

DRAFT

Agenda Item E.1.b
Supplemental Workshop Report PowerPoint Presentation

March 2007

Report of the Groundfish Harvest Policy Evaluation (Bzero) Workshop

Southwest Fisheries Science Center

La Jolla, California

December 18-20, 2006

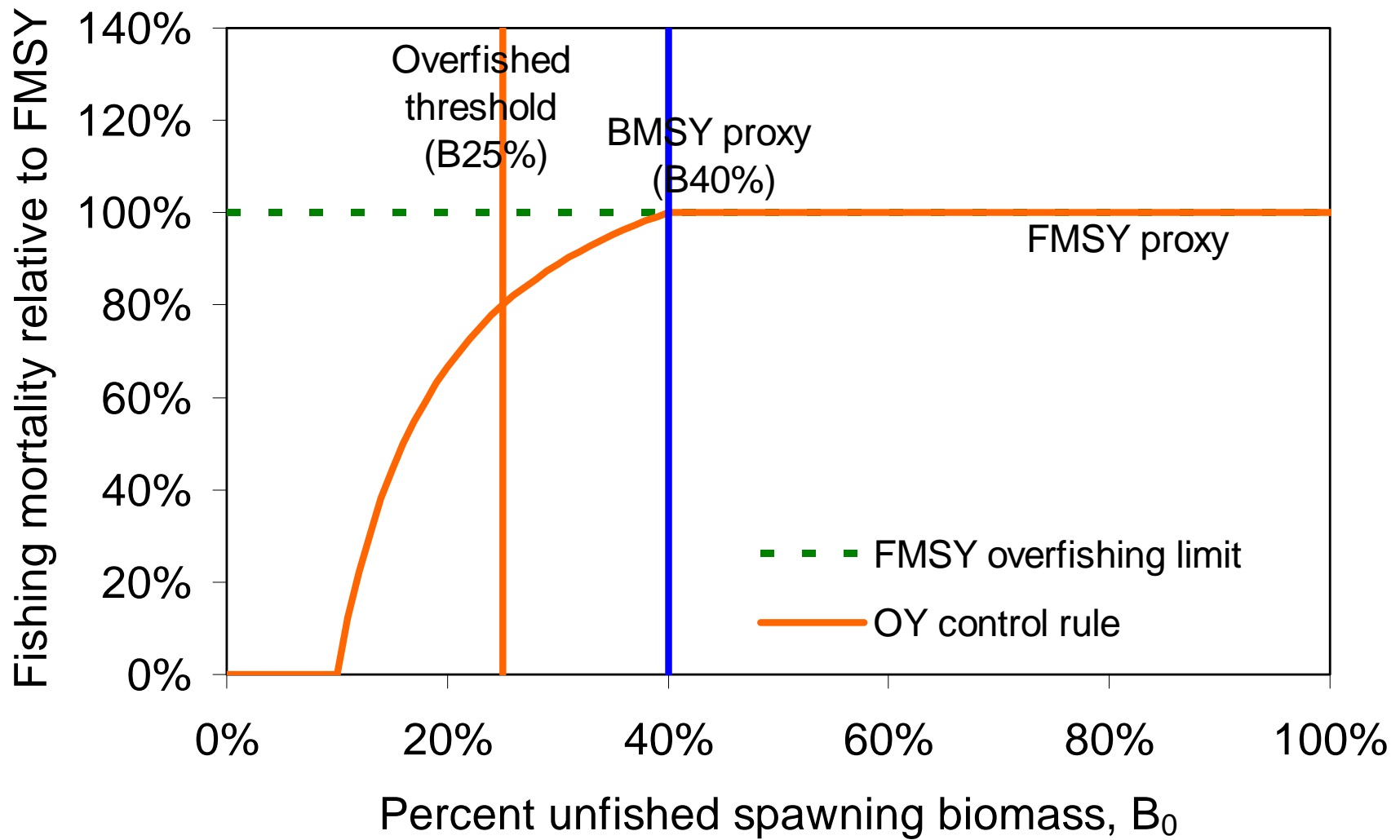
Workshop Goals

1. Evaluate the performance of the Pacific Council's 40-10 harvest policy for stocks with different life history and stock-recruit patterns.
2. Evaluate alternative methods to estimate B_{zero} and $BMSY$ proxies and provide recommendations on their use.
3. Provide recommendations on the use of priors for key assessment parameters in stock assessment models.

