marine Fisheries Service, Alaska Region Policy (appendix B) advocates minimum 100 ft. buffers zones on each side of all anadromous streams and their tributaries, and that buffers should consist of the natural/existing undisturbed forest.

## Appendix A

Much of what follows has been taken directly from : "Logging in Southeast Alaska and It's Relationship to Wildlife Fisheries, and Economics," A report by the Territorial Sportsman, Inc., Juneau, 1985. "The Forest Ecosystems of Southeast Alaska", Meeham, 1974. 1989-94 Operating Period for the Ketchikan Pulp Company Long-term Sale, Vol. 1, 1989.

### Inadequate Streamside Buffers

The riparian zone and stream ecosystem are closely linked: events that occur in the riparian zone can directly affect the status of the stream. The riparian zone provides nutrients and organic material that is utilized by a wide diversity of invertebrates. Large organic debris (LOD) stabilizes stream channels, forms pools and undercut banks, and provides concealment for juvenile salmon. Trees provide shade during the summer that limits high stream temperatures. There is also evidence that trees on streams provide an insulative layer that can help moderate the effects of low winter temperatures. Riparian zones act as a buffer or filter against sediment and debris.

Clearcutting to stream-banks disturbs the natural relationship between riparian and stream ecosystems causing changes that can be expressed in terms of salmon production. Tschaplinski and Hartman (1983) found logging to the streambank and leaving no buffer zone was detrimental to juvenile coho salmon. Culp and Davis (1983) concluded that buffer strips at least 10 meters wide are necessary to maintain normal levels of organic material and detritus in coastal streams.

In Southeast Alaska, Murphy and Koski reported that streams in clearcuts had more fry than streams in old growth, but that with buffer strips, streams had more fry than either clearcuts or old growth. However within clearcut streams, increased summer fry production is nullified by reduced winter habitat (Mason 1976) and since clearcuts have less LOD than undisturbed streams, the winter mortality would be expected to be greater. Buffer strips, on the other hand, optimize the winter carrying capacity by providing more large organic debris.

The streamside forest vegetation plays an important role in regulating heat exchange on small forested streams by providing tree cover that maintains water temperature within the evolutionary range of fish (Beschta and Platts, 1986). Small streams with large surface areas and low water volume are the most susceptible to heat gains or loss. When shade-producing streamside vegetation is removed, water temperatures may be increased several degrees.

### Drainage Wide Clear-cuts

The long-term effects of the removal of all timber from a drainage system are still largely unknown. The problems may be magnified when drainages are logged in a single short entry. Numerous studies demonstrate timber harvest and roading affect fisheries habitats (summarized in: Gibbons 1982; Chamberlin 1982; Hartman and Houby 1982; Elliot 1985; Schwan et al. 1985). Major areas of concern are changes in channel stability, stream temperature, large organic debris, nutrient cycling, streamflow and sediments. Disruptions of this type, either drainage-wide or site specific, can cause both short and long-term effects on fisheries habitat.

### Loss of Spawning Areas

Near the estuary at Deer Creek on Hetta Inlet, the loggers did an adequate job felling the trees away from the stream. However, the logging plan delineated a one-tree buffer strip that, several months afterwards, was blown into Deer Creek. Numerous trees and some root wads fell directly into good salmon spawning habitat. Collapsed banks and soil disturbances resulted in sediments deposited into the stream. Immediately following the blowdown, a sand bar began to form in spawning habitat, and the stream channel changed.

Two major freshwater habitat types are necessary to salmonids, i.e., spawning areas and nursery or rearing areas. The primary function of spawning habitat is to provide an environment suitable for the development of the eggs and alevins up to the time of hatching and emergence from the gravels. Pink and chum salmon utilize the freshwater habitat only for spawning and incubation of eggs. Spawning takes place in late summer and early fall, eggs hatch generally from late November through early January, and the fry emerge from the streambed gravels from late March through May, with most migrating immediately to the sea. The fry of coho, king, and sockeye salmon and steelhead trout remain in the stream for one or more years.

The spawning habitats of the various species of salmon and trout, both anadromous and resident, are basically similar. They must consist of suitable gravel spawning beds and a continuous supply of high quality water, and be protected from physical damage as well as damage to the biological community. The spawning environment 1.) must contain sufficient quantities of suitable gravel, 2.) provide sufficient surface and intragravel water flow to assure adequate levels of oxygen to, and the removal, of metabolic wastes from the developing embryos, 3.) maintain temperatures which assure proper development and time of emergence of the eggs and fry, and 4.) be free of sediment which would inhibit development of embryos due to oxygen depletion that would physically inhibit or prevent emergence of fry.

Water temperature plays a key role in regulating the duration and timing of incubation, hatching, and emigration from the freshwater to the saltwater. If development is accelerated by even a very minor temperature increase (2 or 3 degrees) due to removal of streamside vegetation, fry may emerge earlier than normal in that stream. Early emergence often occurs at a time of of spring floods, when many stream-rearing fry are swept out to sea.

