

# Discussion Paper on Vessel Capacity Limits

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## 1 Introduction

The Council has expressed interest in exploring ways to limit entry of high capacity 58 ft to 60 ft LOA pot and hook-and-line vessels into the GOA Pacific cod fisheries. One approach identified in the fixed gear recency action was to add a vessel capacity endorsement (i.e., width or simple gross tonnage) to fixed gear licenses. Currently, LLP licenses have a maximum length overall (MLOA) designation, but there is no limit on the width or tonnage of the vessel that may be assigned to a license. The capacity endorsement that was proposed in the fixed gear recency motion would have provided such a limit by restricting vessels to a 3-to-1 length-to-width ratio based on the length overall of the vessel currently assigned to the license. Licenses assigned to vessels that exceeded this ratio would have been grandfathered at their present length-to-width ratio.

At its April 2009 meeting, the Council reviewed a discussion paper prepared by NMFS that described regulatory, enforcement, and safety concerns with the proposed length-to-width restriction. Although vessel width can be defined in regulation, requiring vessels to be surveyed could impose substantial costs on participants if width measurements are required to be certified by a marine surveyor. NMFS Enforcement expressed concern that vessel width may be difficult to measure in the field. Finally, establishing regulations that discourage specific vessel configurations may conflict with National Standard 10 (promote safety at sea).

As a result of the concerns expressed in the discussion paper, public testimony, and during AP and Council deliberations, the Council removed the capacity endorsement component from the fixed gear recency motion. The Council requested that staff bring back another discussion paper to the June meeting describing potential ways to address the capacity issue within the fixed gear fleet. The Council requested that the paper explore possible alternative length-to-width ratios and any other solutions to the vessel capacity issue suggested by the public (e.g., trip limits or other output controls). The discussion paper begins with a description of the management issues and a review of the regulatory context. The background section is followed by a discussion of the possible purpose and need of addressing the vessel capacity issue. Finally, the paper describes the elements and options that the Council could consider advancing for further analysis.

## 2 Background

The Council requested that staff provide additional background information on 58 ft and 59 ft LOA vessels that have participated in the GOA Pacific cod fisheries using pot or hook-and-line gear. Specifically, the Council requested information on the length-to-width ratios of vessels in this size class in order to determine whether alternatives to the proposed 3-to-1 ratio might be considered. The Council also requested that staff provide additional data that may help the Council consider alternative approaches to the capacity issue, such as trip limits.

Figures 1 and 2 show the length-to-width ratio and gross tonnages of vessels 50 ft to 70 ft LOA that participated in the GOA Pacific cod fisheries using pot or hook-and-line gear during 2000 through 2008. It is important to note that vessel width and gross tonnage measurements are self-reported, and may not be measured consistently. Vessel width data are from the USCG vessel database; gross tonnages are from the NMFS Alaska region vessel database, and are based on the tonnages reported on the Federal fisheries permit (FFP) application. The figures show that a substantial number of 58 ft and 59 ft LOA vessels have gross tonnages that significantly exceed those of similar-sized vessels (i.e., vessels <58 ft or >59 ft LOA). Similarly, many 58 ft and 59 ft LOA vessels have length-to-width ratios that are much smaller than those of similar-sized vessels. The Council considered placing a capacity endorsement on LLP licenses to limit vessels to a 3-to-1 length-to-width ratio as part of the fixed gear recency action. This would allow a 58 ft LOA vessel to be a maximum of 19 ft wide. Figure 1 shows that a large proportion of 58 ft and 59 ft LOA vessels have length-to-width ratios outside this ratio, including several vessels with a length-to-width ratio of close to 2, indicating that the vessels are nearly 29 ft wide.

