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A Report to the Sea Scallop Plan Development Team: Preliminary Assessment of 3.25" Ring Dredge

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A REPORT TO THE

SEA SCALLOP PLAN DEVELOPMENT TEAM:

PRELIMINARY ASSESSMENT OF 3.25" RING DREDGE

Presented by

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INTRODUCTION

Three experimental trips have been completed: (1) September-October on Georges Bank and New England Area, (2) November on southern mid-Atlantic areas, and (3) November on northern mid-Atlantic areas. Data have not been completely analyzed, but results based on limited preliminary analyses indicates conflicting evidence about the 3.25" rings. One conclusive result, however, is that there are large concentrations of juveniles in the southern mid-Atlantic resource area.

Georges Bank/New England:

The Georges Bank/New England trip suggests that the 3.25" ring will dramatically reduce the harvests of juveniles. Alternatively, the 3.25" ring will not allow the harvesting of juveniles on hard-bottom. As expected though, the 3.25" ring will permit harvesting of larger scallops (≥ 90 mm)--the expected efficiency of the 3.25" ring dredge is 30-50% relative to the 3.00-inch ring dredge.

Unfortunately, minimal quantities of juveniles were found on Georges Bank or other New England resource areas. There were, however, some areas containing minor quantities of juveniles (e.g., ≤ 1.00 basket per haul).

One problem observed during the Georges Bank trip was the presence of "hanging-links". It is customary to leave badly worn links on the gear and install new links every 2-6 tows; major gear repairs occur at the end of watches. For vessels working hard bottom (i.e., rocks), Amendment #4 will impose a cost equal to about 1-2 lost tows per day. This issue will need to be addressed by management.

Southern mid-Atlantic:

The experimental trip during November in the southern mid-Atlantic offered a different picture of the efficiency of the 3.25" ring dredge and the abundance of juveniles. The primary geographical area for this trip was Assateague to southern Chincoteague. Tows was made in shallow and deep water and on or near many recreational fishing areas (e.g., the Cigar and the Fingers). The bottom was primarily soft and contained sand, shells, and gravel; one area, however, was slab.

In terms of relative efficiency of landed product, the 3.25" ring was 82.6% as efficient as the 3.00-inch ring (19 vs. 23 50 lb. bags). For some tows, the 3.25" ring was more efficient than the 3.00-inch ring. Relative to escapement, results from the experimental tows provided conflicting evidence. For conventional tows with a loose tickler and one or no "turn-arounds", the 3.25" ring permitted escapement of juveniles (e.g., tows 10-156). On three tows (54, 56, and 84), the captain demonstrated that escapement by 3.25" ring could be reduced. This was accomplished by tightening up the tickler, having two ticklers, and making two "turn-arounds" during a tow.

Relative to discards, the dominant size was 60-65 mm. Overall, there appeared to be relatively high abundance of scallops between 50 and 70 mm. In terms of harvests, the dominant size was 80-90 mm. Crew did shuck scallops as small as 55 mm, but this was only done for one watch.

Conclusions--southern mid-Atlantic trip:

The 3.25" ring dredge may not offer an effective method of preventing juvenile harvests. Fortunately, the market will likely restrict the harvesting of small scallops (e.g.,

≥ 80 MPP). The concern, however, is that scallops yielding counts less than 70 MPP can be harvested by the 3.25" ring dredge, at least on soft bottoms. Captains wanting to harvest the smaller scallops (≤ 80 mm) will be able to do so in the southern mid-Atlantic resource area. There is little cost differential associated with making two turn-arounds and trashing up the dredge. At a price per pound of at least $3.00 for 50 MPP scallops, a 7 man crew will be able to operate 16 hours per day and earn approximately $1,200 per man for a 16 day trip (640,000 scallops for 15 working days and 50 MPP yields 12,800 pounds).

Southern New England - Mid-Atlantic:

The November trip on the F/V Alpha Omega II covered the area from Southern New England to Virginia. The 3.25" ring dredge was 76% as efficient as the 3" ring dredge (632 vs. 825 lbs.). The captain demonstrated a great deal of interest in insuring that the 3.25" ring dredge was fishing as best it could. Data from selected tows is presented in the accompanying tables. These tows represent areas where small scallops comprised a large percent of the catch. Tow 40 is from an area off the Virginia/Maryland coast and it contained a large number of small (50-70 mm) scallops and some large (greater than 100 mm) scallops; notable was the absence of 89-90 mm scallops. In this case the 3.25" dredge was modestly successful in "releasing" small scallops and catching more larger scallops than the 3" ring dredge.

Data from a sequence of tows (Tows 55, 58, 59, 62) demonstrates a similar pattern, with the 3.25" dredge "releasing" more 50-70 mm scallops. Of interest is the significant "loss" of 80-90 mm scallops by the 3.25" dredge. The loss of 80-90 mm scallops by the 3.25" dredge appears to be the critical issue surrounding the "efficiency" of the dredge. Normally,

harvested 80-90 mm scallops would be retained for shucking and consequently contribute to the total catch. In an area where the majority of scallops are less than 90 mm, the difference in catch by the 3.25" dredge is very noticeable.

Georges Bank - Great South Channel:

Data from a selected group of tows (Tows 223, 225, 226, 228, 231, 233) is presented in the accompanying figure as it demonstrates a unique characteristic of the 3.25" dredge. In areas where the majority of the scallops are greater than 90 mm, the 3.25" dredge will perform equally if not better than the 3" dredge. However, even in areas with a predominance of large scallops, the 3.25" dredge still does not perform well in the harvest of 80-90 mm scallops, therein from the standpoint of industry, is the perceived problem with the 3.25" ring dredge.

PRELIMINARY RESULTS OF EXPERIMENTAL TRIP

NOVEMBER 2 THROUGH NOVEMBER 13, 1993

Tow	Catch		Discards		Loran	Depth
	3.00-inch	3.25-inch	3.00-inch	3.25-inch	Beginning / Ending	fm
10 [45][a]	0.50	0.50+	10.00	6.00	26875-41602 26875-41602	38.5
86 [50]	1.00-	0.50+	6.00	3.00	26870-41330 26861-41365	29.0
155 [50]	1.00	0.88	4.00	1.00	26878-41412 26875-41414	31.0
126 [55]	1.75	2.75	25.00	11.00	26864-41375 26877-41406	29.0
13 [45]	1.13	0.75	1.00	0.25	26867-41664 26870-41705	38.5
83 [50]	0.88	0.75	1.00	0.50	26891-41450 26886-41405	29.0
18 [50]	1.00-	0.63	2.00	0.75	26872-41753 26873-41755	32.5
156 [45]	0.50	0.88	1.00	0.50	26875-41412 26875-41412	31.0
54 [50]	1.00	0.88	25.00	20.00	26852-41775 26861-41759	35.0
56 [45]	0.75	0.88	22.00	20.00	26887-41708 26868-41664	34.0
84 [45]	1.06	1.00	3.00	3.00	26885-41404 26873-41375	28.5

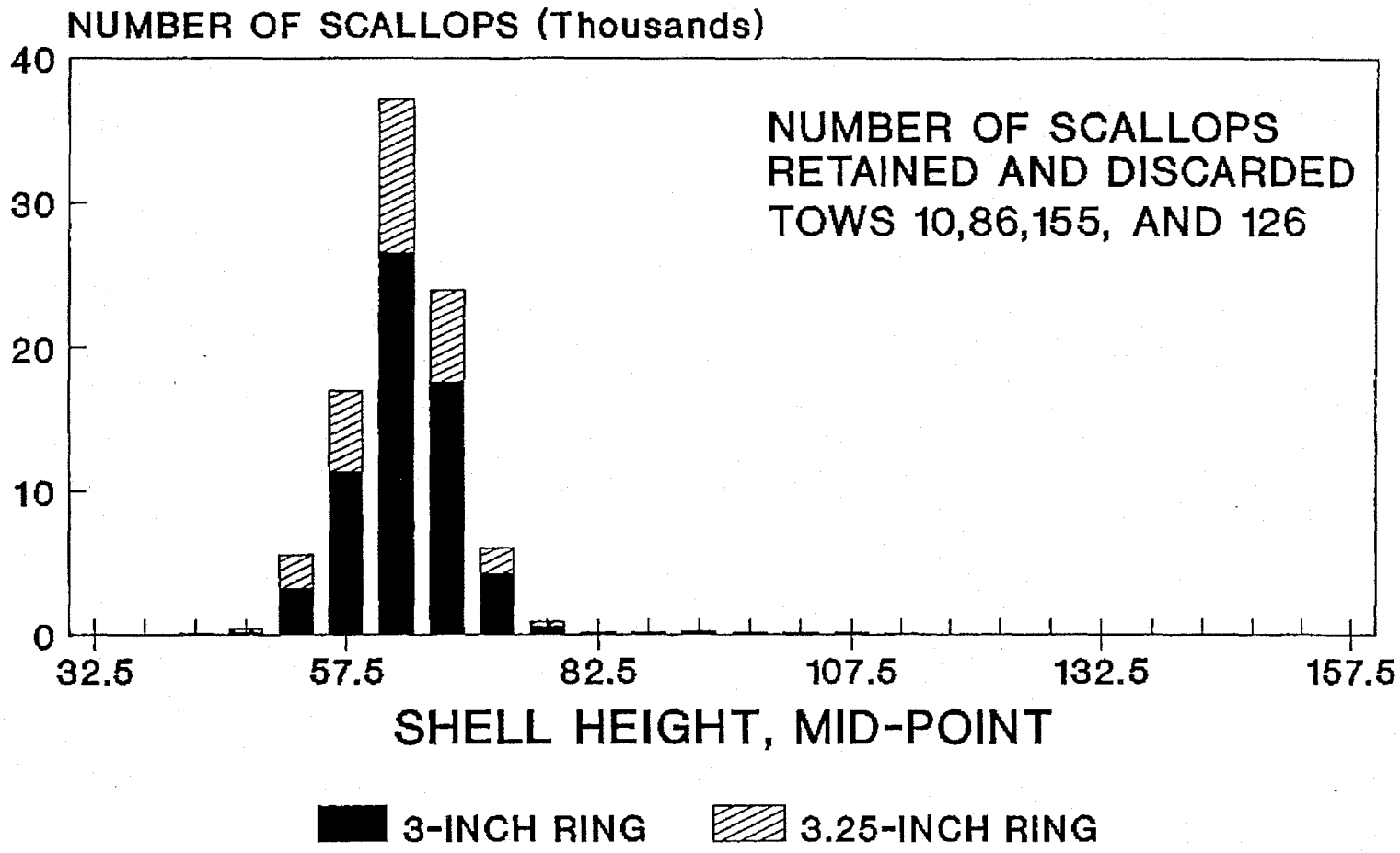
[a]Length of tow time--minutes

NOTE: Total difference in landed product was 4-50 lb. bags or approximately 200 pounds (23 vs. 19 bags)