Pacific Council's Groundfish FMP

- Establishes default proxies for FMSY, BMSY and the overfished threshold
- Allows alternatives to be used if there is scientific justification

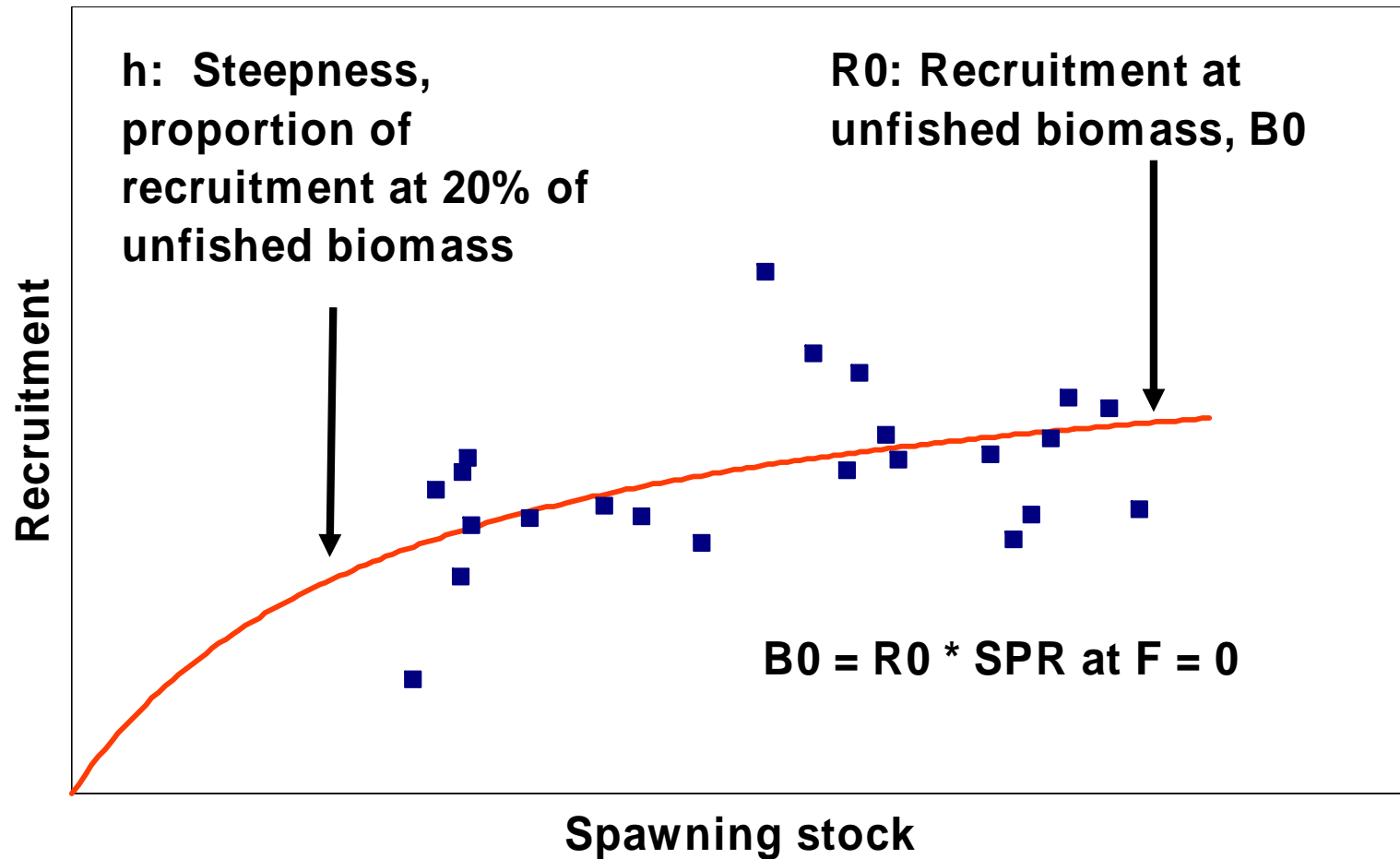
"The Council will consider any new scientific information relating to calculation of MSY or MSY proxies and may adopt new values based on improved understanding of the population dynamics and harvest of any species or group of species."