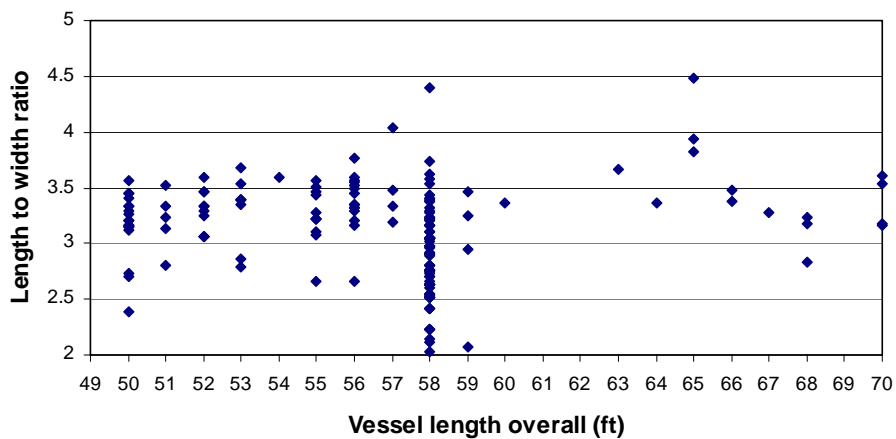


Figure 1. Length to width ratio of vessels 50 to 70 ft LOA that participated in the directed GOA Pacific cod fisheries using pot or hook-and-line gear during 2000 through 2008.<sup>1</sup>

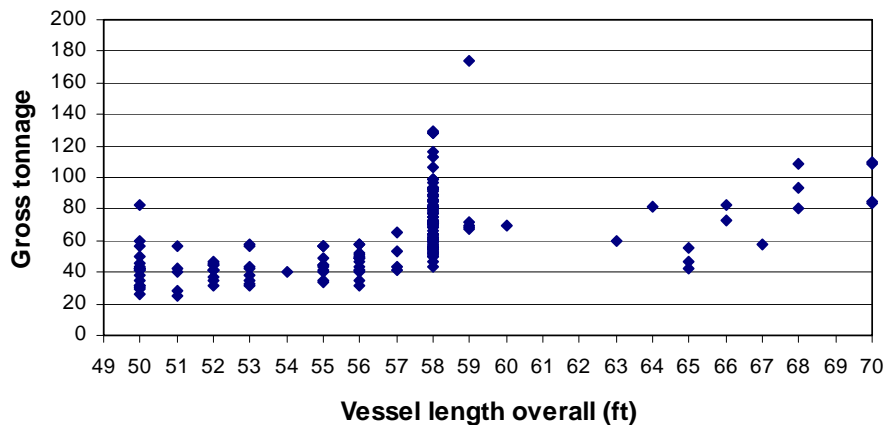


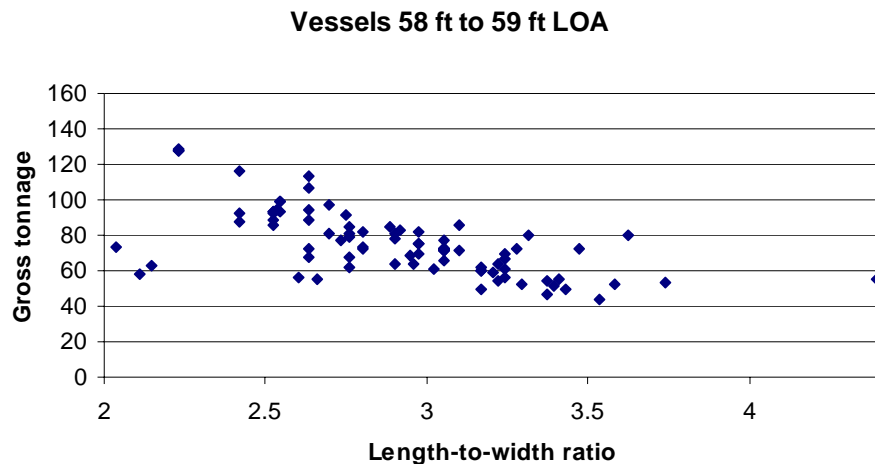
Figure 2. Simple gross tonnage of vessels 50 to 70 ft LOA that participated in the directed GOA Pacific cod fisheries using pot or hook-and-line gear during 2000 through 2008.

