

# **Potential Economic Effects of a Ban on the Trade of North Atlantic Bluefin Tuna on US Commercial Fishermen**

**Prepared by NOAA Fisheries Service**

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In July 2009, Monaco proposed a Convention on the International Trade of Endangered Species (CITES) Appendix I listing of Atlantic bluefin tuna. A CITES Appendix I listing prohibits the trade of that species as well as the sale of any listed species caught on the high seas. For the US, a CITES Appendix I listing of Atlantic bluefin tuna would limit the US domestic market to Atlantic bluefin tuna caught in the EEZ or state waters.

This analysis characterizes the potential effects of the proposed trade ban and landings ban of high seas catch of Atlantic bluefin tuna on US commercial fishermen. The summary statistics presented show that US Atlantic bluefin tuna high seas landings are 3% of longline average annual landings revenue. The study also reveals that in recent years the US has been a net importer of Atlantic bluefin tuna. That is, even if all formerly exported product were to be sold domestically, a trade ban would result in a net loss of Atlantic bluefin tuna to the US market. Given that import prices are higher than domestic prices for all grades and assuming that US harvest rates and consumer demand remain constant, the decrease in quantity supplied to the US market from the trade and high seas landings ban should result in a price increase, thus benefiting US harvesters.

Any potential supply-side price increases created by a trade ban and landings ban of high seas catch may, however, be offset by a declining market in the United States. The study shows that apparent US consumption has been decreasing since 2005 and, given the eroding economic conditions and consumer confidence, it is possible that it may continue to decline in 2009. In addition, a concern raised by US Atlantic bluefin tuna fishermen is that a CITES listing could potentially result in environmentalists mounting a consumer boycott of Atlantic bluefin tuna. If such a campaign were effective in reducing demand, any supply-side driven price increase could partially or more than be offset by the decrease in demand and potentially leave harvesters worse off. Further, if the consumer boycott decreases the demand for bluefin charter/headboat trips, the charter/ headboat group may lose both passenger revenue as well as catch revenue. With current information, it is not possible to assess the probability of a consumer boycott, the potential impact such a boycott would have on domestic prices or demand for bluefin tuna charter/ headboat trips, or whether the overall economy will depress prices. This paper discusses only the possibility of such events occurring and the negative effect they could potentially have on market prices.

The analysis considers several different price scenarios under a proposed trade ban and landings ban of high sea catch of Atlantic bluefin tuna for 2004-2008. Results show that if a trade ban and landings ban had been imposed in 2008 and assuming all other US landings remain constant (i.e., only the high seas catch of Atlantic bluefin tuna changes) and US harvesters are only able to receive prices historically received in the domestic market, US landings revenues would decline

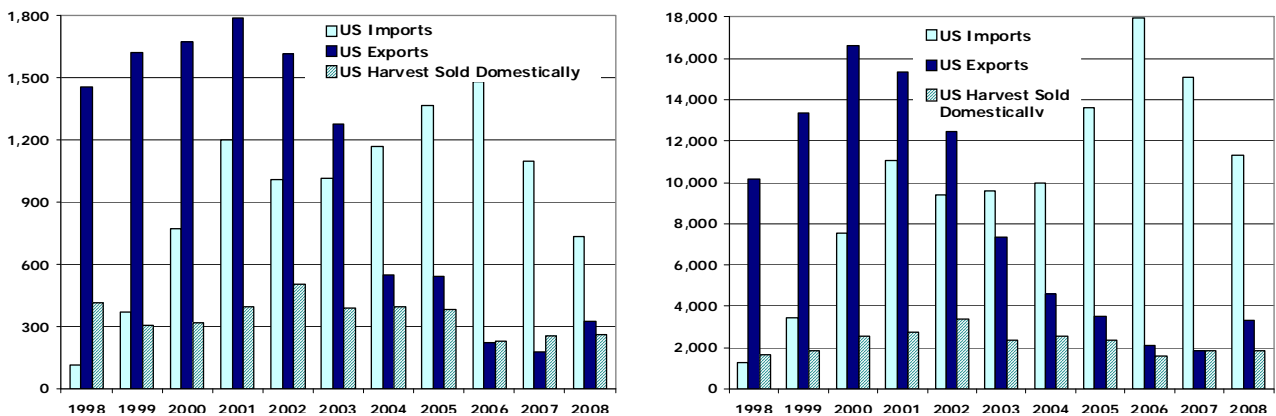
by 11%. If harvesters are able to get prices more comparable to the Atlantic bluefin tuna import prices, the loss of revenue would be less. For example, if prices paid to US harvesters are just 10% higher than 2008 domestic prices, landings revenue would only decrease by 2%. Obtaining prices 12% higher than domestic prices would allow harvesters to maintain current revenues. Any larger price increases would result in a net gain to US harvesters.

