New England Fishery Management Council
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John Pappalardo, *Chairman* | Paul J. Howard, *Executive Director*

MEMORANDUM

DATE: **April 14, 2010**

TO: Council

FROM: Skate PDT

SUBJECT: **Skate wing possession limit options and TALs associated with an updated Skate ABC**

Following the SSC approval of a revised Skate Allowable Biological Catch (ABC) using the fall 2008 survey data, the PDT met to consider the effects, if any, this change might have on the skate wing possession limit set by Amendment 3 and expected to become effective on May 1, 2010. The Amendment 3 skate wing possession limit of 1,900 lbs. was established to prevent the fishery from filling the TAL early in the fishing season and triggering accountability measures. This document describes the effect of the new skate ABC (41,080 mt) and updated skate discard estimates on skate TALs and presents a range of possible possession limits for the skate wing fishery. The skate bait possession limit of 20,000 lbs. whole wt. proposed in Amendment 3 is not being considered for adjustment at this time.

Amendment 3 includes several risk-averse strategies that reduce the probability that catch would exceed the ABC (for skates, ABC=ACL, equivalent to the median catch/biomass exploitation ratio), a limit chosen to help smooth and thorny skates to increase biomass and rebuild to the biomass target. These strategies include a 25% buffer between the ABC (a catch threshold) and the ACT (a catch target) that accounts for uncertainty. It also includes a mechanism to change future Total Allowable Landings (TAL) to account for changes in discarding as well as a TAL trigger to reduce the probability that landings would exceed the wing and bait fishery TALs.

The PDT evaluated various skate wing possession limits (in wing weight unless otherwise noted) that range from 2,600 lbs to 5,000 lbs.. Each of these options has varying levels of risk that need to be considered. The methodology behind these options and the pros and cons of each are provided below and the expected impacts are summarized in Table 1 and Table 2. Please note the difference between the possession limit options and how they address regulatory discards. Additional regulatory discards are expected with the implementation of a reduced possession limit for skate wings. Explicitly accounting for a predicted increase in discards associated with a reduction in the possession limit requires the possession limit to be lower than would otherwise be required in order to ensure that the combination of expected landings and expected discards together do not exceed the TAL. A more traditional approach, as used in the monkfish fishery, is to establish a possession limit based on achieving 100% of the TAL. While this approach does not explicitly account for an increase in regulatory discards, it does provide the fishing industry with a higher probability of attaining the TAL. This strategy allows for a higher possession limit in that year; the accountability measures would be triggered if the actual landings are projected to greatly exceed the TAL. Any increase in regulatory discards that may be associated with the new possession limit

would be accounted for as part of the reduction from the ACT in the specification setting process implemented in Amendment 3.

The PDT also updated the skate wing fishery trip profile using 2009 dealer data and updated the discard rate estimate through 2008 using methods approved by the Data Poor Assessment Workshop. A preliminary estimate of the 2009 discard rate was calculated, but because the landings had not yet been assigned to area fished yet and December 2009 observer data was unavailable, the PDT decided not to use the 2009 discard estimate in setting the TAL at this time. Following the procedures approved by the SSC, the average 2006-2008 discard rate was applied to the ACL framework to determine the appropriate TAL (Table 3). Amendment 3 applied the average discard rate for 2005-2007 to set the TAL.

Table 1. Summary of skate wing possession limit options

Possession Limit (skate wing lbs.)	Estimated % TAL achieved	Mortality achieved from 2009 landings	Risk of exceeding ACL	Additional discards accounted for in possession limit
2,600	80%	31.1%	Very Low	Yes
3,200	89%	27.5%	Low	Yes
4,100	100%	23.0%	Moderate	No
4,500 – 5,000	104-109%	19.1-21.2%	Moderate	No

Table 2. Approaches to setting a skate wing possession limit considered by the PDT, with pros and cons of each.

