

Potential Economic Impacts of Bluefin Tuna Management Measures for 2015-2016 Fisheries

**Agenda Item I.3.b
Supplemental HMSMT Report
Pacific Fishery Management Council Meeting
Costa Mesa, CA
November 16, 2014**

Purpose

- September 2014 HMSMT Report 2 considered potential bluefin tuna (PBF) catch reductions due to reduced bag limits
- This report adds an analysis of potential economic impacts of bag limit reductions on PBF anglers in the CPFV industry

Importance of CPFV Fleet to SoCal Economy

The 2013 contribution of the entire CPFV industry to Southern California (District 1) economy included

- Direct trip expenditures of roughly \$119 million
- 380,000 and 152,000 angler days of fishing effort to U.S. and non-U.S. fishing grounds, respectively
- About 1,537 full-time equivalent jobs

Economic impacts of bag reductions

Potential negative economic impacts of PBF bag size reductions include:

- reduced demand (willingness to pay) for recreational fishing trips
- loss of consumer surplus (value of experience in excess of price)
- loss of producer surplus (sales in excess of costs of providing trips)
- reduction in direct trip expenditures and attendant multiplier effects
- decreased regional economic expenditures and jobs in supporting industries

Impacts of Bag Limits on Angler Experience

- Table 2 shows the estimated impacts of potential bag reductions from current levels to numbers from 5 down to 0
- Representative of 2013 CPFV trip logs for Mexico and U.S. water effort
- The left-most two columns for each fishing area show estimated percentages of bags that would be reduced and average reductions in bag size for anglers with bag reductions
- The right-most two columns for each fishing area show the estimated decrease in the U.S. recreational fishery share of overall population impacts on the north Pacific bluefin tuna stock

Table 2. Estimated CPFV Angler and PBF Population Impacts of Bag Limit Reductions

Potential Bag Reductions	U.S. Waters				Mexico Waters			
	Percent of Bags Reduced	Average Bag Reduction for Impacted Anglers	Estimated Catch Savings (mts)	Estimated Reduction in Total Population Impacts	Percent of Bags Reduced	Average Bag Reduction for Impacted Anglers	Estimated Catch Savings (mts)	Estimated Reduction in Total Population Impacts
10 fish to 5 fish	1.7%	2.16	3	0.0%	0.3%	1.82	5	0.0%
10 fish to 4 fish	6.8%	1.54	9	0.0%	4.7%	1.11	52	0.3%
10 fish to 3 fish	10.8%	1.98	18	0.1%	8.0%	1.65	131	0.6%
10 fish to 2 fish	17.0%	2.26	32	0.2%	13.0%	2.02	260	1.3%
10 fish to 1 fish	26.9%	2.43	55	0.3%	21.8%	2.20	477	2.3%
10 fish to 0 fish	54.9%	2.19	93	0.4%	40.4%	2.19	891	4.3%

Figure 1. Angler and Total Population Impacts for Reduced Bag Limits in U.S. Waters

