Ministry of Agriculture

Fisheries Department

Annual Report 2020

Key Achievements

- Regulations addressing Inland Fisheries and Aquaculture stakeholder consultation have been completed and final draft will be presented to the Minister of Agriculture in first quarter 2021.

- The *Strategic Plan for Inland Fisheries and Aquaculture Development and Management in Guyana (2013-2018*) was updated to a draft 2021-2026 through extensive stakeholder engagement. The final draft strategy will be presented to the Minister of Agriculture for endorsement in first quarter 2021.

- Research has commenced at the Satyadeow Sawh Aquaculture Station (SSAS) on developing breeding programmes for commercially viable local species.

- Internal audit of the Legal and Inspectorate Unit licence process was conducted which showed 99% reconciliation of revenue collected.

- Gender Study was conducted on the artisanal fishery.

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Background

The Fisheries sector in Guyana is managed by the Fisheries Department of the Ministry of Agriculture. The Ministry is headed by the Minister of Agriculture and administrated by a Permanent Secretary, who are advised by the Chief Fisheries Officer and by a Fisheries Advisory Committee (FAC). The FAC comprises of key stakeholders for marine, inland fisheries and aquaculture which provide policy guidance.

Fisheries and The National Economy

The fishery sector is of critical importance to the economy and to social well-being in Guyana. The importance of the fisheries is evident in five areas:

- **Food Security** - Fish is the major source of animal protein in Guyana. It is estimated that per capita annual consumption of fish rose from 9 to 27 kg between 1980 and 1988 and was nearly 45 kg in the 90's, more than three times the world average of 14 kg per year, it has since stabilized around, 35 kg per person annually.
- **Contribution to The Guyanese Economy** - The Guyana Bureau of Statistics estimated that the primary sector of fisheries consistently contributes approximately $8.3Billion of the Gross Domestic Product (GDP) of Guyana annually.
- **Contributions to Export Earnings** - Guyana's 1994 export earnings from fisheries were approximately US$ 20.5 million. In 1997, it was growing to US$ 41.8 million. Guyana's Fishing industry has a current export earnings from fish and fish products averages around GYD$15 billion and contributes directly in foreign exchange earnings of $15 Billion (US$71.6M).
- **Contribution of Employment and Income** - The fishing industry employs some 10,000 persons in harvesting and 5 000 in processing and marketing, so more than 15 000 jobs depend directly on fisheries, and many more people benefit indirectly from fishing-related occupations, such as boat building, supply and repair.

Our Purpose and functions

Vision:

"Well regulated and monitored sustainable fisheries sector that optimally serves the needs of the Guyanese people economically, socially and nutritionally".

Mandate:

"To manage, regulate and promote the sustainable development of the nation's fishery resources for the benefit of the participants in the sector and the national economy".

The Fisheries sector is guided by the Fisheries Act 2002 and the Fisheries Regulations 2018. Current resource management practices are conducted in adherence with the Marine Fisheries Management Plan 2013-2020 and Artisanal Fishery Management Plan 2019-2024. The fisheries sector is comprised of three primary components: Marine Fishery, Aquaculture and Inland Fishery. The Fisheries Department has several sub-programmes/units, namely: Legal and Inspectorate, Resource Assessment and Statistics, Aquaculture and Inland Fisheries, and Program Administration.

The Department Achieves Its Mission Through the Following Programme Units:

Administration - To provide the relevant support services necessary for the functioning of fisheries department programmes and activities.

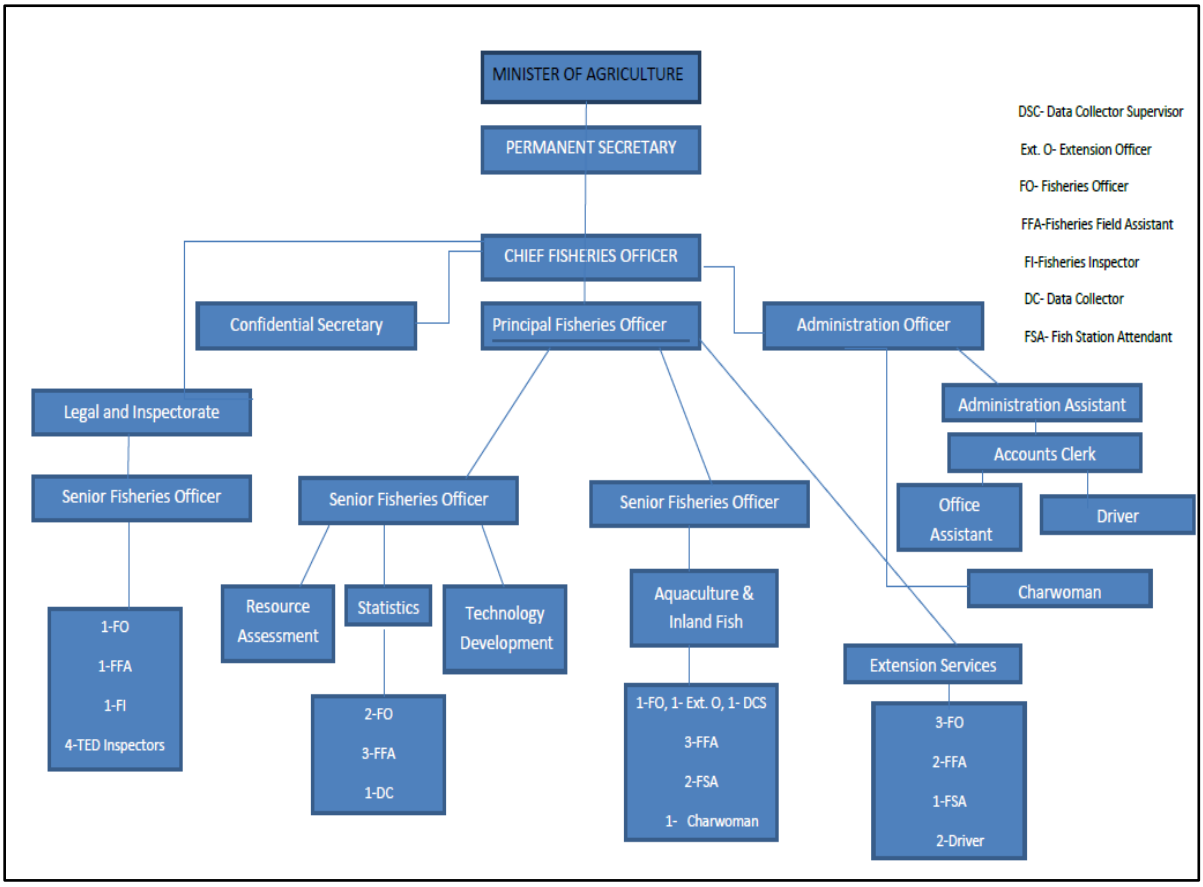
Statistical Unit - To collect, analyze data and conduct surveys to provide scientific and social-economic information for policy determination, planning and resource management. The key responsibilities include; market Survey, data collection from large, medium and small seafood processors, Collect and monitor biological, catch and effort data, management of data entry and storage, production and management of Individual Export Licences forms.

