COMPOSITE CARP CULTURE AND ITS COST - BENEFIT ANALYSIS BASED ON LIMNOBIOLOGICAL STUDIES IN A RENOVATED POND AT SWAMINALAI, TAMILNADU

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ABSTRACT

Fish is the cheapest and most easily digestible animal protein obtained by natural sources from time immemorial for consumption by human beings. However, due to overexploitation and pollution, the availability of fish in natural waters have declined considerably forcing scientists to adopt various methods to increase its production. This has become a necessity for India as the human population is increasing at a tremendous rate if it has to feed its population. The aquatic system chosen for the present investigation is a fresh water pond situated in Swamimalai, Kumbakonam Taluk, Tanjore District, Tamilnadu. After monitoring the man-made pond for an year, attempts were made to polyculture using immunized fingerlings of carps such as *Catla catla, Labeo rohita, Cirrhinus mrrgala, ctenopharygodon idella* and Crustaceans like *Litopenaeus vannamei* for a period of eight months. With regard to the harvest details (Table 1), *C.catla* recorded a total of 513.36 kg while Botla (*Big Head Carp*) recorded a total of 28 kg. While *C.mrigala* recorded 367.841 kg and *L.rohita* recorded 794.75 kg. On the other hand, *C.idella* recorded a weight of 2473.8 kg. Thus, the total net weight of carps (removed wastage) at the time of harvest was 4177.45 kg. *Litopaeneous vannamei* recorded a net weight of 46.2 kg at the end of the experiment. Thus, at the end of the experiment a total of 4149.99 kg of carps and 46.2 kg. of prawn could be harvested. The cost benefit analysis of the fish culture done in the present study.

Keywords: Renovated pond, Poly culture fish, Cost – Benefit Analysis

INTRODUCTION

Fish is the cheapest and most easily digestible animal protein obtained by natural sources from time immemorial for consumption by human beings. However, due to overexploitation and pollution, the availability of fish in natural waters have declined considerably forcing scientists to adopt various methods to increase its production. This has become a necessity for India as the human population is increasing at a tremendous rate if it has to feed its population.

Today, India is a major producer of fish through aquaculture (1) and ranks second in the world in inland fish production (2) and aquaculture contributes to 78% of the country's total fish production. India is known as the carp culture country (3) where the terminology as carp polyculture has been changed to composite carp culture when co-stocking of compatible exotic carps with Indian major carps has been demonstrated and gradually popularized as a high yielding polyculture production system among the Indian fish farmers (4). This technology developed for fish culture enables to get maximum fish production from a system through utilization of available fish food organisms in all natural niches supplemented by artificial feeding (5).

The area under tanks and ponds available for warm fresh water aquaculture is estimated to be 2.85 million ha. The area of 4.56 lakh ha brought under scientific fish culture by 1997-98 is only 16% of the potential area of tanks and ponds available for development showing immense possibilities for horizontal expansion of composite fish culture. In Tamil Nadu, there are many aquatic systems - small and large which remain unutilized. Hence, the present study was attempted to analyse the suitability of these systems for aquaculture and hence the present study. the net profit in culture worked out to (Rs.8,71,400 -Rs. 3,72,400) = Rs.4,99,000/- /0.5ha

MATERIALS AND METHODS

The aquatic system chosen for the present investigation is a fresh water pond situated in Swamimalai, Kumbakonam Taluk, Tanjore District, Tamilnadu. It is a manmade fresh water pond, perennial pond with a water spread area of about 0.6 hectares and a depth of about 4.9 m when full. It is currently used for agriculture and other domestic human activities. Recently the pond is being used for fresh water fish culture.

