Northeast Multispecies Fishery
Flatfish Bycatch and Market Analysis

Cate O’Keefe, Steve Cadrin, & Cassie Canastra
Summary

- Groundfish landings have been far below catch allocations, because the fishery was not able to target healthy stocks.
  - We met with groundfish industry to develop a bycatch avoidance program, but feedback was that it was not practical.
- Revised objectives were to understand market constraints for yellowtail flounder, and to identify ways to rebuild the market.
  - Market analysis indicated that the yellowtail flounder market collapsed because of limited supply, fluctuations in landings and leasing prices, as well as public opinion.
  - A demand for yellowtail flounder is not expected to return until the product is consistently landed, because it can no longer compete with substitutes.
Outline

• Defining the problem and general objectives

• Bycatch avoidance approaches
  • Industry feedback

• Market analysis of yellowtail flounder
  • Price, Supply and Demand
  • Decreased Targeting
  • Decreased Supply
  • Fluctuations in Prices
  • Market Substitutes
  • Public Perception and Mislabeling

• Conclusions
Lack of ACL Uptake

• The fishery was unable to fully utilize the allocation due to the constraint of low allocations of “choke” stocks.
  • 32-41% of 2010-2012 groundfish allocations were caught.
• Low uptake of some choke stocks was interpreted as an indicator of a low stock.
  • 59% of the Georges Bank yellowtail flounder allocation was caught in 2012.

Percent of ACL caught (from Murphy et al. 2014)

<table>
<thead>
<tr>
<th>stock</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haddock, GB east</td>
<td>16%</td>
<td>11%</td>
<td>5%</td>
</tr>
<tr>
<td>Pollock</td>
<td>33%</td>
<td>50%</td>
<td>47%</td>
</tr>
<tr>
<td>Cod, GOM</td>
<td>84%</td>
<td>85%</td>
<td>54%</td>
</tr>
<tr>
<td>Yellowtail FL GB</td>
<td>92%</td>
<td>88%</td>
<td>59%</td>
</tr>
<tr>
<td>Haddock, GB west</td>
<td>22%</td>
<td>12%</td>
<td>4%</td>
</tr>
<tr>
<td>Cod, GB East</td>
<td>78%</td>
<td>83%</td>
<td>42%</td>
</tr>
<tr>
<td>Haddock, GOM</td>
<td>47%</td>
<td>59%</td>
<td>29%</td>
</tr>
<tr>
<td>Yellowtail FL CC/GOM</td>
<td>79%</td>
<td>80%</td>
<td>85%</td>
</tr>
<tr>
<td>Plaice</td>
<td>55%</td>
<td>51%</td>
<td>46%</td>
</tr>
<tr>
<td>Yellowtail FL SNE</td>
<td>66%</td>
<td>83%</td>
<td>70%</td>
</tr>
<tr>
<td>Witch FL</td>
<td>84%</td>
<td>77%</td>
<td>64%</td>
</tr>
<tr>
<td>White Hake</td>
<td>85%</td>
<td>98%</td>
<td>72%</td>
</tr>
<tr>
<td>Cod, GB West</td>
<td>84%</td>
<td>70%</td>
<td>32%</td>
</tr>
<tr>
<td>Winter FL GOM</td>
<td>61%</td>
<td>46%</td>
<td>36%</td>
</tr>
<tr>
<td>Redfish</td>
<td>31%</td>
<td>34%</td>
<td>48%</td>
</tr>
<tr>
<td>Winter Fl GB</td>
<td>76%</td>
<td>91%</td>
<td>55%</td>
</tr>
<tr>
<td>Total</td>
<td>36%</td>
<td>41%</td>
<td>32%</td>
</tr>
</tbody>
</table>
Economic Disaster

• The constraint of choke stocks (e.g. yellowtail), accountability measures (e.g., windowpane), and inability of several stocks to rebuild were largely responsible for an economic decline in the fishery and the economic disaster declaration.