<sup>1</sup> Figures 1 and 2 include measurements for 182 vessels. Measurements were not available for 10 vessels.

**Table 1 Length-to-width ratios of 58 ft and 59 ft vessels that used pot or hook-and-line gear in the directed GOA Pacific cod fisheries during 2000 through 2008.**

Length-to-width ratio	Vessel count	Percent of total	Gross tonnage	Vessel count	Percent of total
2.00 - 2.25	7	7%	40 - 49	2	2%
2.25 - 2.50	3	3%	50 - 59	15	16%
2.50 - 2.75	22	23%	60 - 69	15	16%
2.75 - 3.00	19	20%	70 - 79	28	30%
3.00 - 3.25	29	31%	80 - 89	15	16%
3.25 - 3.50	9	10%	90 - 99	11	12%
3.50 - 4.00	5	5%	>100	8	9%

Source: ADFG Fish Tickets (catch data); NMFS (vessel length and gross tonnage data); USCG (vessel width data).



**Figure 3 Relationship between gross tonnage and length-to-width ratio for 65 vessels 58 ft and 59 ft LOA that participated in the directed GOA Pacific cod fisheries using pot or hook-and-line gear, 2000-2008.**

Table 1 reports the length-to-width ratios of 58 ft and 59 ft LOA pot and hook-and-line vessels that participated in the GOA Pacific cod fisheries during 2000 through 2008. More than half (53%) of the 94 vessels have a length-to-width ratio of less than 3. The majority of these vessels have a length-to-width ratio of 2.5 to 3, and only 10 vessels have length-to-width ratios of less than 2.5. A 58 ft LOA vessel with a length-to-width ratio of 2.5 is approximately 23 ft wide. Based on these data, the Council could consider alternatives to the 3-to-1 length to width ratio proposed in the fixed gear recency motion.

The Council has also considered basing a capacity limit on simple gross tonnage rather than on the length-to-width ratio. Simple gross tonnage is calculated using the length overall, width, and depth measurements for a vessel.<sup>2</sup> One problem with this approach is that a depth measurement is needed to calculate simple gross tonnage, and there are logistical difficulties with obtaining and enforcing depth measurements (addressed later in the paper). There is generally a linear relationship between gross tonnage and the length-to-width ratio (Figure 3), indicating that either measurement could be used as the basis of a capacity endorsement to achieve similar results. However, limiting width may provide an incentive for vessels to be built with greater depth, which could impact the safety of these vessels.

<sup>2</sup> Simple gross tonnage = LOA x width x depth x 0.67 for vessels with ship-shaped hulls (46 CFR Subpart E).

Another approach to limiting the capacity of the less than 60 ft LOA pot and hook-and-line fleet in the GOA Pacific cod fisheries is to establish trip limits. If the Council wishes to develop options for establishing trip limits, it could specify:

- Gear types subject to trip limits
- Vessel lengths subject to trip limits
- Options for possible trip limit amounts (mt or lbs per trip)

Table 2 reports the number of trips by trip size (lbs), gear, and length-to-width ratio, and provides an indication of the potential effects of setting specific trip limits for each sector. Table 3 reports the percent of trips of each size class. For example, if a 100,000 lb trip limit is established for pot and hook-and-line gear for vessels less than 60 ft LOA, only a small fraction of trips exceed this amount, and this restriction would have a limited effect on the <60 ft LOA pot and hook-and-line sectors. Table 4 reports the average trip size by gear, and Table 5 breaks down each gear type by the length-to-width ratio of vessels in that sector. This data is reported here to give the Council a starting point for considering whether trip limits are a desirable approach. If the Council chooses to forward options for trip limits for further analysis, additional data will be provided on trips.

