Bycatch Credits for Bigeye Tuna in Purse Seine Fisheries

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*FISHERIES BYCATCH IN MARINE ECOSYSTEMS: Policy, economic instruments and technical change*
Purpose

• Bycatch credit systems
  – Used in other large industrial fisheries
  – How they might be used for bigeye in purse seine fisheries?
What Are Transferable Bycatch Credit Programs?
Bycatch Limits Assigned & Credits Created When Reduce Bycatch

• Bycatch limit is assigned to individual vessel or group of vessels.
• Bycatch credits are created *gratis* when a vessel reduces bycatch below required level in a certifiable way.
• Creates incentive to reduce bycatch.
Bycatch Credits Are Transferable

• Bycatch credits are transferable to another vessel or into future or sold in credit market.

• Credits carried forward into another year allow more target catch.
Not a Permanent Right or Allocation

• Not a property rights program
  – No permanent allocation

• Credit buyer only needs credits to offset bycatch that exceeds buyer’s bycatch limit.
What Are Their Effects?

• Reduce bycatch in species mix
  – Change species mix
  – Reduce effort level

• Vessels reduce bycatch in their own cost-effective way
Two “Example” Proposals
Common Features....(1)

1. Incentivize continued research and development for bycatch reducing technological change.

2. Technology standards.
   - Mandatory FAD design, operating standards, etc.

3. Can combine with risk pools.
Common Features....(2)

4. Can incentivize voluntary real-time spatial management

Real-time catch and buoy information is shared among vessels to avoid bycatch

5. If exceed bycatch ratio or limit, then stop fishing or purchase credits and continue fishing
5. Organize by vessels / groups / companies / nations.

6. Requires BET limit and identification.

7. Requires observers for identification and discards.
1. Potential “Example” BET Bycatch Credit System

• Output (catch) side
2. Potential “Example” Relative Credit Systems

- Define credits as:
  - Bycatch per day or FAD set or ton of skipjack.
  - Rather than total BET bycatch per year.

- Issues:
  - Incentive weaker & less focused than direct bycatch credit.
  - Essentially convert bycatch credits to unit of effort or skipjack.
  - Can combine with penalties and rewards.
  - Bigeye catch does not limit skipjack catch or effort levels.
    - Rides up and down with skipjack catch or effort levels.
Extend to Address Capacity

• Can readily extend credits to yellowfin catch
  – Yellowfin catch limit that matches MSY
  – Actual catch < catch limit is credit

• Combined with relative bigeye-skipjack credits gives approach to control capacity
Bottom Line EPO

• Cost of failure to take action to reduce bigeye mortality
  – Economic losses from 3-month closure fleetwide

• Alternative is incentive-based approach to reduce bigeye bycatch while continuing fishing
  – More efficiency and profits

• Response by those catching “too much” bigeye is reducing bigeye catch to continue fishing by their own methods
Thanks!.......Questions?
What Are Risk Pools?

• Group of vessels share bycatch limits and risk
• Gives groups flexibility to reduce bycatch in their own cost-effective way
• Can be combined with bycatch credits
What Are Their Effects?

• Reduce bycatch in species mix
• Vessels reduce bycatch in their own cost-effective way
• Incentivizes bycatch reduction through:
  – real-time spatial & temporal management to avoid bigeye
  – number of FAD sets
  – inducing innovation to reduce bycatch
Examples
Examples

• 1. Alaskan Pollock Salmon Bycatch Credit System
• 2. CCSBT’s Southern Bluefin Tuna Credit System
• 3. Scottish Conservation Credits for cod
• 4. West Coast USA risk pool systems
Potential Incentive Options

• **Reward** vessels if lower bycatch
  – Vessels can buy more days
  – Reserve pool of days for vessels to purchase
  – Vessels allowed more FAD sets

• **Penalize** vessels if bycatch too high
  – Vessels penalized in allowable days or FAD sets
Alaskan Pollock Salmon Bycatch Credit System...(1)

• Salmon bycatch problem

• Combine bycatch credits with:
  – Voluntary real-time spatial management (Rolling Hotspots Program)
  – Technology standards (salmon excluder device)
Alaskan Pollock Salmon Bycatch Credit System...(2)

- Vessels voluntarily form groups and pool their catch histories (risk pool)
- Group receives a Chinook salmon bycatch allocation based upon individual vessels’ catch histories.
- Group internally allocates the group bycatch quota among the individual vessels according to their catch histories.
- Group contracts with Sea State for Rolling Hotspot Program
- A manager administers the group, penalties and awards are developed.
- Two onboard observers.
Southern Bluefin Tuna

- CCSBT allocates part of the Southern Bluefin Tuna TAC to member states, where the TAC is set for three-year blocks.
- To provide catch flexibility between years, Members can carry-forward from one year to the next year some portion of quota underages.
- Carry-forward is not always applicable or permissible.
Scottish Conservation Credits

• Purpose is to reduce cod mortality
• Effort credits combined with:
  1. voluntary real-time spatial management,
  2. mandatory technology standards,
  3. co-management,
  4. openness to on-going bycatch reducing technological change
How Scottish System Works

• Vessels receive extra days at sea in addition to basic allocation at 2007 level if:
  – do not fish in certain cod-dense areas,
  – fish exclusively with specified selective gear,
  – cod catches are only small percentage of total catch weight.
Risk Pools: West Coast Groundfish Fisheries

• California Risk Pool (coalition):
  ▪ Fort Bragg Cooperative Groundfish Association
  ▪ Central Coast Sustainable Groundfish Association
  ▪ Nature Conservancy involvement
• Whiting Mothership Cooperative
• Shoreside whiting risk pool formed in 2012
Incentive-Based Approaches

• Incentives
  1. Immediate incentives to reduce bycatch or target catch or effort
     • Especially through real-time spatial management
  2. Longer-term “dynamic” incentives to induce bycatch reducing technological change
• Least-cost to vessels because allows them to reduce bycatch in their own manner
• Provides vessels with flexibility to respond to changing conditions in markets, resources stocks, environment