

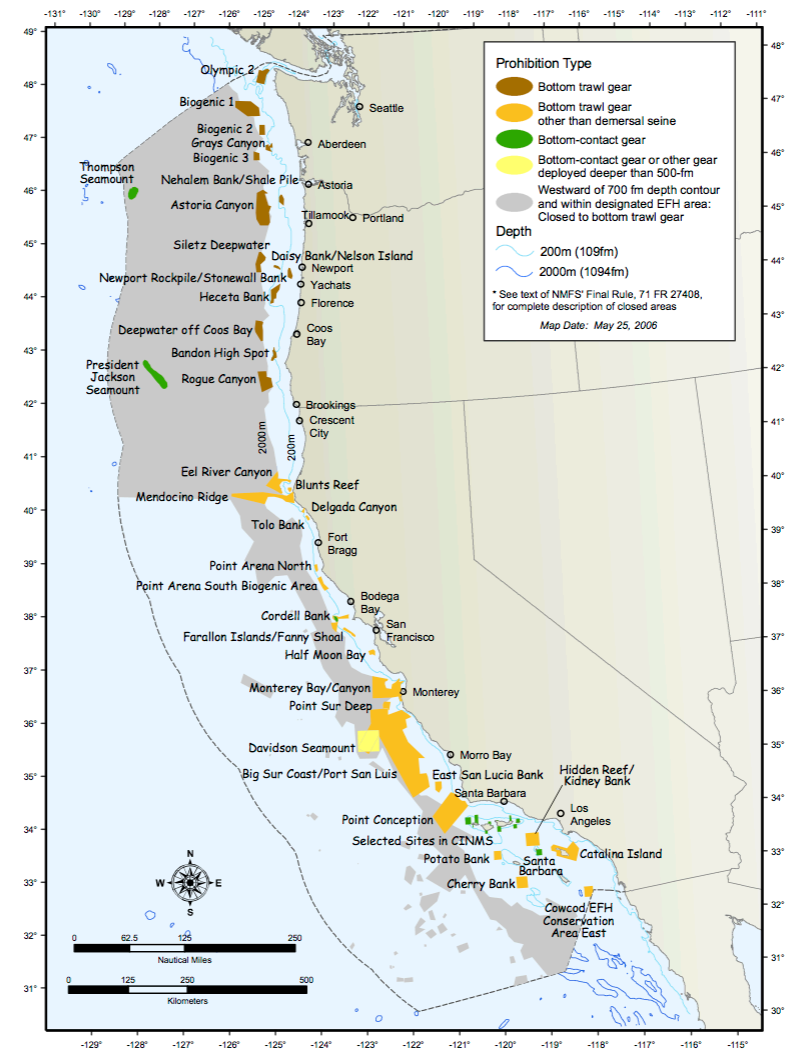
Incentivizing Selectivity in the West Coast Groundfish Fishery

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West Coast Groundfish Fishery

- Multispecies Fishery
– 29 stocks
- Valuable and overfished species caught together
- Overfished species are hard to avoid

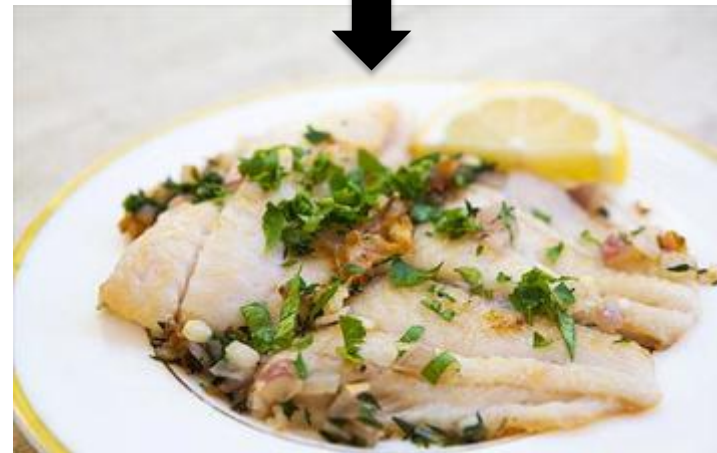


EFH area closures to protect Pacific Coast groundfish habitat - Coastwide.

Multispecies Fishery

Target Species

- Valuable
 - Tasty
 - Marketable
- Examples:
 - Petrale Sole
 - Sablefish
 - Pacific Whiting



Multispecies Fishery



Choke Species

- Overfished and Rebuilding
 - Long lived
 - Slow growing
 - Late maturity
- Examples:
 - Canary Rockfish
 - Yelloweye Rockfish

Multispecies Fishery

- Tradeoff between conservation and profits
- Maximize profits and overfish
 - Can't catch Targets without catching Chokes
- Prevent overfishing and reduce profits
 - Avoid Chokes and avoid Targets

Win-Win?

Catch Shares

- Set and Divide
 - Coastwide total allowable catch (TAC)
- Allocate
 - To individuals based on catch histories
- Fish
 - Extended season, no race to fish
- Trade, lease, or sell quota
 - To meet catch targets

Catch Shares a Win-Win?

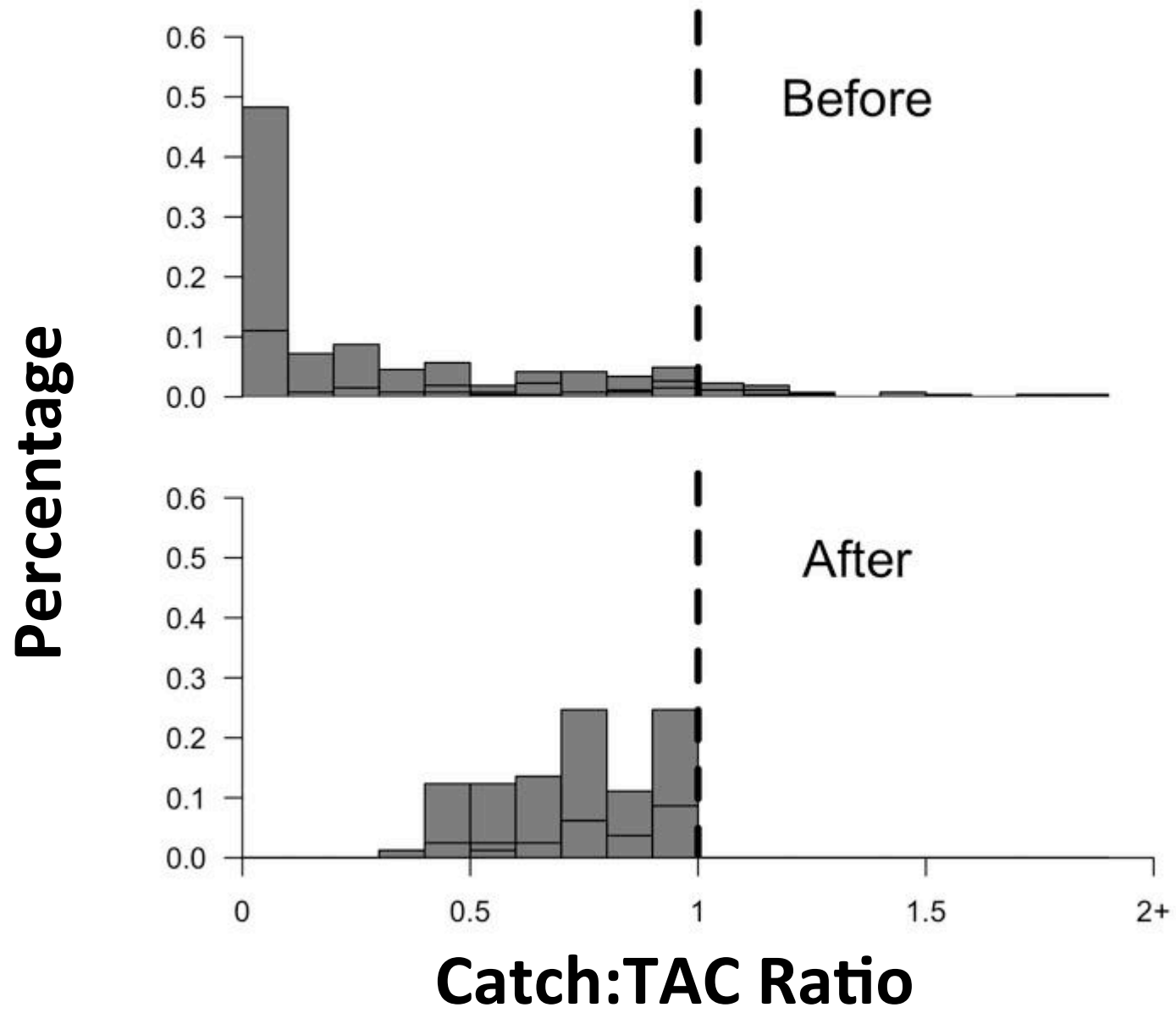
- **Prevent Overfishing**
- **Increase Profits**

