To: Alaska Board of Fisheries
Alaska Department of Fish and Game 1255 W. 8th Street
Juneau, AK 9981

Dear Chairwoman and Members of the Board of Fisheries,

Attached is a gillnet gear evaluation study conducted by the Alaska Department of Fish and Game in 1987 observing the efficiency and catch per unit effort of coho, pink, sockeye, and chum of four different mesh web types. One of the web types studied by ADFG was monofilament and concluded that monofilament showed no significant difference in catch efficiency of sockeye salmon. Being that the Northern District of the North Peninsula is primarily a sockeye salmon fishery, it is likely that the use of monofilament web in set get gear would not give the user an advantage is harvesting more fish.

Under current regulation, set net gear in the Northern District can only use multistrand gillnet web. The intention of Proposal 129 is the allow set net harvesters to use monofilament web to attempt to use a net that may not built up algae and other marine vegetation like multistrand does. Please refer to RC 15 to observe what marine vegetation in multistrand web in a set gill net in the Northern District.

Sincerely,

Connor Murphy

Kodiak, AK 99615

GILLNET GEAR EVALUATION STUDY

IN SOUTHEAST ALASKA, 1987

By

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ABSTRACT

Four test fisheries were conducted in Southeast Alaska in 1987. The
objective was to compare the efficiencies of four different mesh types
including multifilament, mono-twist with center core, six-strand monofilament
and single-strand monofilament. The experiments were conducted in two
districts, glacial and clear water, and in two time periods, summer for
sockeye and pink salmon and fall for coho and chum salmon. The results
showed a general increase in efficiency with six- and single-strand mesh.
Analysis of variance tests shows that single-strand was significantly more
efficient in catching pink salmon in both districts, and that six- and
single-strand were significantly more efficient for coho and chum salmon in
the clear water district. No significant differences were found for sockeye
salmon.

KEYWORDS: Salmon, Southeast Alaska, gillnet mesh efficiency.

INTRODUCTION

The most important factors associated with gillnet selectivity are: mesh size, elastic stretching of the net, inelastic stretching of the net (including stretching of the knots), hanging ratio of the net, strength and flexibility of the twine, and visibility of the twine (Clark, 1960). Other than mesh size, the most important characteristics of a gillnet are its visibility, stretchability of mesh, and tangling capacity (Hamley, 1975). Differences between gear types in the construction of the mesh may translate into differences in efficiency.

Prior to 1960, Alaska did not have any gillnet mesh regulations and all types of gear were legal. After statehood, monofilament nets became illegal. From 1960 to 1978 monofilament gear was not allowed, and was defined as any net which had any single filament of more than 50 denier (50 grams/900 meters of filament). Legal nets were those which had mesh comprised of many small fibers or strands. In 1978, the Alaska Board of Fisheries redefined a legal net as one whose "gillnet must contain no less than 30 strands." The new regulation eliminated any reference specifying individual fiber diameter. Consequently gear was developed which contain 30 strands, but of unequal sizes. The most common of this new type of gear was "mono-twist with center core", which had a core strand comprised of 24 very fine filaments around which a minimum of 6 heavier strands were wrapped. This gear was very similar to the traditional multistrand monofilament nets used in other areas of the country, but cost substantially more. Recognizing the physical similarities between "mono-twist with center core" gillnet mesh and the less expensive six-strand monofilament gillnet, the Alaska Board of Fisheries legalized six-strand monofilament gillnet gear in several areas of the state, including Southeast Alaska, beginning in 1988. The new regulation stated legal gillnet web must contain at least 30 filaments of equal diameter, or the web must contain at least 6 filaments each of which must be at least .20 millimeter in diameter.

Southeast Alaska has 4 distinct drift gillnet salmon fisheries located in regulation districts 101, 106 and 108, 111, and 115 (Figure 1). Gillnet catch-per-unit-of-effort (CPUE) is used by the Department of Fish and Game as a major indictor of the strength of the salmon returns and is used to manage these fisheries. Inseason CPUE is compared to historical averages to decide weekly gillnet fishing time and areas opened to gillnet fishing. In addition, gillnet coho salmon CPUE is monitored by the Department as an indication of coho salmon abundance in the inside waters of Southeast Alaska, and is used as a data base to manage the outside troll coho salmon fishery.

As a result of the recent gear changes in the Southeast Alaska gillnet fisheries, it is unknown to what extent salmon CPUE patterns during the past few years are reflective of changes in gillnet gear efficiency and therefore not reflective of run strength. In order to standardize inseason and historical CPUE to more accurately manage the Southeast Alaska's gillnet fisheries and outside coho salmon troll fishery, the Alaska Department of Fish and Game conducted a gillnet gear evaluation study during 1987.

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The purpose of this study was to examine the effects of four different
gillnet web materials upon catch rates, size selectivity and sex composition
of sockeye and coho salmon, utilizing the gillnet mesh sizes commercially
used to harvest each species. In order to determine the effect of water
clarity and visibility on the catch rates of the gear types, the study was
carried out in glacial and clear water sites and over 24-hour fishing periods
in each of the four weeks of the study.

The center-core and six-strand meshes were assumed to be more efficient
compared to the older commercially used multifilament gear, and a factor of
relative efficiency was therefore assumed to be needed to adjust historical
CPUE databases. Single strand monofilament was included as the fourth mesh
type. Although it is commonly used in other states it is not a legal gear
type in Alaska.