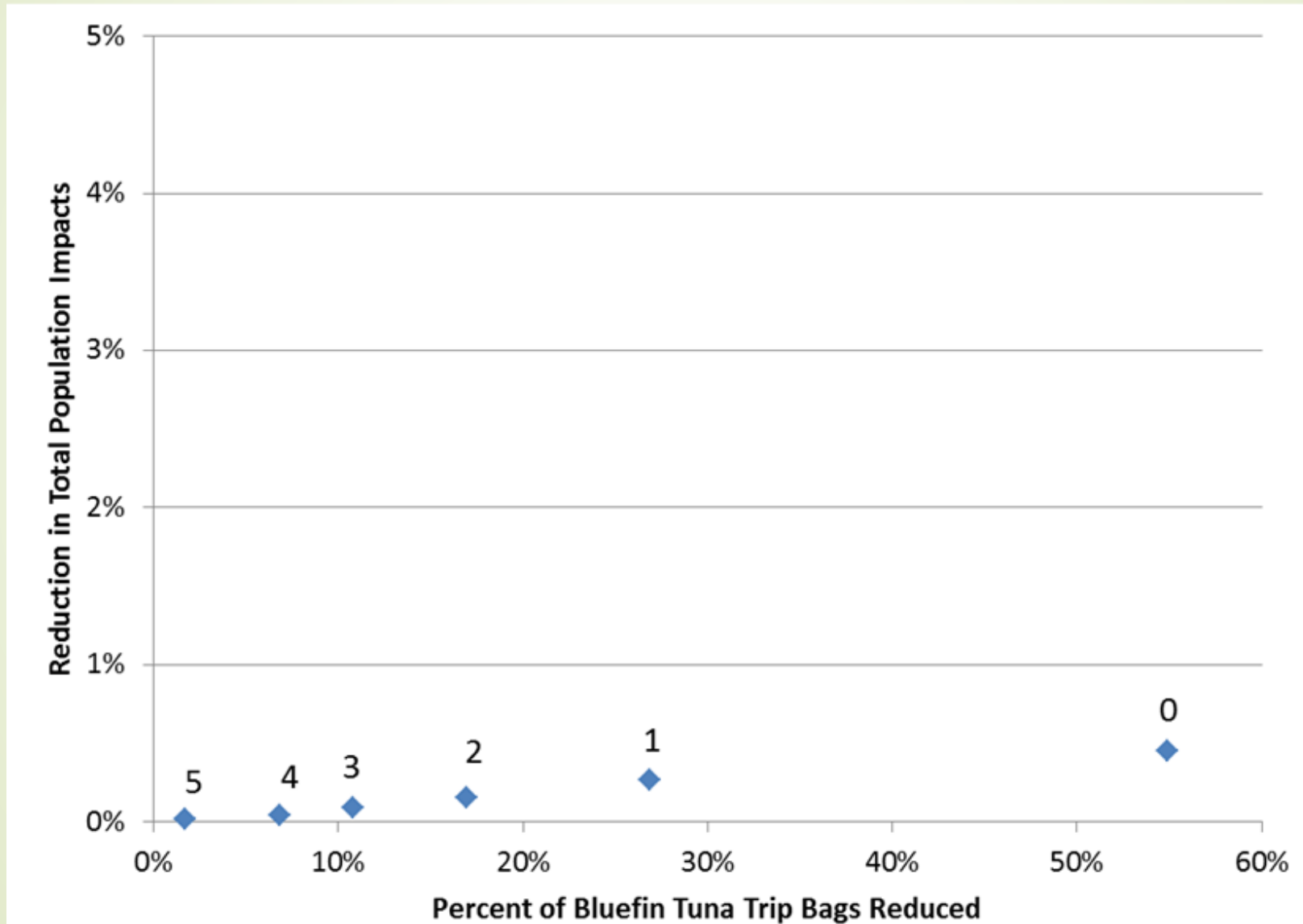


Figure 2. Angler and Total Population Impacts for Reduced Bag Limits in Mexico Waters