Catch Shares a Win-Win?

- **Prevent Overfishing**
 - On-Board Observers enforce TACs
 - Transferable quota
 - Flexibility
 - Eliminate race to fish
- **Increase Fleetwide Profits**
 - Inefficient fishers sell/lease quota
 - More fresh fish to processors

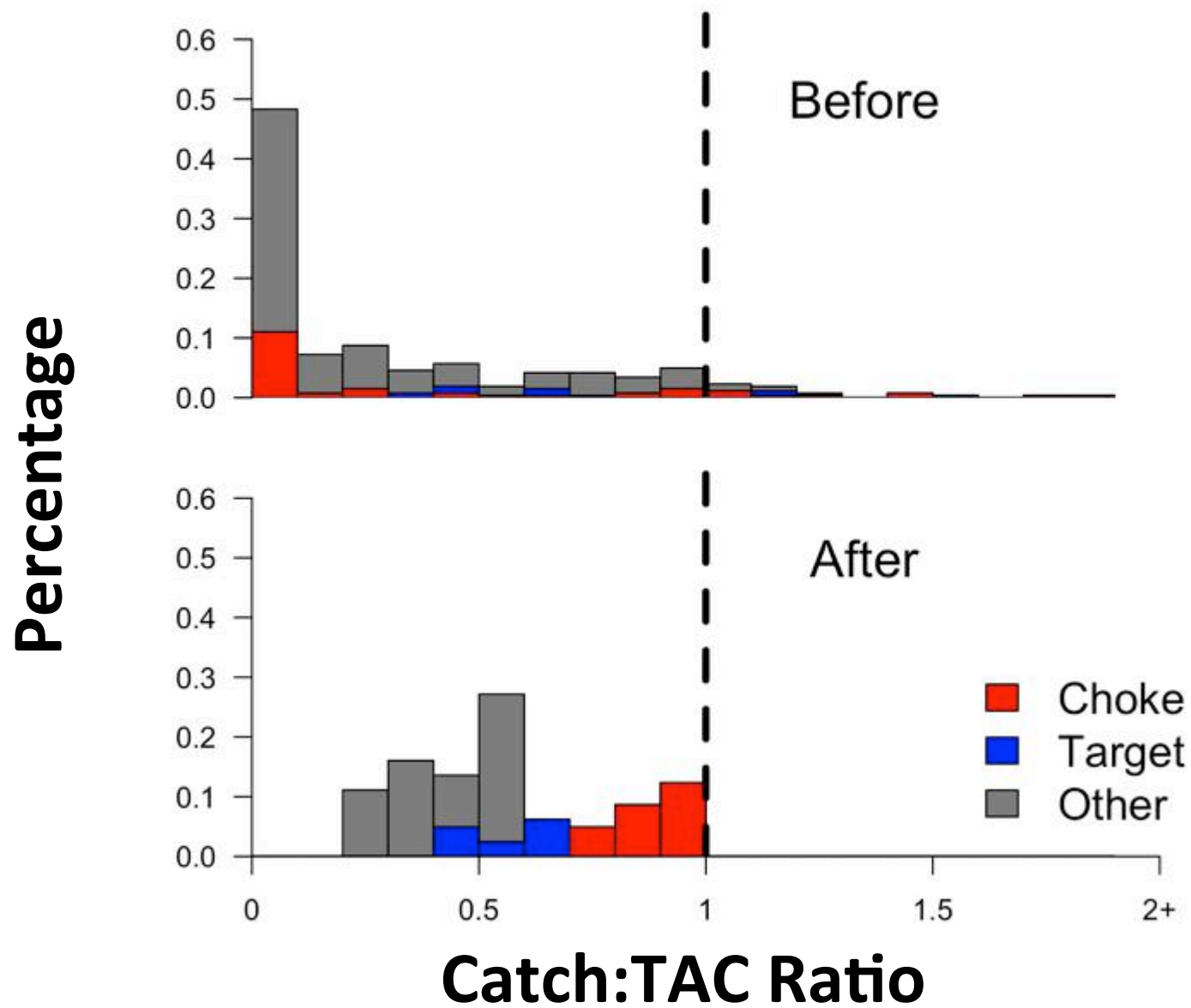
Hypothesis 1

- Catch Shares are perfect!
 - Catch most of the TAC
- Catch:TAC increases for all stocks
- Reasons:
 - Flexibility to transfer quota
 - Relaxed fishing season
 - No race to fish