Legal and Inspectorate Unit - To ensure the observance of all legal and administrative requirements by all entities in the fishery sub-sector and recommend appropriate charges to existing regulations which govern the Sector. The key responsibilities include; Registration and Licencing of fishing vessels, license and inspect fish processing plant, conduct enforcement and surveillance activities of fishing vessels, monitor the industrial fleet/artisanal compliance with licence conditions, monitor and conciliate complaints and disputes at the center and the regions, issue export Licences for fish and fish products, ensure the collection of revenue under the Fisheries Act 2002 and Maritime Act of 2010

Aquaculture - To ensure that aquaculture is developed in a sustainable and controlled manner optimizing economic and environmental benefit.

The image below shows the current organization structure of the Fisheries Department, outlining the administration and sub-programme units which are essential for executing their mandate.

Figure 1: Organizational chart for Fisheries Department



Programme Administration

"Providing support and to coordinate all of the Department's activities, so as to ensure that these activities contribute to the achievement of the Department's overall goals and objectives".

Staffing Summary

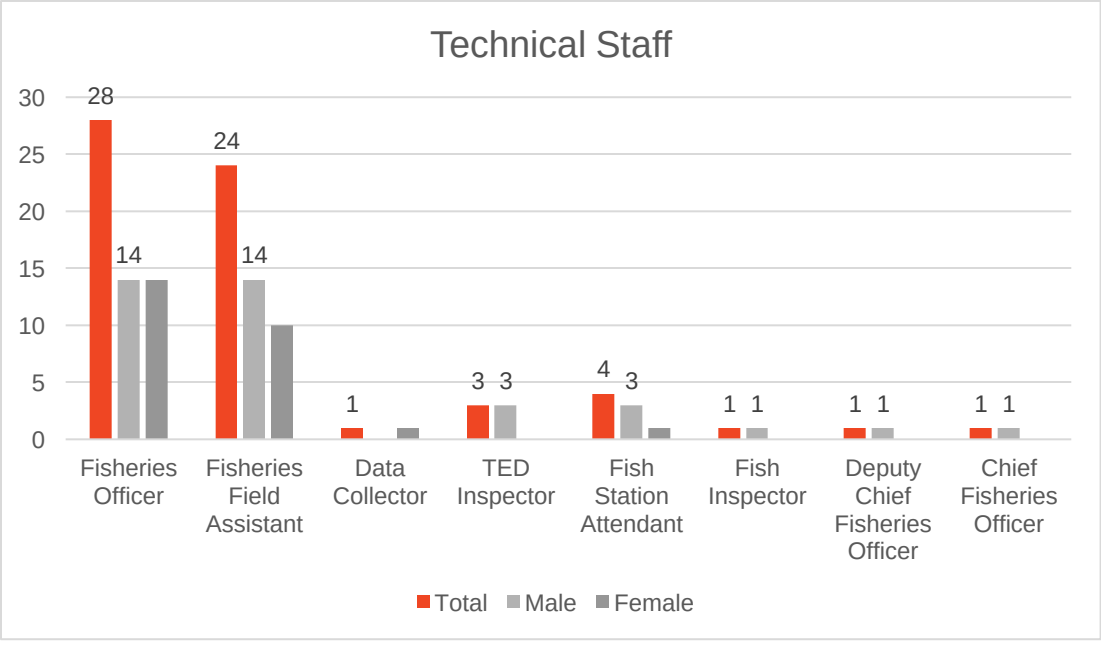
The Fisheries Department in the year of 2020 had a staff complement of seventy (70). This number includes several categories which are presented in the table below. Six (6) staff are on study leave for undergraduate (3) and postgraduate (3).

Table.1. Staffing by category

Acct Code	Category	Filled (as at Dec 2020)
6111	Administrative	2
6112	Senior Technical	27
6113	Other Technical & Craft Skilled	6
6114	Clerical and Office Support	2
6115	Semi-Skilled	29
6116	Contracted Employees	3
6117	Temporary Employees	1
Total	-	**70**

* Several key designations remained vacant, including Senior Fisheries Officer, Data Collector Supervisor, Fisheries Field Assistant II and Administrative Officer.

Figure 2: Showing breakdown of technical staff



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(2)

Financial Summary

Capital Expenditure

Table.2. Capital Expenditure

Item	GYD
Released budgeted amount	42,000,000
Expended amount	41,204,374
Balance	795,626

Table.3. Capital project breakdown

Name of project	Description	Budgeted cost (GYD)	Actual Cost (GYD)	Balance (GYD)	Status of project	Status of payment
Provision for Marine Vessel	Goods	39,750,000	38,954,528	795,472	completed	completed
Furniture and Equipment	Executive Chair	80,000	79,572	428	completed	completed
	Water dispenser	136,800	128,997	7,803	completed	completed
	Filing cabinet	280,000	280,000	0	completed	completed
	Microwave	72,000	72,000	0	completed	completed
	AC Unit (24000 BTU)	360,000	360,000	0	completed	
	Printer HP	375,000	341,772	33,228	completed	
	Semi executive Chair	214,800	210,005	4,795	completed	
	HP Laser jet Printer	81,500	81,500	0	completed	
	Computer & Accessories	731,400	696,000	35.400	completed	
	Savings for Furniture			154		
	Purchased 1 Printer	81,654	81,500			
Total	-	**42,000,000**	**41,204,374**	**795,626**	-	-

Current Expenditure

Table.4. Current Expenditure

Item	GYD
Released budgeted amount	193,816,153
Expended amount	187,689,515
Balance	6,126,638

Table.5. Current expenditure by line item

Line Item	Description	Budget Allocation (GYD)	Revised (GYD)
6111	Administrative	7,791	7,791
6112	Senior Technical	72,118	72,118
6113	Another Tech. & Craft Skill	6,265	6,265
6114	Clerical and Office Support	1,888	1,888
6115	Semi-skilled Operat&Unskilled	23,210	18,210
6116	Contracted Employees	8,136	8,136
6117	Temporary Employees	0	0
6131	Other Direct Labour Costs	600	600
6133	Benefits and Allowances	9,220	9,220
6134	National Insurance	9,227	9,227
6221	Drugs and medical Supplies	100	100
6222	Field Materials and Supplies	2,180	2,180
6223	Office Materials and Supplies	873	873
6224	Print and Non-Print Materials	623	623
6231	Fuel and Lubricants	5,832	5,832
6242	Maintenance of Buildings	1,500	1,500
6243	Janitorial & Cleaning Supplies	774	774
6252	Maintenance of Bridge	0	0
6261	Local Travel & Subsistence	2,348	2,222
6263	Postage Telex and Cablegram	20	20
6264	Vehicle Spares & Maintenance	6,036	6,036
6265	Other Transp Travel & Post	50	50
6271	Telephone Charges	1,533	1,533
6272	Electricity Charges	2,139	2,139
6273	Water Charges	250	250
6281	Security Services	8,053	7,053
6282	Equipment Maintenance	926	926
6283	Cleaning & Extermin Services	814	814
6284	Other	1,522	1,522
6291	National & Other Events	4,000	4,000
6292	Dietary	200	200
6293	Refreshment & Meals	903	903
6294	Other	2,579	2,579
9302	Training (incl Scholar's)	5,613	5,613
6311	Rates and Taxes	0	0
6322	Subsidies & Contr to Intl Org	14,000	14,000
Total		**201,323**	**193,816**

Resource Assessment & Statistical Unit

Key Responsibilities

- Undertake surveys and conduct analysis on fishery trends
- Monitor production and export of fishery products
- Monitor fishing activities through collection of catch & effort and biological data.
- Establish links to communicate between government and stakeholders.
- Initiate research and Development programme.
- Aid in developing fisheries regulations to foster sustainable utilization of the fishery resources.
- Facilitate stock assessment.
- Monitor industrial CPUE and provide advice on the closure of the fishing ground
- Conduct periodic vessel count.

