

harvest level would need to be lowered. Based on the new stock assessment and a new rebuilding analysis, the Council, at its June 2002 meeting, recommended for further analysis a bocaccio rockfish OY for 2003 of 5.8 mt. This new OY was associated with a constant mortality rate and a 50 percent probability of rebuilding to Bmsy by the year 2109 (T_{\max}). At this same meeting, the Council requested that the rebuilding analysis be updated using procedures recommended by the SSC. Following the June 2002 Council meeting and prior to revision of the bocaccio rebuilding analysis, the rebuilding model for all overfished species was refined to more accurately account for actual catch occurring during and after the initial year of rebuilding.

In the revised bocaccio rebuilding analysis prepared following the June Council meeting, the stock failed to have a 50- percent probability of rebuilding by T_{\max} , even in the absence of fishing. T_{\max} is the maximum time for rebuilding established by the National Standard Guidelines (50 CFR 600, subpart D). This failure is due to lower estimated recruitment of the 1999 year class and recent landings that exceeded the rebuilding OYs. Bocaccio landings in 2000 and 2001 were respectively 69 and 47 mt over the OY levels set in 2000. In addition, hindsight shows, based on the new rebuilding analysis' calculation of the actual strength of the 1999 year class, that the OYs for 2000 and 2001 had been set too high in view of the actual strength of the 1999 year class. The OYs set for 2000 and 2001 created a "rebuilding deficit" that will take more than T_{\max} to recover from. NMFS subsequently prepared a sustainability analysis for bocaccio rockfish. A rebuilding analysis addresses the fishing rates associated with rebuilding an overfished stock to a target abundance within a specified time frame, whereas a sustainability analysis addresses the fishing rates that would lead to no further decline in abundance over a specified time frame. In both types of analysis, the uncertainty of future reproductive successes requires that the results be described in terms of probabilities rather than certainties. The sustainability analysis shows that a harvest level of ≤ 20 mt would provide a 50- percent probability for the stock to rebuild in 170 years, with a high probability (>80 percent) of no further decline in the spawning biomass over the next 100 years. The Council's SSC concluded that the sustainability analysis represented the best available science and endorsed its use in setting

2003 harvest levels. The Council agreed with the SSC recommendation. The National Standard Guidelines do not address the situation where NMFS concludes, based on an updated rebuilding analysis, that a stock cannot be rebuilt within T_{\max} , even with zero fishing mortality. Therefore, NMFS has determined that the National Standard Guidelines do not provide sufficient guidance for the bocaccio rockfish situation and instead has looked directly to the Magnuson-Stevens Act for guidance. Section 304(e)(4)(A)(i) states that a rebuilding period shall "be as short as possible, taking into account the status and biology of any overfished stocks of fish, the needs of fishing communities, recommendations by international organizations in which the United States participates, and the interaction of the overfished stock of fish within the marine ecosystem."

NMFS believes that the Magnuson-Stevens Act requires that the Council and NMFS meet the conservation needs of the stock (National Standard 1), and also consider the needs of fishing communities (National Standard 8). Balancing these considerations, zero fishing mortality is not required for this situation. Zero fishing mortality would seriously adversely affect fishers and communities in California south of Cape Mendocino, CA. In this area, commercial fisheries (including fisheries for non-groundfish species) and recreational fisheries that incidentally catch bocaccio would be severely curtailed or closed for many years into the future. Bocaccio is taken incidentally in a wide variety of fisheries, ranging from recreational fisheries that operate off piers and jetties taking juvenile bocaccio in nearshore waters, to commercial purse seine fisheries for squid and other coastal pelagic species. The OY recommended by the Council, which is based on the sustainability analysis, the needs of fishing communities, and the biology of the stock, has a low probability of driving the stock into further decline and will not materially jeopardize future rebuilding. The large historical biomass of bocaccio occurred through accumulation over time of biomass from several intermittent, large recruitments. These large recruitment events are thought to be connected to currently unknown and unpredictable ocean conditions. Bocaccio rebuilding depends on the future occurrence of similarly large recruitment successes. Although the 1999 year class was in fact smaller than had been projected in 1999, it is still the largest year class since 1991. The recruitment success

observed in 1999 indicates that the current spawning biomass is capable of initiating the rebuilding, but substantial rebuilding awaits the future occurrence of several such successes. Based on the current information, NMFS concludes that at the proposed OY level bocaccio will be able to rebuild. The analysis shows an 80 percent probability of no further decline after 100 years, a 50 percent probability (the standard reference probability level) of rebuilding within 170 years, and a 33 percent probability of rebuilding by the year 2109. Therefore, NMFS believes the recommended OY is consistent with the Magnuson-Stevens Act.

Yelloweye Rockfish

Yelloweye rockfish were first assessed in 1996 as part of the "remaining rockfish" group. In 2001, a yelloweye rockfish assessment was conducted for northern California and Oregon. The 2001 assessment estimated that yelloweye rockfish was at about 7 percent of its unfished biomass in waters off northern California and at 13 percent of its unfished biomass in waters off Oregon; this resulted in NMFS declaring yelloweye rockfish to be overfished. An initial yelloweye rockfish rebuilding analysis, based on the 2001 assessment, was prepared and presented at the Council's June 2002 meeting. Because this assessment did not cover Washington, the development of rebuilding measures was hampered.

In August 2002, an updated assessment was completed in order to incorporate data from Washington, an important area of yelloweye rockfish abundance, and to incorporate newly available age data. Other changes from the 2001 assessment included: the use of a combined area model; revised selectivity curves for all sectors of the fishery; the inclusion of Washington catch data; re-evaluation of California logbook data and the influence of port group and depth effects; extension of the modeled time period; revision of the treatment of natural mortality rates; and inclusion of a spawner-recruitment relationship to provide an overall measure of stock productivity.

Like the 2001 assessment, the updated assessment indicated that there has been a declining abundance trend for more than 30 years, with the last above average recruitment occurring in the late 1980s. The assessment update concluded that the coastwide yelloweye rockfish spawning female biomass (934 mt) was at 24.1 percent of its unfished biomass at the beginning of 2002. The SSC supported the new assessment model and indicated that it represented the best available science. The 2003