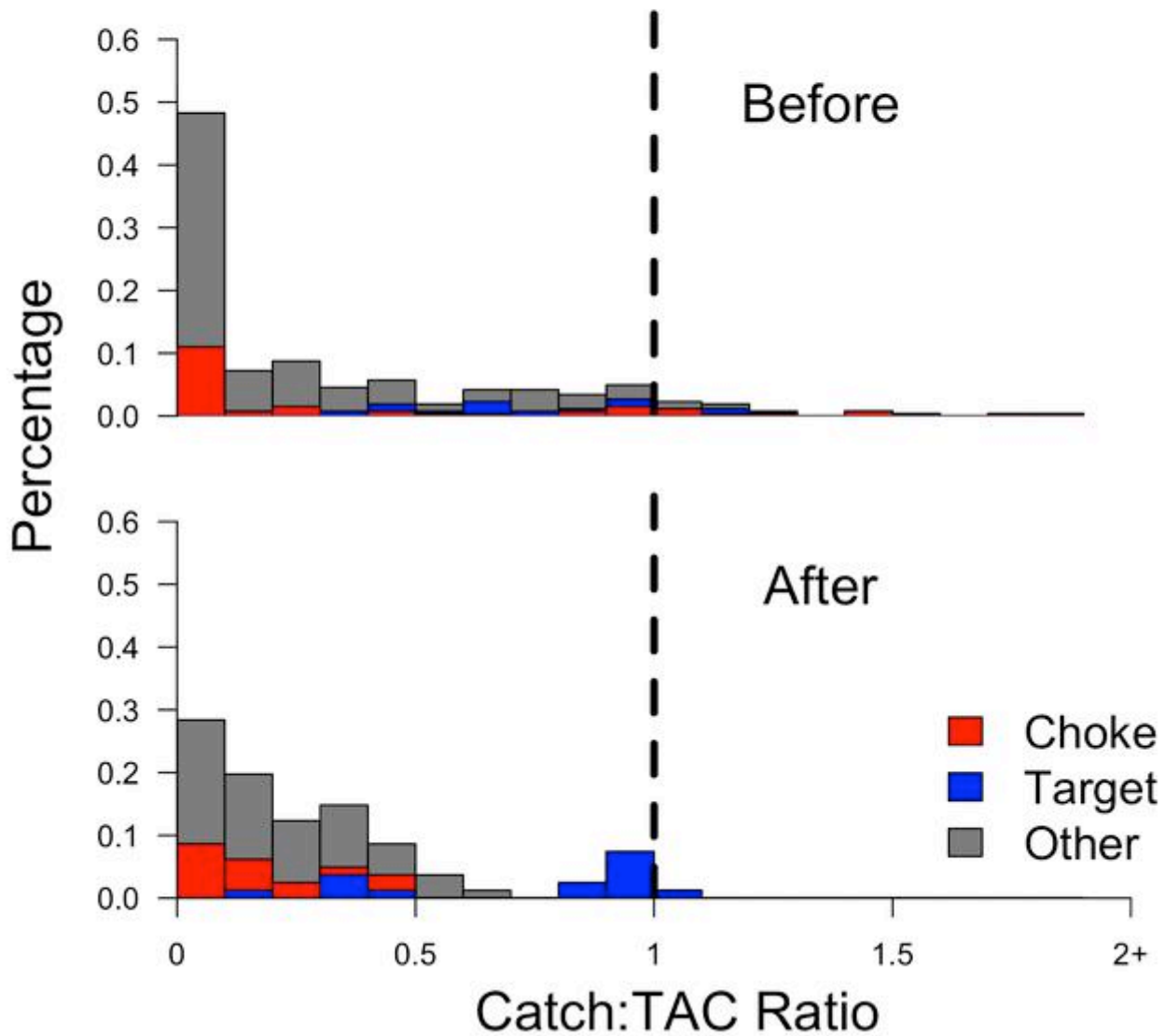


Hypothesis 2

- But we can't overfish
- Choke species choke
 - Choke Catch:TAC at 1
 - Targets less than 1



What Actually Happened



What Happened?

- Variation on Hypothesis 2?
 - Choke species limit catch in a different way
- **How do choke species constrain catch?**
 - Compare:
 - BC Commercial Trawl Fishery
 - WC Groundfish Fishery

Similarities—BC and WC

BC Commercial Trawl and WC Groundfish

- Trip Limits to Catch Shares
 - BC in 1997, WC in 2011
 - Overfishing and Discarding
- Fleet Sizes
- Gear Types
- Target Species

Difference—BC and WC

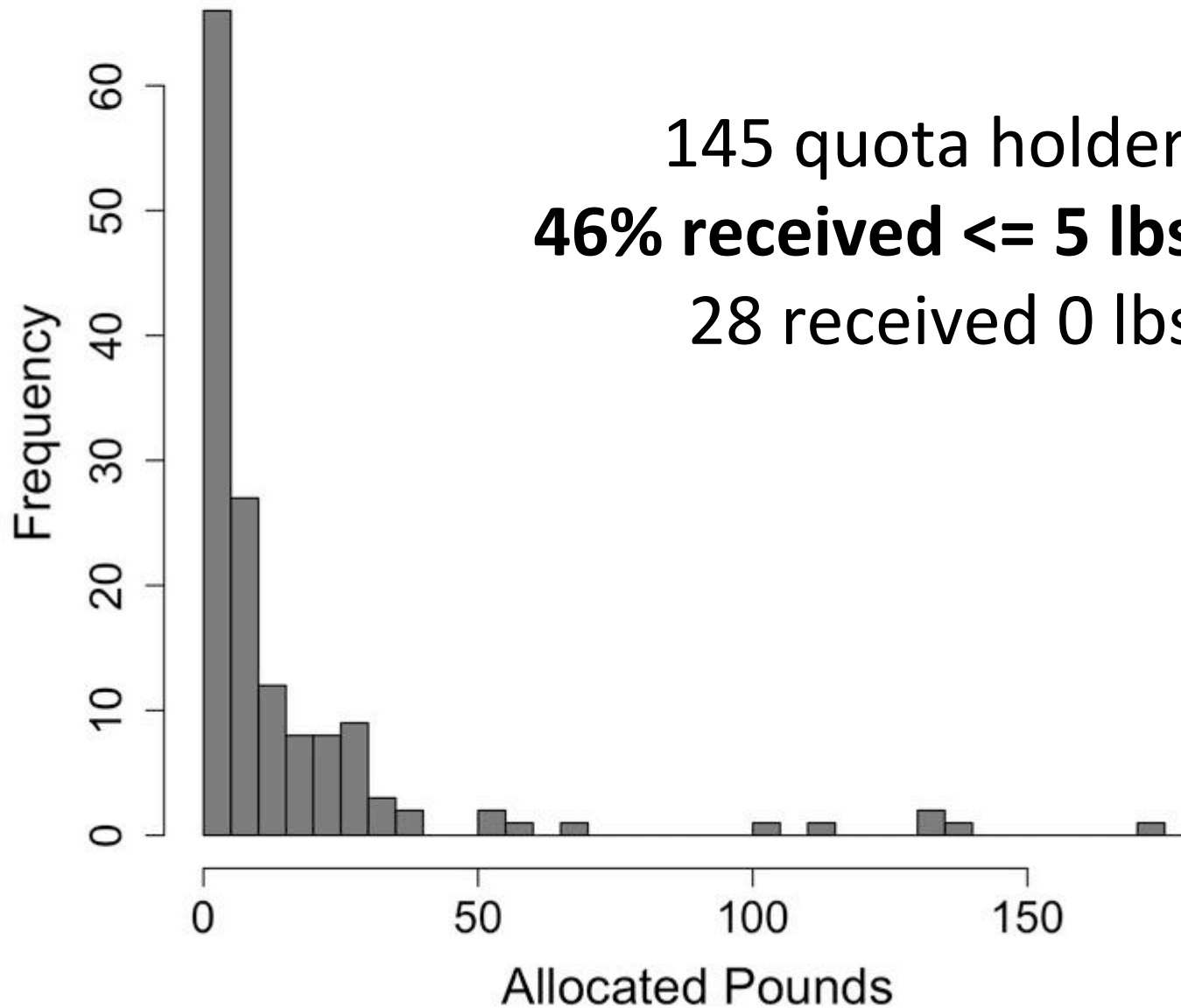
2011 Choke TACs (Metric Tons)

Species	BC TAC	WC TAC
Canary Rockfish	789	26
Widow Rockfish	2316	343
Yelloweye Rockfish	7	0.6
Pacific Ocean Perch	4931	119
Quillback, China, Copper, Tiger*	1	NA
Total	63087	77281**