To collect and analyze data; conduct surveys to provide scientific and socio-economic information for policy determination, planning and resource management.

Staffing

The full staff compliment of the Resource Assessment and statistical Unit was 18. However, 15 staff operated under the umbrella of the unit in a rotational manner, due to an outbreak of COVID 19 in year 2020.The additional three (3) staff were released on study leave; one at the undergraduate level and two at the postgraduate level.

Table 6: Resource assessment and statistical unit staff composition

Resource assessment and Statistical Unit staff	Amount
Principal Fisheries Officer	1
Supervisor	1
Fisheries officer	10
Fisheries field assistant	5
Data collector	1

Resource Assessment & Statistical Unit

Ministry of Agriculture Head Office
Regent & Shiv Chandrapaul Drive,
Bourda,
Georgetown,
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Statistical Unit

Data collection exercises involve gathering quantitative and qualitative information on specific variables with the aim of evaluating outcomes or garnering actionable insights.

Sampling Schedule 2020

Catch & effort and biological data (length and sex) were collected for both artisanal and industrial landings during the year 2020. A total of 660 schedule sampling trips were prepared among 4 regions for this period, however only 385 trips were executed due to COVID 19 outbreak. No data was collected between the periods April to August due to COVID 19.

Table 7: Sampling trips for the year and the percentage sampled.

	Region 2	Region 4	Region 5	Region 6	Total
NO. of trips Scheduled	192	216	60	192	660
NO. of trips Achieved	112	126	35	112	385
% of B.D.C Achieved	0	2%	58%	58%	58%
% of C & E Achieved	58%	58%	58%	58%	58%
% Achieved	58%	58%	58%	58%	58%

Table 8: National Actual Data Collection on Gear Type/Region

National Actual Data Collection (Gear Type/Region)2020												
	Gillnet											
Regions	C/S	Cad	Catguts	P/S	2-4"	5-6"	7-8"	S/B	Prawns	Trap	L/L	Total
#2	89	0	0	2	23	9	18	0	0	0	0	**141**
#3	17	0	0	0	28	0	0	0	0	0	0	**45**
#4	19	4	0	0	38	5	45	11	1	1	1	**125**
#5	26	8	0	0	80	22	0	0	0	0	0	**136**
#6	179	0	0	23	107	116	0	0	0	0	0	**425**
Total	**330**	**12**	**0**	**25**	**276**	**152**	**63**	**11**	**1**	**1**	**1**	**872**

Biological Data Collection

Our biological data is crucial in assessing population parameters such as species abundance, sex and reproductive status, and growth patterns. Biological data was collected for a number of commercial fish species.

Table 9: Individual biological data collected on commercial species

Species	Regions			Total
	#4	#5	#6	
Bangamary	242	787	1665	2694
Butterfish	409	494	460	1363
Bashaw	47	0	0	47
Seabob	2	0	59	61
Grey-snapper	0	88	307	395
Sea Trout	1	61	412	474
Red-snapper	10	0	0	10
Total	**711**	**1430**	**2903**	**5044**

Market Survey

Retail and wholesale prices were collected from municipal markets as well as during sampling exercises from Region No. 2, 4, 5 and 6 quoted in Guyana dollar. Prices would fluctuate throughout the year for some commercial species owing to supply and demand. Please refer to appendix 1 and 2.

Resource Assessment

Marine Fishery Resources

Guyana's marine fishing activities are directed at exploiting its shrimp resources using shrimp trawls and its ground fish resources utilizing wooden vessels and a variety of gear by artisanal fishers. However, there is limited exploitation of pelagic resources over the continental shelf and towards the continental slope.

Marine production

Table 10: Guyana's marine fisheries landings for the period 2020.

Marine Production 2020 (mt)					
Industrial	**1st Q**	**2nd Q**	**3rd Q**	**4th Q**	**Total**
Prawns	172	143	54	96	**465**
Seabob	3,126	2,370	2,041	1,280	**8,817**
Finfish	165	223	161	79	**628**
Total	**3,463**	**2,736**	**2,256**	**1,455**	**9,910**
Artisanal					
Seabob	97	195	90	167	**549**
Whitebelly	630	2,527	317	238	**3,712**
Finfish	3,881	4,613	4,594	4,502	**17,590**
Total	**4,608**	**7,335**	**5,001**	**4,907**	**21,851**
Deep Slope					
Red Snapper	317	221	408	702	**1,648**
Tuna	59	30	19	19	**127**
Total	**376**	**251**	**427**	**721**	**1,775**
Grand Total	**8,447**	**10,322**	**7,684**	**7,083**	**33,536**

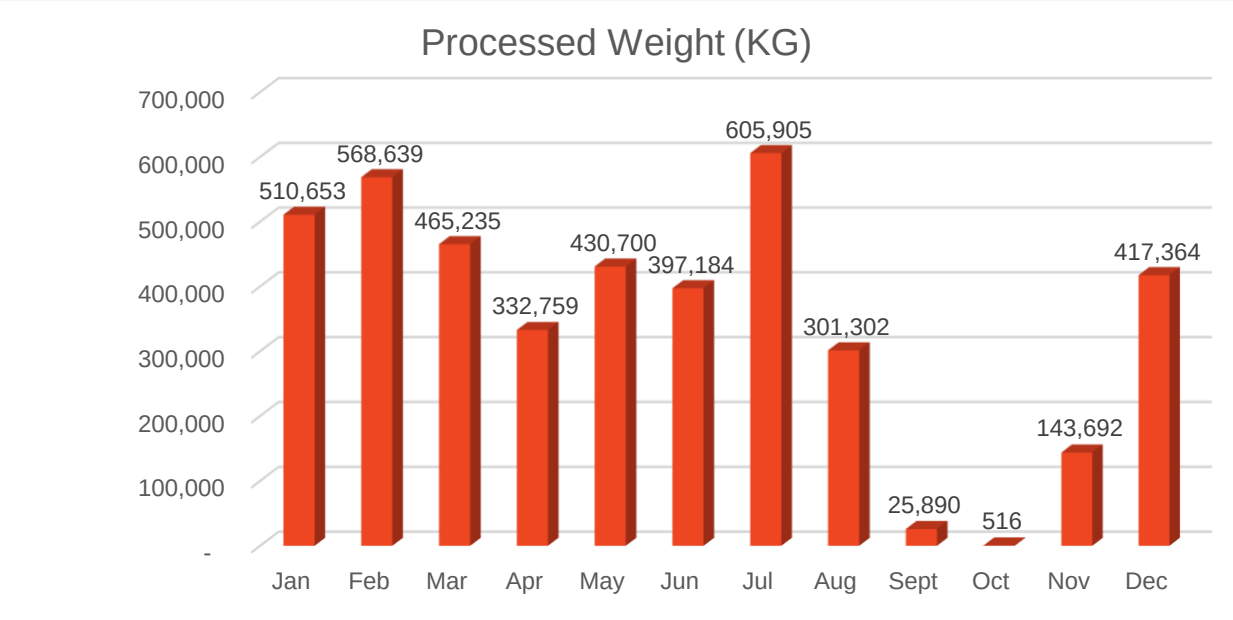
The table above shows a landing of thirty-three thousand five hundred and thirty-six (33,536) metric ton for 2020. The second quarter produced the highest landing for the year with 10,322 mt tons, followed by the first quarter with 8447, and the last quarter of the year that produced the lowest fish landing with 7083 mt tones.