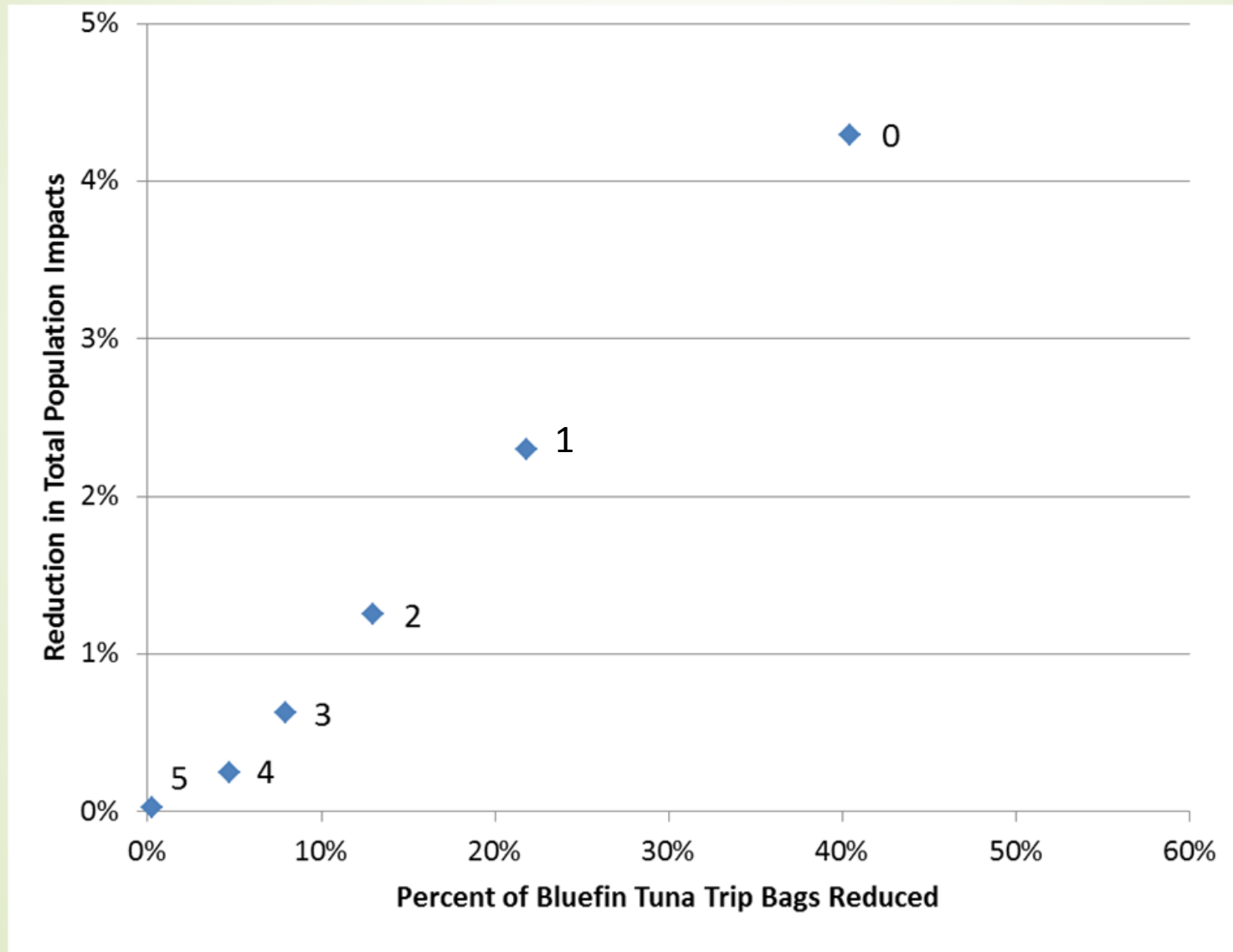


Table 4. Estimated Job Loss under a Range of PBF Bag Limit Reduction Scenarios (2013 fishery)

Potential Bag Reductions	U.S. Waters					Mexico Waters				
	Percent of Bags Reduced	Demand Loss Multiplier for Scenario				Percent of Bags Reduced	Demand Loss Multiplier for Scenario			
		0.25	0.5	1	1.5		0.25	0.5	1	1.5
10 fish to 5 fish	1.7%	0.1	0.2	0.3	0.5	0.3%	0.2	0.3	0.7	1.0
10 fish to 4 fish	6.8%	0.3	0.7	1.4	2.1	4.7%	2.7	5.5	11.0	16.5
10 fish to 3 fish	10.8%	0.5	1.1	2.2	3.2	8.0%	4.7	9.3	18.7	28.0
10 fish to 2 fish	17.0%	0.8	1.7	3.4	5.1	13.0%	7.6	15.2	30.4	45.5
10 fish to 1 fish	26.9%	1.3	2.7	5.4	8.1	21.8%	12.7	25.5	51.0	76.5
10 fish to 0 fish	54.9%	2.7	5.5	11.0	16.5	40.4%	23.7	47.3	94.6	142.0

Management Alternatives for Bag and Possession Limits

- **Bag reduction to 2 fish (PPA)**

- An estimated 17.0% of bags in U.S. waters and 13.0% of bags in Mexico waters would be limited below current allowable levels
- Average retained catch per angler who reaches the new limit would decrease by 2.26 fish in U.S. waters and 2.02 fish in Mexico waters compared to fishing under current management
- Anticipated employment loss on the range from 8 to 51 jobs
- **Bag reduction to 0 fish**
- Could limit upwards of 40% of angler bags
- Anticipated employment loss on the range from 26 to upwards of 150 jobs

Management Alternatives for At-sea Filleting

- Filleting at sea provides income for CPFV crew and facilitates on board fish storage and post-trip convenience for the angler
- On-board processing services provided by crew members are likely less expensive than on-shore options and avoids the costs of transporting the fish to the on-shore processor
- Industry representatives have also expressed a potential public health concern due to an increase in the inappropriate disposal of fish waste products on shore

Estimated PBF Population Impacts of Bag Limits

- EPO fisheries (2007-2012) have accounted for approximately **20%** of the impacts of all fisheries on the Pacific bluefin tuna spawning stock biomass (Executive Summary to the 2014 Stock Assessment for Bluefin Tuna, ISC Bluefin Tuna Working Group)
- Recent (2013) U.S. recreational catch represented approximately **984 mts** / 4,184 mts = 23.5% of EPO impacts, or 23.5 % of 20% = **4.7%** of all fisheries impacts on bluefin spawning stock (Table 4, September 2014 HMSMT Report 2 under Council Agenda Item G.4.b)
- Mortality per 100 mts of U.S. sport catch $\approx 100 \times 4.7\% / 984 = 0.4776\%$ of total