

STATUS OF THE ROUNDSCAD (DECAPTERUS SPP.) CATCH BY PURSE SEINE¹

By

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ABSTRACT

The roundscad (*Decapterus* spp.) forms the largest fishery in the Philippines after World II, with catches reaching 100,000 tons a year since 1965.

Two species, *D. macrosoma* and *D. russelli* comprise the fishery at all times in all fishing grounds. The fishery consists mainly of one year class (Age Group II of about 14 cm). The fish matures while it is available to the fishery and leaves the fishery to breed at Age Group III, for deeper unknown waters. Based on the examination of the conditions of the gonads, the fish leaves the fishing grounds to breed after 10-12 months, having grown to about 21 cm total length.

Most fish do not return to the fishing grounds although very large fishes (23 to 27 cm) representing returning fishes (Age Group IV and V) may be found at times among the coral reefs.

The use of purse seines have made possible the exploitation of younger and older fishes in view of the greater area where the gear operate which is also the path of the inward and outward movement of the fish from the breeding grounds.

It is hoped that with the larger purse seiners, the largest fishes (breeders) may be found, as well as their breeding grounds, so that the fishery may be expanded. The whereabouts of older year classes may also be determined and made available.

Investigation along this line is requested among member nations of CSK.

The roundscad (*Decapterus* spp) is undoubtedly, of greatest importance to the commercial fisheries of the Philippines. It has been the leading species after World War II, and it has reached the 100,000 tons landing from 1965 to 1967 comprising about 1/3 of

¹I, Proc. of the 2nd CSK Symposium, Tokyo, 1970.

the total commercial landings. Although there was a decrease in total landing in 1968 (87,521 tons) it still forms more than 1/5 of all commercial species landed by the commercial fisheries (Fish. Statistics, 1968).

The roundscad is not considered a first-class fish for it reaches the Manila market mostly iced and at least 10 days old for it is taken far from the centers of populations. Hence, although it is of good flavor and relatively cheap, it is considered a poor man's fish.

The fish is caught in commercial quantities, the whole year round and is one of the most important sources of animal protein of the country especially of the lower income group.

Table 1, representing the monthly production of galonggong compared with total catches of bag-nets and purse seines for 1968, shows that the greatest quantity is landed from March thru August every year with top landings in April thru June.

The quantity landed increased greatly after the introduction of the modern purse seine and this almost doubled the catch during the past six years. (Table 2).

More than 50 modern purse seiners have been in operation in the country since 1968. The popularization of the gear was made possible initially thru an FAO purse seine expert working alone in 1963. In 1965, with the operation of the UNDP Deep Sea Fishing Development Program of FAO in cooperation with the Philippine Fisheries Commission (PFC) and the private sector, the modern purse seine fishery with light became firmly established.

It is estimated that since 1967 about 40,000 tons (mostly galonggong and sardines) have been landed annually from modern purse seiners.

Species Caught by Purse Seine With Light Fishing

While about 20 species of fish are available to the purse seine and bag-net fishery, about 10 groups form a greater portion of the catch which include the roundscad, sardines, herrings, anchovies, chub mackerels, big-eyed scad, oceanic bonito and several species of tuna-like fishes.

Of these, the roundscad is the most important (see Table 3), and in fact accounts for five times more than most groups of pelagic fishes taken.

Table 1. Comparison of monthly productions by gear as compared to total catch of Galonggong (Decapterus spp.) in 1968 in metric tons.

Months	Bag-net	Purse seine	Decapterus spp.
January	6,702	1,745	3,630
February	9,572	2,687	5,228
March	12,138	2,834	6,329
April	17,770	8,006	7,002
May	15,139	8,665	16,589
June	13,190	6,112	11,178
July	10,587	6,761	4,312
August	15,981	3,362	11,583
September	12,655	7,741	4,484
October	11,743	6,917	4,708
November	11,235	2,694	6,038
December	13,931	5,143	6,440
Total	150,644	63,138	87,521

Table 2. Production of three types of fishing gear during the last eight years, 1960-1968. (Total and per unit vessel in metric tons).