Landings decreased from 42, 2277 mt tons in 2018 to 36,386 mt tons in 2019. This represented a 13% reduction. Landing further reduced in 2020, producing a total of 33,536 mt and 6% difference of the previous year. Please refer to appendix 3.

Catch per Unit Effort (CPUE)

Fishery landing statistics constitute one type of fishery-dependent information to evaluate the status of exploited fishery resources. Quantifying and estimating trends of species abundance is critical for the sustainable management of fisheries resources. Catch per unit effort (CPUE) is an indirect measure of the abundance of a targeted species. This defined as "the catch of fish, in numbers or weight, taken by a defined unit of fishing effort" which is represented by the nominal days spend fishing at sea.

Figure3: Graph showing the Seabob processed by Industrial Seabob Companies in 2020



A total of 4,199,840 kg of Seabob were processed for the year 2020. The month of July recorded the largest volume of processed seabob at 605,905 kg. The lowest processed weight of seabob outside of the close season was recorded in the month of November at 143,692 kg (i.e. at the closed season period not including 1st September-9th November).

The Industrial Seabob companies collectively processed a totally of 349,987 kg of seabob per month in 2020.

Vessels landing at the Industrials Companies in 2020 utilized a total of 13,141 nominal fishing days. July recorded the highest Nominal fishing days used totally 1,597 while November accounted for less days used with a total of 569 outside of the closed season (i.e. at the closed season period not including 1st September-9th November).

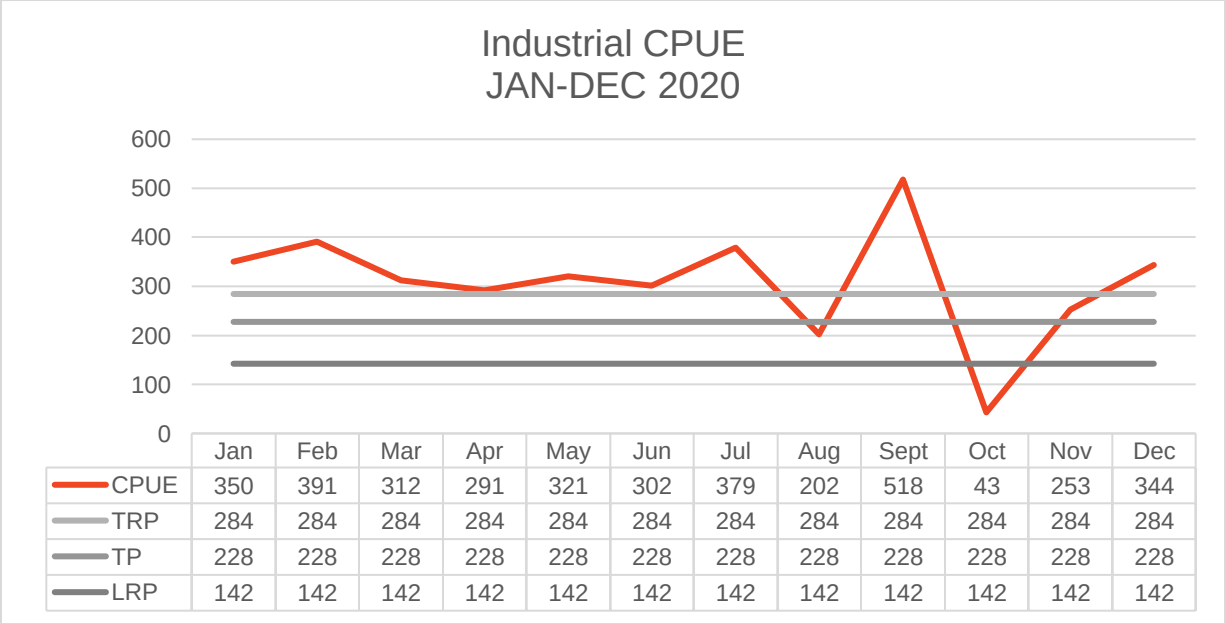
The average numbers of days used by vessels landing at the Industrial Companies in 2020 were 1,095 Days per month.

Table 11: Industrial CPUE and Harvest Control Rule CPUE in 2020

INDUSTRIAL SEABOB CPUE – 2020				
Months	**Processed Weight (KG)**	**Nominal Das + 1**	**Monthly CPUE**	**Overall CPUE**
January	510,653	1,458	350	
February	568,639	1,453	391	
March	465,235	1,492	312	
April	332,759	1,143	291	
May	430,700	1,342	321	
June	397,184	1,316	302	
July	605,905	1,597	379	
August	301,302	1,494	202	
September	25,890	50	518	
October	516	12	43	
November	143,692	569	253	
December	417,364	1,215	344	
	4,199,840	**13,141.142**		**320**

The overall performance of the Seabob Industry during 2020 can be considered satisfactory since quarterly catch rates (CPUE) were all above the Target Reference Point (TRP). The quarterly CPUE for the Industry were as follows: 1ST Quarter – 351 kgs/ndas; representing 23% above the TRP. 2nd Quarter – 297 kgs/ndas, 4 % above the TRP, 3rd Quarter – 7 % above the TRP and 4th Quarter- 313 kg/ndas, 9 % above TRP.

Figure 4: Industrial Seabob Catch per Unit Effort (CPUE) in 2020



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
CPUE	350	391	312	291	321	302	379	202	518	43	253	344
TRP	284	284	284	284	284	284	284	284	284	284	284	284
TP	228	228	228	228	228	228	228	228	228	228	228	228
LRP	142	142	142	142	142	142	142	142	142	142	142	142

The Industrial Seabob Companies recorded an annual CPUE rate of 302 kg/ndas for 2020. The month of February recorded the highest CPUE for 2020 which was 391 kg/ndas. The lowest monthly CPUE was observed in the month of August with 202 kg/ndas (i.e. at the closed season period not including 1st September-9th November). The Industrial Seabob companies collectively had an averaged CPUE of 309 kg/ndas per month in 2020.