After monitoring the man-made pond for an year, attempts were made to polyculture using immunized fingerlings of carps such as *Catla catla, Labeo rohita, Cirrhinus mrrgala, ctenopharygodon idella* and Crustaceans like *Litopenaeus vannamei* for a period of eight months. The pond was phase fertilized weekly with cow dung, vegetable waste and urea in 3:2:1 ratio for the enhancement of natural live feed. Supplementary feeding using groundnut oil cake, coconut oil cake, rice bran vegetable wastes and agriculture products like straw etc. in the ratio of 1:2 at the rate of 1% of body weight were for given the first four months and at 2% of body weight for the remaining months till the end of the experiment. In addition, phytobionts added with feed as immunized agent in the ratio of 0.2 % bodyweight of the fishes was also added during all the months of culture. After this period, the fishes were harvested, sold in the market and the economics of farming calculated.

RESULTS AND DISCUSSION

The details of pond in which the composite culture was done along with other relevant details of the fishes used in the culture are presented in Tables 1-3. Table 1 shows the conditions of the pond along with the initial preparation that was done before the fishes were introduced into the pond. The Fishes used for culture was induced bred by the S.S. fish farm, Swamimalai, Tamil Nadu.

Various fertilizers that were added to the system are also presented in Table 1. Both organic (Cow dung, vegetable wastes, leaves and urea) and inorganic (lime) substances were used in the study. The frequencies of using these substances are also presented in this table.

The details of the feed along with the amount and frequency given to the fishes are also presented in Table 1. As evident from the table, the various feeds were coconut and ground nut oil cakes, rice bran, floating and immersed feed.

As mentioned earlier, fingerlings of the different species of carps which were induced bred by the S.S. Fish farm at Swamimalai were used in the present experiment. The details of the fingerlings are presented in Table 2. In the present study, four species of carps (catla, rohu, mrigal and grass carp) along with one species of prawn (*Litopaeneous vannamei*) was used. The initial length and weight of the various carps and prawn along with their

stocking numbers and percentage composition are presented in Table 2. The experiment was continued for a period of seven months after which they were harvested.

The growth of carps during the period of study are presented in Table 3. With regard to *Catla catla,* from an initial average total length of 16.7 ± 0.4 cm and weight of 36.5 ± 0.2g during the end of the experiment recorded a length of 45.7 ± 1.7cm and a weight of 1104.6 ± 10.6g thus showing a growth in length of 29 cm and growth in weight of 1068.1g.

Labeo rohita, on the other hand, recorded a total length of 46.4 ± 1.4 cm and weight of 850.3 ± 16.7 g from an initial total length of 18.2 ± 0.7 cm and weight of 23.5 ± 0.6 g. Thus, the growth in terms of total length was 28.2 cm and weight was 826.8 g after a period of 7 months.

Cirrhinus mrigala recorded a final total length of 73.7 ± 20.3 cm from an initial length of 21 ± 0.9 cm thus recording a growth of *52.7* cm. The final weight at the end of the culture period was 778.5 ± 20.4 g from an initial weight of 26.9 ± 0.4 g thus recording a growth in weight of 751.6 g at the end of the culture period.

Ctenopharyngodon idella recorded a final total length of 152.5 ± 60.2 cm from an initial length of 16 ± 0.26 cm while the final weight was 1274.2 ± 100.1 g from an initial weight of 44.2 ± 0.43 g thus showing a growth in weight of 1230 g and growth in length of 136.5 cm.

With regard to Botla (*Big Head Carp*) on the other hand, recorded a total length of 48.2 ± 0.26 cm and weight of 780.5 ± 0.46 g from an initial total length of 14.2 ± 0.54 cm and weight of 36.4 ± 0.7 g. Thus, the growth in terms of total length was 34 cm and weight was 744.1 g after a period of 7 months.

Thus, a comparison of the growth rates in terms of weight reveals that growth was highest in Botla and *C. idella* followed by *C.catla, L.rohita* and *C.mirgala.*

The prawn, *Litopaeneous vannamei* was also obtained from S.S. Fish farm at Swamimalai. They were introduced into the system at an initial weight of 5.6 ± 0.17 g. At the end of the experiment they recorded a weight of 80 ± 0.5 g thus showing a growth of 52 ± 0.36 g.