**Table 2 Number of trips by trip size, gear, and length-to-width ratio for 58 ft to 59 ft LOA vessels that participated in the directed GOA Pacific cod fisheries during 2000 through 2008.**

Gear	Length to width ratio	>100,000 lbs	75,000 - 100,000 lbs	50,000 - 75,000 lbs	25,000 - 50,000 lbs	<25,000 lbs
Hook-and-line	>3	*	13	82	117	124
	2.75 - 3	0	*	*	*	12
	2.5 - 2.75	*	*	30	35	45
	2 - 2.5	*	*	*	*	4
Pot	>3	4	20	97	257	465
	2.75 - 3	0	25	57	161	260
	2.5 - 2.75	21	15	51	118	195
	2 - 2.5	6	7	30	40	67

Source: ADFG Fish Tickets (catch data); NMFS (vessel length data); USCG (vessel width data).

**Table 3 Percent of trips by trip size, gear, and length-to-width ratio for 58 ft to 59 ft LOA vessels that participated in the directed GOA Pacific cod fisheries during 2000 through 2008.**

Gear	Length to width ratio	>100,000 lbs	75,000 - 100,000 lbs	50,000 - 75,000 lbs	25,000 - 50,000 lbs	<25,000 lbs
Hook-and-line	>3	*	4%	24%	35%	37%
	2.75 - 3	0%	*	*	*	52%
	2.5 - 2.75	*	*	23%	27%	35%
	2 - 2.5	*	*	*	*	17%
Pot	>3	0%	2%	12%	30%	55%
	2.75 - 3	0%	5%	11%	32%	52%
	2.5 - 2.75	5%	4%	13%	30%	49%
	2 - 2.5	4%	5%	20%	27%	45%

Source: ADFG Fish Tickets (catch data); NMFS (vessel length data); USCG (vessel width data).

**Table 4 Average trip size by gear type for 58 ft to 59 ft vessels targeting Pacific cod in the Western and Central GOA during 2000 through 2008.**

Management area	Gear	Number of trips	Average trip size	
			Tons	Pounds
Central GOA	HAL	508	17.2	37,819
	POT	1273	13.1	28,890
Western GOA	HAL	39	12.1	26,598
	POT	1215	11.1	24,470

Source: ADFG Fish Tickets (catch data); NMFS (vessel length data); USCG (vessel width data).

**Table 5 Average trip size by 58 ft and 59 ft LOA vessels targeting Pacific cod by gear and length-to-width ratio groupings during 2000 through 2008.**

Management Area	Length to width ratio	Gear	Vessel count	Mt	Pounds
Central GOA	2 - 2.5	HAL	3	27.7	61,067
	2.5 - 2.75	HAL	8	19.2	42,328
	2.75 - 3	HAL	6	13.3	29,321
	>3	HAL	17	16	35,274
	2 - 2.5	POT	5	14.2	31,305
	2.5 - 2.75	POT	7	22.9	50,485
	2.75 - 3	POT	11	12.2	26,896
	>3	POT	21	9.5	20,944
Western GOA	2 - 2.5	HAL	0	0	0
	2.5 - 2.75	HAL	0	0	0
	2.75 - 3	HAL	1	*	*
	>3	HAL	9	12.8	28,219
	2 - 2.5	POT	9	15.9	35,053
	2.5 - 2.75	POT	19	11.3	24,912
	2.75 - 3	POT	11	12.3	27,117
	>3	POT	20	9.4	20,723

Source: ADFG Fish Tickets (catch data); NMFS (vessel length data); USCG (vessel width data).

### 3 Purpose and Need

If the Council decides to advance the vessel capacity issue for further analysis, it may wish to include a statement of purpose and need for the proposed action. The vessel capacity issue was originally part of the GOA fixed gear recency motion, but the Council removed the vessel capacity options from that motion at final action. The vessel capacity issue could be addressed as part of the GOA Pacific cod sector split action, or could be a separate action. The fixed gear recency problem statement included the following language on the vessel capacity issue:

*Fishery policies have created incentives that encourage nontraditional efficiency improvements for the less than 60 ft LOA vessel class. [One] intent of the proposed amendment..... is to preserve the traditional vessel operational efficiencies within the fisheries.*

## 4 Elements and Options

Several potential approaches to the vessel capacity issue were identified during Council and AP deliberations and public testimony:

- (1) Placing a capacity endorsement on the LLP license (length-to-width ratio, width limit, or simple gross tonnage limit) to limit the size of the vessel that may be assigned to the license, in addition to the existing MLOA designation.
- (2) Establishing trip limits for vessels less than 60 ft LOA using pot or hook-and-line gear in the GOA Pacific cod fisheries.