## Overview

*US Tuna Harvest:* For the past decade, the United States has been a relatively small player in Atlantic bluefin production as well as other tuna production. Since 1998, the United States has produced on average 2.2% of Atlantic bluefin, 3.5% of Pacific bluefin, 2.3% of bigeye tuna, and 2.4% of yellowfin tuna total world production.<sup>1</sup> For the most recent five years, the US has played a smaller role in the world Atlantic bluefin tuna market, accounting for only 1.3% of total production from 2003-2007. As shown in Figure 1, US Atlantic bluefin tuna landings (revenue) fell 73% (-71%) from its peak in 2001 of 2.2 million pounds (\$18.1 million) to 0.6 million pounds (\$5.2 million) in 2008.

*US Atlantic Bluefin Harvest Sold Domestically:* US Atlantic bluefin tuna landings averaged 1.4 million pounds from 1998-2008, with an average 350,000 pounds sold domestically each year. Domestic sales accounted for 20% of harvest from 1998-2003 and 48% of harvest from 2004-2008. On average, 54% of the BFT sold on the domestic market from 1998-2008 was purchased on consignment from the fisherman (the fisherman assumes the risk); the remainder was sold dockside and received, on average, a modest price premium of 4% (this goes against economic theory and may be due to quality differences not accounted for in these summary statistics).

**US Atlantic Bluefin Tuna Imports, Exports & US Landings Sold Domestically, 1998-2008: Dressed Weight (Figure 1) and Revenue (Figure 2)**



*Exports:* Historically, a large proportion of US Atlantic bluefin tuna harvest was exported. As production fell, a larger proportion of Atlantic bluefin tuna was retained in the domestic market. From 1998-2003, 80% of harvest was exported on average while from 2004-2008, exports accounted for 41%-58% of annual harvest. Unlike the domestic market, 80% of the BFT exported during this period was purchased on consignment from the fisherman with a modest

<sup>1</sup> FAO Statistical Database, 1998-2007. Unless cited otherwise, all other data from HMS Dealer Database.

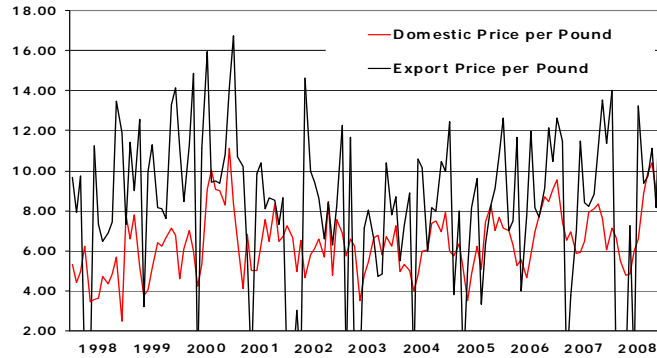
price premium of 6%. This is consistent with economic theory, i.e., the fisherman needs to be able to expect a higher price for his fish consignment relative to getting a certain ex-vessel price.

*Imports:* The United States on average imported 2.4% of total world production from 1998-2007. Since 2004, imports have accounted for 79% of Atlantic bluefin tuna sold in the United States. On average, the United

States imported approximately 1.2 million pounds at a cost of \$13.6 million annually from 2004-2008. From 1998-2008, the top three countries the United States has imported from include Spain, Canada, and Italy. In 2008, Canada, Spain, and Malta were the top sources of US imports.