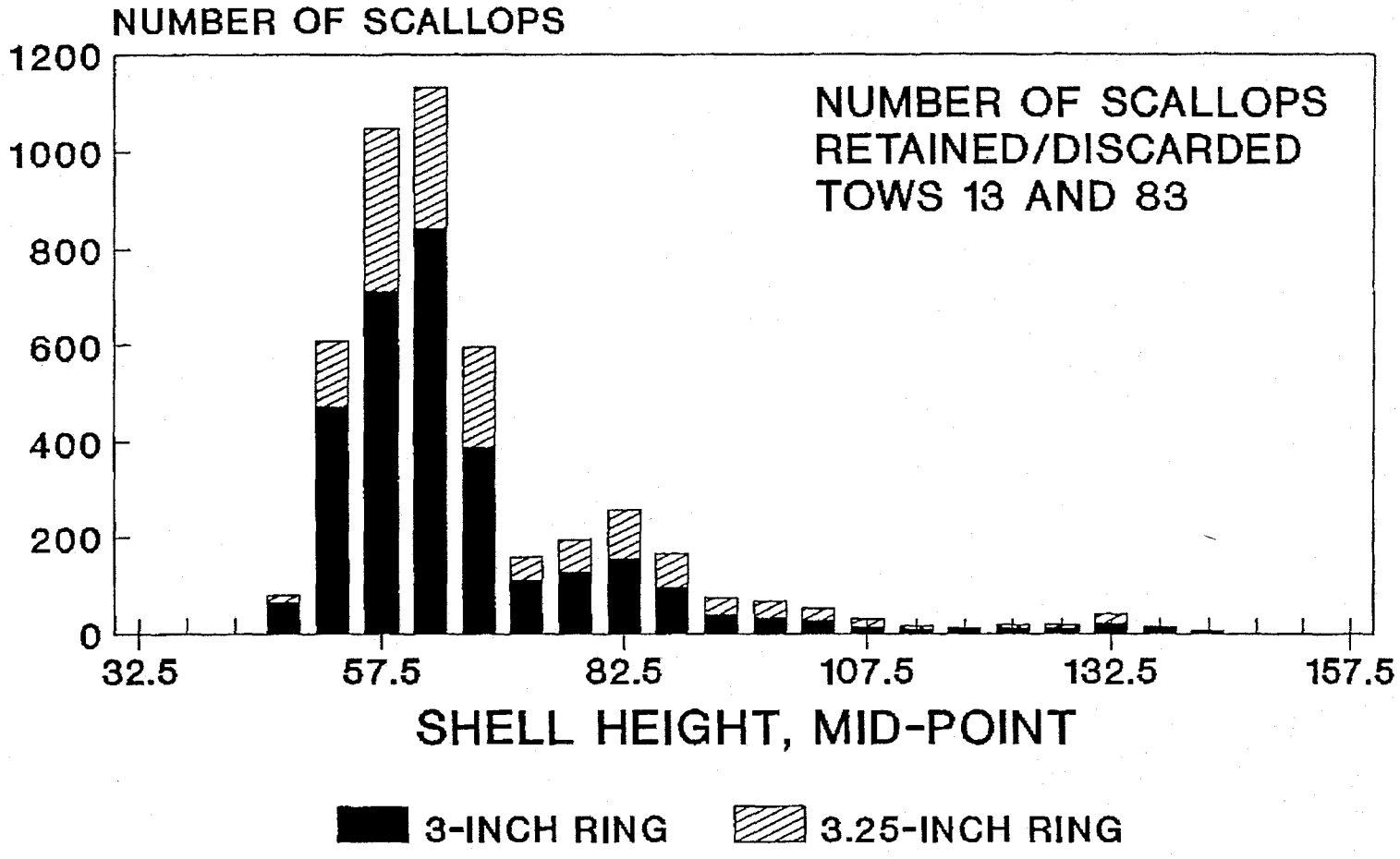
Average landed meat counts: 3.00 = 28.00 vs. 3.25 = 24.30

Range of landed counts: 3.00:20-69 MPP; 3.25:20-65 MPP.