Research has shown that after clearcut logging streamflow generally increases. Increased flow during periods of intense rainfall and/or snowmelt can cause mortality of eggs and alevins from gravel bed movement. Shifting gravels can displace eggs from their protective gravel cover, exposing them to predators, dessication, etc. Shifting gravels can also physically damage eggs and alevins or cause deep burial due to gravel redistribution. High stream stages also move debris, such as excavated streamside stumps and trees, which in turn cause gravel excavation and redeposition, changing the stream channel.

Sediments introduced into the stream, dramatic temperature changes, alterations in streamflow and streambank conditions are important factors affecting the freshwater phases of salmon production. Consideration for habitat in Southeast Alaska during timber harvest needs to be directed to the protection of spawning habitat. With a high percentage of the best salmonid-producing streams scheduled for logging under current timber harvest plans in Southeastern Alaska, it is essential that forest management guidelines be developed to maintain salmon populations.

### Diminished Water Quality-Sedimentation

Sediment in streams is a consequence of natural geologic processes and of disturbances due to human activity. Steep ground and large amounts of rainfall, both common in Southeast Alaska, make the land sensitive to such activities as road construction and log yarding.

Erosion of the soil and subsequent sedimentation in streams is a major concern associated with road building and timber harvesting. There are six primary ways sediments are introduced into streams as a result of roading and timber harvest: 1.) landslides due to logging on steep slopes, 2.) soil movement associated with roadbuilding, 3.) road runoff, 4.) stream channel disturbance, 5.) installation of bridges and culverts, 6.) yarding of trees adjacent to or across streams or their tributaries.

Sediment, which directly or indirectly affects fish, occurs in two forms. The first is suspended, i.e. as part of the free-flowing, above-streambed water. In this form it causes the murky appearance of the water. Suspended sediment is harmful to fish if the concentrations are high and persistent. In high concentrations over time, silt accumulates on the gill filaments and inhibits the ability of the gills to aerate the blood.

The second form is deposited, i.e. as particles which have settled out of suspension and have been deposited on and among streambed gravels, on aquatic vegetation, etc. Sedimentation of this type can change the particle size and composition of streambeds. Spawning habitat can be affected by a decreased rate of flow of oxygen-bearing waters within the gravels where the salmon eggs and alevins are incubating. In addition, sediment may act as a physical barrier to the emergence of fry up through the gravel (Hall and Lantz 1969). A third effect of deposited sediment is reduction of habitat used by aquatic insects. A reduction of insects can effecting the food chain, causing a reduction in the growth rate and condition of rearing fishes.

Organic sediment is also a factor contributing to degradation of fish habitat. Bark from logging activities can create a significant oxygen demand as it decomposes, and it can produce excessive amounts of slime bacteria which then may suffocate incubating eggs and alevins (Hall and Lantz 1969, Burns 1972).

## Direct and Indirect Impacts to Small Rearing Tributaries

The rearing environment must provide the food, living space, cover and water quality necessary for good growth and survival of fish populations. Good rearing habitat is often slow-moving water, rich in plant and animal life, and ranges from small streams and tributaries, through sloughs, side channels, and shore areas of major streams and rivers, to ponds and lakes of varying size. In many places in Alaska small fish rearing tributaries are very close together. Dense networks of small tributaries are affected by the felling of trees into their channels, logs crossing their channels, logging debris, siltation, disruption of streambanks and the removal of vegetation.

In the past, consideration for fish habitat in Southeast Alaska during timber harvest was often directed only toward the larger spawning streams. Today, the great importance of the smaller rearing areas is being recognized. Small streams are often more dramatically affected by changes than are the larger streams and rivers.

### Loss of Salmon and Trout Rearing Areas

Logging to the streambank can result in the loss of what is called LOD or Large Organic Debris. LOD is large woody material that intrudes into the stream channel, and in a productive habitat is continuously provided. Moderate amounts of logs and large debris naturally provide rearing and resting pools for juvenile salmon and trout. Streamside trees which fall into the stream create well covered pools, the most important component of rearing fish habitat. LOD stabilizes gravels used for spawning. It is also a source of channel stability. The roots of streamside trees stabilize streambanks, thereby preventing excessive bank erosion. Logs are also an important source of energy in streams, and the bulk of the nitrogen supply of a stream comes from woody debris. Murphy (1987 Draft) speculates a 30-50% decrease in carrying capacity for rearing coho salmon may occur 50 years after streamside clearcutting. This is due to the lack of recruitment of large organic debris of appropriate size and length.

In Southeast Alaska, studies of winter habitat have found that fish used only habitat that had large organic debris. With decreasing water temperature, swimming performance declines, and fish seek shelter from floods by moving to deeper water and to recesses provided by LOD (Bustard 1975). Mason (1976) has shown that regardless of the size of the summer population of fish, the annual production in the form of smolt was directly related to the amount of winter habitat available. Logging practices that remove all the timber to the streambank remove the natural source of LOD. The small, young second-growth does not replace old-growth Sitka spruce and hemlock as a source of large debris. The young material is also easily floated and will not appear as a stable feature as did the large spruce and hemlock. Of great concern to fishery managers are the long-term effects of LOD loss on habitat. Swanson et al. (1974) suggests that large organic debris gradually disappears when the source of recruitment is removed and does not return to former levels until 100 years after cutting. Sedell and Triska (1976) indicate that 300 years or more may be required for levels of large organic debris to recover.