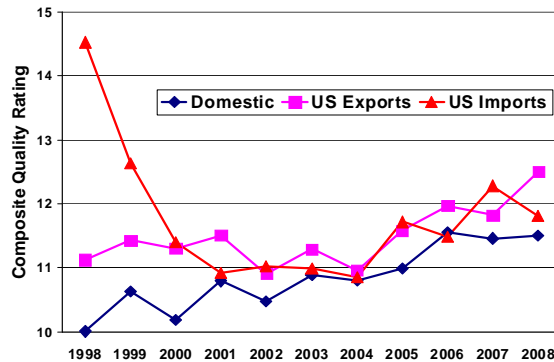
*Market Prices:* Atlantic bluefin exports received a higher average price per pound relative to harvest sold on the domestic market. Overall, a positive price margin between exports and the domestic market existed 95 of the 115 months when both markets were active. From 2004-2008, the average price per pound for exported Atlantic bluefin tuna (9.18/lb) was 37% higher than that sold in the domestic market (Figure 3).

**Figure 3: Average Monthly Price of Atlantic Bluefin Tuna Exports & Domestic Sales: 1998-2008**



The price differential may, at least in part, be due to higher quality product being exported rather than sold in the domestic market (Figure 4). Imports are also of higher overall quality than domestically sold landings and from 2002-2008, are fairly comparable to US exports. Higher quality product generally received a price premium (Figure 5). For example, exports graded “A” for fat received a 50% price premium relative to Grade C exports, which at \$8.66 per pound were, notably, still more than domestically sold Grade A product (\$7.20).

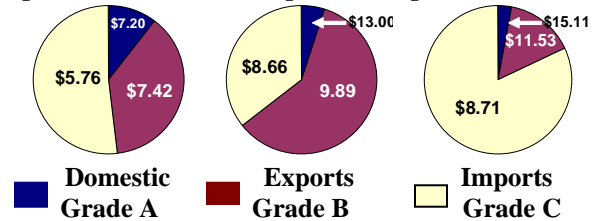
**Figure 4. Average Atlantic Bluefin Tuna Quality By Market, 1998-2008**



**US Commercial Atlantic Bluefin Fishery**

The majority of commercial Atlantic bluefin tuna fishermen fall in the General Permit category, which includes small-boat hand gear fishermen (Table 1). Note that landings from Charter/Headboat category permits are included with landings for General category vessels. From 2004-2008, there were on average 431 vessels (81%) with General Category or Charter/Headboat category permits that caught

**Figure 5. Product Fat Rating and Average Price, 2004-2008**



Atlantic bluefin tuna, 74 longliners (13%), 20 harpoon category vessels (4%), and 3 purse seiners (less than 1%).

**Table 1. Average Vessel Landings Revenue & Number of Active Vessels By Gear: 2004-2008**

Permit Category	Year	Average Vessel Landings Revenue	Average Vessel Atlantic Bluefin Tuna	Proportion of Vessel Landings Revenue from Atlantic Bluefin	Number of Vessels Landing Atlantic Bluefin	Number of Permits
General (Includes Charter / Headboats)	2004	26,735	8,187	31%	655	5,057/3,881 <sup>2</sup>
	2005	25,580	8,516	33%	440	4,494 / 3,963
	2006	27,194	7,499	28%	366	4,824 / 4,173
	2007	19,466	7,082	36%	314	3,616 / 3,899
	2008	32,609	10,802	33%	378	4,031 / 4,297
<b>Avg: 2004-08</b>		<b>26,317</b>	<b>8,417</b>	<b>32%</b>	<b>431</b>	
Harpoon	2004	26,679	13,447	50%	29	49
	2005	25,399	11,201	44%	24	40
	2006	25,581	18,997	74%	14	40
	2007	32,866	9,462	29%	17	26
	2008	44,464	22,413	50%	14	26
<b>Avg: 2004-08</b>		<b>30,998</b>	<b>15,104</b>	<b>49%</b>	<b>20</b>	
Purse Seine	2004	731,058	110,933	15%	3	5
	2005	1,266,335	224,862	18%	5	5
	2006	353,094	16,910	5%	2	4
	2007	1,188,589	451,390	38%	1	4
	2008	1,188,589	451,390	38%	1	4
<b>Avg: 2004-08</b>		<b>714,015</b>	<b>163,840</b>	<b>23%</b>	<b>3</b>	
Longline (ALL)	2004	330,135	9,721	3%	82	222
	2005	278,423	7,588	3%	70	200
	2006	343,867	8,290	2%	60	214
	2007	375,679	8,879	2%	72	218
	2008	286,451	7,634	3%	87	241
<b>Avg: 2004-08</b>		<b>322,911</b>	<b>8,422</b>	<b>3%</b>	<b>74</b>	
Longliners w/ High Seas Atlantic Bluefin Tuna Catch Only	2004	442,728	10,968	2%	9	na
	2005	353,769	8,754	2%	7	na
	2006	375,988	10,501	3%	7	na
	2007	416,135	9,304	2%	6	na
	2008	229,635	9,178	4%	4	77
<b>Avg: 2004-08</b>		<b>363,651</b>	<b>9,741</b>	<b>3%</b>	<b>7</b>	