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>$82,456,833</td>
<td>$82,964,771</td>
<td>$90,237,532</td>
<td>$69,669,582</td>
</tr>
<tr>
<td>Active Vessels</td>
<td>566</td>
<td>445</td>
<td>419</td>
<td>401</td>
</tr>
<tr>
<td>Trips</td>
<td>25,897</td>
<td>13,474</td>
<td>15,958</td>
<td>14,496</td>
</tr>
<tr>
<td>Crew</td>
<td>2,416</td>
<td>2,255</td>
<td>2,161</td>
<td>2,136</td>
</tr>
<tr>
<td>Crew Trips</td>
<td>148,153</td>
<td>123,885</td>
<td>122,003</td>
<td>116,331</td>
</tr>
<tr>
<td>Crew Days</td>
<td>187,219</td>
<td>169,939</td>
<td>169,417</td>
<td>167,620</td>
</tr>
</tbody>
</table>

from Murphy et al. 2014
Bycatch Avoidance Approaches

- Alverson et al. 1994
  - Gear modifications and restrictions
  - Time/area closures
  - Bycatch quotas

- Bycatch quota systems can be successful for meeting conservation goals, but can increase operational costs and administrative/enforcement responsibilities (Catchpole and Gray 2010).

- An alternative or complementary approach to reducing bycatch is avoidance of non-target species through fleet communications (e.g., O’Keefe and DeCelles 2013, Gauvin et al. 1996, Watson et al. 2003).

- Socioeconomic incentives to avoid fisheries bycatch must also exist in order to influence changes in fishing behavior.
Initial Objectives

• Assist groundfish fishermen to increase yield of healthy stocks, such as Georges Bank haddock and winter flounder, by avoiding bycatch of yellowtail and windowpane flounder on Georges Bank and in southern New England.
Industry Meetings

• In association with a broader effort to consider bycatch avoidance in the groundfish fishery, we organized meetings to scope possible approaches for designing a bycatch avoidance program for flatfish and other species.

• The meetings were organized as listening/brainstorming sessions, focused on understanding issues surrounding bycatch and low ACLs at the individual, Sector and port levels.

• Fishermen provided background information on fishing areas and timing, quotas and monitoring, and current measures being employed to reduce or avoid certain species.

<table>
<thead>
<tr>
<th>Port</th>
<th>Date</th>
<th>Number of Industry Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gloucester, MA</td>
<td>15 April 2015</td>
<td>5</td>
</tr>
<tr>
<td>Scituate, MA</td>
<td>16 April 2015</td>
<td>7</td>
</tr>
<tr>
<td>Seabrook, NH</td>
<td>5 May 2015</td>
<td>8</td>
</tr>
<tr>
<td>New Bedford, MA</td>
<td>17 June 2015</td>
<td>4</td>
</tr>
</tbody>
</table>
Industry Feedback

• The proposed approaches to reduce bycatch to target healthy stocks were not viable.
  • Only a few fishermen have recently targeted Georges yellowtail at the end of the fishing year.
  • Fishermen avoid yellowtail and use yellowtail allocation to target other species, specifically haddock.

• Real-time bycatch avoidance and quota pooling for yellowtail flounder were considered to be impractical for the 2015 fishing year.
Industry Feedback (continued)

- The number of active fishing vessels and fishing effort have decreased since 2010.
  - With few vessels fishing in overlapping areas, real-time information sharing was considered ineffective for reducing bycatch.

- Fluctuating lease prices for yellowtail quota have constrained fishermen’s ability to target healthy stocks.
  - E.g., $0.80 for landed yellowtail and $0.10 – $1.00 lease prices
  - Price and quota availability are constraining factors towards the potential application of quota risk-pooling within the current status of the fishery.