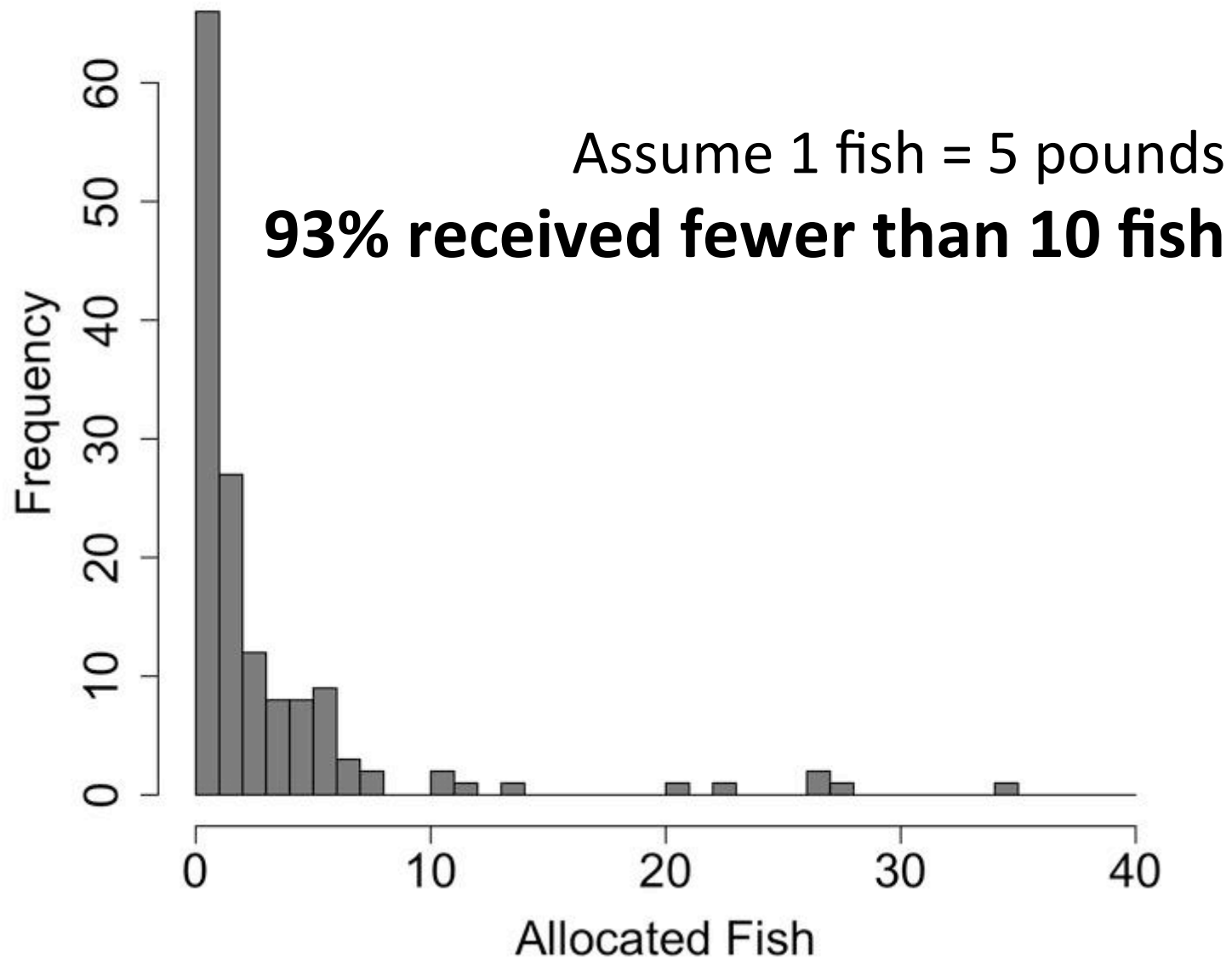
*TAC for Area 5E only, Recreational TAC was 49 MTs

**Total WC TAC does not include Pacific Hake TAC ~ 90 MTs

Individual WC Yelloweye Quota



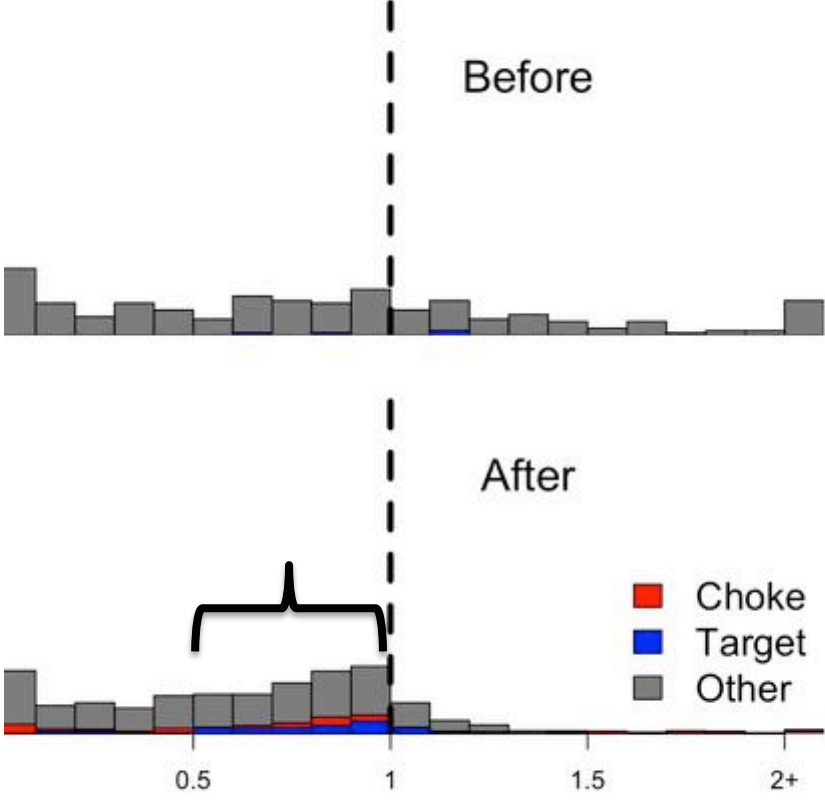
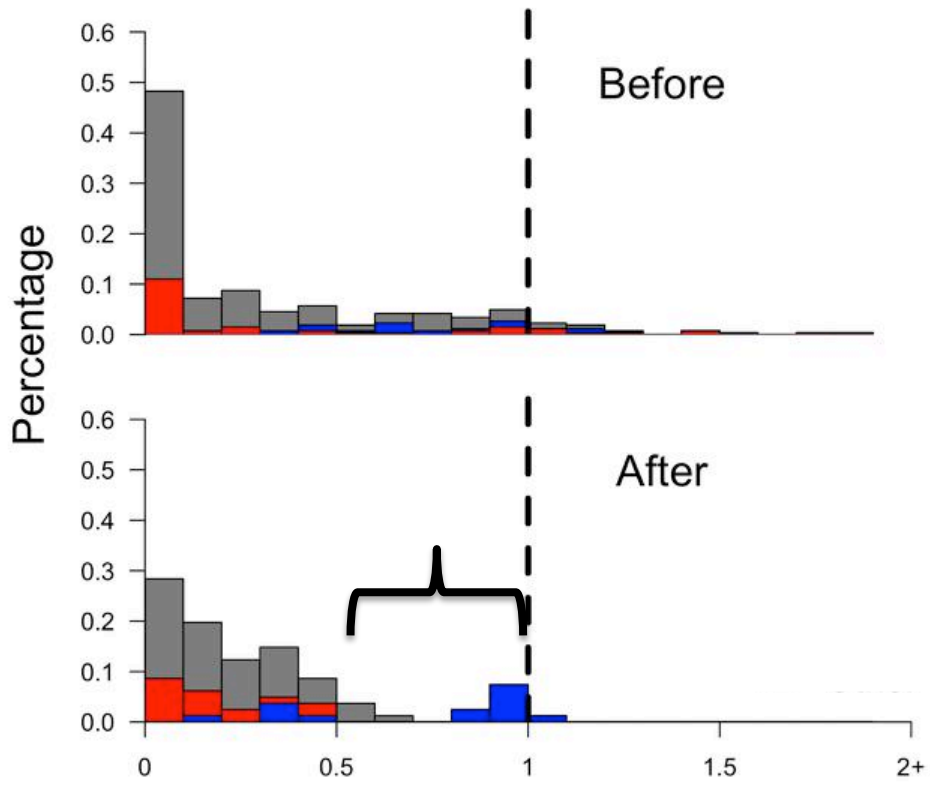
Individual WC Yelloweye Quota