Pacific Council's harvest policy for groundfish

Some definitions

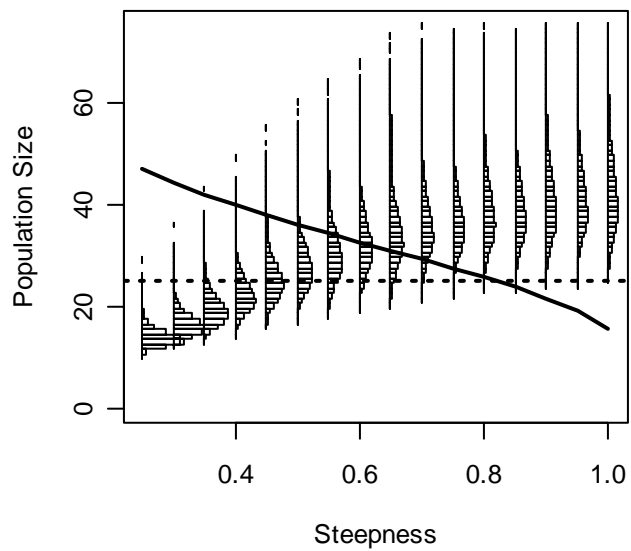
Beverton-Holt curve



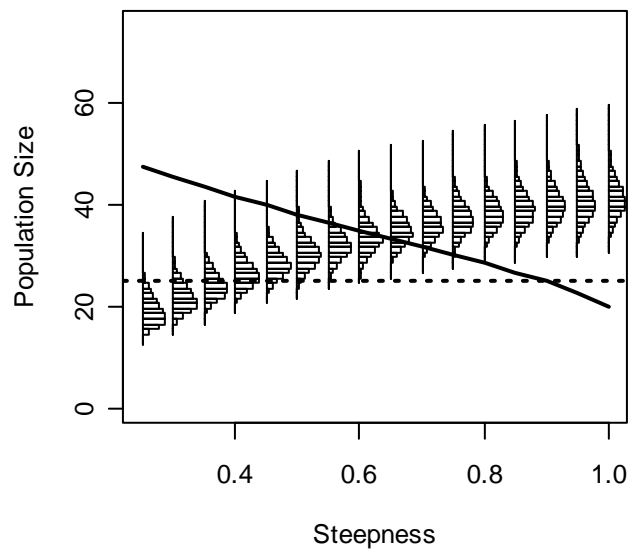
Harvest policy performance

- Monte Carlo simulation
- Four representative species with contrasting biology and population dynamics: petrale sole, sablefish, canary rockfish and whiting
- Performance statistics reflect the intent of the harvest control rule
 - High stable catches
 - Low probability of dropping below the overfished threshold