### 4.1 Capacity endorsement

#### Policy and Legal Considerations

The Council has not yet adopted a purpose and need statement to limit vessel width or simple gross tonnage. The Council would need to address several key issues in developing a purpose and need statement and a suite of alternatives. As an example, the Council would need to determine the specific LLP licenses on which the endorsement would be required, the specific ratio of width-to-length (or tonnage), and the rationale for that ratio (or tonnage). Several of the concerns NMFS raised in an earlier version of this discussion paper continue to be applicable. The earlier version of this discussion paper noted that the Council would need to address the ability of vessel owners to avoid the limitations by the purchase of LLP licenses not encumbered with capacity limitations, the potential costs to industry participants if they choose to purchase an unencumbered LLP license, and the implications for vessel owners who are unable to purchase an unencumbered LLP license. NMFS raised concerns that limitations on vessel capacity could increase costs for operating a specific size of vessel, presumably vessels that are more efficient than smaller vessels within that size class. NMFS raised concerns that these measures may not meet the requirements of National Standards 5 (consider efficiency) and National Standard 7 (minimize costs),<sup>3</sup> and that discouraging specific vessel configurations may conflict with the requirements of National Standard 10 (promote safety).<sup>4</sup> NMFS also raised concerns about the implications of a vessel capacity endorsement for compliance with the Regulatory Flexibility Act (RFA) and the Administrative Procedure Act (APA). The concerns raised by NMFS are explained in detail in the April 2009 discussion paper and are not repeated here.

NMFS consulted with USCG personnel to determine whether a specific ratio of length-to-width was commonly used in naval architecture to determine vessel safety or stability, and the potential implications of a vessel capacity endorsement on vessel safety more generally. USCG personnel noted that no specific ratio was commonly used in vessel construction, because vessel dimensions incorporate many different factors such as the intended uses of the vessel, fuel efficiency, and overall seaworthiness. USCG personnel could not identify a specific ratio that best represents current vessel construction standards or that would accommodate future vessel construction techniques. USCG personnel noted that vessel width

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<sup>3</sup>MSA, Section 301: National Standard 5: “Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no measure shall have economic allocation as its sole purpose. National Standard 7: “Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.”

<sup>4</sup>MSA, Section 301: National Standard 10: “Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.”

and tonnage for vessels in the 58 foot and 59 foot length overall range has increased over the past several decades as vessel owners have built vessels to improve efficiency and address safety considerations.

USCG personnel noted that wider vessels generally are more stable than narrower vessels of the same length, and are more likely to promote safety for vessel operators and crew. USCG personnel expressed concerns that selecting a specific vessel length-to-width ratio and placing such restrictions on an LLP license could limit vessel construction choices available to vessel owners and adversely affect safety, particularly if an LLP license not encumbered with width restrictions were unavailable to a vessel owner. For example, the USCG noted that if vessel owners are limited by vessel length and width, vessel owners could choose to construct deeper draft or taller vessels to maximize vessel efficiency. The precise safety implications of any such construction techniques are unclear, but adding additional depth or height above the waterline could increase the proportion of the vessel exposed to icing conditions, and adversely affect the vessel's stability through significant change of its vertical center of gravity.

The USCG has encouraged expanding vessel stability standards to commercial vessels 50 feet in length or greater. These standards would apply only to new construction, and would not affect existing vessels. Current standards apply only to vessels 79 feet in length or greater. USCG is seeking legislative authority to mandate stability testing for smaller commercial vessels, but the passage of any legislation is uncertain, and any implementing regulations would not be effective for several years. USCG personnel noted that if width restrictions were placed on LLP licenses and vessels were constructed to comply with these restrictions, those vessel construction techniques could conflict with possible future stability requirements.