As with large organic debris and other factors influencing fish habitat, water temperature must be considered with respect to salmon rearing areas. Coho and Dolly Varden use slow-moving, or even still waters in tributaries, sloughs, beaver ponds, or just side meanders of the main stream. Sockeye require a lake system for early rearing and chinook look for large rivers. In all rearing areas, water temperature changes affect food organisms such as aquatic insects and other invertebrates which respond to temperature changes in terms of species composition as well as biomass.

### Hydrological Changes

Immediately following extensive cutting, there is a general increase in normal levels of streamflow. Chamberlin (1982) lists examples showing annual increases in runoff 20-40 percent greater than pre-logging levels. Greater flow increases may be caused by rain-on-snow events or when heavy rainfall coincides with rapid snowmelt. Considerable evidence suggests that harvesting in British Columbia may have contributed to deteriorating fish habitat in a region where rain-on-snow events are common (Chamberlin 1982).

The combination of increased streamflow after clearcutting and natural flooding can have a dramatic impact on rearing salmonids. Winter floods can rapidly reduce summer populations of fish, and population of juvenile coho salmon can be severely depleted after floods. Because fish choose foraging sites based on size and velocity conditions, both higher minimum flows and higher peak flows can reduce fish populations.

A 1981 study in Porcupine Creek on Etolin Island in Southeast Alaska concluded that once the clearcut watershed turned into a rapidly growing second-growth stand (more than 20 years old) streamflow may be less. In the long-term this has the potential to reduce the minimum summer streamflow and exacerbate salmon kills, especially in times of summer drought. In August of 1989, the Alaska Department of Fish and Game reported the death of more than 25,000 salmon on Prince of Wales Island. Stream temperatures between 60 and 66 degrees were recorded, which is about 10 degrees higher than normal. The Alaska Department of Fish and Game made associations between lack of adequate streamside buffers and elevated water temperatures.

### Massive Soil Failures

Road construction activities and logging can trigger landslides by destabilizing soils on steep slopes. The slide shown in this photo and several others occurred in a drainage near Hydaburg at the time of logging road construction in 1986. The debris torrent ended at the beginning of coho salmon spawning and rearing habitat, with flows into downstream waters still chocolate brown when examined eight months later.

The collapse of slopes can occur in all types of soils, but there are basic elements that affect the stability of a slope: 1.) the steepness of the side slope, 2.) the soil and geologic materials, 3.) rise and fall of the water table.

Road construction on this steep mid-slope logging road, located in an area with unstable soils, initiated this landslide. High-lead logging, a common logging practice in Southeast Alaska, also contributes to soil failures.

An additional problem is found on unstable soils on steep slopes. Landslides and debris flows may seriously retard regeneration on steep slopes by removing the soil mantle down to glacial till or rock and by covering high-site land on lower slopes and valley bottoms with debris and rubble. Slides are common throughout Southeast Alaska, but their frequency is greatly increased after logging (Bishop and Stevens 1964, Swanston 1971). Bishop and Stevens (1984) noted a four-fold increase in the rate of landslides in the Maybeso Creek valley, on Prince of Wales Island, following clearcutting. On a mile-square cutting unit in Maybeso valley, 11 percent of regeneration plots were disturbed by slides, 8 percent being eroded to bedrock or glacial till and 3 percent covered by debris (Harris 1967).

Neither the frequency of occurrence nor the extent of damage resulting from landslides or road building is reported or monitored in a standardized fashion by the various governmental agencies in Southeast Alaska.

### Unaffected Streams

The old growth timber found adjacent to these unimpacted streams perform several important functions for fisheries resources. The retention of forest canopies next to productive fish habitats can provide input of large woody debris over time, reduce the potential for dramatic temperature changes, maintain high water quality, provide insect fallout and other fish food sources, stabilize stream hydrology and watershed run-off, prevent siltation, protect instream invertebrate populations, prevent streambank collapse, keep excessive logging debris from reaching the channel, and provide for the essential ecological components dependent upon undisturbed riparian habitats.

Old growth characteristically has a mix of tree heights and diameters resulting in a diffuse light environment. Old trees and snags which die and fall over perform a vital function in stream ecology. As large trees topple, they create small gaps in the canopy, allowing light to penetrate to the stream, stimulating the food chain. The fallen trees create the large organic debris in the stream which account for about three-fourths of the rearing pools in a stream. Without these instream structures, streams begin to resemble drainage ditches, especially at flood stages.

## Appendix B



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
*National Marine Fisheries Service*  
P.O. Box 21568  
Juneau, Alaska 99802-1668

### NATIONAL MARINE FISHERIES SERVICE, ALASKA REGION

#### POLICY

#### FOR RIPARIAN HABITAT PROTECTION IN ALASKA

1988

#### INTRODUCTION

National Marine Fisheries Service (NMFS) issued a policy statement in 1976 on the "Protection of Fisheries Resources During Logging Operations in Alaska". This policy called for a mandatory buffer zone of riparian vegetation along both banks of all salmon streams; buffer width was to be based on resource values, topography, wind-firmness, and stream size. Some management activities (e.g., selective harvesting) could be allowed within the prescribed buffer zone. The policy was issued because of the importance of anadromous salmonids in Alaska's economy and because of continuous degradation of fisheries habitat by logging activities. New information and experience suggests that our policy be revised. What follows is our revised statement of policy and the supporting background information.