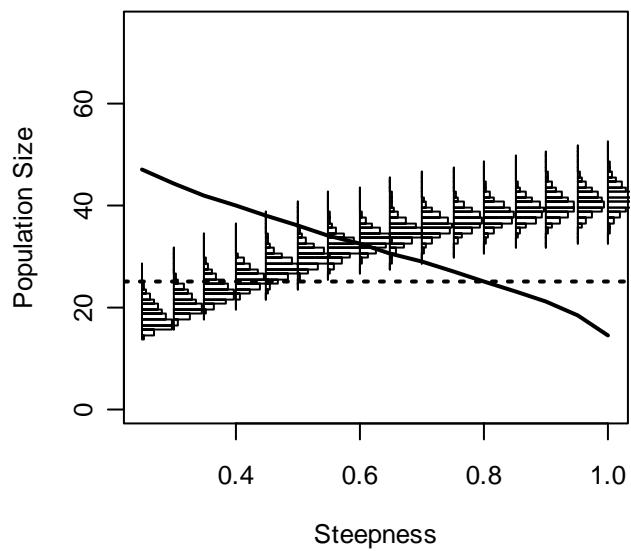
Petrale sole



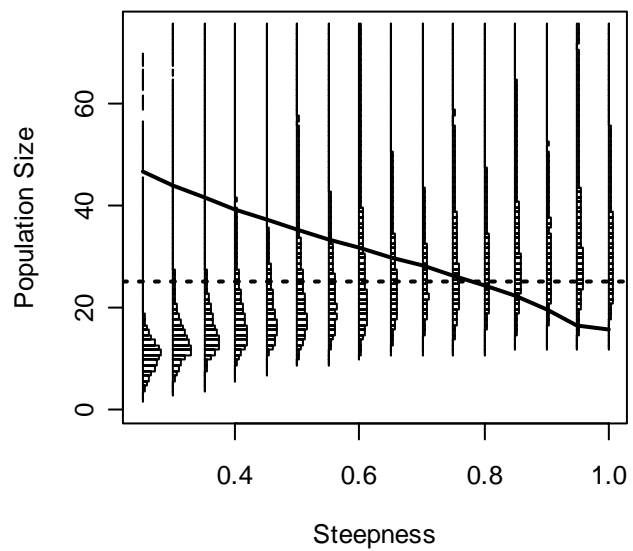
Canary rockfish



Sablefish



Pacific whiting



Simulation results

- 40-10 with current proxies is OK for most species
- Stock-recruit steepness and recruitment variability are significant factors affecting performance
- Low steepness rockfish (all are now under rebuilding plans)
- High recruitment variability for whiting leads to frequent episodes of low stock size (below the overfished threshold)
- Sablefish?

Estimating Bzero and Bmsy

- Review of approaches used by other councils
- Simulation/estimation tests
- Dynamic Bzero

Review of approaches used by other Councils

- Each Council has a unique set of circumstances
- Proxies for BMSY are widely used but no other Council uses Bzero as a concept
- Proxies that are direct approximations of BMSY are used instead
- There is some variation between Councils in how the overfished limit is defined