USCG personnel raised similar concerns about the implications of establishing a simple "calculated" gross tonnage limitation. First, the Council would need to clearly and specifically define how tonnage would be measured, because numerous different regulatory and traditional tonnage definitions exist. The Council could choose to apply the existing USCG definition and calculation of simple gross tonnage. A limitation on vessel tonnage rather than width could provide greater flexibility for vessel construction but many of the concerns raised about applying a vessel width restriction would continue to apply. It is not clear what the appropriate tonnage limitation would be, or whether that limit on vessel tonnage would preclude safer vessel construction techniques. USCG personnel noted that vessel tonnage would require specific measurement of several dimensions, and it would not be possible to measure those dimensions accurately unless the vessel was out of the water. USCG personnel noted that if the Council developed a tonnage requirement that differs from USCG definitions, it could create additional confusion for vessel operators and enforcement operations.

### **Technical Aspects of Vessel Capacity Measurements**

The April 2009 discussion paper provided by NMFS noted that establishing clear descriptions of vessel depth and width is complicated by the range of vessel construction and measurement tools. Experience with the implementation of an LOA regulation suggests that defining specific nautical terms unambiguously is challenging, and enforcement actions that may disqualify a vessel's use with a specific LLP license are often the subject of appeal and litigation. NMFS noted that NOAA Office of Law Enforcement (OLE) coordinated with a marine surveyor to explore a potential definition of width and depth, and those draft definitions were provided to the Council.

NMFS noted that unlike LOA measurements that can be relatively easily verified by measuring a vessel at dock, width measurements are not easily determined by visually inspecting a vessel. NMFS noted that vessel superstructure can impede line-of-sight measurement, and motion of the vessel, even while at dock, can make accurate measurements difficult. Any protrusions of a vessel below waterline could not be reliably measured. NOAA Enforcement conducted a limited field test in early May in Kodiak to



determine the feasibility of measuring vessel width in the field. NOAA Enforcement did not use a specific definition of width, but were guided by the draft definition provided to the Council in the April 2009 discussion paper.

NOAA Enforcement envisioned and used a series of rigid bars, estimating both level and 90 degree angles with the keel, and visual estimates of the widest part of the vessel to begin the width measurements. The use of plumb bobs on strings as a measurement tool was difficult because the strings moved with both wind and vessel motion and did not provide an accurate measurement. Vessel width measurements were conducted by personnel onboard the vessel. Vessel width measurement conducted from the dock was problematic because the vessel pitches and rolls in wave conditions and even small waves can change the measurement significantly. Based on this limited field test, NOAA Enforcement concluded that for certain vessel construction types, field testing could be accurate within a foot to several feet depending on the vessel and vessel movement conditions present at the time of measurement, and could be sufficient to guide enforcement personnel to require a survey of the vessel's width if these tests differed substantially from the width endorsement on the LLP license. However, NOAA Enforcement noted that the use of rigid bars would not provide reasonably accurate measurements for all vessel types, or when the width of the vessel was at the waterline. Intervening superstructures, shelter decks, or other vessel construction styles made onboard measurements difficult and of questionable accuracy.

NOAA Enforcement note that even though in some cases a field measurement could be used to verify vessel width to a reasonable degree of accuracy, in many cases, field tests of width would be impractical. Because NOAA Enforcement cannot predict the specific vessels where field measurements would be practical, NOAA Enforcement continues to recommend that vessel width or depth measurements be made while a vessel is out of the water by an independent third-party such as a marine surveyor or naval architect.