#### THE POLICY

In order to maintain optimum production of anadromous salmonids the NMFS policy is to advocate the protection of riparian habitat through the retention of buffer zones along all anadromous fish streams and their tributaries in Alaska. NMFS will seek to ensure that a minimum buffer zone width of 30 meters (100 feet) be maintained on each side of the stream, and should consist of the natural/existing undisturbed forest. This policy addresses only the minimum buffer zone width. In some cases a wider zone is necessary to protect fisheries resources. Additional research is needed from which more site-specific prescriptions can be developed.



## DISCUSSION

Research conducted under the auspices of the Alaska Working Group on Cooperative Forestry/Fisheries Research has confirmed that riparian vegetation is an important and essential component of anadromous salmonid habitat. This streamside zone is required to sustain optimum egg-to-fry survival, smolt yield, and adult returns. Riparian vegetation left along streams protects salmonid habitat from the effects of clearcutting by maintaining the natural temperature regime, maintaining channel stability, maintaining undercut banks and instream habitat, preventing erosion and sedimentation, providing cover for winter habitat, and permitting adequate sunlight for food production. In essence, riparian vegetation controls and maintains the natural integrity of a stream's characteristics which have evolved in harmony with the development of the old-growth forest for hundreds of years.

Clearcutting without retention of an adequate zone of riparian vegetation can affect habitat, which in turn affects fish production on both a short- and long-term basis. Short-term (1-20 years) impacts can result from increased sedimentation, altered temperature and flow regimes, and reduced quantity of large woody debris. Long-term impacts (20-100 years) can result from closure of the second-growth canopy, reduced input of large woody debris, changes in stream channel morphology, and continued sedimentation from bank erosion, landslides, and roads.

Properly designed buffer zones are an effective management tool for protecting riparian vegetation and can help prevent both short- and long-term adverse impacts on fish and wildlife habitat. Current research by NMFS shows that nearly all of the large woody debris in streams of southeastern Alaska originates from trees within 30 meters (100 feet) of the streambank. Other research shows that canopy shading necessary to maintain natural stream temperature regimes also comes from trees within 30 meters of the stream. These two factors, large woody debris and canopy cover, control stream characteristics essential to salmonid habitat. They also are directly related to the quantity and quality of trees within the riparian zone. There are indications that situations exist where a 30-meter buffer zone is not adequate. There are also special situations in which removal of riparian vegetation is considered a fishery habitat management option to open the forest canopy. In the absence of definitive research findings, buffer zone width in these areas should be set through an interdisciplinary team approach. Team members should take into account wind-firmness, topography, values of fisheries and wildlife habitat, and other resource uses.

Special techniques for selective harvesting of timber within the prescribed boundaries of the buffer zone may be beneficial in some cases for enhancing aquatic productivity; however, prescriptions for stream-side harvest of timber are premature pending research to determine whether there might be long-term impacts on fish habitat.

APPROVED BY:

*Robert W. Mcvey*  
ROBERT W. MCVEY, Director, Alaska Region

Date:

*5/3/88*

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# Southeast Alaska Conservation Council

SEACC • P.O. Box 021692 • Juneau, Alaska 99802 • (907-586-6942)

May 6, 1989

The Honorable Cliff Davidson & The Honorable Curt Menard  
Alaska State House of Representatives  
P.O. Box V  
Juneau, Alaska 99811

Dear Sirs:

The Southeast Alaska Conservation Council (SEACC) would like to go on record supporting HB 331 which revises the current Forest Practices Act.

WE MUST MAKE IT CLEAR THAT WE SUPPORT THIS LEGISLATION ONLY IF NO CHANGES ARE MADE, WHATSOEVER. Your choice today is to either bow to the last minute demands of the Alaska Loggers Assoc., or to approve HB 331 intact.

HB 331 is the result of months of arduous work by many diverse parties to solve major problems in State forest practices law through the consensus process. SEACC's board and staff have invested an enormous amount of time and energy in making this consensus work. Consensus development was based on the trust that the final result would be supported by all participating parties and passed by the Alaska Legislature unamended. As with all compromises, no one is entirely happy with everything, but at this point we believe it represents a workable solution to current management problems.

The health of Alaska's commercial fisheries is of utmost importance. Therefore, federal land management agencies who manage the public trust of land, river systems and habitat, should grant the same level of riparian habitat protection as established for State lands in HB 331.

This is especially critical to residents of Southeast Alaska where 90% of the salmon harvested in the region are spawned and reared in Tongass National Forest watersheds. We should not put these fisheries at risk.

SEACC, along with 5 other groups, endorsed this point in the Steering Committee meeting on February 13, 1989 by stating that "on all publicly owned lands on all stream types, there will be a minimum no cut buffer strip of 100 meters within a 300 meter RMZ" (see attachment). The language in HB 331 has drastically reduced the 100 meters to 30 meters, but we are willing to accept that standard as a rock-bottom minimum.

Thank you for your prompt scheduling of this important legislation.