Simulation/estimation testing to evaluate alternative estimators for B0 and BMSY

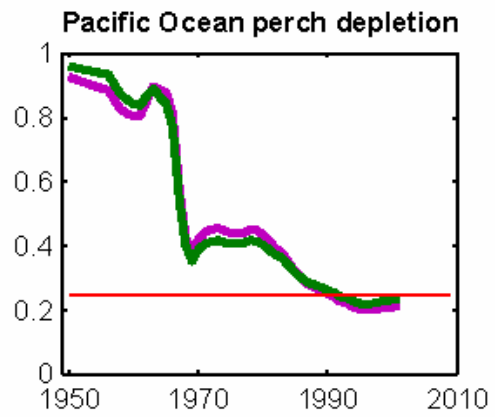
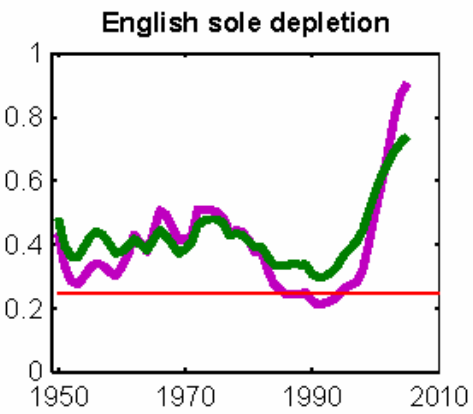
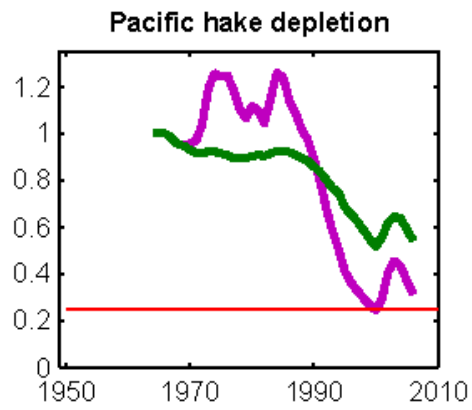
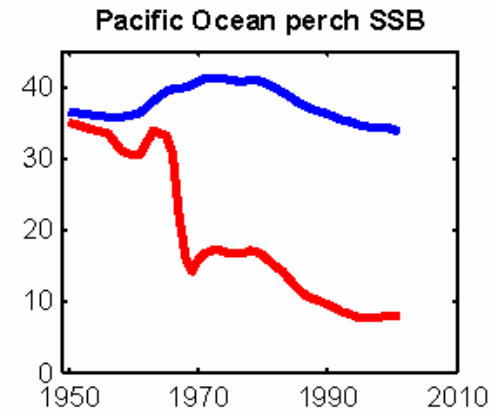
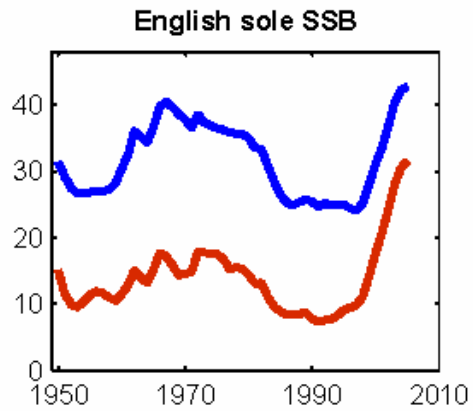
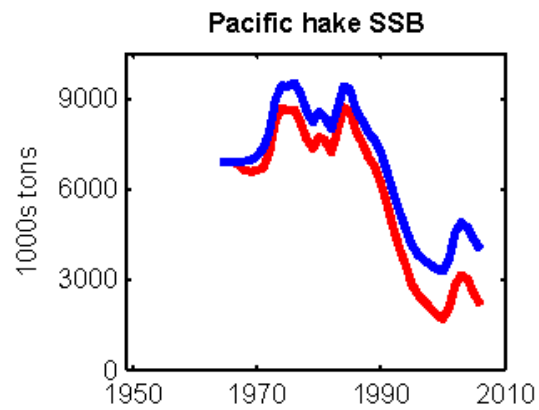
- Simulations considered three life histories: canary rockfish, petrale sole, Pacific whiting
- Simulate the dynamics of a population
- Simulate sampling from that population to generate assessment data
- Fit a simplified stock assessment model
- Repeat multiple times to obtain statistical properties

Sablefish simulation/estimation testing

- Simulation-estimation framework developed specifically for sablefish
- Used an environmental variable to drive part of recruitment variability
- Compared the precision and bias of Bzero estimates for scenarios with and without the environmental forcing
- Preliminary results confirmed the validity of the approach

Dynamic Bzero: An alternative approach to abundance reference points

- Basic approach is to “replay” the historical population dynamics without removing catches
- Allows implicit accounting of environmental forcing on stock abundance
- Estimates of dynamic Bzero all available West Coast assessments were examined
- Potentially useful for determining overfished and/or rebuild status



— obs SSB — unfished SSB — dep static B0 — dep dynamic B0

Advice to assessment authors

- How to obtain a suitable value for natural mortality
- Use of priors for stock-recruit steepness

The next steps

- A follow-up workshop is needed to develop recommendations on estimating B_0 and $BMSY$.
- A harvest policy evaluation should be undertaken for Pacific whiting
- Management policies for data-limited stocks should be developed and evaluated.
- The harvest policies for the CPS species should be reviewed
- Harvest policies that perform robustly in the face of climatic regime shifts should be developed and evaluated.