

STATE OF THE CEPHALOPODA RESOURCES ALONG THE EASTERN ADRIATIC COAST  
AND POSSIBLE CONFLICTS BETWEEN TRAWL AND ARTISANAL FISHERIES

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**ABSTRACT:** *By simple analysis of Cephalopods catch and corresponding fishing effort data of the Yugoslavian trawl and artisanal fishery for the period 1961-1978 year, applying global production models, it has been stated that in both cases since 1974 yields and corresponding effort are above maximum sustainable yields (MSY) and optimal fishing effort ( $f_{OPT}$ ). Management of the coastal resources exploited by different types of fisheries should be carefully considered from the side of national planner and managers who should not take into the account only biological but socio-economic aspects of each specific fishery.*

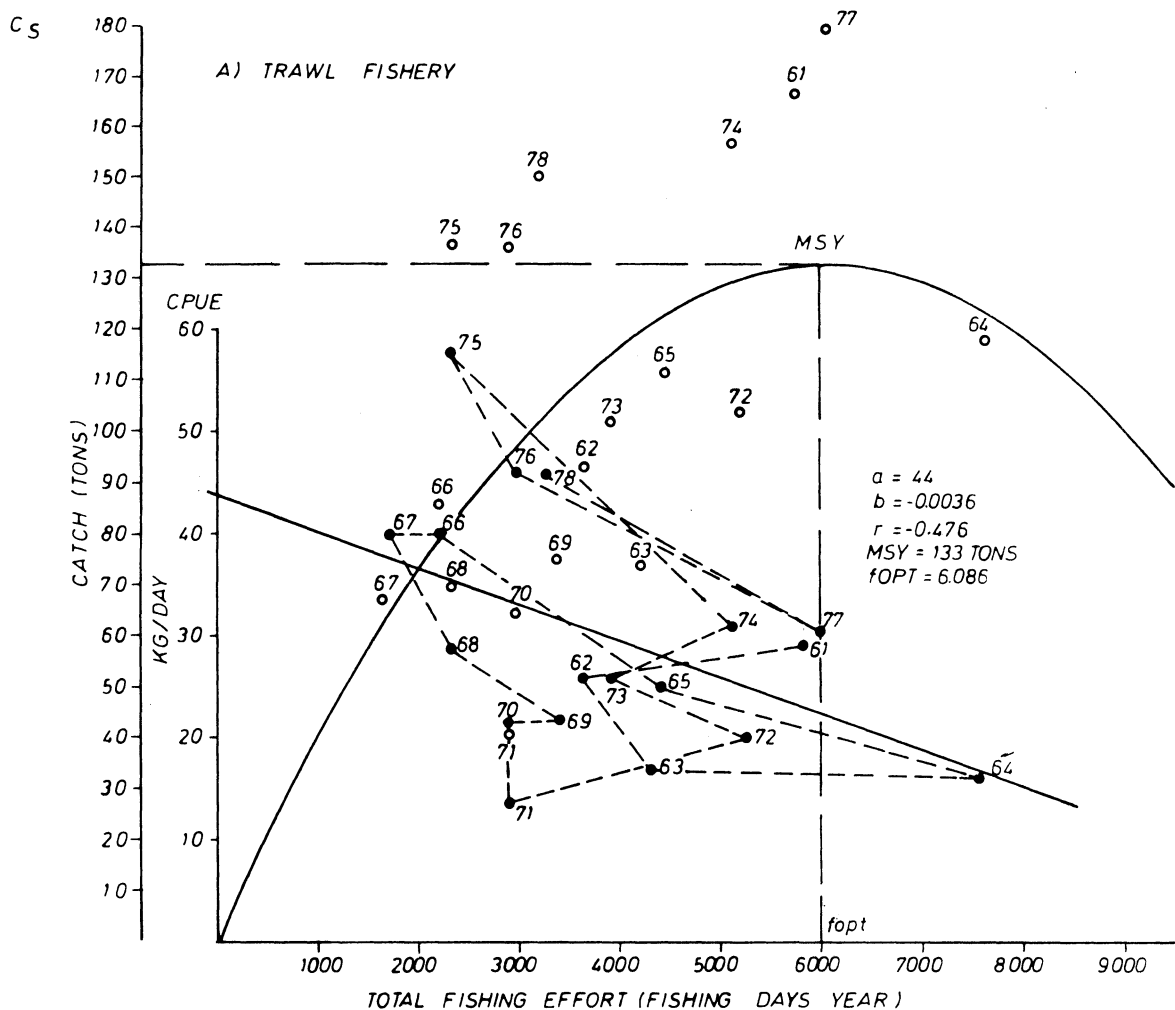
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**RESUME:** *On a effectué une analyse linéaire de la pêche totale des Céphalopodes et de l'effort de pêche optimal pour la pêche yougoslave aux chalutiers et celle littorale, comprenant la période de 1961 à 1978. La technique appliquée a été celle des modèles de production globaux. On a constaté, dans les deux types de pêche, que le niveau de la pêche et de l'effort de pêche optimal dépassent le maximum de production de ce groupe d'organismes, en particulier depuis 1974. Par conséquent, dans les cas du règlement des deux types différents de pêche, et par rapport aux mêmes ressources, le problème d'une bonne économie ne contient pas seulement la composante biologique, mais aussi celle socio-économique qui est à respecter dans la planification nationale de la pêche.*