Sincerely,

Bart Koehler/Executive Director

# STATE OF ALASKA

## DEPARTMENT OF NATURAL RESOURCES

OFFICE OF THE COMMISSIONER

STEVE COWPER, GOVERNOR

400 WILLOUGHBY AVE.  
JUNEAU, ALASKA 99801-1798  
PHONE: (907) 465-2400

May 6, 1989

The Honorable Cliff Davidson  
The Honorable Curt Menard  
Co-Chairs, House Resources Committee  
P.O. Box V  
Juneau, AK 99811

Dear Representatives Davidson and Menard:

The bill before you represents substantial changes to the Alaska Forest Practices Act. It is the result of almost six months of work by representatives of the timber industry, the state resource agencies, and fishing and environmental groups. I believe that this bill, as a result of hard work and compromises by all interest groups, will allow Alaska's forest practices program to both meet the needs of Alaska's growing timber industry and achieve appropriate protection for public resources such as fish habitat and water quality. I would like to take this opportunity to explain the consensus mediation process used to arrive at this bill--the Alaska Forest Practices Act Review--and explain the provisions of the bill.

Last year, the Governor directed the state resource agencies to conduct a public review of the Forest Practices Act and to make recommendations for any improvements in the Act, its regulations, and implementation. In order to facilitate an objective and balanced review, a steering committee was formed, including representatives of timber landowners and operators, state agencies, and users of public resources that are affected by forest practices. Because the agencies felt it would be possible to review the state's forest practices program and meet both the needs of the timber industry and resource protection needs for fish habitat and water quality, the committee attempted to operate by unanimous consent. This approach ensured that the committee's decisions respected all interests.

The bill before you achieves near-total consensus; it has the support of representatives of Native corporations, boroughs, fishing groups, and environmental groups. There have been questions raised about a provision of the bill that might affect harvest on federal land through the Alaska Coastal Management

Representative Davidson  
Representative Menard

- 2 -

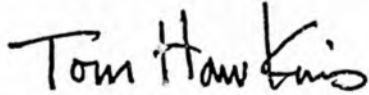
May 6, 1989

Program. (For information on that section, please see the attached bill analysis, Section 27.) Agency staff will be available during the committee hearing to discuss any questions raised on this issue.

The committee's long and difficult work was not completed until early this week, and so the bill could not be introduced earlier. However, because of the importance of the bill and the extraordinary and fragile achievement of achieving near-total consensus on these controversial issues, I urge your prompt and favorable consideration.

Attached is an analysis of the bill.

Sincerely,



*for* Lennie Gorsuch  
Commissioner

Attachment

STEVE COWPER  
GOVERNOR



STATE OF ALASKA  
OFFICE OF THE GOVERNOR  
JUNEAU

cc  
HB 331

May 3, 1989

The Honorable Sam Cotten  
Speaker of the House  
Alaska State Legislature  
P.O. Box V  
Juneau, AK 99811

Dear Mr. Speaker:

Under the authority of art. III, sec. 18, of the Alaska Constitution, I am transmitting a bill relating to forest resources and practices and to the management of forest land. This bill would make substantial changes in the Alaska Forest Practices Act to meet the needs of a growing and viable timber industry in Alaska while ensuring the protection of public forest resources, including fish habitat and water quality.

Last year, I directed the state resource agencies to conduct a public review of the Forest Practices Act and to make recommendations for improvement in the Act, its regulations, and implementation. In order to facilitate an objective and balanced review, a steering committee was formed including representatives of timber land owners and operators, state agencies, and users of public resources that are affected by forest practices. Because I felt that it would be possible to review the state's forest practices program and meet both the needs of the state's growing timber industry while achieving appropriate protection for public forest resources, the committee attempted to operate by unanimous consent. This approach ensured that the committee's decisions respected all interests.

The bill provides for a streamside management program that strikes a fair balance between the needs of the timber industry and those of fish habitat and water quality protection. It provides for significant timber harvest while providing appropriate protection for public resources. Riparian standards for timber harvest differ depending upon land ownership, stream type, and region. For example, on private land in southeast Alaska, streamside areas of up to 30 meters will be managed for the protection of water quality and fish habitat, although timber operators will not be required to leave more than five percent of their timber volume for this purpose. In this way, strong resource protection exists without requiring any one private owner to

shoulder an undue portion of the resource protection costs.

The bill provides an improved process for efficient and detailed review of timber harvest plans. This efficient review allows the timber industry to quickly respond to changing timber markets, but ensures that harvest operations conform to forest practice standards and regulations. To coordinate overlapping agency jurisdiction, the provisions of the bill and the regulations will serve, with the approval of the commissioner of environmental conservation, as the forest practice standards for the Department of Environmental Conservation's program to control nonpoint source pollution. Except for activities subject to AS 16.05.840 or AS 16.05.870, the regulations will also serve as the upland fish habitat protection for timber harvest activities.

A system of coordination between state agencies with enforcement authority over timber operations is established to ensure consistent and non-duplicative action. The Department of Natural Resources would have additional enforcement authority, including the authority to issue stop-work orders, to impose civil and criminal penalties, and to issue remedial orders to correct damage resulting from the violation of forest practices standards. The administrative enforcement process is simplified by providing for hearings to be conducted by an employee of the Department of Natural Resources with appeals to the commissioner.