Option	**Description**	**Pros**	**Cons**
2,600 lbs.	Set limit to achieve the 80% of the TAL trigger and account for additional discard mortality within the 20% TAL buffer (proactive).	a. More likely to achieve the intended mortality reduction. a. Provides additional buffer against exceeding the TAL.	a. Will not achieve the TAL and would increase discards due to the low possession limit.
3,200 lbs. Method A	(Method in Amendment 3) Set limit so that expected landings account for the additional discard mortality created by a possession limit within the 9,209 skate wing TAL. (front-loading estimated additional discards).	a. More conservative approach in 2010 (does not need to account for additional mortality caused by the possession limit for setting year 2 TAL).	a. Reduces likelihood for wing fishery to reach the TAL. b. Achieves 89% of the TAL, which is higher than the 80% TAL trigger but may not cause a change in the possession limit if landings appear unlikely to reach the TAL.

Option	Description	Pros	Cons
3,200 lbs. Method B	Reduce TAL to account for additional discards (proactive, but circular). This explicitly accounts for additional discards in setting the existing TAL.	a. Unlikely to cause a higher discard rate in future years that would reduce the discard-adjusted TAL.	a. *This approach is not allowed in the Amendment 3 ACL framework.* b. The SSC approved using the most recent three years to estimate a discard rate to be applied to the ACT and derive a TAL.
4,100 lbs.	Set limit so that expected landings reach 100% of 9,209 mt skate wing TAL. Rely on additional discards resulting from the possession limit to be captured in future discard estimates and appropriately applied to TALs if necessary (back loading additional discards; part of ACL framework to account for changes in discarding)	a. Higher possession limit would create fewer discards and result in better utilization of the resource (i.e. more of the TAL is likely to be landed)	a. Greater risk in exceeding the ABC due to unaccounted discards caused by possession limits. b. More likely to cause the in-season 80% TAL trigger to be met, reducing the skate possession limit to 500 lbs. of wings, potentially causing discards to increase depending on when the AM is tripped. c. Foregoing opportunity to correct for higher discards in the current year (2010).
4,500-5,000 lbs.	Set limit so that expected landings reach 104-109% of 9,209 mt skate wing TAL. The method relies on additional discards resulting from the possession limit to be captured in future discard estimates and appropriately applied to TALs if necessary (back loading additional discards)	a. Would counteract effect the trip limit reduction triggered at the 80% TAL trigger. b. High likelihood of achieving 100% of the TAL. c. Would not cause as large an increase in regulatory discarding until the AM is triggered, reducing the skate possession limit to 500 lbs.	a. Would increase the risk of incidental possession limits being triggered and cause AMs to reduce the possession limit if the landings exceed the TAL. b. Derby-style fishing behavior may result.

In 2008, the data suggest that a greater fraction of total catch was converted from discards to landings and the discard rate declined from 58.9% to 53.7%. Thus, if this rate continues, a greater fraction of the ABC can be allocated to the TAL rather than being set aside to account for discards. Preliminary 2009 discard estimates indicates a slight increase in the discard rate but this estimate is based on incomplete

information. If discards do increase, a greater fraction of the ACT will be allocated to discards in future specifications.

As a result of the higher ABC (using the fall 2008 survey data) and the lower estimated discard rate (53.7%), applying the Amendment 3 TAL calculation gives an aggregate skate TAL of 14,277 mt (Table 3). This value is 46.9% higher than the 9,719 mt TAL[1] in Final Amendment 3 and 23.7% higher than the 11,544 mt TAL that was used as the objective to set a 1,900 lb. skate wing possession limit for Alternative 3B in the draft amendment. Accounting for a 3% set aside to account for state water fisheries and allocating 66.5% of the TAL to the wing fishery[2], the skate wing fishery TAL would be 9,209 mt, which is 27.5% less than the 12,706 mt of skate wing landings so far reported in calendar year 2009.