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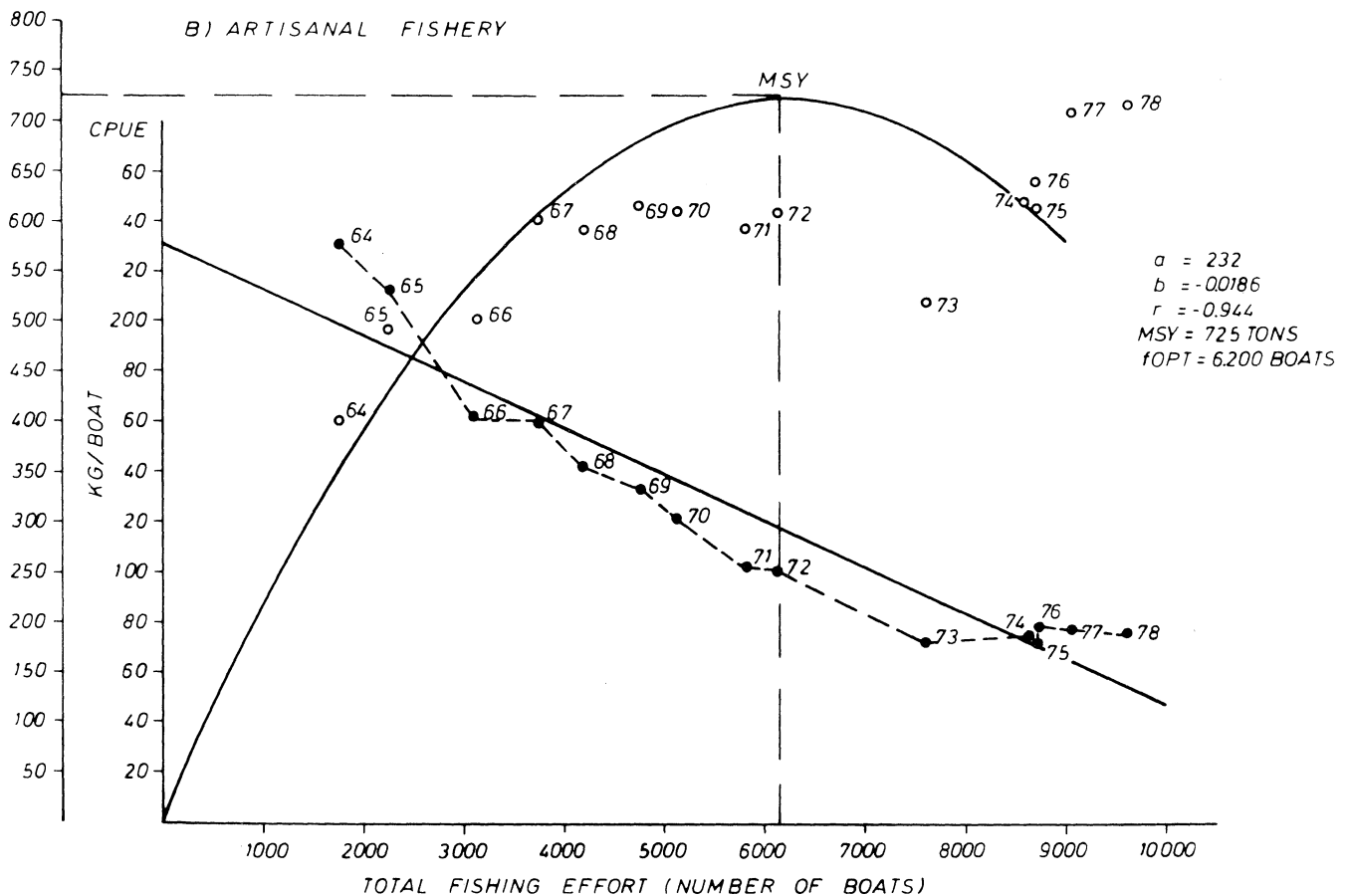
Group of Cephalopoda with total number of 29 species (GAMULIN-BRIDA & ILIJANIĆ, 1972) makes a significant edible fauna group in the Adriatic sea. In the Yugoslav trawl and artisanal fishery along the eastern Adriatic coast following species make a principal bulk of edible biomass: *Loligo vulgaris* Lamarck 1789,