An additional planning process would be required under the bill before state timber sales. The additional planning will improve public review and will require the state to plan timber harvests that fully integrate resource protection into the sale design. The department would also be required to annually prepare a five-year schedule of proposed timber sales for state land. Except for small sales and emergencies such as salvage, a proposed sale would have to appear on the two five-year schedules preceding the sale. The five-year schedule will inform the public and the timber industry of the state's long-term plans.

Finally, the Board of Forestry would be restructured to a smaller, more balanced membership. This balanced board would provide a forum for representatives of affected interests to discuss and resolve forestry issues before they become divisive. The board has the authority to provide advice concerning research and implementation of the Forest Practices Act and regulations. The board would include a member or representative of a fishing organization, a Native corporation, an environmental organization, and a forest industry trade association as well as a professional fish or wildlife biologist and a professional forester.

Drafts of this bill have been discussed extensively by the members of the Forest Practices Act Steering Committee and with other representatives of the timber industry, environ-

mental groups, and fishing organizations. The bill is the product of discussion and compromise to meet the major concerns of all those affected by its provisions.

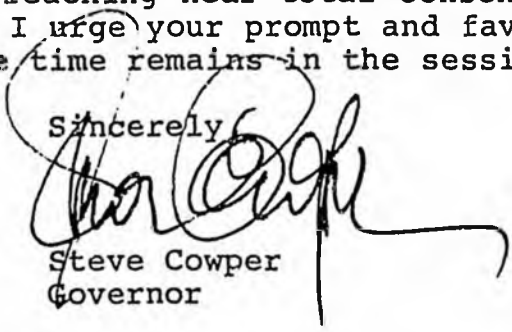
The bill I am transmitting achieves near consensus; it has the support of all but one of the steering committee members. It is supported by representatives of Native corporations, boroughs, fishing groups, and environmental groups but not by the Alaska Loggers Association (ALA).

The ALA objects to a provision of the bill that the association believes would affect harvest on federal land through the Alaska Coastal Management Program. AS 41.17.900(b), in the current law, requires federal harvest to be consistent with the Alaska Forest Practices Act. The bill proposes to amend the law to ensure that the general level of resource protection must be consistent, but that the federal harvest need not follow the specific provisions of that Act. The ALA still fears that this amendment might disrupt an orderly federal planning process that provides sufficient protection.

I realize that it is late in the session for introducing a bill, however, the committee's long and difficult work was not completed until early this week. I felt that it was important to allow the committee to conclude its work and was therefore unable to introduce this bill earlier in the session.

Because of the importance of the bill, and the extraordinary and fragile achievement of reaching near-total consensus on these controversial issues, I urge your prompt and favorable consideration in what little time remains in the session.

Sincerely,



Steve Cowper  
Governor

# ★ Fairbanks North Star Borough

809 Pioneer Road

P.O. Box 1267

Fairbanks, Alaska 99707

907/452-4761

May 4, 1989

The Honorable Steve Cowper  
Governor, State of Alaska  
PO Box A  
Juneau, Alaska 99811

Dear Governor Cowper,

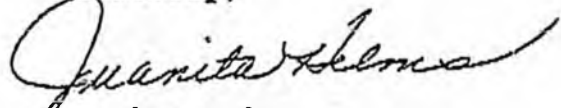
I am writing in support of introduction and passage of the Alaska Forest Practices Act revision. The intent of this legislation has been painstakingly hammered out over the past months by the Forest Practices Review Committee. The committee had representation from all groups interested in the Management of Timber and other resources, which are found in, or depend on forest ecosystems.

My support for this legislation is based on its impact on the Forest Resources within the Fairbanks North Star Borough. I further believe that it is important to preserve the work that has gone into arriving at the agreements which are the core of the revision legislation.

Throughout the forest practices revision process, the various boroughs have been provided with representation in the form of John Duffy/Ted Smith who are from the Mat-Su Borough, and who consulted with us regularly as the process went through. I do feel that there are some areas where further research is necessary to determine what protection measures are really necessary for the protection of Fish and Wildlife habitats. In spite of these areas where questions remain, the legislation is a step in the right direction, and provides the framework for further refinements through operation of the Board of Forestry.

I would appreciate your support of this legislation.

Sincerely,

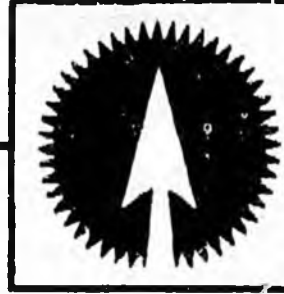


Juanita Helms, Mayor  
Fairbanks North Star Borough

cc: Lennie Gorsuch, Commissioner  
Department of Natural Resources

Bob Loeffler, FPA Coordinator  
Department of Natural Resources

# Alaska Loggers Association, Inc.



111 STEDMAN, SUITE 200  
KETCHIKAN, ALASKA 99901  
Phone 907-225-5114

May 3, 1989

The Honorable Curt Menard  
House of Representatives  
P.O. Box V  
Juneau, Alaska 99811

Dear Representative Menard:

The Alaska Loggers Association (ALA) is disappointed to learn that a state forest practices bill has been introduced by the Governor that does not prevent the application of the state forest practices to federal land through the consistency provisions of the State Coastal Zone Management Act. This is distressing because at the onset of the forest practices revision process, the ALA was advised that the process would move only by consensus agreement. This was the mechanism which was designed to cause negotiations to continue to resolution or stalemate. We were not aware that a stalemate had been reached until today. Indeed, as late as Sunday, April 30, we were still discussing alternative language with the Division of Governmental Coordination that might resolve one of the major problems which the Alaska Loggers Association has with the legislation, which had been presented to the Steering Committee.