At the end of the experimental period, the fishes were captured by repeated netting. Details of the percentage survival of each category of fish along with the total weights of each category of fish at the time of harvesting are presented in Table 2. As evident from the table, survival rates of carps varied between 93.1 and 96.2% with *C.catla* recording the lowest percentage survival and *C.idella,* the highest percentage survival. The percentage survival of *Litopaeneous vannamei* was only 78%.

With regard to the harvest details (Table 1), *C.catla* recorded a total of 513.36 kg while Botla (*Big Head Carp*) recorded a total of 28 kg. While *C.mrigala* recorded 367.841 kg and *L.rohita* recorded 794.75 kg. On the other hand, *C.idella* recorded a weight of 2473.8 kg. Thus, the total net weight of carps (removed wastage) at the time of harvest was 4177.45 kg. *Litopaeneous vannamei* recorded a net weight of 46.2 kg at the end of the experiment. Thus, at the end of the experiment a total of 4149.99 kg of carps and 46.2 kg. of prawn could be harvested.

The cost benefit analysis of the fish culture done in the present study is presented in Table 3. 510 kg of *Catla catla* was sold at an average rate of Rs.175/kg which fetched Rs.89,250 while 790 kg of rohu was sold at an

average price of Rs.175/kg which fetched Rs.1,38,250/-; 360 kg of mrigal was sold at an average price of Rs.175/kg which again fetched Rs.63,000/- and 2470 kg of grass carp was sold at Rs.225/kg which netted Rs.5,55,750/- and 28 kg Botla (*Big Head Carp*) was sold at an average price of Rs. 200/kg which again fetched Rs. 5600 and 46 kg of *Litopaeneous vannamei* was sold at an average rate of Rs.425 resulting in total of Rs.19,950/-. Thus, the total amount received in fish culture amounted to Rs. 8,71,400/-. The expenditure incurred during the culture of the fishes (Pond lease, pond preparation, cost of seedlings, fertilizers, feed, harvesting, labour and miscellaneous items) was Rs. 3,72,400. Thus the net profit in culture worked out to (Rs.8,71,400 - Rs. 3,72,400) = Rs.4,99,000/- /0.5ha

A perusal of literature reveals that Sukumaran (6) while doing composite fish culture recorded a growth of 262.5 g for rohu, 505 g for mrigal, 687.8 g for *Catla* and 1366 g for common carp in a farm in Uttar Pradesh. Sinha *et al.* (7) while doing fish culture in West Bengal recorded a growth of 573.5g (*Catla*), 613.3g (rohu), 952.33 g (mrigal) and 1009.3 g (common carp) respectively for a ten month period while Singh *et al.* (8) reported a growth of 315.7g for *Catla*, 1074 g for common carp, 1080 g for Mrigal and 1338 g for rohu in a lake in Uttar Pradesh for a one year culture. On the other hand, Sivakami (9) could record a growth of only 160 g (mrigal), 230 g (rohu), 410 g (catla), 520 g (common carp) and 805 g (silver carp) for a period of six months in a perennial pond in Tiruchirappalli. Saha *et al.* (10) recorded a maximum weight of 1.14 kg for grass carp and 1.45 kg for silver carp grown in polythene lined rain water harvest tank in Arunachal Pradesh after a period of 8 months while Arumugam (11) recorded an average growth of 601g for rohu, 760g for mrigal, 775 g for common carp and 1004 g for *catla*. In the present study, Botla was added newly and the average growth of 744 g observed for 7 months culture.

Comparing these growth rates obtained by others with the prevent study reveals that the growth was highest in the present study. The differences in the growth rates obtained by different workers can be attributed to the specific physico chemical conditions present in each system along with the condition of the bottom and soil conditions in addition to the quality of seeds, fertilizers and feed used as suggested by various workers (8,9,12,13,).

Thus, the results of the present study clearly indicates that with proper management using composite fish culture technology raising of healthy and economically viable fish crops can be realized through appropriate stocking density and ecology as suggested by FAO (14). In addition, this study also proves that aquaculture can be practiced as a source of regular income.