WC vs BC

West Coast

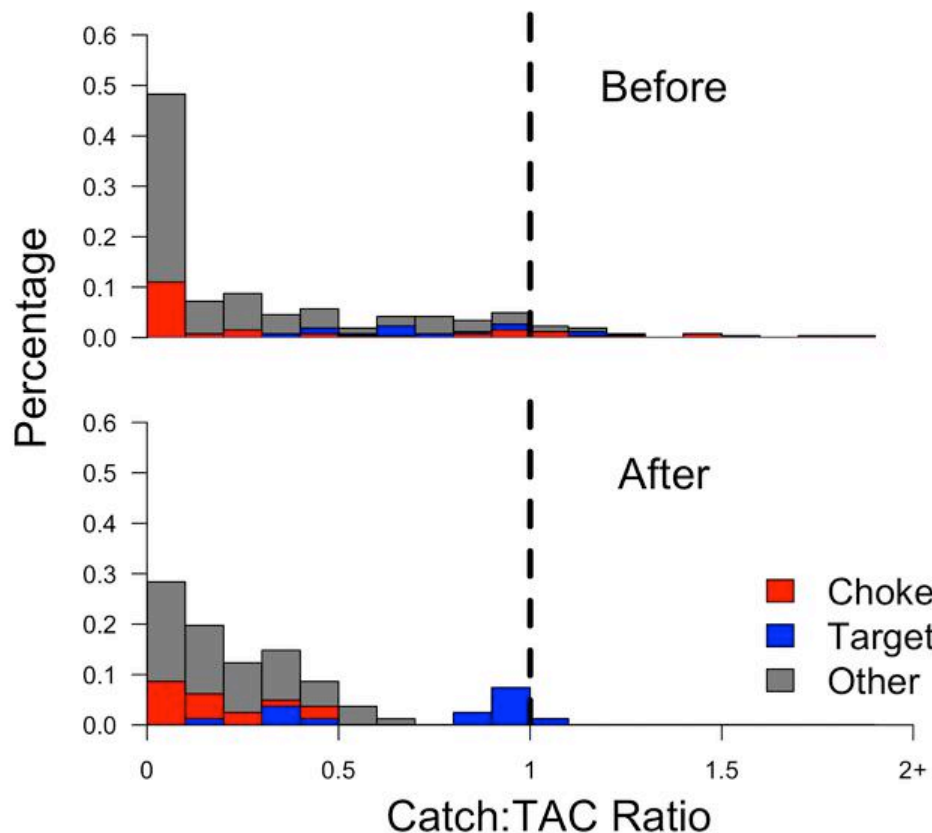
BC



- Choke
- Target
- Other

Catch:TAC Ratio

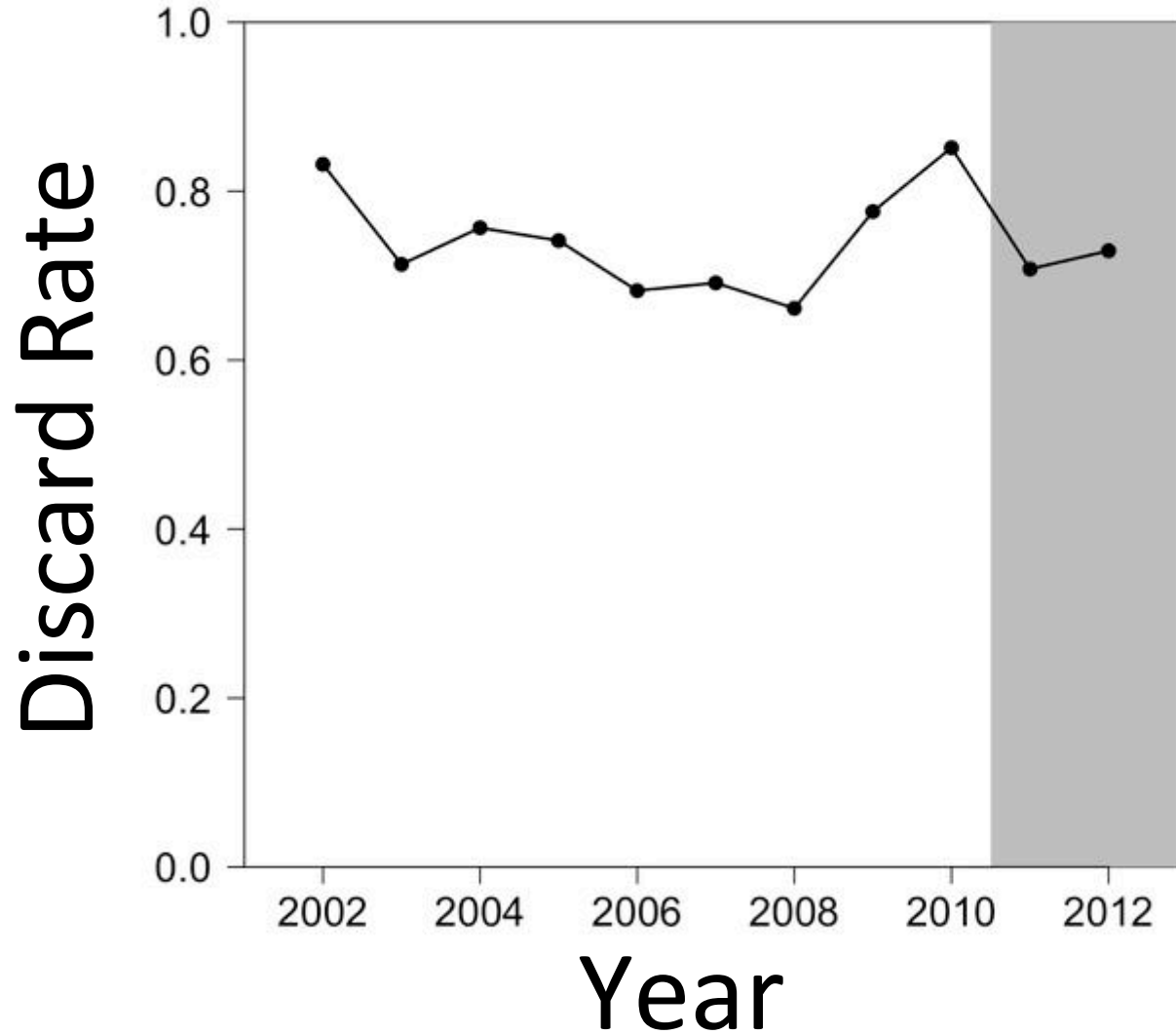
Incentivizing Selectivity



Targets:

- Petrale Sole
 - Pacific Hake (midwater)
 - Sablefish (pots)
-
- Catch fish with low bycatch
 - Not fishing anything else

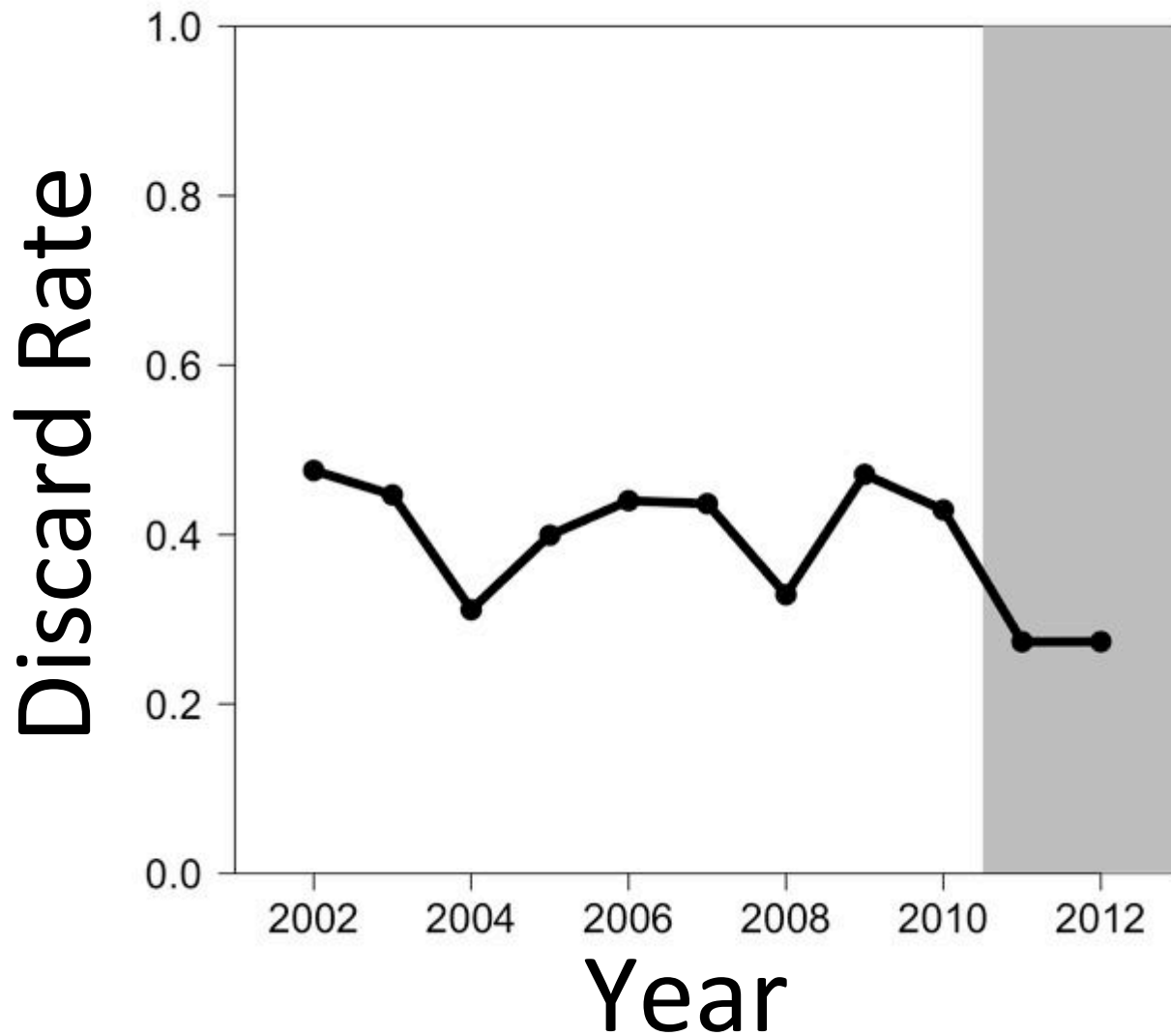
WC Discards – Unmanaged Species



Top 5 Species:

- Spiny Dogfish
- Tanner Crab
- Dungeness Crab
- Spotted Ratfish
- Pacific Halibut