Year	Bagnet		Purse Seine		Round Haul Seine	
	Total	Per Unit	Total	Per Unit	Total	Per Unit
1960	56,320	84	590	7	4,040	44
1961	53,590	75	870	11	8,370	65
1962	58,140	78	950	11	7,840	73
1963	88,030	99	3,750	34	12,210	94
1964	102,950	122	9,560	57	10,840	97
1965	119,490	118	28,680	171	8,770	63
1966	119,786	112	25,700	114	12,146	83
1967	111,105	111	41,445	229	10,645	99
1968	150,644	171	63,138	367	7,235	219

Table 3. Amount of catch of the two gears by group in 1968 in metric tons.

Species	Bag-net		Purse Seine	
	Total	Per Unit	Total	Per Unit
Anchovy	12,770			830
Big-eyed Scad	4,440			5,161
Bonito	8,303			4,308
Chub Macherel	9,268			5,521
Roundscad	55,694			22,972
Herring	2,924			122
Sardine	17,803			6,237
Cavalla	3,299			215
Spanish Mackerel	2,230			1,347
Slipmouth	9,473			2,344
Hairtail	2,674			1,560
All Other Species	21,766			12,521
Total	150,644			63,138

Although the roundscad was taken in many fishing grounds before World War II, the catch was not significant in view of the small vessels associated with light fishing, *i.e.*, the *sapiao*, *lawag* and the small *basnigan*, using petroleum incandescent lamps which could not attract enough large schools of roundscad to warrant greater catches.

Likewise, the price of fish then and poor methods of fish refrigeration available did not enhance intensive fishing, as sufficient quantity was then still available for the local daily needs in most localities. Iced fish was almost unknown and unpopular.

However, with the development of bag-net fishery in the early 1950s, especially in Manila Bay, there has been a rapid increase in the catches of the roundscad.

History of Galonggong Fishing with Bag-net

The predominant use of a specialized bag-net fishery, *basnigan*, developed after World War II (Manacop & Laron, 1953) in Manila Bay, Palawan Waters, Visayan Sea, Batangas Bay, Tayabas Bay, Lingayen Gulf, off Camarines Norte, Ragay Gulf and Zamboanga Peninsula landed about 18,000 tons in 1956 and increased to 92,000 tons in 1966.

Although developed before World War II, the bag-net became very efficient after the war when larger dugouts (*bancas*) and more powerful engines were used together with surplus electric generators which provided power 10 to 15 KVA's for light depending on the size of the vessel.

Since 1960, however, there has been a rapid development of the bag-net fishery with an estimated landing of about 151,000 tons in 1968 from about 883 vessels.

However, efforts of the Philippine Fisheries Commission (PFC) thru an FAO Fisheries Expert to introduce boke-ami was without success. It seems that tropical pelagic fishes form very much smaller schools to make the gear economically feasible. With the success of the bag-net, however, greater emphasis was made on the part of the private sector to develop greater improvements in light fishing with the use of modern purse seines.

In 1962, this led to the introduction of a US West Coast type purse seiner equipped with puretic power block, in combination with bag-net vessels serving as light boats which drove the school of fish toward the purse seiner for pursing.

The experiment was very successful so much so that by 1963, five purse seiners were already in operation, together with the bag-netters as light boats.

There are two centers of development of bag-net fishing in Manila Bay. One is in Rosario, Cavite, from which the wooden dug-out bag-net evolved as early as 1956 and which had numbered more than 100 units of 18 to 25 G.T. each, propelled by a 200 H.P. grey marine engine and provided with a 5 to 15 KVA electric generator. This bag-net is responsible for the exploitation of the galonggong fishery at the Manila Bay approach, in Batangas Coast, Tayabas Bay, Ragay Gulf and in Mercedes, Camarines Norte.

Fishermen from the province of Rizal, in the towns of Navotas and Malabon, evolved the launch-type bag-net. This area being the center of fishing in the Philippines, availed itself of larger launches and engines. These vessels were used to fish in Northern Palawan waters and the Cuyo Group, and other areas south and southwest of the Philippines. These two centers supply galonggong for the Manila market. Modern purse seine with the bag-net as light boat was initiated in the Rizal side of Manila Bay.

Fishing Grounds

The major fishing grounds for galonggong are still concentrated in the coastal and inland seas (Fig.1). The principal fishing grounds where modern purse seines and bag-nets operate especially for the Manila market are: off Manila Bay, off Batangas Coast, Tayabas Bay, off San Miguel Bay, around Busuanga Island, Ragay Gulf, Visayan Sea, Northern Palawan area and Sibuguey Bay (Table 4).

