Executive Summary

Bristol Bay Salmon Drift Gillnet Fishery Optimum Number Report

Annotation made December 1, 2022:
Dear Members of the Board of Fisheries,
I am submitting excerpts from the 2004 Bristol Bay Drift Gillnet Fishery Optimum Number Report which has been cited repeatedly in testimony in favor of using Permit Stacking as a method to get us closer to the "optimum number" of permits recommended by this report. This report took several factors into account, with the "Economic Optimum Number" producing the lowest recommended number of permits for an economically viable fishery. This number was determined based on assumptions of economic conditions made in 2004 which have proved inaccurate.

In the report itself the authors states that if future prices do not decline as predicted the number of permits would not need to be reduced. However, report authors instead predict future prices to fall within a range of $.29 to $.61. This inaccurate assumption produced an optimum number recommendation of 600-1200 permits, a huge reduction. In reality, our prices have rebounded to a range double to three times the predicted level, completely invalidating the number presented in this report.

This report has been cited at every board cycle where permit stacking has been taken up since 2004. Given the economic conditions at the time it was authored, it is understandable that low future prices were predicted; however, thankfully these predictions were incorrect. When CFEC authors a report it gives credibility to the results and if a person does not read into the details of this report and explore the predictive methodology used it can be very misleading. I would like to request that the board issue a letter or opinion acknowledging that this report is out of date and it's recommendations are invalid due to the predictive assumptions having been proved inaccurate in the context of the past two decade's economic realities.

Thank you,
Katherine Carscallen,
Dillingham, Alaska
S03T Permit Holder

CFEC Report 04-3N-Exec
October, 2004

Commercial Fisheries Entry Commission
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Forecasts of Future Rates of Economic Return

Chapter 4 of the report provides forecasts of how future average rates of return in the Bristol Bay salmon drift gillnet fishery will vary depending upon the number of entry permits in the fishery and other assumptions about future conditions in the fishery. The chapter also provides an estimate of the "economic optimum number" under Standard One in Alaska's limited entry law. The estimate of the economic optimum number of permits under Standard One ranged from 600 to 1,200 permits.

If future economic returns in the fishery were expected to vary as economic returns varied over the entire 1983-2003 time period, the economic optimum number of permits would likely remain near current permit levels.

However, the decline in ex-vessel prices, coinciding with a dramatic growth in farmed salmon and trout production and a concomitant decline in the price of farmed substitutes for wild salmon, suggests that economic returns will be lower in the future, reflecting these factors and the reality of more recent experience. The sharp decline in the market value of entry permits for the fishery and the large decline in participation rates suggest that fishermen have revised their expectations about future net returns sharply downward.

To make the forecasts, the authors developed an economic simulation model that is derived from relationships estimated from historic and survey data, and relies on assumptions about likely "future values" of key explanatory variables. The model was used to generate estimates for a "baseline scenario," a "high ex-vessel price scenario," and a "low ex-vessel price scenario."

The results of these simulations are shown in Chapter 4 in real 2003 constant-value dollars. All scenarios assume that harvests will continue to vary in the same fashion as harvests varied over the 1978 through 2003 time period. However, the assumptions about future ex-vessel prices reflect the reality of the growth of the salmon farming industry. Therefore, the price forecasts tend to be much lower, on average, than average ex-vessel prices observed during the 1980's and early 1990's.

Ex-vessel prices are a critical part of forecasts of future net economic returns. If harvests are held constant, percentage change in ex-vessel prices lead to equal percentage changes in total gross earnings. Thus, forecasts of future economic returns are very sensitive to forecasts of future ex-vessel prices.

Because ex-vessel prices have recently declined to new lows, and future ex-vessel prices are of critical importance in an optimum number determination, CFEC contracted with Dr. Gunnar Knapp to help with forecasts of future ex-vessel prices. Dr. Knapp is a Professor of Economics at the University of Alaska Anchorage and is a recognized expert on world salmon markets. Dr. Knapp's recommendation for a sockeye ex-vessel price forecasting equation was used in the CFEC economic simulation model of future net returns. Ex-vessel prices for the other Bristol Bay salmon species were related to the sockeye ex-vessel price.

The baseline simulation follows directly from Dr. Knapp's equation, as well as from the other ex-vessel price equations and the assumptions about future harvest levels. The results of 100 simulations of the baseline scenario suggest that future average sockeye ex-vessel prices will be

somewhat lower in real terms than any observed over the 1975-2003 time period. The overall mean of the sockeye ex-vessel price from the 100 simulations was $0.41 per pound, measured in real 2003 "constant-value" dollars. Forecasts of ex-vessel prices for the other salmon species were also near historic lows. The results, coupled with forecasts of average operating costs per permit, suggest that a reduction to around 900 permits would be needed to achieve positive average economic profits in the future. Even at 900 permits, some of the simulations twenty-five years into the future suggest that average profits may still be negative.

Table 2. Sockeye Salmon Ex-vessel Price Forecasts. Mean Prices From the Distribution of Sample Means of 100 Simulations.

Mean Prices are in Real 2003 Dollars per Pound.

Scenario	Overall Mean	Minimum Mean	Maximum Mean
Baseline	$ 0.41	$ 0.35	$ 0.47
High Price	$ 0.54	$ 0.45	$ 0.61
Low Price	$ 0.29	$ 0.24	$ 0.33

The two other scenarios were run to put boundaries around the economic optimum number. The scenarios reflect the fact that there is great uncertainty about future ex-vessel prices and hence future economic profits. One can come up with many hypotheses suggesting why ex-vessel prices in the future could be higher or lower than under the baseline case. Some of these theories are mentioned in Chapter 4 and are discussed in more detail in Dr. Knapp's report to the commission. The results from the economic simulation model are highly sensitive to future ex-vessel price assumptions, and these two scenarios highlight that sensitivity.

The "high ex-vessel price" scenario simply increased sockeye ex-vessel price forecasts by 30%, which also increased the forecast for the other salmon species. The overall mean of the sockeye ex-vessel price from 100 simulations of this high price scenario was $0.54 per pound. Simulations under this scenario suggest that positive average economic profits per permit in the future could be achieved with a reduction to around 1,200 permits.

The "low ex-vessel price" scenario simply decreased the sockeye ex-vessel price forecast by 30%, which also decreased the forecast for the other salmon species. The overall mean of the sockeye ex-vessel price from 100 simulations of this low price scenario was $0.29 per pound. Simulations under this scenario suggest that positive average economic profits per permit in the future would be achieved only with a reduction to around 600 permits. Table 3 shows the results of the 3 simulation scenarios. It illustrates the overall estimated average profits derived from varying levels of permits for the baseline, the high price, and the low price scenarios. Note again the forecast is the result of 100 simulations; therefore, the table also shows the range (the minimum and maximum) of the average estimated profits generated by the simulations.

Results from the economic simulation model are highly sensitive to the assumptions about future ex-vessel prices. Modifications of other elements of the model, such as the cost function, could also lead to significant changes.