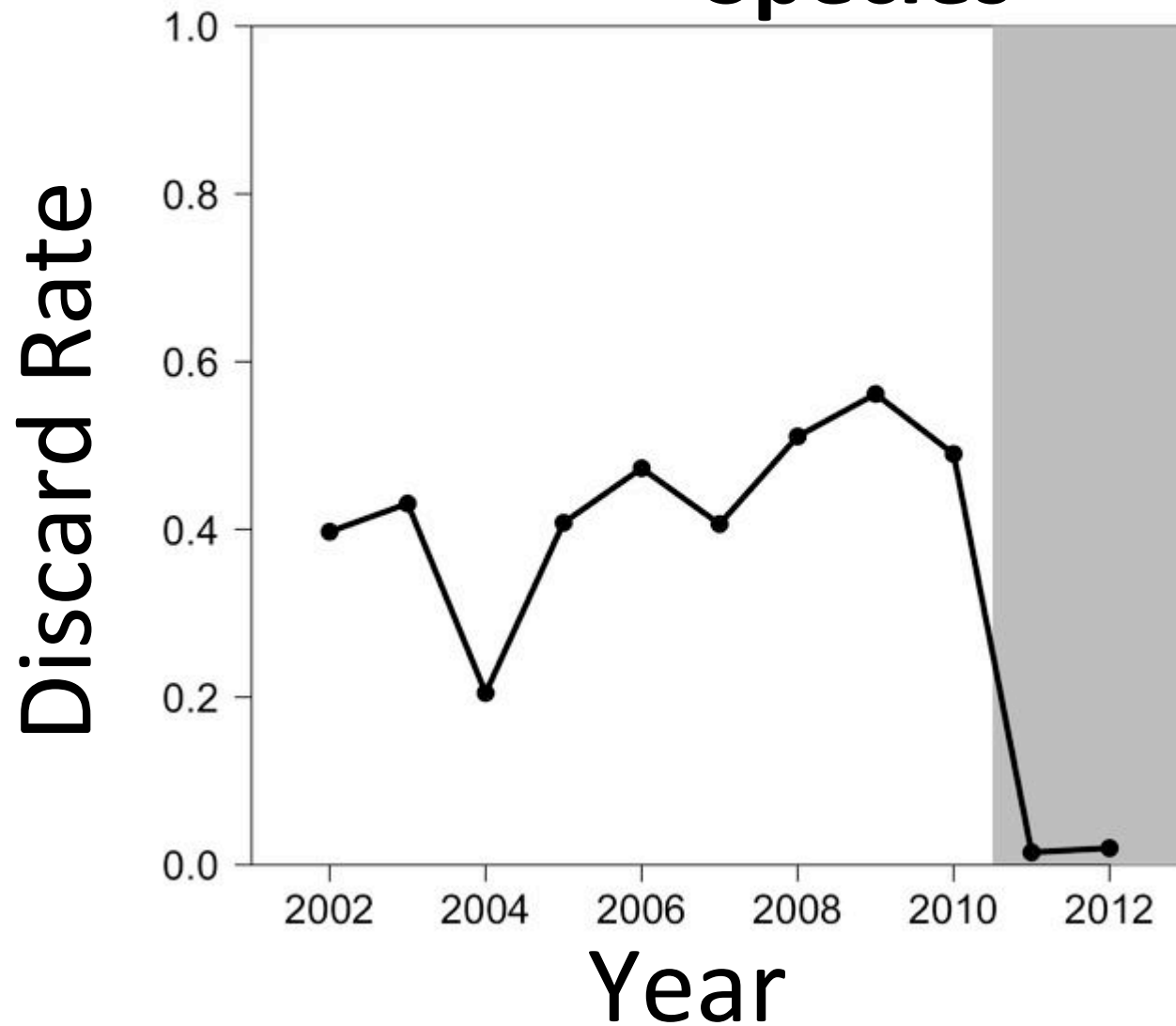
WC Discards – Unmanaged Flatfish



Top 5 Species:

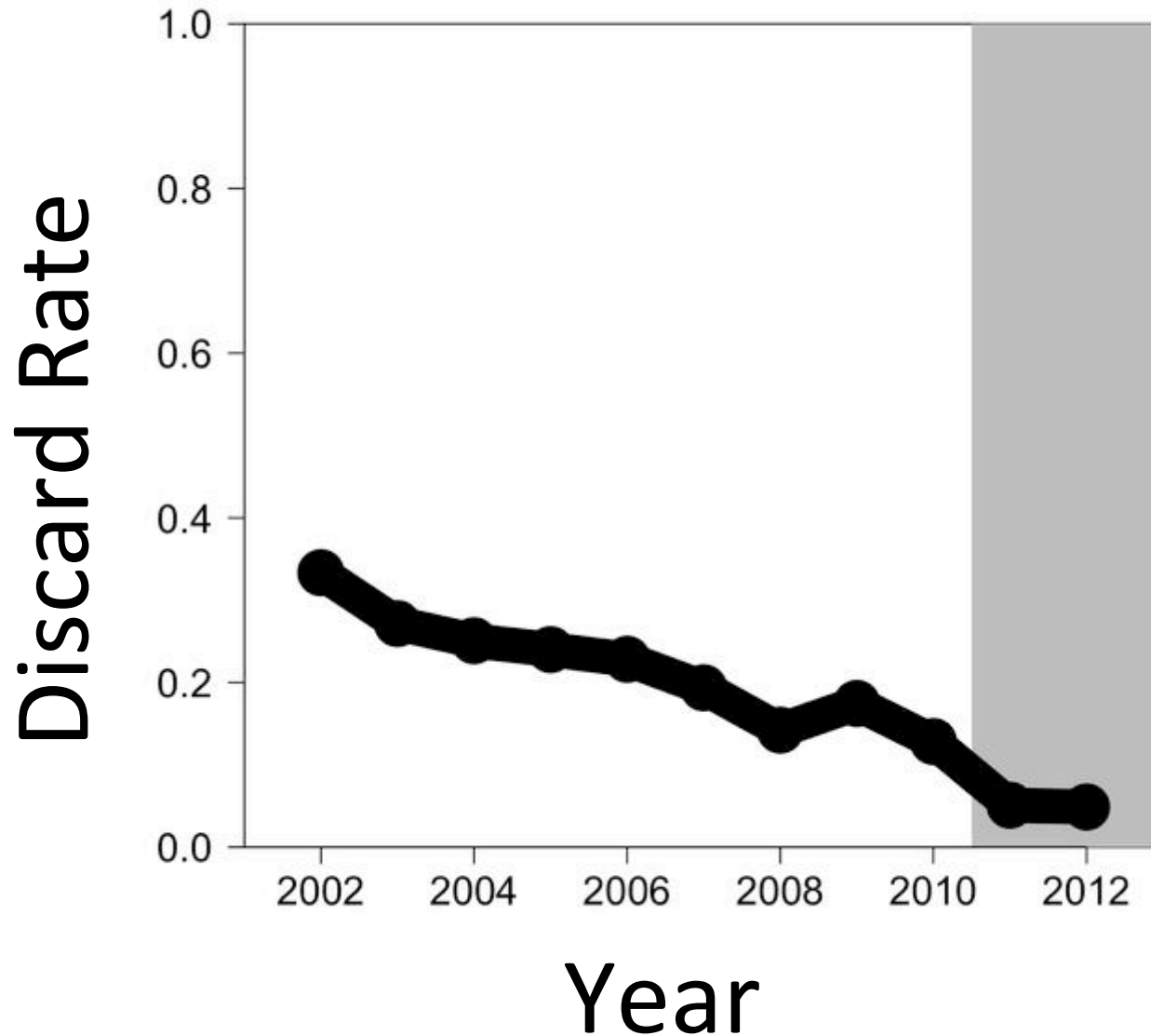
- Rex Sole
- Pacific Sanddab
- Sand Sole
- Sandpaper Skate
- Deepsea Sole

WC Discards – Managed & Rebuilding Species



- Top 5 Species:
- Darkblotched
 - Pacific Ocean Perch
 - Widow
 - Canary
 - Bocaccio