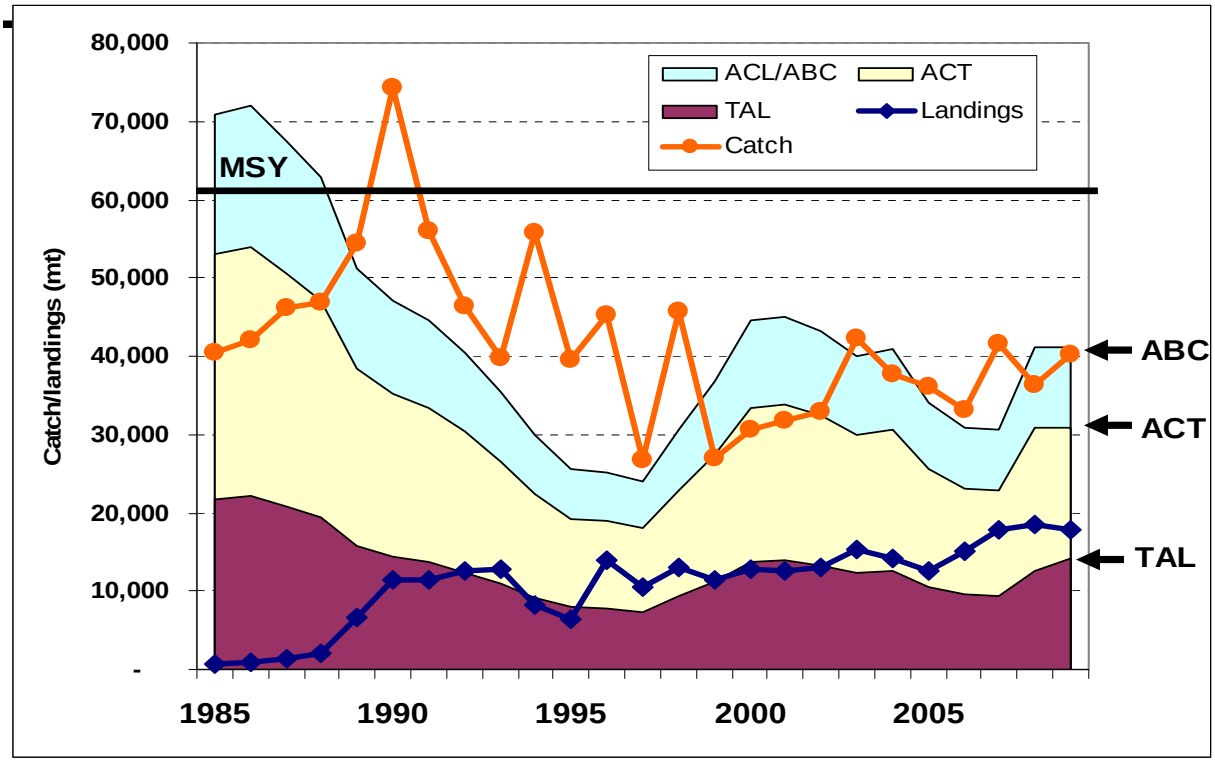
Table 3. Effect of landings and discard rate on aggregate skate total allowable landings (TAL) with a Skate ABC of 41,080 mt.

Years	Average landings	Average dead discards	Discard rate	TAL
2005-2007[3]	15,170	21,697	58.9%	12,638
2006-2008	17,200	19,918	53.7%	14,277
2007-2009[4]	18,104	21,399	54.2%	14,120

A comparison of landings and catch with the revised ABC and TAL is shown in Figure 1. Catch in 2008 was between the ACT and the ABC. Since 2006, skate landings were considerably above the proposed TAL (by 27.5% in 2009). If the mortality associated with landings is reduced to the TAL, the total catch would approximate the ACT if the discard rate does not change. Preliminary 2009 discard estimates increased from 2008, however, resulting in a total catch was very close to the ABC threshold (Figure 1).

[1] Including a 3% set aside to account for skate landings from state waters fisheries.
[2] This allocation was established by Amendment 3.
[3] Discard rate used in Final Amendment 3.
[4] 2009 data are preliminary, do not include December 2009 observed discards, and the discard estimate is not stratified by region.

Figure 1. Historic landings and estimated discards vs. trend in Skate ABCs calculated using the three-year moving average biomass index and the median catch/biomass ratio.



Taking the same approach as in Amendment 3 which implicitly accounted for additional discards that result from a skate wing possession limit, the new estimate to achieve a landing mortality reduction of 27.5% (equivalent to 14,277 mt TAL) is 3,200 lbs. per trip (Table 4). If the additional discards are not taken into account in the current TAL or in the method for estimating a reduction in fishing mortality resulting from lower landings, then a 4,100 lbs. skate wing possession limit would allow the fishery to achieve 100% of the 14,277 mt TAL, but would probably ensure that the 80% TAL trigger would be met and a 500 lbs. possession limit might be invoked mid-season[5]. Higher possession limits (e.g. those set to overshoot the TAL) could also have the desired effect but could increase the risk that derby style fishing effects (higher cost fishing, lower prices) could occur and possibly result in a longer in-season closure from the 80% TAL trigger. The additional discards that were not taken into account could also increase the risk that discards would be substantially higher, exceed the ABC, and trigger a post-hoc accountability change to increase the 25% buffer, although such an event would require a considerable increase in the catch after landings had been reduced by 27.5%. Triggering a change to the incidental possession limit (500 lbs. of wings) would itself contribute to an increase in discards (up to 7% of the total catch, Table 4).

[5] The Amendment 3 regulations would give the Regional Administrator authority to reduce the skate possession limit to 500 lbs. of wings or 1135 lbs. of whole skates if the wing landings have reached the 80% trigger and it appears that without such action the wing fishery will exceed the TAL.

Table 4. Affected number of vessels and trips landing skates with total revenue at various skate wing possession limit options, based on 2009 landing characteristics reported by dealers. The revised TAL is 27.5% less than preliminary 2009 landings. These possession limits exceed the range of options recommended by the PDT, but are included for information and illustration across a wide potential range.

Skate wing possession limit option	Percent morality reduction	Additional discard rate (% total catch)	Number of vessels	Trips	Gross annual revenue (millions)	Net revenue (millions)	Gross annual revenue from skate wings (millions)
500	50.7%	7.0%	288	2,831	$23.5	$16.5	$0.9
1,900	36.0%	4.1%	178	1,360	$32.6	$22.6	$2.1
2,600	31.1%	3.3%	149	1,083	$34.6	$24.0	$2.4
3,200	**27.5%**	2.7%	130	930	$35.8	$24.8	$2.7
3,600	25.4%	2.4%	124	837	$36.5	$25.3	$2.8
4,100	23.0%	2.1%	116	756	$37.3	$25.8	$3.0
5,000	19.1%	1.6%	95	606	$38.3	$26.5	$3.3
10,000	7.5%	0.5%	42	179	$40.9	$28.3	$4.0
All skate trips			465	7,933	$41.9	$29.0	$4.4

Future changes in specifications would explicitly take the additional discards into account and future possession limit calculations would not need to internally account for this source of mortality, since the additional discards will then have been estimated and deducted from the ACT. Possession limits might need to be reconsidered however if unaccounted discard mortality results in a lower TAL in future specifications. Increasing reliance on possession limits to achieve mortality goals has the potential to create a negative feedback loop that continually reduces the TAL, while continually increasing regulatory discards.

Higher possession limits and TALs reduce the probability of increasing the biomass of overfished smooth and thorny skates, because at this time it is not possible to directly prevent catch of these species. Landings of smooth and thorny skates are prohibited and therefore do not appreciably contribute to commercial landings. If Amendment 3 regulations result in fewer trips that target and/or discard skates, it may cause biomass of smooth and thorny skates to increase if it results in a catch/biomass exploitation ratio for these species that is below the historic median value. The unknown question is whether keeping catch below a higher aggregate ABC will also reduce catch for smooth and thorny skates.

Higher possession limits would of course affect fewer vessels and trips landing skates. A greater fraction of trips longer than 24 hours and a greater fraction of vessels that depend on skates as a source of annual revenue are affected with a skate wing possession limit, whether the skate wing possession limit is low (1,900 lbs.), medium (3,200 lbs.), or high (4,100 lbs.) (Table 5, Table 6, and Table 7). Comparisons can be made between these tables to examine how the range of possession limit options affects different classes of vessels and trips.

Although the 83% of trips landing skates are unaffected by a skate wing possession limit as low as 1,900 lbs. (Table 4), the effects of a possession limit will depend on how the fishery responds to the new regulations. All of the possession limit options assume that the trip frequency and landings per trip in 2010 will be the same as they were before the regulations take effect. If the number of trips landing skates declines in 2010 (due to skate and other related fishery regulations), these possession limits will be too conservative. On the other hand, if the number of trips increases in 2010 (such as vessels taking more frequent trips in response to lower possession limits or higher skate prices) then the possession limit

options will be too liberal. At a 500 lbs. wing limit, the analysis indicates that 2,831 or 36% of trips would be affected. The number of vessels and trips landings greater than 10,000 lbs. represents the smallest proportion of the fishery; however, the impact of these possession limits on the 42 vessels cannot be discounted.

Table 5. Skate trip diagnostics and effects of a 1,900 skate wing possession limit on 2009 trips landings skate wings according to dealer reports. Prices are adjusted to dollars per whole pound.

			Trip affected by measures?			Percent
Trip type	Dependency	Data	N	Y	Grand Total	
Day	Low	Trips	4,686	254	4,940	5.1%
		Daily fishing cost	$678	$381	$663	
		Sum of Total skate landings, live weight	2,792,119	1,887,435	4,679,554	40.3%
		Sum of Adj. skate landings	2,792,119	1,095,502	3,887,621	58.0%
		Sum of Skate discard mortality	0	268,916	268,916	14.2%
		Sum of Skate price	$0.17	$0.15	$0.16	
		Sum of Orig. revenue/DA	$3,715	$4,773	$3,783	
	Medium	Trips	138	273	411	66.4%
		Daily fishing cost	$472	$423	$440	
		Sum of Total skate landings, live weight	183,302	3,649,868	3,833,170	95.2%
		Sum of Adj. skate landings	183,302	1,177,449	1,360,751	32.3%
		Sum of Skate discard mortality	0	357,922	357,922	9.8%
		Sum of Skate price	$0.19	$0.14	$0.15	
		Sum of Orig. revenue/DA	$3,691	$5,198	$4,809	
	High	Trips	7	54	61	88.5%
		Daily fishing cost	$376	$393	$391	
		Sum of Total skate landings, live weight	19,136	870,935	890,072	97.9%
		Sum of Adj. skate landings	19,136	232,902	252,038	26.7%
		Sum of Skate discard mortality	0	31,445	31,445	3.6%
		Sum of Skate price	$0.26	$0.19	$0.19	
		Sum of Orig. revenue/DA	$2,583	$8,169	$7,455	
	#N/A	Trips	52		52	0.0%
		Daily fishing cost	$487		$487	
		Sum of Total skate landings, live weight	679		679	0.0%
		Sum of Adj. skate landings	679		679	
		Sum of Skate discard mortality	0		0	
		Sum of Skate price	$0.23		$0.23	
		Sum of Orig. revenue/DA	$2,939		$2,939	
Day Trips			4,883	581	5,464	10.6%
Day Daily fishing cost			$670	$402	$641	
Day Sum of Total skate landings, live weight			2,995,236	6,408,239	9,403,475	68.1%
Day Sum of Adj. skate landings			2,995,236	2,505,853	5,501,089	39.1%
Day Sum of Skate discard mortality			0	658,283	658,283	10.3%
Day Sum of Skate price			$0.17	$0.15	$0.16	
Day Sum of Orig. revenue/DA			$3,705	$5,234	$3,894	
Trip	Low	Trips	1,594	601	2,195	27.4%
		Daily fishing cost	$996	$1,193	$1,050	
		Sum of Total skate landings, live weight	1,692,610	8,470,850	10,163,461	83.3%
		Sum of Adj. skate landings	1,692,610	2,592,113	4,284,723	30.6%
		Sum of Skate discard mortality	0	1,632,925	1,632,925	19.3%
		Sum of Skate price	$0.22	$0.22	$0.22	
		Sum of Orig. revenue/DA	$3,541	$3,818	$3,653	
	Medium	Trips	90	160	250	64.0%
		Daily fishing cost	$385	$448	$425	
		Sum of Total skate landings, live weight	168,216	2,967,308	3,135,524	94.6%
		Sum of Adj. skate landings	168,216	690,080	858,296	23.3%
		Sum of Skate discard mortality	0	227,119	227,119	7.7%
		Sum of Skate price	$0.21	$0.18	$0.18	
		Sum of Orig. revenue/DA	$2,080	$3,541	$3,001	
	High	Trips	2	18	20	90.0%
		Daily fishing cost	$388	$425	$421	
		Sum of Total skate landings, live weight	6,315	250,378	256,693	97.5%
		Sum of Adj. skate landings	6,315	77,634	83,949	31.0%
		Sum of Skate discard mortality	0	27,844	27,844	11.1%
		Sum of Skate price	$0.17	$0.30	$0.30	
		Sum of Orig. revenue/DA	$3,180	$4,331	$4,222	
	#N/A	Trips	4		4	0.0%
		Daily fishing cost	$901		$901	
		Sum of Total skate landings, live weight	141		141	0.0%
		Sum of Adj. skate landings	141		141	
		Sum of Skate discard mortality	0		0	
		Sum of Skate price	$0.18		$0.18	
		Sum of Orig. revenue/DA	$5,094		$5,094	
Trip Trips			1,690	779	2,469	31.6%
Trip Daily fishing cost			$962	$1,022	$981	
Trip Sum of Total skate landings, live weight			1,867,282	11,688,536	13,555,819	86.2%
Trip Sum of Adj. skate landings			1,867,282	3,359,827	5,227,109	28.7%
Trip Sum of Skate discard mortality			0	1,887,887	1,887,887	16.2%
Trip Sum of Skate price			$0.22	$0.21	$0.21	
Trip Sum of Orig. revenue/DA			$3,505	$3,805	$3,629	
Total Trips			6,573	1,360	7,933	17.1%
Total Daily fishing cost			$745	$757	$747	
Total Sum of Total skate landings, live weight			4,862,519	18,096,775	22,959,293	78.8%
Total Sum of Adj. skate landings			4,862,519	5,865,680	10,728,199	32.4%
Total Sum of Skate discard mortality			0	2,546,171	2,546,171	14.1%
Total Sum of Skate price			$0.19	$0.19	$0.19	
Total Sum of Orig. revenue/DA			$3,562	$3,911	$3,685	

