Fishery Analysis on the Basses in Southern California

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Marine Resources Committee Mtg.
Santa Barbara, California

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Overview

• Background

• Summary of fishery analysis

• Management options for consideration

• Department recommendations

Photo: Tom Schabow
Policies for Achieving the Goals of the Marine Life Management Act (MLMA)

1. Science
2. Constituent Involvement
3. Adaptive Management
4. Socio-Economic Considerations

Photos: DFG
Kelp Bass, *Paralabrax clathratus*

- Range: Columbia River, WA/OR border to Magdalena Bay, Baja
- Associated with kelp/rocky reef
- Popular recreational fishery since 1940s
- Mainland and island fishery

Photo: Rob Johnson
Barred Sand Bass, *Paralabrax nebulifer*

- Range: Santa Cruz, CA to Magdalena Bay, Baja
- Associated with sand/reef
- Popular recreational fishery since 1970s
- Mainland fishery (spawning aggregations)

*Photo: author unknown*
Spotted Sand Bass, *Paralabrax maculatofasciatus*

- Range: Monterey, CA to Mazatlan, Mexico/Gulf of Calif.
- Associated with bays/harbors
- Popular recreational fishery since 1980s
- Mainland fishery (catch-and-release)

*Photo: Dave Rudie*
CPFV landings (1980-2011)

Barred sand bass
- 85% decrease

Kelp bass
- 70% decrease
CPFV catch per unit effort (CPUE) (1980-2011)

Barred sand bass

Kelp bass

CPFUE (fish/angler)

Years: 1980 to 2011
Hyperstability and Population Size

Catch rates over time

Modified from Larry G. Allen, 10-18-10
Hyperstability and Catch Ranges

Catch range when fish are abundant

Catch range when fish are scarce

North

South

Catch rates

Modified from http://fish.washington.edu/
Commercial Passenger Fishing Vessel CPUE by CDFG fishing block (2000-2010) [CPFV Logbook Data, CFIS]

Temporal trends in CPUE by fishing block
Updated 09 Dec 2011
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Temporal trends in CPUE by fishing block
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<table>
<thead>
<tr>
<th>DATA TYPE</th>
<th>ORGANIZATION</th>
<th>LIFE STAGE</th>
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<td>Larval Abundance</td>
<td>CalCOFI</td>
<td>Larvae/recruits</td>
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<td>Recruitment</td>
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<td>Fish Entrapment</td>
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<td>SCUBA Surveys</td>
<td>NPS, PISCO, Occidental College, SF State Univ.</td>
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Island SCUBA Transects (1985-2010): Adults

Kelp bass

Mean density (fish/100 m²)

- Santa Cruz Island
- Anacapa Island

Year:
- 1985
- 1990
- 1995
- 2000
- 2005
- 2010
Entrapment Abundance (1975-2009): Subadults

**Barred sand bass**

**Kelp bass**

Mean abundance (fish/10^6 m^3)
Pacific Decadal Oscillation

![Graph showing PDO Index (sum of May-Sept) from 1930 to 2010 with warm and cool regimes.]
Rockbass Larval Abundance (1951-2010)

Larvae per 10 m²

Cold Regime
Warm Regime
Cooler

Thousands of fish

CPFV landings (1936-2011)
Kelp bass densities and kelp canopy

Kelp canopy (sq. miles)

Juvenile Kelp bass

Fish/million gallons

1983 1985 1987 1989 1991 1993 1995 1997 1999 2001 2003

0 0.0001 0.0002 0.0003 0.0004 0.0005

2 yr
Tracking Dominant Age Classes
(Fishery Recruitment Strength)

Barred sand bass 1997 year class

Dominant age (yrs)

CPUE (fish/angler)
Tracking Dominant Age Classes (Fishery Recruitment Strength)

Kelp bass

1997 year class

Dominant age (yrs)

CPUE (fish/angler)


0 0.5 1 1.5 2

0 5 6 7 8 9 10 11

Tracking Dominant Age Classes (Fishery Recruitment Strength)
Population recruitment failure?

Recruitment and Larval Abundance

Warm Regime

Larvae per 10 m²

Decrease in larval survival and/or larval supply?
Size structure of harvested catch (1975-2011)

Barred sand bass

Kelp bass

Est. Age (yrs)

~15+

~4
The Basses are Different

- Steep catch declines
- Mainland fishery
- Very large, localized spawning aggregations
- Range less to the north

- Smooth catch declines
- Mainland/Island fishery
- Smaller, broadly distributed spawning aggregations
- Range farther north
- Kelp habitat important

= HIGHER LEVEL OF CONCERN
Management Goals and Considerations

1) Provide measures that will favor a population rebound for the basses.

- Reduction in bag limit?
- Change in size limit?
Management Goals and Considerations

2) Protect barred sand bass spawning population.

- Seasonal closure?
- Seasonal reduction in bag limit?
Constituent Input

Recreational Fishing Groups

Bag limit reduction
Slot limits
No slot limits
Minimum size limit increase
Catch-and-release only for spotted sand bass

Environmental Groups

Concern for kelp bass and barred sand bass
Explore management options
Partial season closure for barred sand bass
Percent Reduction in Catch under Hypothetical Bag Limits

In-season 3 fish bag limit

Barred sand bass
Kelp bass
Spotted sand bass

Data source: California Recreational Fisheries Survey, 2004-2010
Percent Reduction in Catch under Hypothetical Minimum Size Limits

Data source: California Recreational Fisheries Survey, 2004-2010
Avg. Percent Reduction in Catch under Various 2-wk Closures

Barred sand bass

Data source: CPFV logbooks, 2004-2010
Summary

• Environment and fishing have affected our bass populations

• Precautionary management measures appear prudent
Recommendations

• Increase minimum size limit
  – Allows for at least 1 additional year of spawning

• Decrease bag limit
  – Allows for modest savings

• Partial spawning season closure
  – Allows for uninterrupted spawning activity
Recommendations

• Continue to evaluate regulation effectiveness

• Take adaptive management approach to maximize fishing opportunities

Artist: Kelly Day Spady
Thank you