NMFS would require that measurements be conducted by certified marine surveyors or marine architects to avoid the risk of unintentional or intentional misreporting. The potential complexity of measurements would require that a standard approach be adopted by all surveyors. Individuals that self-report their vessel depth or width would be less likely to apply a uniform standard and may have little incentive to do so. To ensure up-to-date measurements, NMFS would require vessel owners to periodically measure the vessel to ensure that any modifications that affected a vessel's dimensions are provided to the agency. Preliminary discussions with NMFS, NOAA OLE, and USCG personnel suggest that defining a change in vessel dimensions that would require re-measurement is particularly difficult, and NMFS would have to rely on the vessel owner to self-report any such modifications. A requirement for regular re-measurement of a vessel is likely to result in more accurate information. NMFS has not determined the appropriate requirement for re-measurement, but annual, biennial, or triennial timeframes have been discussed. NMFS would likely require that a survey be conducted for a vessel prior to approving the designation of an LLP license for that vessel if that vessel does not have a certified survey on file. The April 2009 discussion paper described the potential costs, number of potential surveyors, and other practical considerations of conducting a vessel survey in detail, and that discussion is not repeated here. Because of the potential number of vessels to be surveyed, the costs of a survey, and the need for regular re-measurement, the total reporting burden and cost to the industry to implement and enforce an LLP license width or SGT endorsement could be substantial.

### **Implementation Considerations**

In the April 2009 discussion paper, NMFS recommended that if any width restriction were placed on license, it ought to be based on a ratio of the length-to-width on the MLOA of the LLP license rather than attempting to link the license to a specific vessel. This approach would be much simpler to implement and would not require a potentially long, contentious, and expensive process of remeasuring a vessel's



LOA, or result in potential delays in endorsing a specific LLP license if the existing LOA is challenged and appealed. Because the MLOA is listed on the LLP license, it is no longer subject to challenge through the appeals process, and calculating the width endorsement from that MLOA using a simple ratio would not be subject to appeals procedures.

If the Council chooses to require vessel owners to measure their vessels and obtain certified length, width, or depth measurements, NMFS would not be able to require those measurements until after the effective date of a final rule. Requiring vessel owners to measure their vessels and provide those measurements to RAM before the issuance of a width or SGT endorsement on an LLP license could cause substantial delays in the implementation of any vessel capacity endorsement. Because these measurements would need to be conducted while the vessel is in drydock, timing a vessel survey with shipyard activity could be problematic, particularly if large numbers of vessels are subject to this provision.

## 4.2 Trip Limits

The Council could develop options for establishing trip limits that apply to pot and hook-and-line catcher vessels participating in the GOA Pacific cod fisheries. The advantages of trip limits are that they are easily enforced and can apply to any set of vessels (e.g., based on gear type and/or vessel length) using information that is already collected by NMFS. No additional vessel measurements would need to be made. Trip limits could apply equally to vessels with traditional dimensions and to ‘Super 8’ vessels. Some of the disadvantages of establishing trip limits include the potential that a greater proportion of fish will be discarded at sea if vessels exceed the trip limit. This may not be a significant problem for pot vessels, which may be able to adjust their operations to avoid exceeding a trip limit. Hook-and-line vessels may be more likely to exceed trip limits, depending on the amount of gear deployed and catch rates.

Table 3 shows the number of trips by size (lbs) made by pot and hook-and-line vessels in the GOA Pacific cod fishery during 2000 through 2008. The Council could use this information as a starting point for developing options for trip limits. For example, if a 100,000 lb trip limit is established for pot and hook-and-line gear for vessels less than 60 ft LOA, only a small fraction of trips exceed this amount, and this restriction would have a limited effect on the <60 ft LOA pot and hook-and-line sectors.

If the Council wishes to develop options for establishing trip limits, it could specify:

- Gear types subject to trip limits
- Vessel lengths subject to trip limits
- Options for possible trip limit amounts (mt or lbs per trip)

## 5 Action by the Council

The purpose of this discussion paper is to provide the Council with additional information on ways to address the vessel capacity issue in the GOA Pacific cod fishery. At this meeting, the Council could develop a purpose and need statement and advance a set of options for further analysis, or take no further action. If the Council chooses to forward this action for further analysis, the Council could direct staff to add the options and problem statement language to the GOA Pacific cod sector split motion or to develop a separate analysis.