Table 6. Skate trip diagnostics and effects of a 3,200 skate wing possession limit on 2009 trips landings skate wings according to dealer reports. Prices are adjusted to dollars per whole pound.

			Trip affected by measures?			Percent
Trip type	Dependency	Data	N	Y	Grand Total	
Day	Low	Trips	4,850	90	4,940	1.8%
		Daily fishing cost	$668	$366	$663	
		Sum of Total skate landings, live weight	3,700,927	978,628	4,679,554	20.9%
		Sum of Adj. skate landings	3,700,927	653,760	4,354,687	66.8%
		Sum of Skate discard mortality	0	103,977	103,977	10.6%
		Sum of Skate price	$0.17	$0.15	$0.16	
		Sum of Orig. revenue/DA	$3,739	$5,543	$3,783	
	Medium	Trips	183	228	411	55.5%
		Daily fishing cost	$450	$431	$440	
		Sum of Total skate landings, live weight	436,269	3,396,901	3,833,170	88.6%
		Sum of Adj. skate landings	436,269	1,656,192	2,092,461	48.8%
		Sum of Skate discard mortality	0	204,478	204,478	6.0%
		Sum of Skate price	$0.20	$0.14	$0.15	
		Sum of Orig. revenue/DA	$4,179	$5,160	$4,809	
	High	Trips	13	48	61	78.7%
		Daily fishing cost	$377	$395	$391	
		Sum of Total skate landings, live weight	55,422	834,649	890,072	93.8%
		Sum of Adj. skate landings	55,422	348,672	404,094	41.8%
		Sum of Skate discard mortality	0	18,472	18,472	2.2%
		Sum of Skate price	$0.22	$0.19	$0.19	
		Sum of Orig. revenue/DA	$3,944	$8,463	$7,455	
	#N/A	Trips	52		52	0.0%
		Daily fishing cost	$487		$487	
		Sum of Total skate landings, live weight	679		679	0.0%
		Sum of Adj. skate landings	679		679	
		Sum of Skate discard mortality	0		0	
		Sum of Skate price	$0.23		$0.23	
		Sum of Orig. revenue/DA	$2,939		$2,939	
Day Trips			5,098	366	5,464	6.7%
Day Daily fishing cost			$658	$411	$641	
Day Sum of Total skate landings, live weight			4,193,297	5,210,178	9,403,475	55.4%
Day Sum of Adj. skate landings			4,193,297	2,658,624	6,851,921	51.0%
Day Sum of Skate discard mortality			0	326,927	326,927	6.3%
Day Sum of Skate price			$0.17	$0.15	$0.16	
Day Sum of Orig. revenue/DA			$3,745	$5,627	$3,894	
Trip	Low	Trips	1,766	429	2,195	19.5%
		Daily fishing cost	$1,003	$1,243	$1,050	
		Sum of Total skate landings, live weight	2,668,179	7,495,281	10,163,461	73.7%