- Windowpane flounder Accountability Measures currently close large areas to most gears.
  - Additional area closures and gear modifications were considered impractical for the current fishing year.
Revised Objectives

• With guidance from our industry collaborators, Richie Canastra and Mark Phillips, we decided to focus our efforts on
  • understanding the market constraints for yellowtail flounder, and
  • investigating possible mechanisms to rebuild the market and increase economic viability for the groundfish fleet.
Georges Bank Yellowtail Flounder

- The combined US and Canada catches for fishing year 2014 (159mt) were the lowest in the assessment time series, and discards were greater than landings for the first time in 2014 (TRAC 2015).

- One scientific interpretation was that the inability of the fleet to catch the ACL reflects a depleted stock (e.g., Legault & Alade 2015).
Georges Bank Yellowtail Flounder

• Two industry letters were submitted to the SSC, related to low utilization of Georges Bank yellowtail allocations in recent years.

• The industry letters listed several reasons for low catch levels of yellowtail, including:
  • low allocations,
  • reduction of effort due to reduction in active fleet size,
  • restricted fishing areas associated with windowpane flounder Accountability Measures,
  • variable lease prices,
  • loss of market and
  • price fragility.
Scientific & Statistical Committee

• The SSC recommended a status quo ABC for fishing year 2016 (354mt), and recognized that several factors impact the utilization rate of Georges Bank yellowtail flounder.
  • The SSC recognized that low catches and utilization rates should not be considered as an indication of biomass.
  • They also recommended that “the interacting management, market and biological factors that determine actual catch from the stock should be more closely examined in order to better understand why catch remains substantially below ABC and how that disparity might change in the future” (SSC, 2015).
Market Analysis

1. Interview yellowtail fishermen, processors, distributors, and representatives to get their perspectives on changes in the yellowtail flounder market.

2. Analyze Whaling City Seafood Display Auction data to investigate patterns and trends.

3. Interpret trends and form recommendations for reviving a market.
Price, Supply and Demand

• In 2004 groundfish fishermen were allowed access to Closed Area II.
  • Prior to the opening of the closed area, yellowtail was averaging $1.80 per pound.
  • The rush to fish created a glut, and prices crashed to as low as $.05 per pound.
  • Once landings returned to normal, prices increased and remained stable for the remaining months of the year.

<table>
<thead>
<tr>
<th></th>
<th>April</th>
<th>MAY</th>
<th>JUNE</th>
<th>JULY</th>
<th>AUGUST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (lbs)</td>
<td>Min Price</td>
<td>Weight (lbs)</td>
<td>Min Price</td>
<td>Weight (lbs)</td>
<td>Min Price</td>
</tr>
<tr>
<td>2003</td>
<td>307,035</td>
<td>$0.52</td>
<td>485,010</td>
<td>$0.20</td>
<td>146,620</td>
</tr>
<tr>
<td></td>
<td>79,214</td>
<td>$0.55</td>
<td>88,820</td>
<td>$0.10</td>
<td>78,562</td>
</tr>
<tr>
<td>2004</td>
<td>323,500</td>
<td>$0.54</td>
<td>443,454</td>
<td>$0.40</td>
<td>1,256,067</td>
</tr>
<tr>
<td></td>
<td>53,492</td>
<td>$0.58</td>
<td>42,501</td>
<td>$0.40</td>
<td>169,577</td>
</tr>
<tr>
<td>2005</td>
<td>26,860</td>
<td>$1.90</td>
<td>292,342</td>
<td>$0.75</td>
<td>290,484</td>
</tr>
<tr>
<td></td>
<td>24,416</td>
<td>$1.00</td>
<td>187,434</td>
<td>$0.46</td>
<td>273,797</td>
</tr>
</tbody>
</table>
Decreased Supply

- Odell (2015) testified that "pressure to reduce the ACL below 2,000 metric tons effectively eliminated the directed fishery which resulted in permanent loss of market."
- In 2004, Georges Bank yellowtail flounder contributed 29% of the total groundfish landings at the New Bedford auction and accounted for 21% of the revenue.
- By 2016, yellowtail accounted for only 3% of the value of landings at the auction.
Decreased Targeting & Leasing

