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Fishing Power Studies

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Statistics on catches and efforts of commercial offshore vessels may be studied from two points of view. In the first place, we may consider how accurately the performance of a vessel may be predicted from its characteristics. In the second place, we may consider the relationship of the calculated catch-per-hour of a "standard" class vessel to the abundance of fish. In this summary we consider the former problem of specifying the fishing power of a vessel by its characteristics, such as the gross tonnage and net size.

Following international practice, Canadian offshore vessels have been customarily classified by type of fishing and by gross tonnage. This gives a primary division of groundfish vessels into classes below 25, 26-50, 51-150, and over 150 gross tons, and to otter trawlers, longliners, Danish seiners, and dory schooners. All the gross tonnage classes are well represented in our commercial fleet, but only otter trawlers form a significant type-of-fishing class. Most of our studies, and all commented on here, refer therefore to otter trawlers.

Barring the escape of fish from the front of the net or from the net itself, we may relate the fishing power of a vessel to the size of the net it carries and to the speed at which the net is dragged. Following this reasoning we have therefore divided the vessels in each gross tonnage class by size of net carried on board. Numbers of otter-trawl trips in 1960 by these classes are shown in Table I.

Table I. Number of otter-trawl trips in 1960 in ICNAF Subarea 4 with effort information complete by gross tonnage and type of net.

	Gross tonnage No. of trips		
Type of net	Gr. T. 2 26-50	Gr. T. 3 51-150	Gr. T. 4 151-
1½ Iceland			529
41		170	192
41A			20
Peter Carey			45
36 Yankee			8
35 Yankee	690	560	
3/4 35 Yankee	11		
Flounder net			
Type C net			44

Possible comparisons of the effect of net size within gross tonnage classes and between gross tonnage classes within net size are shown in Table II. It also shows the results of the type of median tests referred to in ICNAF Document 50 . In estimating the differences the effect of seasons and fishing areas have been eliminated.

Table II. Comparison of gross tonnage and net size.

Comparison	d.f.	χ^2
35 Yankee; Gr. ton. 2 vs. Gr. ton. 3	1	50.20*
35 Yankee vs. 41; Gr. ton. 3	1	19.74*
41; Gr. ton. 3 vs. Gr. ton. 4	1	0.06
1½ Iceland, 41, 41A, Peter Carey and Type C net within Gr. ton, 4	4	11.5 *

*indicates significance at 5% level

By and large the tests show that there exist significant differences between the gross tonnage classes and between net sizes within gross tonnage classes. Further breakdown of gross tonnage classes should therefore be contemplated. In some cases this can be done by considering finer breakdown by gross tonnage, e.g., in the 51-150 class, the vessels using the 41 net tended to be over 75 gross tons and the ones using 35 Yankee less than 75 gross tons.

The above results are currently being checked for other years as well. The proper classification of vessels is important for interpreting published national and international statistics series and for following long-term trends in reported efforts and catches.

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