Table – 1

Details of Composite Culture of Carps and Prawns

S. No.	Experimental Details	Particulars
1	Years of Experimentation	August 2019 - January 2020
2	Pond size	0.6 ha
3	Depth	4.5 metre
4	Location	Kumbakonam, Swamimalai, Kumbakonam District, Tamil Nadu State
5	Condition of culture pond	Pumbing water (Semi permanent) free from weeds, wel exposed

		and protected from floods. There is an inlet and over let to maintain the level of water.
6	Initial preparation of the fresh water pond	Cleared, dried ploughed and added lime at 50 Kg / ha, organic manures like cow dung, 150 kg / ha, super 50 kg / ha and 25 kg / ha Urea added in the ratio of 3:2:1.
7	Species combination	Please refer Table – 2
8	Stocking Density	Please refer Table – 3
9	Sources of fingerlings	Induced breed spawn reared upto firgerlings stage supplied S.S. fish farm, Swamimalai by Mr.Srimath.
10	Initial total weight of kg of fingerlings stocked	97.16 kg / 0.5 ha / fishes / 5000 fish & prawn

11	**Fertilizer**			
	A. Kind			
	1. Inorganic	Lime only 100 kg/0.5 ha/7 month		
	2. Organic	**S.No.**	**Details**	**Ratio**
		1	Cow dung	3
		2	Vegetable waste	2
		3	Urea	1
	B.Rate/Pond/10 Months			
	1. Inorganic	Lime only 100 kg/0.5 ha/7 month		
	2. Organic	**S.No.**	**Details**	**Ratio**
		1	Cowdung 142.8 lKg/months	1000 Kg
		2	Vegetable wastes 142.8 Kg/ months	1000 Kg
		3	Cross/weeds/Leaves 285 Kg / months	2000 Kg
		4	Urea 7 kg.	50 Kg
		Total 4050 kg added for 7 months. Every 15 days 290 kg added		

	C. Frequency	
	1. Inorganic	Once in a year for initial pond prepartion urea added every 3 months of the culture.
	2. Inorganic	7 days in a month (Cowdung & Vegetable waste + Grass+Waste Leaves (Banana + Tapioca Leaves) + Paddy straw (Green) Totally 28 weeks added.
12	**Artificial feed**	
	A. Kind	1. Every day feed, Groundnut Oil Cake and Coconut Oil Cake+Rice bran in the ratio of 1:2 by body weight of the culture carps. 2. Ever day - Floating feed 2% of the body weight 3. Every day - Immersed feed 2% of body weight of the carps.
	B. Frequency	Once a day.
	C. Rate/Pond/7 months	
	1. Coconut Oil Cake	430 Kg / 7 months
	2. Ground nut Oil Cake	210 Kg / 7 months
	3. Rice bran	1250 Kg / 7 months
	4. Floating feed	520 Kg / 7 months
	5. Immersed feed	230 Kg / 7 months
13	**Mode of harvesting**	By Repeated Netting

S.No.	Experimental Details	Pond Particulars		
14	**Data on fish Production**			
	1. A.Gross Weight (Kg) of fish harvested	4149.45 / sold (4130 kg) 4149.45 ± Botla - 25 kg = 4174.45		
	B. Gross weight (kg) of prawn harvested	47.200 Kg. Sold (46 Kg.)		
	Details	**Kilogram**		**Caught Nos.**
	a) *Catla catla*	513.360 (510 Kg)		(465 Nos.)
	b) *Labeo rohita*	794.750 (790 Kg)		(935 Nos.)
	c) *Cirrhinus mrigala*	367.841 (360 Kg)		(472.5 Nos.)
	d)*Ctenopharygodon idella*	2473.500 (2470 Kg)		(1940 Nos.)
	e) *Botla - Hypophthalmichthys nobilis* (Big Head Carp)	25 Kg		(50 Nos.)
	f) *Litopenaeus vannamei*	46.200 (46 Kg)		
	2. Survival (%) Range/average	93.00 - 97.00% = 95%		
	Details	**Percentage**		
	a) *Catla catla*	93.0		
	b) *Labeo rohita*	93.5		
	c) *Cirrhinus mrigala*	94.7		
	d) *Ctenopharygodon idella*	96.2		
	e) *Botla - Hypophthalmichthys nobilis* (Big Head Carp)	94.0		
	f) *Litopenaeus vannamei*	78.0		
	A. Total survival percentage of Fish	95.0		
	B. Total survival percentage of Prawn	78.0		
	3. Average length (cm) and weight (gm) of invidual species and their percentage contribution at the end of the experiment			
	a) *Catla catla*	1104.0	43.5/38.0	10%
	b) *Labeo rohita*	850.0	44.5/41.0	18%
	c) *Cirrhinus mrigala*	778.5	45.5/43.0	10%
	d) *Ctenopharygodon idella*	1275.0	41.6/36.6	38%
	e) *Botla - Hypophthalmichthys nobilis* (Big Head Carp)	1750.0	45 / 48	4%
	f) *Litopenaeus vannamei*	66.0	25-38 cm	10%
15	**Economics:**			

	Cost Benefit Analysis of Field Fish Culture Studies		
A. Total Income		**Kg**	**Rs.**
1	.@ Rs.150-200 (Average per kg 175 kg) *Catla catla*	510 Kg	89,250
2	.@ Rs.150-200 (Average per kg 175 kg) *Labeo rohita*	790 Kg	1,38,250
3	.@ Rs.150-200 (Average per kg 175 kg) *Cirrhinus mrigala*	360 Kg	63,000
4	.@ Rs.200-250 (Average per kg 225 kg) *Ctenoparygodon idella*	2470 Kg	5,55,750
5	.@ Rs. 175-225 (Average per kg 760 kg) Botla – *Hypophthalmichthys nobilis* (Big Head Carp)	28 Kg	5,600
6	.@ Rs.400-450 (Average per kg 425 kg) *Litopenaeus vannamei*	46 Kg	19,550
	Total fishes sold and its amount		851850
	Total fishes and prawn sold and its amount		19,550
	Total Income		**871,400**

B. Expenditure

a	**Pond Lease**	Rs. 40,000 / 0.5 ha
b.	**Pond Maintenance & Report**	Rs. 10,000 / 0.5 ha
c.	**Pond Preparation**	Rs. 32,000 / 0.5 ha
d.	**Cost of seed (Fingerlings)**	Rs. 36,250 / 0.5 ha
	Details	
1.	A fish @ Rs. 6 for 2000 No.	Rs. 12,000 / 0.5 ha
2.	A fish @ Rs. 8 for 2000 No.	Rs. 16,000 / 0.5 ha
3.	A fish @ Rs. 5 for 50 No	Rs. 250 / 0.5 ha
4.	A prawn @ 8 for 1000 No.	Rs. 8,000 / 0.5 ha

e	**Fertilizers**	
1.	**Inorganic fertilizers:**	
	Lime initials – 100 kg @ Rs. 10 per kg.	Rs. 1000 / 0.5 ha
	Urea 50 kg @ Rs. 80 per kg	Rs. 4000 / 0.5 ha
2.	**Organic manures**	
	Cowdung 1000 kg @ Rs. 4 per kg.	Rs. 4000 / 0.5 ha
	Vegetable waste – 1000 kg @ Rs. 5 per kg.	Rs. 5000 / 0.5 ha
	Banana leaves, paddy straws & other leaves / Grass 4000 kg @ Rs. 3 per kg.	Rs. 12,000 / 0.5 ha
f.	**Artificial feed**	
1.	Coconut Oil Cake 430 kg @ Rs. 12 per kg	Rs. 5160 / 0.5 ha
2.	Groundnut Oil Cake 210 kg @ Rs. 60 per kg.	Rs. 12, 600 / 0.5 ha
3.	Rice brawn 1550 kg @ Rs. 10 per kg.	Rs. 15,500 / 0.5 ha
4.	Floating feed 80 kg @ Rs. 480 per kg.	Rs. 38,400 / 0.5 ha
5.	Immunized feed 60 kg @ Rs. 460 per kg.	Rs. 27,600 / 0.5 ha
6.	Natural Immunized (Herbal ingredients) 2kg Rs. 1000 per	Rs. 2,000 / 0.5 ha
g.	**Miceellaneous items (Rental & other works)**	Rs. 8,200 / 0.5 ha
h.	**Labour charges for manuring (Students / Ladies)**	Rs. 14,400 / 0.5 ha
i	**Watch & Ward**	Rs. 14,000 / 0.5 ha