		Sum of Adj. skate landings	2,668,179	3,116,256	5,784,435	41.6%
		Sum of Skate discard mortality	0	1,188,504	1,188,504	15.9%
		Sum of Skate price	$0.22	$0.22	$0.22	
		Sum of Orig. revenue/DA	$3,530	$3,933	$3,653	
	Medium	Trips	130	120	250	48.0%
		Daily fishing cost	$386	$467	$425	
		Sum of Total skate landings, live weight	397,984	2,737,540	3,135,524	87.3%
		Sum of Adj. skate landings	397,984	871,680	1,269,664	31.8%
		Sum of Skate discard mortality	0	152,331	152,331	5.6%
		Sum of Skate price	$0.21	$0.17	$0.18	
		Sum of Orig. revenue/DA	$2,470	$3,547	$3,001	
	High	Trips	5	15	20	75.0%
		Daily fishing cost	$385	$433	$421	
		Sum of Total skate landings, live weight	22,493	234,200	256,693	91.2%
		Sum of Adj. skate landings	22,493	108,960	131,453	46.5%
		Sum of Skate discard mortality	0	17,371	17,371	7.4%
		Sum of Skate price	$0.20	$0.31	$0.30	
		Sum of Orig. revenue/DA	$3,252	$4,551	$4,222	
	#N/A	Trips	4		4	0.0%
		Daily fishing cost	$901		$901	
		Sum of Total skate landings, live weight	141		141	0.0%
		Sum of Adj. skate landings	141		141	
		Sum of Skate discard mortality	0		0	
		Sum of Skate price	$0.18		$0.18	
		Sum of Orig. revenue/DA	$5,094		$5,094	
Trip Trips			1,905	564	2,469	22.8%
Trip Daily fishing cost			$959	$1,056	$981	
Trip Sum of Total skate landings, live weight			3,088,797	10,467,021	13,555,819	77.2%
Trip Sum of Adj. skate landings			3,088,797	4,096,896	7,185,693	39.1%
Trip Sum of Skate discard mortality			0	1,358,206	1,358,206	13.0%
Trip Sum of Skate price			$0.22	$0.21	$0.21	
Trip Sum of Orig. revenue/DA			$3,499	$3,913	$3,629	
Total Trips			7,003	930	7,933	11.7%
Total Daily fishing cost			$740	$802	$747	
Total Sum of Total skate landings, live weight			7,282,094	15,677,199	22,959,293	68.3%
Total Sum of Adj. skate landings			7,282,094	6,755,520	14,037,614	43.1%
Total Sum of Skate discard mortality			0	1,685,133	1,685,133	10.7%
Total Sum of Skate price			$0.19	$0.19	$0.19	
Total Sum of Orig. revenue/DA			$3,564	$4,022	$3,685	

Table 7. Skate trip diagnostics and effects of a 4,100 skate wing possession limit on 2009 trips landings skate wings according to dealer reports. Prices are adjusted to dollars per whole pound.