At Sea Observers are an independent source of fisheries data, including bycatch composition, mortality and interaction with sharks, marine mammals, sea birds and turtles.

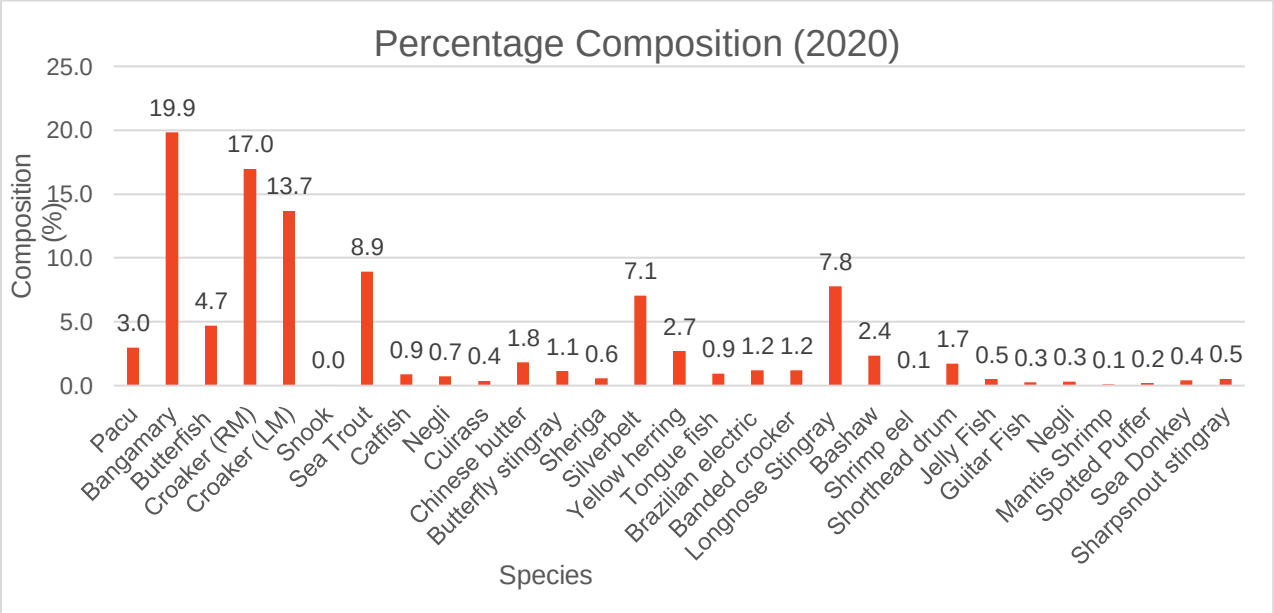
Observer program

Responsibilities

- To monitor the fishing vessel's compliance with fisheries regulations, such as observing no trawl areas and use of By-catch Reduction Devices.
- To collect and record biological data from representative fish samples, such as age and sex determinations, length/weight measurements, detailed species morphologies, as well as catch and effort data.

A target of 16 at sea sampling trips were scheduled for the year 2020, however only 8 trips were accomplished. During the eight trips, the observers sampled forty-one (41) drags.

Figure 5: Catch composition of sampled haul



Data was collected for Species composition for the year of 2020. The species that were most abundant were the Bangamary (*Macrodon ancylodon),* Round mouth croaker (*Stellifer rastrifer*) and the long mouth croaker (*Stellifer microps*), having a composition of 19%, 17% and 13.7% respectively.

Gender Study of the Artisanal Fishery

This Gender Analysis study of the Fisheries Sector in Guyana was a joint effort between the Fisheries Department and World Wildlife Fund (WWF)- Guianas that resulted from a discussion out of the Gender and Environment Forum held in 2019. The Fisheries Department willingness to collaborate with WWF stemmed from gaps in data on the subject. This, being the first survey of this kind, inevitably cannot answer all the questions it seeks. Only the general areas of the different sectors were examined. This study was supported financially by the Shared Resources Joint Solutions (SRJS) programme. A Gender-Responsive Value Chain Analysis (GRVCA) was used as the framework along with USAID's six gender dimensions that include access to assets, beliefs (including knowledge and perceptions), practices and participation, time and space, legal rights and status, and power and decision-making. Boat owners, fishers, vendors, small and large-scale processors, as the value chain players, were included in this study, together with the value chain enablers, which included government officials and Fisheries Co-operatives/Association/Friendly Societies, all of whom made possible the functioning value chain in the sector. There were three hundred and twenty-one (321) respondents to the survey with two hundred and forty-eight (248) males and seventy-three (73) females. The results showed that both men and women are actively involved at the different levels of the value chain in the fisheries sector. Men outnumbered the women in the categories of boat owners, fishers and owners of small-scale processing plants. While women were dominant in processing at large and small-scale levels and market vending of fish. In the government agency, females were given equal opportunity. The survey commenced in May 2020 and concluded in July 2020. Staff conducted interviews via telephones which was a challenge because the time was not in sync with the operations of the fishers. Subsequently, visits were made to landing sites to obtain information.

Constraints

- Lack of expertise in statistical analysis and lack of cooperation from fishers

Proposals and Projects For 2021

- A Gender participation survey in industrial fisheries
- Monitoring the effect of environmental factors on industrial CPUE
- Provide Extension Service to Fisherfolks.
- Maintain MSC certification

Legal and Inspectorate Unit

To ensure the observance of all legal and administrative requirements by all entities in the fishery sub-sector and recommended appropriate charges to existing regulations which govern the Sector.

Key Responsibilities

- Registration and Licencing of fishing vessels.
- Licence and inspect fish processing plant.
- Conduct enforcement and surveillance activities of fishing vessels.
- Administer the Fisheries Vessel Monitoring Centre
- Monitor the industrial/ artisanal fleet for compliance with licence conditions.
- Monitor and conciliate complaints and disputes involving stakeholders.
- Process and issue export Licences for fish and fish products.
- Ensure the collection of revenue under the Fisheries Act 2002.
- Update Fisheries Department information on existing international and local agreements affecting fisheries sector.
- Attend and participate in Co-operatives Societies meetings.
- Monitoring of Turtle Excluder Device (TED) and By-catch Reduction Devices (BRDs), Inspectors were placed at the various landing sites.
- Review closed circuit television footage captured on fishing vessels
- Tabulation of export and import data for the Fisheries Department.

Staffing

The Legal and Inspectorate Unit in 2020 operated primarily on a rotational basis due to the COVID19 pandemic situation. The full staff compliment was eighteen (18) comprising of the following designations:

Table 12: Resource assessment and statistical unit staff composition

Resource assessment and Statistical Unit staff	Amount
Head	1
Fisheries officer	5
Fisheries field assistant	6
Fisheries Inspector	1
TED Inspector	4
Charwoman	1

It should be noted that for the reporting period, two (2) staff were granted study leave to pursue higher education opportunities- one (1) at the undergraduate level (Bachelors) and one (1) at the postgraduate level (Master). While One (1) member of staff reached the mandatory age of retirement during the year 2020, another staff (TED Inspector) passed away during the said year.

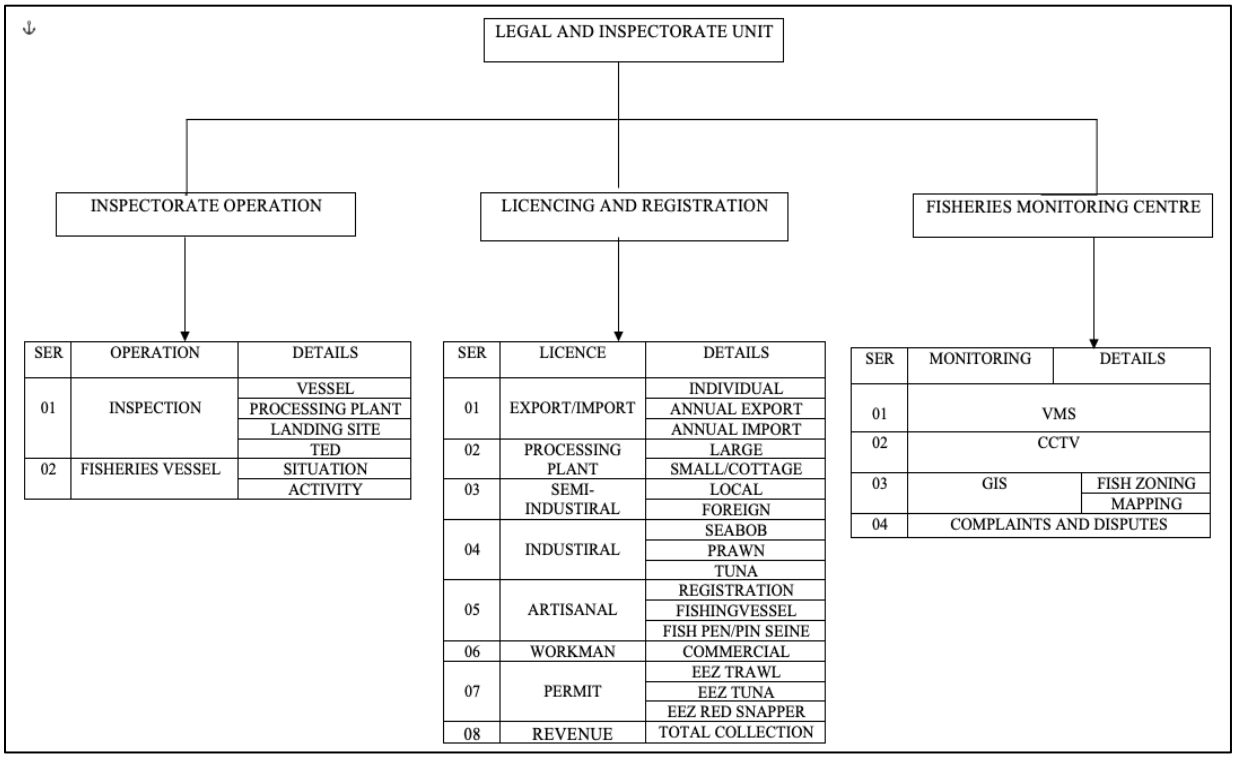
Legal and Inspectorate Unit

Guyana Fisheries Limited
Wharf, Houston, East Bank Demerara,

Guyana. Contact: (592) 226-1833

Figure.6. Highlights the current internal structure of the Legal and Inspectorate Unit (L&IU), it is organized in this operational manner to ensure efficiency during the execution of all the key responsibilities and objectives assigned to the sub-unit.

Figure 6: Operational structure of the Legal and Inspectorate Unit.



SER	OPERATION	DETAILS
01	INSPECTION	VESSEL
		PROCESSING PLANT
		LANDING SITE
		TED
02	FISHERIES VESSEL	SITUATION
		ACTIVITY

SER	LICENCE	DETAILS
01	EXPORT/IMPORT	INDIVIDUAL
		ANNUAL EXPORT
		ANNUAL IMPORT
02	PROCESSING PLANT	LARGE
		SMALL/COTTAGE
03	SEMI-INDUSTIRAL	LOCAL
		FOREIGN
04	INDUSTIRAL	SEABOB
		PRAWN
		TUNA
05	ARTISANAL	REGISTRATION
		FISHINGVESSEL
		FISH PEN/PIN SEINE
06	WORKMAN	COMMERCIAL
07	PERMIT	EEZ TRAWL
		EEZ TUNA
		EEZ RED SNAPPER
08	REVENUE	TOTAL COLLECTION

SER	MONITORING	DETAILS
01	VMS	
02	CCTV	
03	GIS	FISH ZONING
		MAPPING
04	COMPLAINTS AND DISPUTES	

Summary Performance Review 2020

PROGRAMME: FISHERIES 2020	SUB-PROGRAMME: LEGAL AND INSPECTORATE	
Objective: To ensure the observance of all legal and administrative requirements by all entities in the fisheries sub-sector., and recommend appropriate changes to existing regulation which govern the industry.		
Main Components	**Achievements**	**Remarks**
	Target set for 2020 / **% Achieved**	
Registration, inspection and Licencing of fishing vessels	750 Artisanal Vessels — 48% 2700 Fishermen — 67.% 450 Fish Pen — 57% 300 Registration — 36% 97 Trawlers — 100%	There was underperformance in most Licencing and registration categories, except for Guyana's industrial Fleet. This however was due largely to circumstances beyond the control of the Legal and Inspectorate Unit in specific and the Fisheries Department in general (see details within).
Inspection and Licencing of fish processing plants and storage facilities	9 major plants licence — 100% 23 small plants inspected and 21 licensed — 91.3% 3 storage facilities, were fully operational — 100%	All the large seafood processing establishments inspected, were licensed for the period while two (2) small processors were not licensed though they were cleared by the VPHU (see details within).
To process application and issue Annual or Individual export/import Licences for fish and fish products	750 Individual – 590 Export Licences issued — 79% 120 Individual – 114 Import Licences issued — 95% 12 Annual Export Licences — 100%	A decrease (10%) in overall number of individual export and import licenses was recorded for 2020, when compared the 2019 achievement.
To monitor compliance with licence condition viz: The use of (TED) Turtle Exclusive Devices	Full compliance of regulations — 97% compliance. Regulations updated and gazette	Overall industrial compliance with TEDs decreased by 1% when compared to 2019. However, this figure while reduced is well above the 85% pass mark that is required internationally.

To monitor and conciliate complaints and disputes on the fishing grounds	4	100%	The four complaints lodged with the legal and inspectorate unit, were all resolved at the departmental level.
To monitor by catch landings from prawns' trawlers	Industrial Private Owners	100% 0%	Submitted mainly by large companies and not private owners. Private vessel licence holders continue to avoid data submission, a swift solution is required to correct same.
To participate in the detection, arrest and detention of illegal fishing activities	12	25%	Monitoring offshore by the Guyana Coast Guard is limited. Three (3) collaborative aerial reconnaissance operations were conducted between the FD, GDFCG and other enforcement agencies.
Ensure the collection of revenue under the Fisheries Act of 2002, the general fisheries (amended) regulations 2021 and Maritime boundaries Act	Fisheries licence, permits and others	$66,539,560	The revenue collected for the year 2020 represents a decrease of 22 % when compared to 2019. This was primarily due to several nationally prevailing circumstances
Monitor fleet operation and collect data with the Coast Guard.	Weekly visits to the wharves	20%	COVID19, Shortage of staff, transportation, and collaboration with the GPFMW & GDFCG were some of the limiting factors in 2020.
Monitor and generate export information for the industry by collecting data by the way of licensing records from submission by industry and from Customs and Excise Department	12-month summary of export 4 quarterly summaries 2 half yearly summaries 1 annual summary	100% 100% 100% 100%	See Monitoring and evaluation report for details.