j.	**Nets (for inlets and out lets)**	Rs. 6000 / 0.5 ha
k.	**Harvesting expenses (Labour)**	Rs. 12,000 / 0.5 ha
l.	**Pumping watch (Labour)**	Rs. 8,000 / 0.5 ha
m.	**Harvesting materials**	Rs. 6,000 / 0.5 ha
n.	**Equipments and Gears**	Rs. 6000 / 0.5 ha
o.	**Maintenance of fishes and prawns of before marketing**	Rs. 8000 / 0.5 ha
p.	**Nets & Marketing Materials**	Rs. 4,800 / 0.5 ha
q.	**Transport charges**	Rs. 5,240 / 0.5 ha
	Total	

Net Profit = Total Income (A) – Total Expenditure (B)

= Rs. 8,71,400 - Rs. 3,72,400

Net Profit = Rs. 4,99,000 /- / 0.5 ha / year

Table - 2

Species Stocking Combination (Carps and Prawn) for this Field Culture Experiments in a pond at Swamimalai

S. No.	Species	Initial length of fingerlings		Initial weight of fingerlings		No. of stocked with percentage composition		Weight of fish stocked (kg)	Date of stocking	Period of Harvesting Duration of Culture
		Ranges (cm)	Average (cm/SD)	Ranges (gm)	Average (gm/SD)	Ranges	Average			
Carps										
1	*Hypophthalmichthys nobilis* (Big Head Carp)	8-9	8.0 ± 0.4	36 - 40	34.0 ± 0.20	50	4%	25	12.08.2019	7 Months
2	*Catla catla* (Catla)	6 - 8	7.0 ± 0.34	30 - 34	32.0 ± 0.64	500	10%	16.20	12.08.2019	7 Months
3	*Labeo rohita* (Rohu)	8 - 10	9.0 ± 0.24	28 - 33	30.5 ± 0.28	1000	20%	28.16	12.08.2019	7 Months
4	*Cirrhinus mrigala* (Mrigala)	7 - 10	8.5 ± 0.60	29 - 33	31.0 ± 0.34	500	10%	14.70	12.08.2019	7 Months
5	*Ctenophryngodon idella* (Grass carp)	8 - 10	9.0 ± 0.76	29 - 34	31.5 ± 0.64	2000	40%	35.60	12.08.2019	7 Months
Crustacea (Prawn)										
6	*Litopenaeus vannamei*	2.5 - 4.5	3.4 ± 0.6	4 - 7	5.6 ± 0.17	1000	20%	2.5kg	12.08.2019	4 Months