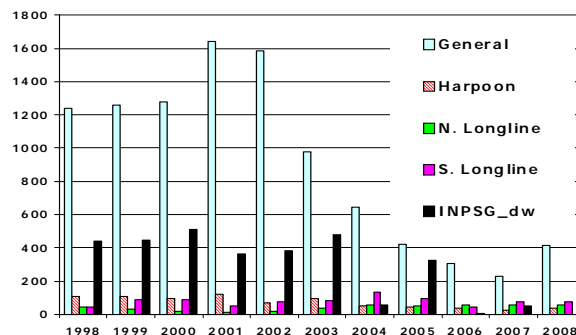
Purse seiners had the highest average annual vessel revenue from Atlantic bluefin tuna (\$164,000) followed by the Harpoon category vessels (\$15,000), and longliners and the combined General and Charter/Headboat categories (both \$8,400) for this period. Overall, Atlantic bluefin tuna landings revenue represented 49% of Harpoon category vessel commercial landings revenue followed by the combined General and Charter/Headboat categories (32%), purse seiners (23%), and longliners (3%). Note that the charter/headboat vessels also generate passenger revenue from their trips.

The Northeast Distant (NED) Statistical Reporting Area is a high seas area that attracts some longline vessels. In 2004, nine longline vessels fished in the NED; in 2008, only four longline fished in the NED. Overall, longliners that fished in the NED on average earned \$9,700 from their high seas landings of Atlantic bluefin tuna. This represented 3% of their average annual landings revenue.

<sup>2</sup> The second number reported under number of permit holders is the number of Charter/Headboat category permit holders.

While the General category and Charter/Headboat category do not earn the most per vessel from Atlantic bluefin tuna, due to the high number of participants, these categories combined consistently land the majority of Atlantic bluefin tuna, averaging 65% of landings from 1998-2008 (Figure 6). The purse seiners were a significant share of landings through 2005 (22%) but averaged 4% from 2006-2008. From 2006-2008, the combined General and Charter/Headboat categories, longliners, and Harpoon category averaged 64%, 25%, and 7% of landings, respectively.

**Figure 6: US Landings of Atlantic Bluefin Tuna by Gear (dw, thousands of pounds): 1998-2008**



The degree to which fishermen exported their catch or sold it on the domestic market varied by category suggesting that the permit category groups may be affected differentially by a trade ban on Atlantic bluefin tuna (Table 2). From 2004-2008, 69% and 67% of the General and Charter/Headboat and purse seiners' catch was, respectively, exported. To summarize some of the information presented, the combined General and Charter/Headboat categories, which represent 81% of the vessels that caught Atlantic bluefin tuna and 65% of the landings from 2004-2008, exported 69% of their landings and would be one of the groups most directly affected by a trade ban, albeit these fishermen earn on average only \$8,400 annually from bluefin tuna. Purse seiners, which represented fewer than 1% of the vessels and 13% of landings, exported 67% of their catch and earned \$164,000 annually from bluefin tuna, which is 23% of average annual landings revenue.