While fishing activity is highly seasonal in most fishing grounds depending on the prevailing monsoon, the insular nature of the country allows only a transfer of the fishing fleet from the exposed coasts to the more protected side for continuous operation throughout the year. For instance, in northern Palawan and Culion Group, one of the most important pelagic fishery areas for roundscad, fishing opera-

Table 4. Showing the production of the important fishing grounds for roundscads (Decapterus spp.) for 1967-1968.

Fishing Grounds	1967	1968
1. Visayan Sea	36,481,400	19,688,040
2. Sibuyan Sea	2,802,360	1,873,640
3. Southern Mindanao Sea	8,612,120	6,297,520
4. Northern Mindanao Sea	102,600	199,720
5. Manila Bay and Vicinities	4,793,920	2,183,080
6. Pacific Coast	1,629,760	1,421,840
7. Palawan Waters	45,484,560	55,015,040
8. Sulu Sea	420,640	862,360
Grand Total	100,327,360	100,327,360

tions are concentrated on the eastern coasts of the islands during the southwest monsoon and on the western coast during the northeast monsoon season (October-April).

The bag-net and purse seine fishery are pursued only during the dark phases of the moon, about 20 days per month.

Identification

Although Herre (1953) reported four species of roundscads from the Philippines, Tiews, *et al* (1968) and Magnusson (1970) separated the species which can be distinguished externally into two, namely: *D. macrosoma* and *D. russelli*.

The above studies show that *D. macrosoma* is predominant in Palawan waters, although both species are taken in the catches simultaneously. In fact, both studies made 10 years apart show that *D. macrosoma* predominated in the fishery and it is only during the end of the year when the *D. russelli* (then mature) enter the fishery in greater proportions.

Magnusson (*op. cit.*) also noted the possibilities that *D. russelli* is the more open water species found both in the eastern and western waters of the archipelago, while *D. macrosoma* is more or less abundant in the inter-island seas.

Studies of parasite incidences on both species show the possibility of different stocks of fishes taken from Manila Bay approach and from Palawan waters (Tiews, *et al*).

Breeding Habits

Magnusson (*op. cit.*), using samples from the fish landings in Navotas, Rizal, (Manila Bay) and from the catches of PFC fishing vessels (a total of 64,295 specimens) noted that all the roundscad which enter the fishery during the first quarter of the year are juveniles. It matures during the year and the majority reaches stages IV and V (out of eight maturity stages distinguished) when the fish leaves the fishing grounds during the last months of the year. Based on these facts, the greatest intensity of breeding seems to occur during the months of January to April, although spawning can start as early as October.

Except for a few stragglers, the spawners do not return to the fishing ground after breeding.

Growth rate. Magnusson also noted that the growth rates of *D. macrosoma* and *D. russelli* are very much alike. Based on his studies, the smallest fishes entering the fishery have an average length of 13-14 cm, with the main group of fish entering the fishery in January and February. He noted several length-frequency curves which shifted regularly and could be followed throughout the year until the large fish at 20-21 cm average length disappear from the fishery during the last few months of the year to the early part of the next year during the northeast monsoon season.

With the use of the modern purse seines, samples of catches show two distinct peaks in the length distribution, the two groups of fishes (one 14 cm in length representing small fish entering the fishery and another 21.5 cm in length representing the bigger fish leaving the fishery) could readily be discerned.

These data seem to indicate an average growth rate of 7-8 cm a year (in 1968) which is slightly higher than the previous estimate of Tiews (*et al*) from 1957-59 data, which was 6-7 cm. Magnusson (*op. cit.*), using more mature specimens (23-24 cm), believes that the roundscads breed on their fourth year of life (Age Group III) (26-27 cm), and that the fish spawn every year to Age V.

Tiews (*et al*) noted breeding at the beginning of the 2nd year (Age 2) at 18-20 cm.

In view of the catches of large roundscads by Muro-ami along shore reefs, both Magnusson and Tiews believe that only few fishes return to the Philippine waters after breeding. Whether the feeding habits have something to do with this migration has to be determined. It is possible that the high average of parasitism found in these fishes is responsible for the high mortality of the adult after breeding.

The main fishery. It was noted that the purse seine get larger fishes than the bag-nets except during the last months of the year and the few months of the succeeding year (October-January). In fact, the purse seine gear get the youngest fish entering the fishery. The reason is that although the fishing method is basically the same (fishing by light), the purse seine does not operate in the shallower

water; the larger purse seines fish in more offshore waters than the bag-netters. In this way, the largest fishes on their breeding migration are available to the gear for a longer period while the young fish entering the fishery are more available first to the purse seiners (December to February) than to the bag-netters. The very large fishes, having left the fishing ground, are still available to the purse seines.

The present knowledge on the biology of roundscad shows that the present fishery is only exploiting the maturing fish after it enters the fishery (Age group II). Those which escape the fishery move into deeper oceanic water to breed during the northeast monsoon season. However, although the large fishes have left the fishing grounds, they are still available to the purse seiners on their way out when they are considerably larger.

The larger older fish which survives the first breeding season has yet to be located and exploited. These shall be undertaken in due course, probably during the subsequent investigations of the South China Sea and Sunda Shelf. Other nations which may make studies in these areas may find this latent fishery.

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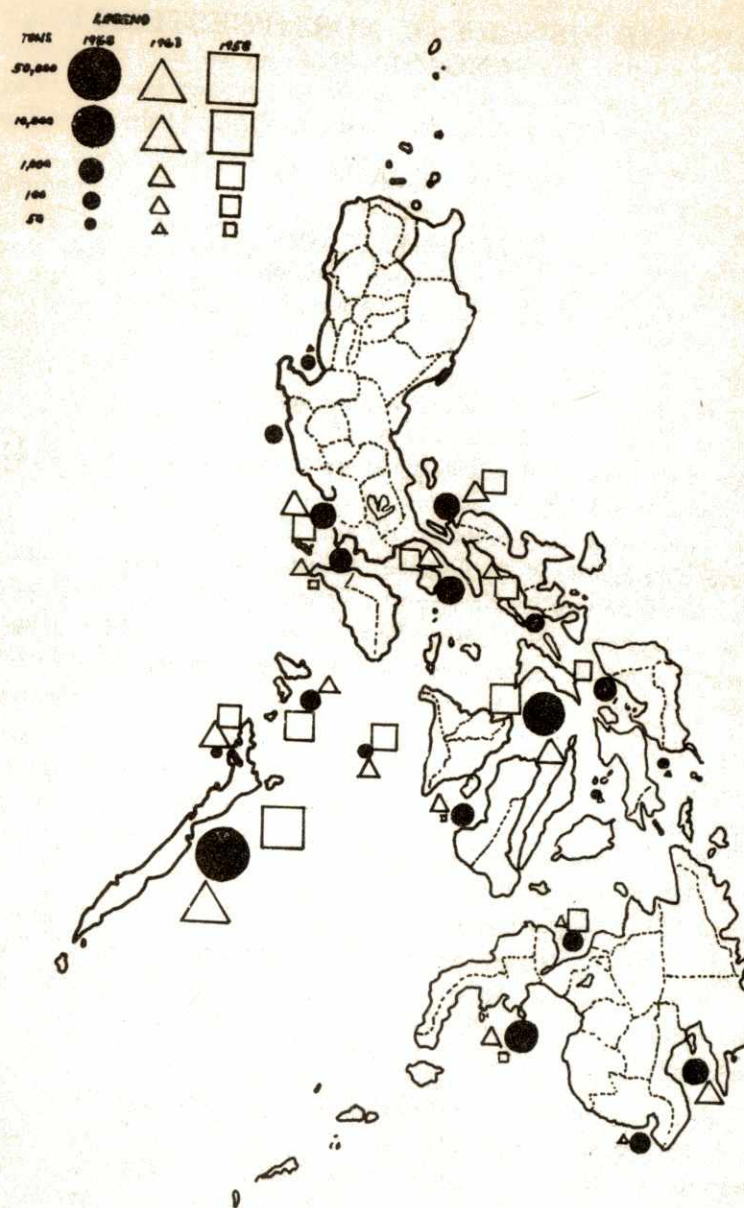


Fig. 1. Roundscad production in the different fishing grounds for the years 1958, 1963, and 1968.