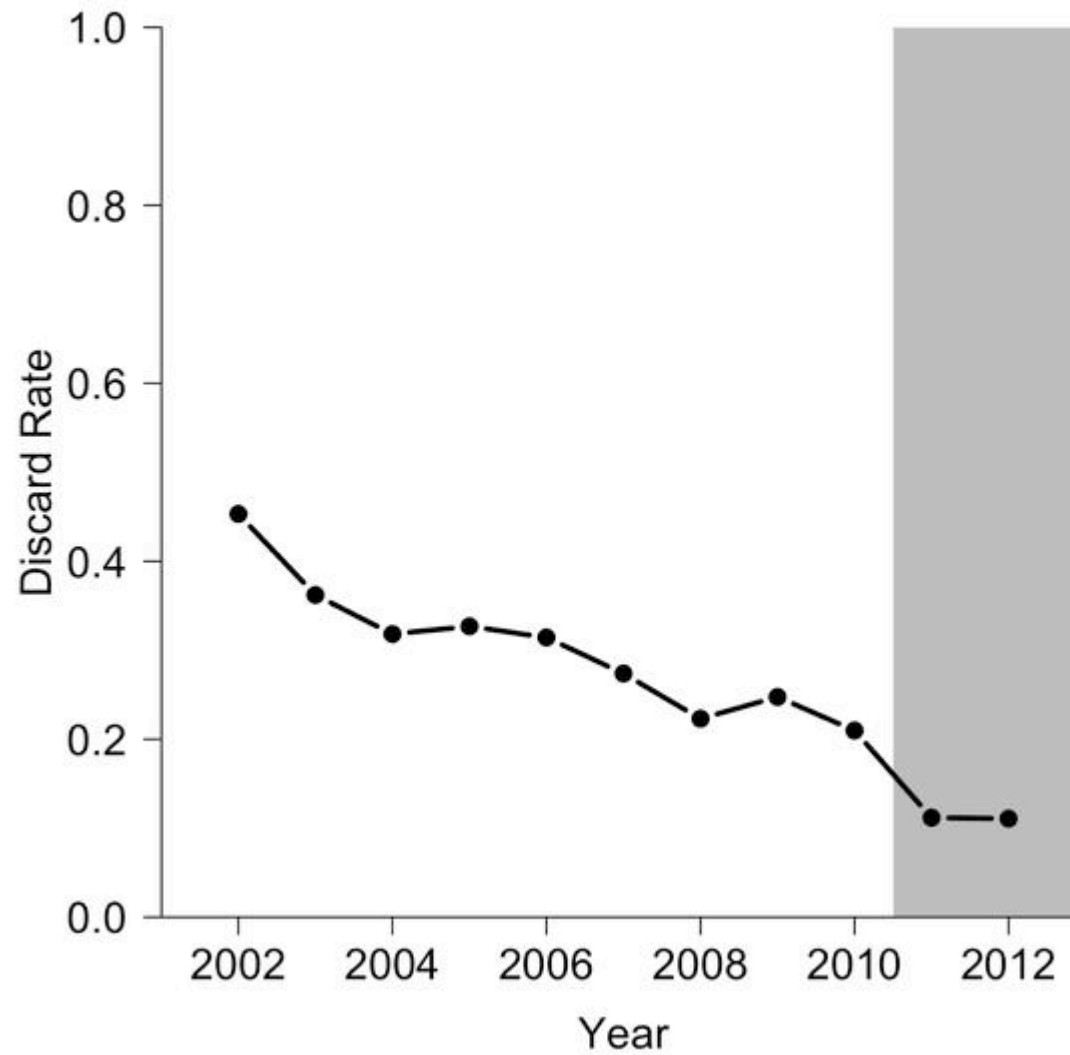
WC Discards – Managed Species



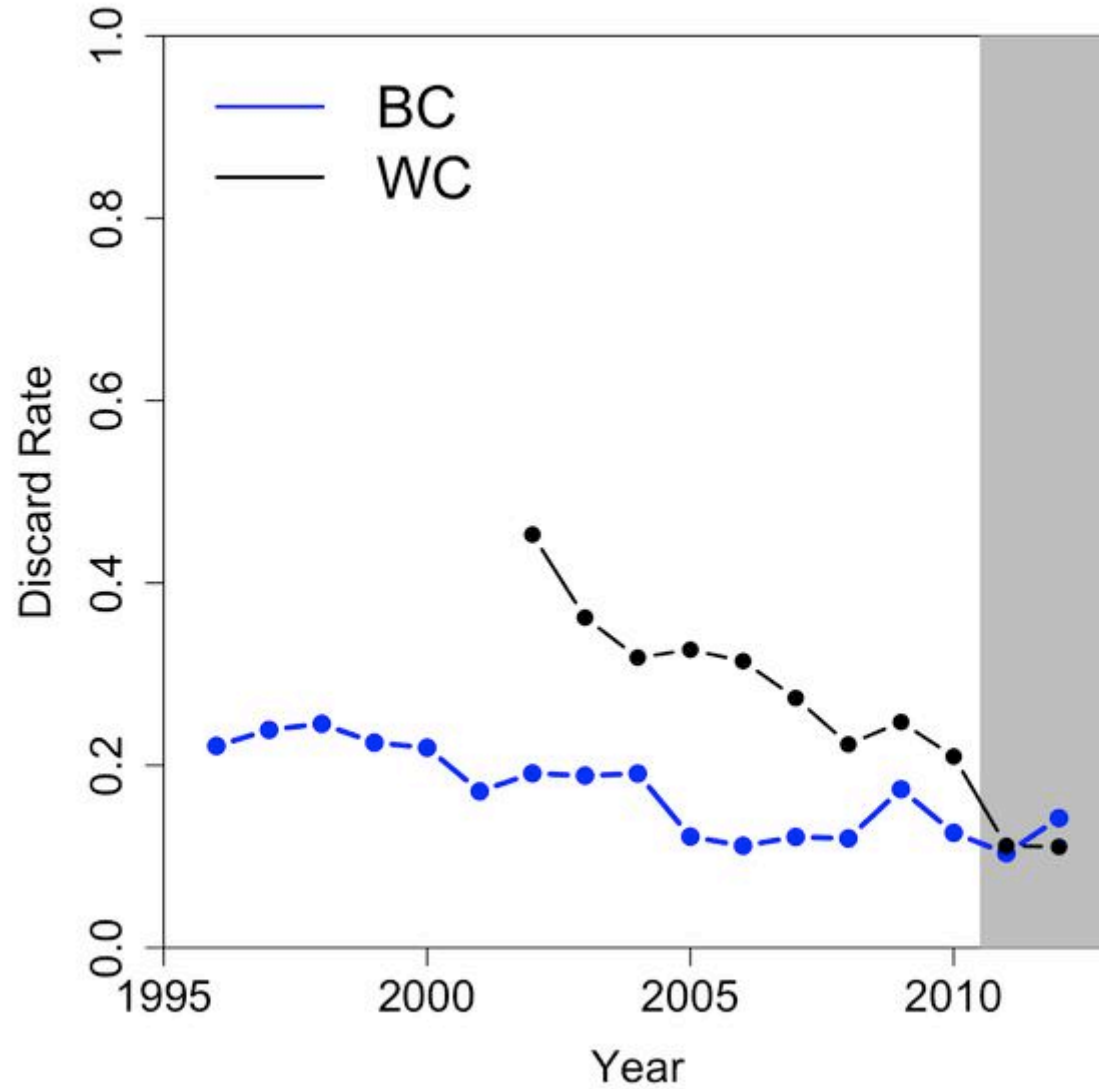
Top 5 Species:

- Arrowtooth Flounder
- Dover Sole
- Petrale Sole
- Sablefish
- Pacific Hake

Total WC Discard Rate



WC and BC Discard Rate




Risk Pools

- Fishing Insurance Policy
- Fishers Pool Choke Quota
- Coordinate Effort
 - Daily Catch Updates
- Informal and Formal

Risk Pools

- Central California
 - Morro Bay, Fort Bragg, Half Moon Bay
- Quota owned by The Nature Conservancy



CCSMA Central California Seafood Marketing Association   *Fish hub*

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Buy Our Fish!

Wild California Seafood is now available at SLO County Farmers' Markets

Find one near you!

Risk Pools

Catch:TAC Ratio



Year

Anecdotal Evidence

- Profit-maximizing individual
 - Fish crab and shrimp
 - Groundfish very restrictive
 - Fish groundfish to minimize crew turnover
- Supply of fish to processors more erratic
 - No deadline like with trip limits
- Best fishers received no choke species quota

Conclusions

- Catch shares incentivize selective fishing
 - Low choke quotas
 - Selectively catch profitable species
- Overall catch choked
 - Most TACs 50% caught or less
- Only 2 years

Thanks:

