# FOCI Prediction - 1998 - Average

The Fisheries-Oceanography Coordinated Investigations (FOCI) program annually makes a prediction regarding incoming year class strength for pollock in the Gulf of Alaska. Typically, six sources of information are utilized in making this prediction: quantitative results from a nonlinear transfer function time series model, quantitative results from time series analysis of recruitment data, and four qualitative sources of information.

**1998 Year Class Prediction**

This forecast is based on four data sources, three of which involve purely physical properties, and one of which involves a biological survey:

1. observed Kodiak rainfall,
2. wind mixing energy at [57N, 156W] computed from sea-level pressure analyses,
3. advection of ocean water in the vicinity of Shelikof Strait as inferred from drogued drifters deployed during the spring of 1998, and
4. rough counts of pollock larvae from a survey conducted during late May 1998.

Each source provided a recruitment forecast on a continuum of 1 (weak recruitment) to 3 (strong recruitment). These four forecasts then were combined with equal weighting to produce the overall 1998 FOCI prediction. Other predictors employed in past forecasts (time series model, time sequence of recruits, length composition data from echo-integration trawls, and puffin diet analyses) were not available this year.

ANALYSIS - It was a stormy winter and spring in the SHelikof SAtreait region. Precipitation and wind mixing were greater than their 30-year (1962-1991) averages. Freshwater dischare uinto the ocean from the above-average precipitation favored the formation of eddies thought to be benficial for pollock larval survival. Monthly measured predipitation totals at Kodiak produced a "strong" prediction with a score of 2.73. ALthough the potential for eddy formation was conducive to above-average survival in 1998, other factors did not support the year class. Bebgits of strong mixing in late winter were offset by continuyes strong mixing during spring, a time when first-feeding pollock larvae survive better if winds are calm. Monthly estimates of wind mixing prduced an "average" prediction with a numerical score of 2.18. Subjective comparison of 1998 drifter tracks with tracks form previous years resulted in a "weak to average" prediction scored at 1.67. In 1998, transport in the Alaska Coastal Current was very weak during the early larval pollock stage. This resulted in drifters remianing in the sea balley and not being rtransported to the nursery grounds near the Shumigan Islands, although they did remain on the shelf. This type of transport is associated with an average year class. Finally, the index of larval rough counts was low this year compared to other years, giving a prediction of "weak" with a numerical score of 1.0

CONCLUSION - Based on these four elements and the weights assigned in the table below, the FOCI forecast of the 1998 year class is average.

| Index | Weight | Score | Product |
|---|---|---|---|
| Time series model | 0.00 | 0.00 | 0.00 |
| Time sequence of recruitment | 0.00 | 0.00 | 0.00 |
| Echo integration trawl size composition | 0.00 | 0.00 | 0.00 |
| Rain | 0.25 | 2.73 | 0.68 |
| Wind mixing | 0.25 | 2.18 | 0.55 |
| Advection | 0.25 | 1.67 | 0.42 |
| Larval index of abundance | 0.25 | 1.00 | 0.25 |
| Puffin nesting diet | 0.00 | 0.00 | 0.00 |
| *TOTAL* | *1.00* | | *1.90* |
| *FORECAST* | | | *AVERAGE* |