Table – 3

Growth of Carps in the Freshwater pond after the period of 7 months 2019-2020

S. No.	Month & Year	Species Parameter	*Catla catla*		*Labeo rohita*		*Cirrhinus mrigla*		*Ctenophryngodon idella* (Grass carp)	
			Ranges	Average SD	Ranges	Average SD	Ranges	Average SD	Ranges	Average SD
1	July 2019	Weight (gm)	29.0 - 44.0	36.5 ± 0.2	19.0 - 28.0	23.5 ± 0.6	21.0 - 31.0	26.9 ± 0.4	34.5 - 54.0	44.2 ± 0.43
		Total Length (cm)	15.5 - 18.0	16.7 ± 0.4	19.0 - 21.5	18.2 ± 0.7	19.5 - 22.5	21.0 ± 0.9	14.5 - 17.5	16.0 ± 0.26
		Standard Length (cm)	12.0 - 15.0	13.5 ± 0.7	17.0 - 19.0	18.0 ± 0.5	17.0 - 19.0	18.0 ± 0.5	12.0 - 14.5	13.2 ± 0.43
2	August 2019	Weight (gm)	104.0 - 144.0	124.0 ± 0.6	76.0 - 141.0	108.5 ± 0.4	76.0 - 131.0	103.5 ± 0.4	180.0 - 240.0	210.0 ± 0.40
		Total Length (cm)	24.0 - 26.0	25.0 ± 0.4	27.5 - 30.5	29.0 ± 0.3	28.5 - 32.5	30.5 ± 0.6	36.0 - 42.0	39.0 ± 0.26
		Standard Length (cm)	19.5 - 22.5	21.0 ± 0.3	25.5 - 27.0	26.2 ± 0.6	25.0 - 29.0	27.0 ± 0.4	33.0 - 37.0	35.0 ± 0.7
3	September 2019	Weight (gm)	274.0 - 384.0	129.0 ± 0.3	176.0 - 246.0	211.0 ± 0.3	236.0 - 311.0	273.5 ± 0.7	534.0 - 660.0	597.0 ± 0.40
		Total Length (cm)	28.5 - 38.0	33.2 ± 0.2	32.5 - 35.0	33.7 ± 0.6	35.0 - 41.5	38.2 ± 0.6	46.0 - 52.0	49.0 ± 0.26
		Standard Length (cm)	24.5 - 35.0	29.7 ± 0.5	30.0 - 32.5	31.2 ± 0.4	31.5 - 37.6	34.2 ± 0.3	43.0 - 47.0	45.0 ± 0.7
4	October 2019	Weight (gm)	434.0 - 654.0	544.0 ± 0.6	346.0 - 436.0	391.0 ± 0.3	426.0 - 536.0	481.0 ± 0.8	639.0 - 820.0	729.5 ± 0.6
		Total Length (cm)	34.5 - 41.5	38.0 ± 0.3	38.5 - 43.5	41.0 ± 0.3	42.5 - 47.5	45.0 ± 0.3	48.0 - 50.0	49.0 ± 0.7
		Standard Length (cm)	30.5 - 38.0	34.2 ± 0.6	35.0 - 40.0	37.5 ± 0.4	40.0 - 43.5	41.7 ± 0.4	47.0 - 50.0	48.0 ± 0.6
5	December 2019	Weight (gm)	564 - 904.0	734.0 ± 0.4	466.0 - 546.0	506.0 ± 0.3	546.0 - 746.0	646.0 ± 0.7	810.0 - 920.0	865.0 ± 0.4
		Total Length (cm)	38.5 - 44.5	41.5 ± 0.3	43.0 - 46.5	44.7 ± 0.3	49.5 - 51.0	50.3 ± 0.6	52.0 - 54.0	53.0 ± 0.6
		Standard Length (cm)	35.0 - 41.0	38.0 ± 0.4	39.0 - 42.0	40.5 ± 0.6	44.5 - 47.0	45.7 ± 0.7	50.0 - 52.0	51.5 ± 0.7
6	Janurary 2020	Weight (gm)	694.0 - 1334.0	1104.6 ± 0.6	696.0 - 900.0	850.3 ± 0.7	606.0 - 941.0	778.5 ± 0.4	1210.0 - 1340.0	1274.2 ± 0.1
		Total Length (cm)	44.5 - 47.0	45.7 ± 0.7	45.5 - 49.0	46.4 ± 0.4	54.0 - 58.5	56.2 ± 0.3	56.0 - 58.0	57.0 ± 0.2
		Standard Length (cm)	39.0 - 43.0	41.0 ± 0.8	42.0 - 44.0	43.0 ± 0.3	53.0 - 56.0	54.5 ± 0.4	55.0 - 57.0	56.0 ± 0.4

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