- Almost 90% of the fleet either sold out or leased their quota to other fishermen.
- In 2000, the auction had 44 vessels land at least 30,000 pounds of yellowtail for the year.
- By 2006, the fleet had decreased by 60% to 18 vessels that landed at least 30,000 pounds of yellowtail.
- Since the change to sector management and catch shares, the fleet decreased to two vessels.
Decreased Targeting

**Percent Yellowtail in Landings**

- **all groundfish**
- **Yellowtail flounder**

**Value of Landings 2000-2016**
Fluctuations in Landings and Leasing Prices

• The majority of yellowtail quota is sold to one or two fishermen, resulting in a high volume of landed yellowtail over the course of two weeks in April, the end of the fishing year.
  • Market flooding results in lower prices.
  • Leasing yellowtail quota at other times during the fishing year can result in an economic loss as lease prices continually fluctuate, and most quota lessors try to move allocations in large packages which makes collecting quota even more costly.
Decreased Demand

• In 2000, 79% of the buyers at the auction were purchasing yellowtail flounder, but by 2016 only 53% of the buyers purchased yellowtail.

• Seafresh processing plant
  • In the early 1980s, Seafresh processed about 150,000 pounds of whole yellowtail per day in New Bedford.
  • In the 1990s, they would typically purchase all the yellowtail flounder that was landed in New Bedford.
  • Seafresh went out of business due to the lack of production and a decrease in available local products after 2010.
    • “No one makes phone calls when there is only 2,500 pounds of yellowtail a week, there is too much of a risk. The menu for restaurants is set Monday and they need a ‘go to’ fish. There would need to be 2,000 pounds of yellowtail every day, 1,000 pounds from each vessel landed to rebuild the market.”
Market Substitutes

- Buyers began to replace yellowtail with similar flatfish species, such as sea dabs (American plaice).
  - The sea dab market is stronger, because landings are consistent, with at least 2,000 pounds on a weekly basis.
  - The yellowtail market is weak in comparison, with very few landings amounting to no more than 500 pounds per vessel trip.
Consumer Perception & Seafood Mislabeling

• Yellowtail flounder is no longer sought by consumers, possibly because of overfished stock status and ecolabeling.

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<table>
<thead>
<tr>
<th>AVOID</th>
<th>Type</th>
<th>Method</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Flounder, Yellowtail</td>
<td>Bottom trawl</td>
<td>U.S. Cape Cod, Gulf of Maine, Georges Bank (New England Fishery)</td>
</tr>
</tbody>
</table>

• “the $23 flounder fillet turned out to be a Vietnamese catfish known as swai - nutritionally inferior and often priced under $4 a pound” (Abelson, 2011).
Price Fluctuations (unrelated to supply & demand)

- The 2016 market trends at the New Bedford auction had unusual price fluctuations.
  - In January and April, when there was an increase in landings of large yellowtail flounder, the price decreased as expected.
  - However, in October and November there was an unusual price decrease, despite a decline in product, because of the inconsistent supply.

By contrast, grey sole prices are still dependent on supply.
Possible Marketing Solutions

• To achieve the management objectives of optimum yield ("provide the greatest overall benefit to the Nation, particularly with respect to food production..." US DOC 2007), the market for Georges Bank yellowtail flounder will need to be rebuilt.
  • If the product can be consistently landed, then the market is expected to re-establish.
  • Marketing campaigns can be developed to highlight the locally caught seafood.

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www.mass.gov/marinefisheries
Conclusions

• Groundfish industry members advised that a bycatch avoidance program is not practical.

• Market analysis indicated that the yellowtail flounder market collapsed because of limited supply, fluctuations in landings and leasing prices, as well as public opinion.

• Similar analyses would be informative for catch advice for other stocks when allocation is not being caught.

• A demand for yellowtail flounder is not expected to return until the product is consistently landed, because it can no longer compete with substitutes.