The second reason why the state action is distressing is that it had been agreed going into this process that the State Forest Practices Act was to have no impact on federal land. Indeed, there were some within the Department of Natural Resources who agreed that the ALA should not even be included on the Steering Committee because there was no intent to impact federal land.

In order not to impact federal land, several positive steps needed to be taken in the legislation. Two weeks before the negotiations among the members of the Steering Committee ended, the legislation was

SERVING ALASKA'S TIMBER INDUSTRY

## Alaska Loggers Association, Inc.

produced and the Alaska Loggers Association learned that the State Forest Practices Act would apply to federal land through the consistency provisions of the Coastal Zone Management Act. We immediately raised the concern in an effort to find a resolution satisfactory to all sides. The ALA proposed language, the Division of Governmental Coordination found unacceptable. At that point, a second proposal was made based upon discussions between the ALA's attorney, a member of the Division of the Governmental Coordination staff and the Attorney General's office. This proposal, as we said earlier, was also under discussion through Sunday, April 30th.

Attached to this letter is our last proposal for legislation solving the Coastal Zone problem from the ALA's point of view. We urge that legislation not go forward in this session of the Legislature so that the consistency problem and other problems can be taken care of between the sessions of the Legislature in an orderly way. We pledge to work to resolve this issue with the Governor's office, the Department of Natural Resources and the Consensus Group Steering Committee in the meantime. If legislation does go forward, please consider the attachment as our request for an amendment.

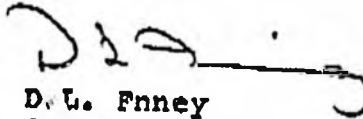
Another major issue of concern has to do with management on state land. The 30 meter no cut zone plus due deference to the Alaska Department of Fish and Game (ADF&G) for the next 60 meters is unacceptable to the ALA. While we understand that there may be changes in the language submitted by the Governor, we really need time to review those changes and to determine their significance.

In the event that the legislation introduced today is delayed until the next session as we are requesting, we would also urge that the Habitat Regulations from the ADF&G and/or Section 31<sup>0</sup> regulations under the Clean Water Act by DEC and ADF&G be delayed through your good offices pending a resolution in the next session of the Legislature of the key issues facing the state through the State Forest Practices Act.

**Alaska Loggers Association, Inc.**

We appreciate your courtesy on this matter.  
Please let me know if you have any questions.

Sincerely,



D. U. Finney  
General Manager

DLF:es

cc Commissioner Lenny Gorsuch  
Denby Lloyd

SENT BY: RONEA/JUNEAU

: 5- 3-89 : 16:25 :

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**SECTION 205. STANDARDS FOR DETERMINING  
THE CONSISTENCY OF TIMBER HARVESTING  
AND PROCESSING ON A NATIONAL FOREST LAND**

a. The Legislature declares that applicable federal land and resource management plans promulgated under the Forest and Rangeland Renewable Resources Planning Act of 1976, as amended (16 U.S.C. Sec. 1601 et. seq.), meet or exceed State standards for the protection of forest resources.

b. For purposes of 16 U.S.C. Sec. 1456(c) (Section 307(c) of the Coastal Zone Management Act of 1972, P.L.-92-583) standards incorporated in applicable federal land and resource management plans promulgated pursuant to the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended, (16 U.S.C. 1601 et. seq.) shall serve as the forest management standards and policies for activities on National Forest Lands so long as those standards and policies meet or exceed the following standards:

(i) the location of facilities and the layout of logging systems must be sited so as to minimize adverse environmental impacts;

(ii) free passage and movement of fish in coastal water must be allowed; and

(iii) timber harvest and timber management activities must be planned so as to protect streambanks and shorelines, minimize adverse impacts on fish resources and habitats, and minimize adverse impacts on wildlife resources and habitats.

(iv) onshore storage of logs must be encouraged;

(v) sites for in-water dumping and storage of logs must be selected and these activities conducted so as to minimize adverse effects on the marine ecosystem, minimize conflicts with recreational uses and activities, be safe from storms, and not constitute a hazard to navigation;

(vi) roads for log transport and harvest area access must be planned, designed, and constructed so as to minimize mass wasting, erosion, sedimentation, and interference with drainage, and must be adequately maintained until they are

returned to their pre-road natural drainage patterns (put-to-bed); and

(vii) stream crossings, including bridges and culverts, must be designed to withstand seasonal high water and flooding, and must allow the free passage and movement of fish.

## Whitestone Logging, Inc.

Box 389  
Hoonah, Alaska 99829

May 5, 1989

Senator Bettye Fahrenkamp  
Senate Resources Committee  
P.O. Box V  
Juneau, Alaska 99811

Dear Senator Fahrenkamp,

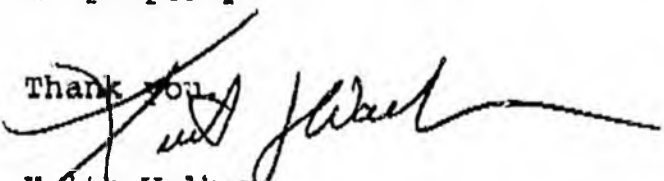
I am starting to believe that there is something seriously wrong with the Cowper administration. The State is cutting out jobs and money for social programs on one hand while promoting the revision of the Forest Practices Act that would necessitate the hiring of a large number of fish biologists.

The fish biologists provided the information to the Governor via their clones in the environmental movement that there was a greater need for fish biologists. After reading the proposed legislation it would seem that the whole purpose of a forest is to produce fish.

The most important concept that this Act should address is the protection of the soil. If the soil is protected by proper placement of roads and structures, by the use of sound logging systems and by proper bank stabilization and forest regeneration then clean water and good fish habitat are assured. The purity of the water from a managed forest is an indicator of soil health.

I feel that this Act revision is a hasty and ill conceived piece of legislation, imported from the Lower 48, that is poorly suited to Alaskan conditions. I would request that you defer this legislation until the next session so that I may have time to dismember it properly.

Thank you

  
Keith Walker  
Forester

cc: Peter Goll  
Curt Menard  
Cliff Davidson

*Time*

Box 020241  
Juneau, Alaska 99802

May 5, 1989

*Cliff Davidson*  
Honorable Betty Farenkamp  
*Hans* Senate Resources Committee  
Alaska Legislature  
Juneau, Alaska

*R. M. Davidson*  
Dear Senator Farenkamp:

*HB 331*  
For the Record ~~SB-317~~

I endorse speedy committee approval and passage of this Forest Practices Bill. It is the result of compromise and mediation between representatives of all effected parties.

In my view, substantial damage occurs to salmon streams without the buffer strip provision contained in the bill. Mud slides into creeks after logging killing eggs and small fry. Exhibit 1, a Fish and Game memo, documents 47 landslides in Southeast alone last November. These slides occur during heavy rains in four year cycles. Without the buffer, mud damages our salmon resource.

Fish kills result from high summer temperature when the umbrella of trees are cut. Exhibit 2 is a list the Forest Service compiled last year showing up to 30,000 estimated salmon kills resulting from the high temperatures which result when we cut trees next to streams. This SB 317 will reduce the effects of clearcutting.

Staff monitoring is not done adequately. I have discovered the state has no turbidity meters which are instruments for measuring how much mud is in the water; like tankers without tug escorts, logging without monitoring is an invitation to destruction of a priceless living resource which the oil spill should have made everyone aware can no longer be accepted. Exhibit 3 gives but one example of roads build directly into salmon streams in 1988. As Exhibit 4 from Fish and Game makes clear, "policies regarding streams be inadequate for stream protection." As we must do with oil, so we must also do with timber. We must error on the side of caution and create buffers which eliminate some need for monitoring. As Exhibit 5 shows, almost three years elapsed between a promise of the Forest Service and today. I swear, no consistent monitoring for State Water quality regulation occurs on salmon streams in Southeast Alaska. The legislature has provided not enough money and no staff are regularly assigned to monitor water quality with instruments.

Please pass out today ~~SB 317~~

*Alan Stein*  
Alan Stein  
fisherman

To: Gary Gunstrom  
Regional Research Supervisor  
Commercial Fisheries  
Juneau, Region I

Date: January 6, 1989

From: John Edgington  
Land Use Project  
Commercial Fisheries  
Petersburg

Subject: Landslides

Observations of landslide areas stopped abruptly with the addition of new snow and poor flying weather. Reports of landslides will probably continue again with the start-up of spring activities.

The following areas and numbers of landslides have been reported:

<u>Area</u>	<u>Landslides</u>	
Lake St. Nicholas	3	
Rush Creek	1	* (tributary of Goose Cr.)
Ratz Harbor	1	* (more than one)
Buster Creek	1	
Deer Bay	2	
Natzuhini River	3	*
Big Salt	1	
Long Island	2	
Fubar Creek	1	
Anita Bay	1	
Mitkof Island	4	
Kupreanof Island	2	
S. Kulu Island		
Elena Bay	1	
W. Thetis Bay	1	*
Gedny Harbor	1	
Crowley Bight	1	
Howard Cove	1	
N.W. Affleck Creek	1	
Three Mile Arm	1	
E. Port Camden	1	
N. Kulu Island		
Saginaw Creek	7	*
Security Bay East	3	*
Saginaw Bay East	1	*
Kadake Creek	1	*
Rowan Bay	1	
Muddy River	1	(Thomas Bay)
Pavlof Creek	1	*
Kadashan River	1	*
Kennel Creek	1	*
Kelsall River	1	*

Total 47 12 \* = Salmon Stream Influence

Exhibit 1