			Trip affected by measures?			Percent
Trip type	Dependency	Data	N	Y	Grand Total	
Day	Low	Trips	4,893	47	4,940	1.0%
		Daily fishing cost	$666	$359	$663	
		Sum of Total skate landings, live weight	4,062,893	616,661	4,679,554	13.2%
		Sum of Adj. skate landings	4,062,893	437,429	4,500,322	70.9%
		Sum of Skate discard mortality	0	56,010	56,010	9.1%
		Sum of Skate price	$0.16	$0.15	$0.16	
		Sum of Orig. revenue/DA	$3,756	$5,814	$3,783	
	Medium	Trips	212	199	411	48.4%
		Daily fishing cost	$443	$436	$440	
		Sum of Total skate landings, live weight	669,595	3,163,575	3,833,170	82.5%
		Sum of Adj. skate landings	669,595	1,852,093	2,521,688	58.5%
		Sum of Skate discard mortality	0	127,806	127,806	4.0%
		Sum of Skate price	$0.19	$0.14	$0.15	
		Sum of Orig. revenue/DA	$4,387	$5,126	$4,809	
	High	Trips	15	46	61	75.4%
		Daily fishing cost	$377	$395	$391	
		Sum of Total skate landings, live weight	71,891	818,181	890,072	91.9%
		Sum of Adj. skate landings	71,891	428,122	500,013	52.3%
		Sum of Skate discard mortality	0	12,258	12,258	1.5%
		Sum of Skate price	$0.21	$0.19	$0.19	
		Sum of Orig. revenue/DA	$4,072	$8,600	$7,455	
	#N/A	Trips	52		52	0.0%
		Daily fishing cost	$487		$487	
		Sum of Total skate landings, live weight	679		679	0.0%
		Sum of Adj. skate landings	679		679	
		Sum of Skate discard mortality	0		0	
		Sum of Skate price	$0.23		$0.23	
		Sum of Orig. revenue/DA	$2,939		$2,939	
Day Trips			5,172	292	5,464	5.3%
Day Daily fishing cost			$654	$418	$641	
Day Sum of Total skate landings, live weight			4,805,058	4,598,417	9,403,475	48.9%
Day Sum of Adj. skate landings			4,805,058	2,717,644	7,522,702	59.1%
Day Sum of Skate discard mortality			0	196,074	196,074	4.3%
Day Sum of Skate price			$0.17	$0.15	$0.16	
Day Sum of Orig. revenue/DA			$3,772	$5,709	$3,894	
Trip	Low	Trips	1,849	346	2,195	15.8%
		Daily fishing cost	$1,009	$1,269	$1,050	
		Sum of Total skate landings, live weight	3,346,604	6,816,857	10,163,461	67.1%
		Sum of Adj. skate landings	3,346,604	3,220,222	6,566,826	47.2%
		Sum of Skate discard mortality	0	964,129	964,129	14.1%
		Sum of Skate price	$0.22	$0.22	$0.22	
		Sum of Orig. revenue/DA	$3,580	$3,858	$3,653	
	Medium	Trips	145	105	250	42.0%
		Daily fishing cost	$388	$476	$425	
		Sum of Total skate landings, live weight	519,145	2,616,379	3,135,524	83.4%
		Sum of Adj. skate landings	519,145	977,235	1,496,380	37.4%
		Sum of Skate discard mortality	0	120,205	120,205	4.6%
		Sum of Skate price	$0.22	$0.17	$0.18	
		Sum of Orig. revenue/DA	$2,479	$3,690	$3,001	
	High	Trips	7	13	20	65.0%
		Daily fishing cost	$386	$440	$421	
		Sum of Total skate landings, live weight	38,667	218,026	256,693	84.9%
		Sum of Adj. skate landings	38,667	120,991	159,658	55.5%
		Sum of Skate discard mortality	0	12,462	12,462	5.7%
		Sum of Skate price	$0.22	$0.31	$0.30	
		Sum of Orig. revenue/DA	$3,341	$4,705	$4,222	
	#N/A	Trips	4		4	0.0%
		Daily fishing cost	$901		$901	
		Sum of Total skate landings, live weight	141		141	0.0%
		Sum of Adj. skate landings	141		141	
		Sum of Skate discard mortality	0		0	
		Sum of Skate price	$0.18		$0.18	
		Sum of Orig. revenue/DA	$5,094		$5,094	
Trip Trips			2,005	464	2,469	18.8%
Trip Daily fishing cost			$961	$1,067	$981	
Trip Sum of Total skate landings, live weight			3,904,556	9,651,262	13,555,819	71.2%
Trip Sum of Adj. skate landings			3,904,556	4,318,448	8,223,004	44.7%
Trip Sum of Skate discard mortality			0	1,096,796	1,096,796	11.4%
Trip Sum of Skate price			$0.22	$0.21	$0.21	
Trip Sum of Orig. revenue/DA			$3,546	$3,853	$3,629	
Total Trips			7,177	756	7,933	9.5%
Total Daily fishing cost			$740	$816	$747	
Total Sum of Total skate landings, live weight			8,709,614	14,249,679	22,959,293	62.1%
Total Sum of Adj. skate landings			8,709,614	7,036,092	15,745,706	49.4%
Total Sum of Skate discard mortality			0	1,292,870	1,292,870	9.1%
Total Sum of Skate price			$0.19	$0.19	$0.19	
Total Sum of Orig. revenue/DA			$3,604	$3,963	$3,685	