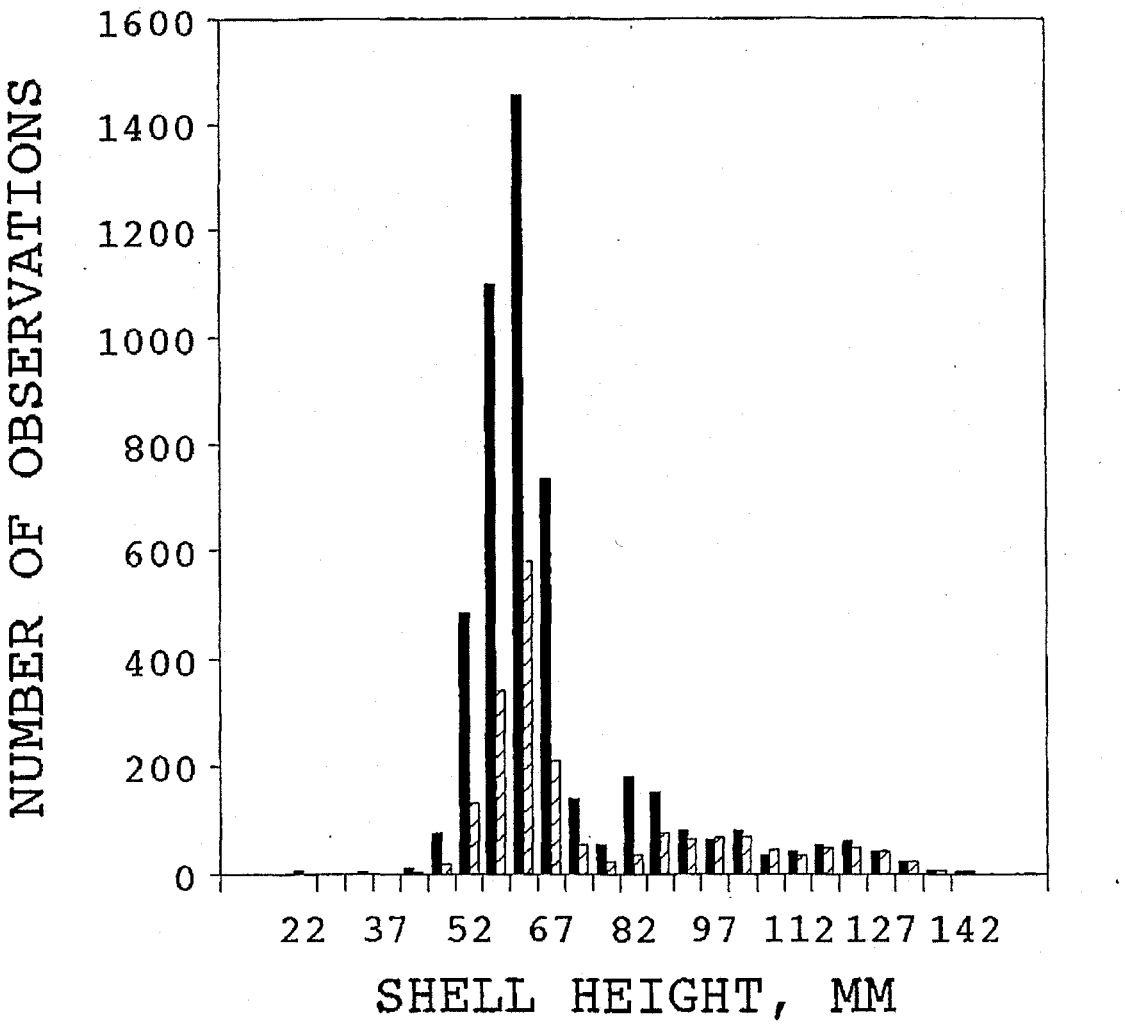
COMPARISON OF 3 VS. 3.25-INCH RING CATCH