Licensing and Permits

Artisanal Licence and Permits

Three hundred and fifty-seven (357) artisanal vessels were licensed representing a 40 % decrease when compared to 2019. This figure also represents 48% of the projected target for 2020 i.e. 750 artisanal vessels licence.

This decrease was due to less enforcement, the prevailing political situation within the country at the time and the emergence of COVID-19 in Guyana

- **Commercial Fishers**

One thousand eight hundred and seven (1807) Commercial fishers permit (workmen) were issued for the year of 2020, representing 67% of the total projected for the said year.

- **Fish Pen/Pin Seine**

A total of two hundred and sixty-one (261) fish pen permits were issued for the reporting year, representing 57% achievement of the projected total of four hundred and fifty (450) for the same year.

- **Registrations**

One hundred and seven (107) new persons were registered for the year of 2020. This number represents an achievement of 36 % of the projected three hundred (300) for the same year.

Industrial Vessels

Ninety-eight (98) trawlers, of which eighty-nine (89) targeting seabob/finfish and nine (9) targeting Penaeid (prawns) were licensed representing a 100% achievement. It should be noted that two (2) new trawler licence were issued in the year of 2020 for the purpose of targeting Seabob/Finfish.

Semi-Industrial

Ninety-four (94) Red Snapper vessels were licenced for 2020. Twenty-five (25) local trap red snapper vessels were registered for 2020, while sixty-nine (69) Venezuelan longline vessels were licenced to operate for a period of three (3) months at the following companies;

- Amar Global - 39 quarterly Licences
- Pritipaul Singh Investments Inc. - 20 quarterly Licences
- BM Enterprise - 10 quarterly Licences

Deep Sea Longline

Four (4) Licences to fish for tuna was granted to Pritipaul Singh Investment Inc. during 2020. As opposed to six (6), representing a 67 % of the projected total. Two (2) of the six (6) vessels were not operational during the reporting period and as such could not legally be issued a licence for the purpose of targeting Tuna and tuna like species within Guyana's Exclusive Economic Zone (EEZ).

Processing Plants and Storage Facilities

Nine (9) large processing plants were inspected and licenced for fish and shrimp representing 100% of the projected, it should be noted that the subsidiary, Demerara Wild Caught, which falls under Pritipaul Singh Investments Inc. was official granted a licence to operate (processing establishment) and export both fish and shrimp in November of 2020 with the aim of the company in question achieving full operational compliance.

Small and Cottage Processing Facilities

A total of twenty-nine (21) small seafood processing establishments were registered, inspected, and licenced in 2020 representing a 100% achievement of those processing establishments which were granted approval after inspection. While three (3) storage facilities operated during 2020.

Individual export and Import Licence

Seven-hundred and four (704) individual import and export license were issued in 2020 as compared to the Seven hundred and eighty-two (782) individual export and import Licences of 2019, representing a 10% decrease and a 90 % achievement when considering the projected target of the Eight hundred and seventy (870) for 2020.

Annual Export Licence

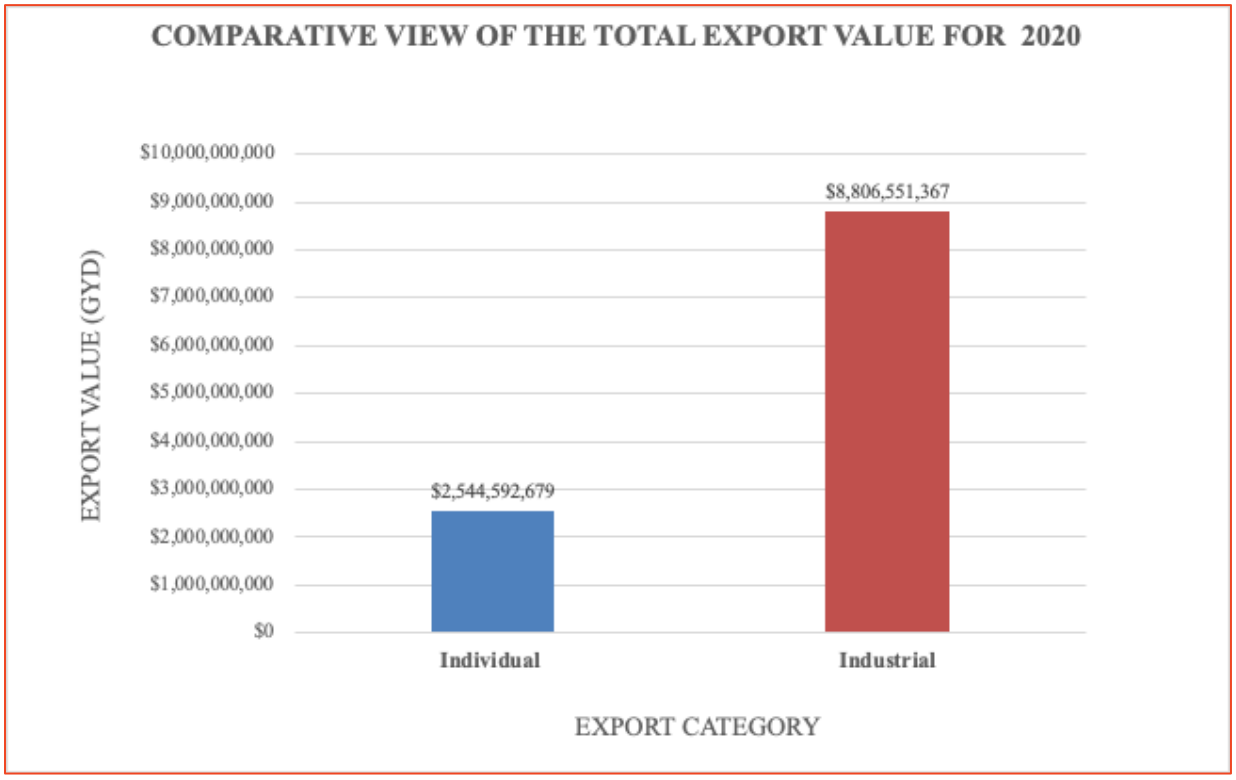
Twelve (12) Annual Export Licences were issued for 2020 representing a 100% achievement not only of those approved, but also the 2020 projected

Total Export and Import of Fish and Fisheries Products

Export

The total export value and weight for Guyana in the reporting year i.e., 2020, was recorded as $11,351,144,046 (GYD) and 15,350 mt, of this total, industrial exports (companies holding annual export Licences) had a total customs value, representative of 77% of the total, while individual exports represented the remaining 23% of the total.