**Table 2. US Landings by Market & Gear: 2004-2008**

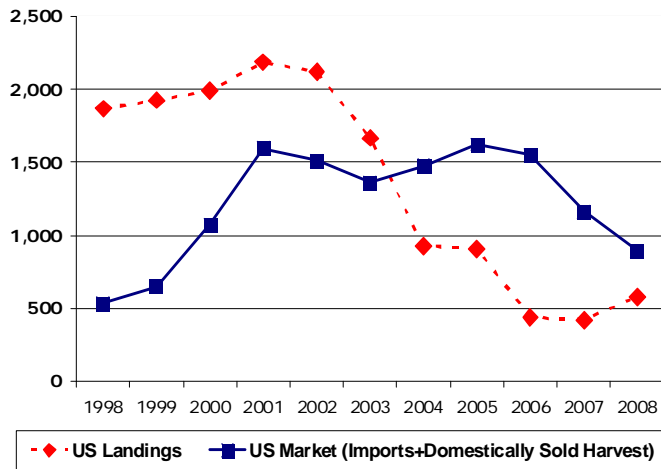
YEAR	REVENUE	GENERAL	HARPOON	LOGLINE	PURSE SEINE	TOTAL
<b>2004</b>	<b>Total Revenue</b>	<b>5,445</b>	<b>390</b>	<b>1,001</b>	<b>333</b>	<b>7,169</b>
	Export Revenue	75%	36%	13%	84%	64%
	US Sales Revenue	25%	64%	87%	16%	34%
<b>2005</b>	<b>Total Revenue</b>	<b>3,815</b>	<b>269</b>	<b>675</b>	<b>1,124</b>	<b>5,883</b>
	Export Revenue	67%	23%	7%	78%	60%
	US Sales Revenue	33%	77%	93%	22%	39%
<b>2006</b>	<b>Total Revenue</b>	<b>2,790</b>	<b>266</b>	<b>613</b>	<b>34</b>	<b>3,703</b>
	Export Revenue	68%	41%	19%	13%	57%
	US Sales Revenue	32%	59%	81%	87%	41%
<b>2007</b>	<b>Total Revenue</b>	<b>2,259</b>	<b>161</b>	<b>808</b>	<b>451</b>	<b>3,679</b>
	Export Revenue	59%	30%	6%	94%	50%
	US Sales Revenue	41%	70%	94%	6%	48%
<b>2008</b>	<b>Total Revenue</b>	<b>4,137</b>	<b>314</b>	<b>748</b>	<b>0</b>	<b>5,199</b>
	Export Revenue	77%	26%	9%	0	64%
	US Sales Revenue	23%	74%	91%	0	35%
<b>Average: 2004-2008</b>						
	Export Revenue	69%	31%	11%	67%	59%
	US Sales Revenue	31%	69%	89%	33%	40%

## US Market

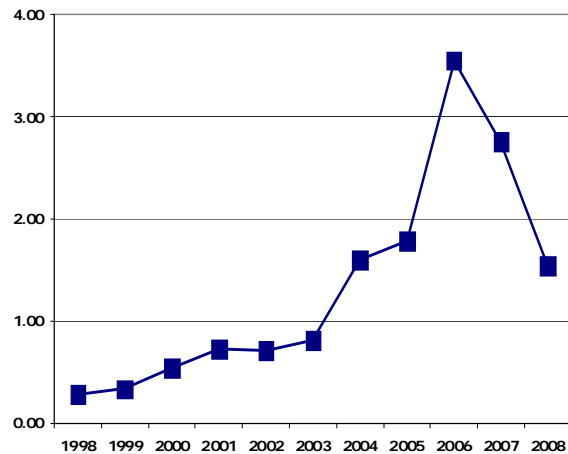
In 1998, the quantity of Atlantic bluefin tuna available on the US market (imports plus domestically sold US landings) represented less than 30% of total US landings. While US landings peaked in 2001 and then fell precipitously, as shown in Figure 7 below, domestic consumption rose dramatically and has exceeded US landings since 2004. Alternatively stated, notwithstanding differences in quality, US landings could have fully met US demand for Atlantic bluefin tuna from 1998-2003. Since 2004, however, the US has been a net importer of Atlantic bluefin tuna, i.e., domestic harvest could not meet domestic demand. This suggests that a potential trade ban would result in reduced supply to the US market and, based on basic supply and demand principles, higher prices would result.