COMPARISON OF 3 VS. 3.25 INCH RING CATCH



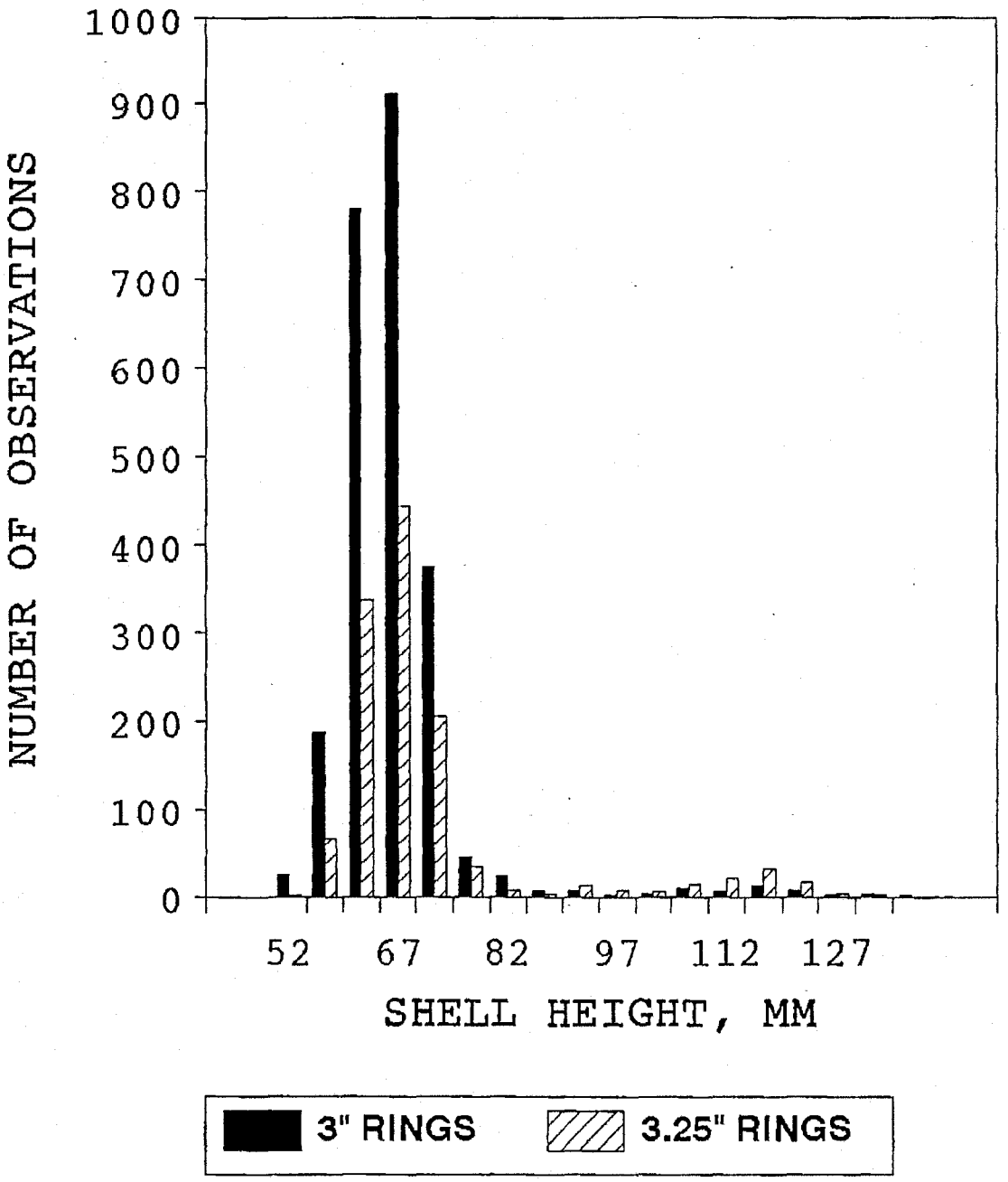
SHELL HEIGHT FREQUENCIES
F/V ALPHA & OMEGA TOWS 55,58,59,62



TOW DATA			CATCH (BASKETS)		
TOW #	LORAN		RET	DISC	TOTAL
55	26870	41642	1.75	3.2	4.95
58	26845	41765	0.75	1	1.75
59	26836	41807	2.25	1	3.25
62	26835	41859	2	0.5	2.5

SHELL HEIGHT FREQUENCIES

F/V ALPHA & OMEGA TOW 40



TOW DATA			CATCH (BASKETS)		
TOW #	LORAN		RET	DISC	TOTAL
40	26832	41989	1.25	3.5	4.75

COMPARISON OF 3 VS. 3.25-INCH RING CATCH