*Sepia officinalis* Linne 1758, *Eledone moschata* (Lamarck 1799), in open and deeper central Adriatic *Todarodes sagittatus* (Lamarck 1789) and over the rocky bottoms *Octopus vulgaris* (Lamarck 1799). These populations with exceptions of common octopus and *Todarodes sagittatus* represent unit and shared stocks in the Adriatic sea being widely distributed over the continental shelf, especially of northern and shallower Adriatic, with significant seasonal horizontal migrations.



As Yugoslav trawl and artisanal fisheries take a place within Yugoslav territorial waters over the clay-loamy bottom sediments of channel regions and sandy sediments of northern Adriatic (ALFIREVIĆ, 1981), it has been tried to assess the state of Cephalopoda resources and possible conflicts that might arise among these two types of fisheries.

By simple analyses of catch and fishing effort data for Cephalopoda group in trawl and artisanal fisheries for period 1960-1978 year (Table 1), maximum sustainable yields (MSY) and corresponding optimal fishing effort ( $f_{OPT}$ ) is tried to be established (fig. 1 and 2). Using a concept of global productive model (SCHAEFER, 1954), in the case of Cephalopods trawl fishery, it has been found out that (MSY) equals 133 tons/year with corresponding ( $f_{OPT}$ ) 6.086 fishing days/year. For artisanal fishery, for which fishing effort was calculated as total number of small boats with engine per year, (MSY) is found to be 725 tons/year with ( $f_{OPT}$ ) 6.200 boats/year. For both fisheries has been stated that present yields, especially since 1974 year, are beyond the maximum biological production of Cephalopods resources available to the both fisheries along the Yugoslav coast.



These results of Cephalopoda resources state along the Yugoslav coast has pointed out that in the case of unit and shored stocks for the management purposes, biological assessment approaches are not always sufficient and that such studies should deal mutually with socio-economic aspect studies of each type of the fishery.

Table 1 - Yugoslav total Cephalopoda catch(tons) along the eastern Adriatic coast for period 1961-1978 year derived from bottom trawl(A) and artisanal(B) fishery

	(A) Bottom trawl fishery catch(tons)																		
	Years 1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Total trawl catch*	1593	1214	1116	1458	1455	1236	1208	1040	946	853	839	1318	1675	1894	2136	1962	2141	1876	2010
Cephalopoda	167	93	74	119	112	88	67	69	75	64	41	104	102	157	137	136	180	150	122
% Cephalopoda	10	8	6	8	8	7	6	7	8	8	5	8	6	8	6	7	8	8	6
Fishing effort (No.days)	5799	3647	4277	7628	4444	2211	1679	2347	3409	2922	2908	5253	3923	5114	2366	2976	6040	3254	-
	(B) Artisanal(coastal) fishery catch(tons)																		
Total Cephalopoda	-	-	-	403	480	500	602	592	634	621	592	614	543	642	643	680	716	732	
Loligo vulgaris	-	-	-	128	153	162	189	188	221	234	230	201	184	248	244	248	249	284	
Sepia officinalis	-	-	-	94	121	117	161	134	154	140	143	168	155	179	202	189	183	171	
Octopus vulgaris	-	-	-	116	135	145	163	145	132	151	137	134	102	99	87	103	136	134	
Eledone moschata	-	-	-	65	71	76	96	125	123	96	80	111	104	105	108	140	151	139	
Fishing effort(No.boats with engine)	-	-	-	1735	2258	3075	3762	4181	4724	5103	5816	6104	7589	8589	8691	8654	9020	9586	

\* Cooperative and private sectors together

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