A careful examination of recent market trends (2005-2008) reveals, however, that US consumption of Atlantic bluefin tuna has been declining since 2005 (Figure 7). Thus, while US demand was 3.5 times larger than domestic landings (Figure 8) in 2006, by 2008, US landings exceeded market demand by only 54%. In 2009, eroding economic conditions including declining income and wealth and reduced consumer confidence could decrease demand for high-end seafood products such as Atlantic bluefin tuna. A demand driven decline in price could be partially, fully or more than offset by a price increase anticipated from the supply-side driven price increase from a trade ban.

**Figure 7. US Atlantic Bluefin Tuna Landings & the US Bluefin Tuna Market: 1998-2008**



**Figure 8: Ratio of Atlantic Bluefin Tuna Sold on US Market to US Landings**



There is concern, however, that a trade ban under CITES could have both the supply effects cited above and demand side effects. That is, US fishermen are concerned that environmentalists may use the CITES listing to organize a consumer boycott of Atlantic bluefin tuna. If such a campaign were effective in reducing demand for Atlantic bluefin tuna, any supply-side driven price increase could partially or more than be offset by the decrease in demand and potentially leave harvesters worse off.

## Potential Effect of a Trade Ban and Landings Ban of High Seas Catch of Atlantic Bluefin Tuna on Landings Revenues

The table below presents a sensitivity analysis for Atlantic bluefin tuna revenues under various price assumptions and, importantly, assuming domestic landings remain fixed at the current level. Price increases may be expected for at least two reasons. The first is that higher-quality fish that had previously been exported may command a higher domestic price, especially when similar high-quality imports are no longer available. The second is that, because the United States is a net importer, a trade ban would result in fewer fish available for purchase by wholesalers; basic supply and demand principles dictate a decrease in quantity supplied increases price.

The column “Current Revenues” reflects the revenue received by vessels from sales in both the domestic and export markets. Column 3 values all landings at the average monthly price of Atlantic bluefin tuna sold in the domestic market. This scenario reflects either no supply side price increase from a trade ban or that the price increase is fully offset by declining demand from either worsening economic conditions or the hypothetical consumer boycott. Under this assumption, landings revenues would have declined 11% in 2008. If there is a 10% price increase in the domestic market (Column 5) and all product is sold domestically, landings revenues would have declined 2% in 2008. This scenario reflects either a supply side price increase that is either not accompanied by or not fully offset by a demand side decrease. As Column 7 shows, if a trade ban increases prices sufficiently, fleet revenues may actually increase despite the loss of access to lucrative foreign markets. The fleet would be revenue-neutral with an 11% price increase.

**Table 3. Projected US Landings Revenues Under Various Price Scenarios: 2004-2008**

Year	Current Revenues (\$1,000s)	Exports & Domestic Valued at Current Domestic Prices (\$1,000s)	Percent Change	Exports & Domestic Valued at 110% Current Domestic Prices (\$1,000s)	Percent Change	Exports & Domestic Valued at 125% Current Domestic Prices (\$1,000s)	Percent Change
2004	7,169	6,492	-9%	7,141	0%	8,115	13%
2005	5,883	5,793	-2%	6,373	8%	7,242	23%
2006	3,703	3,281	-11%	3,609	-3%	4,101	11%
2007	3,679	3,118	-15%	3,429	-7%	3,897	6%
2008	5,200	4,638	-11%	5,102	-2%	5,797	11%

### Conclusion

US Atlantic bluefin tuna fleet revenues are most likely to increase as a result of a trade ban and landings ban of high seas catch. Because the United States is a significant net importer of Atlantic bluefin tuna, at the wholesale level we would expect price to rise as a result of a ban: fewer fish overall will be available to domestic wholesalers, which would tend to drive price up. The diversion of otherwise exportable fish to the domestic market would tend to dampen the price increase, but given that domestic consumption has been more than double domestic landings since 2005, some price rise is very likely.



Lastly, note that the impact on consumers of a trade ban depends upon the extent to which wholesalers are able to pass along the price increase they pay for Atlantic bluefin product to the consumers. The extent to which wholesalers can pass along the price increase cannot be determined from the information available.