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VIRGINIA EEL POT STUDY

Presented to
Potomac River Fishery Commission
December 10, 1982

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Concern by Virginia eel fishermen, processors, and the Virginia Marine Resources Commission that eel stocks may be overfished prompted VIMS to conduct a study of eel pots. Fishermen have reported a decrease in the average size of harvested eels during recent years. The fall silver-eel fishery in Virginia has experienced declining catches over the past five years. These trends may be symptomatic of overfishing. The recent practice of some fishermen to use increasingly smaller mesh in their eel pots could be detrimental to the resource if expanded to widespread practice. Subsequently, VIMS conducted a Sea Grant project to study the two primary mesh sizes used in Virginia, 1/2" X 1" and 1/2" X 1/2". This paper summarizes the findings of the study pertinent to the question of regulating eel pot mesh sizes.

From May through September, 1981 commercial eel pots of various configurations (galvanized vs. vinyl coated, rectangular vs. cylindrical, 1/2" X 1/2" vs. 1/2" X 1" mesh) were fished weekly at several locations along the York River system. Day and night sets were made. All eels captured were measured to the nearest mm TL and weighed to the nearest gram. Head and stomach girths were also determined. Additional locational and physicochemical data were obtained.

Catch Data

From the following table it is evident that the small mesh pots (1/2" X 1/2" mesh) caught more eels of a smaller size than the standard pots (1/2" X 1" mesh).

	Variable	Mesh	Mean
(A)	Number Captured	1/2" X 1/2" 1/2" X 1"	1.4 eels/pot 0.9 eels/pot
(B)	Weight Captured	1/2" X 1/2" 1/2" X 1"	161 grams/pot 165 grams/pot
(C)	Average Length	1/2" X 1/2" 1/2" X 1"	390 mm TL 436 mm TL
(D)	Average Weight	1/2" X 1/2" 1/2" X 1"	151 grams 198 grams

There was essentially no difference in the total weight captured (B) for the two mesh sizes. The smaller mesh pots captured an eel 46 mm shorter (C) and 47 grams lighter (D) than the standard mesh pots.

A multiple regression analysis, which controls other variables, predicted that eels from the standard mesh pots will average 32 mm longer and 31 grams heavier than eels from the small mesh pots.

Length frequency data are summarized on the next page for the two mesh sizes. Nineteen percent of the eels captured in the standard pots were undersized for the European live eel market (approximately 350 mm or 13-14 inches long). A much larger percentage of the catch was undersized in the small mesh pots; 61 percent of the eels were less than 350 mm.

PERCENT OF TOTAL

<u>Length Interval mm</u>	<u>1/2" X 1" Mesh</u>	<u>1/2" X 1/2" Mesh</u>
100-149	0.25	0.00
200-249	0.50	0.74
250-299	0.75	18.61
300-349	17.59	41.94
350-399	27.14	14.39
400-449	22.86	9.18
450-499	14.32	6.20
500-549	8.54	3.97
550-599	4.02	2.48
600-649	2.76	1.98
650-699	1.26	0.25
750-799	0.00	0.25
TOTAL	99.99	99.99

The medium length of eels captured in the standard pots was 403 mm and in the small mesh pots 311 mm.

Escapement Data

Live eels of known size and number were placed in unbaited pots which were put back overboard for six hours. These unbaited pots were then fished and the remaining eels counted and measured. Escapement rates were much higher for the standard mesh pots than for the small mesh pots, 73% and 19% respectively. Eels initially placed in the standard pots ranged from 245-420 mm TL, and the eels retained in the standard pots were from 303-420 mm TL. For the small mesh pots the "before" and "after" length ranges were 250-620 mm TL and 280-620 mm TL, respectively.