Figure 7: Comparative view of the total export value for the year 2020.



The United States is the primary market for seafood exports and Guyana remains certified to export seafood to the EU market. In 2020 Frozen fish, Fish Fillets and Seabob remained the major contributing seafood exports along with other significant contributors in the individual export category, were shark fins, dried fish swim bladders (glue) and dried fish.

Figure 8: Individual export revenue for the year 2020.

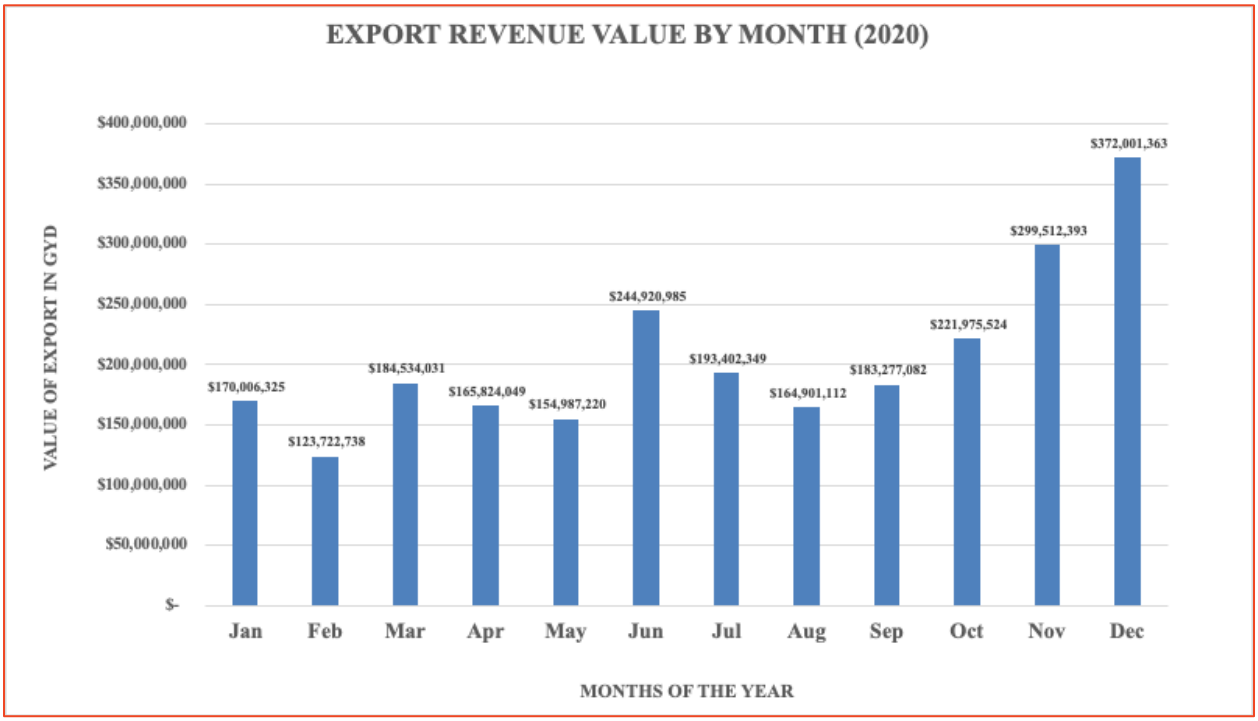
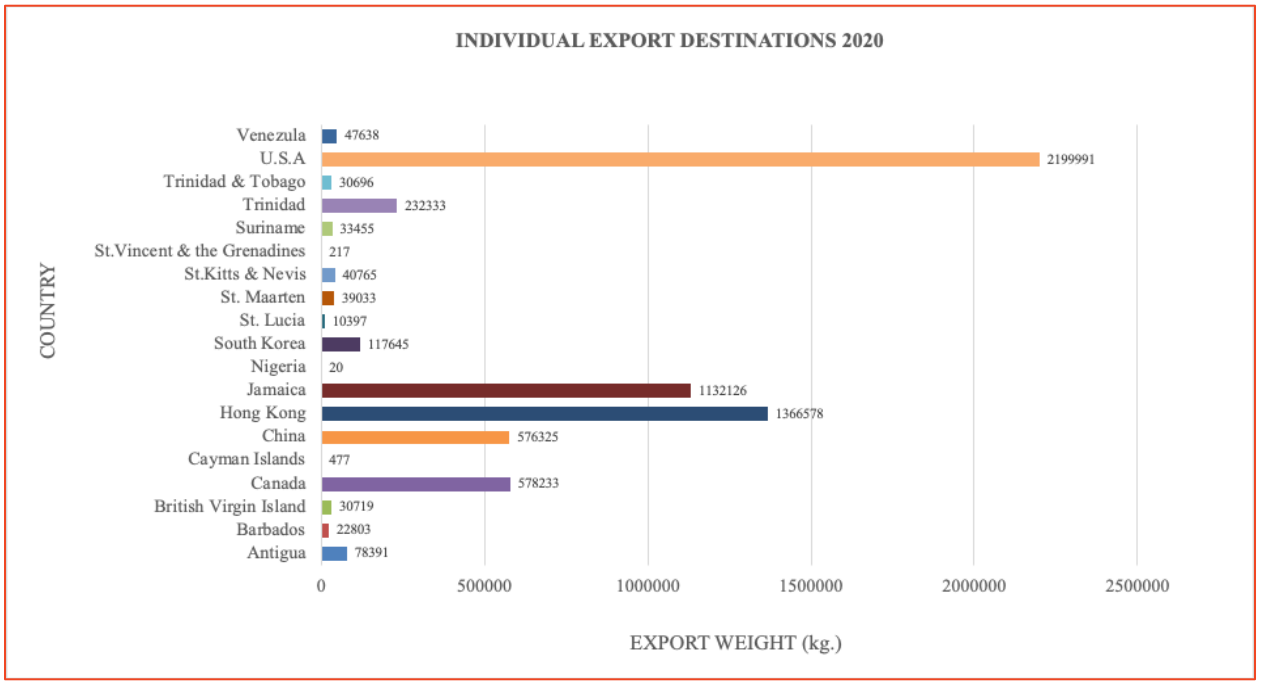


Figure 9: Individual export destination and weight (kg) for the year 2020.



Import

The total import value and weight for Guyana in the reporting year i.e., 2020, was recorded as $1,049,434,643 (GYD) and 2,555 mt, of this total, industrial import had a total customs value, representative of 91% of the total, while individual importers represented the remaining 9% of the total.

Revenue Collection

Revenue collected was G$ 66,539,560 million which represents 22 % decrease when compared to the GYD$ 84,904,770 million revenues collected in 2019. This significant decrease in revenue collection was due to several temporary closures resulting from the emergence of the novel corona virus in Guyana and the general halt in formal services (from the customer end) due to state of post electoral uncertainty of over four (4) months.

Table.13. Breakdown of revenue collected by the fisheries department, through its Legal and Inspectorate Unit.

CATEGORY	COST	AMOUNT	TOTAL
Annual Export Licence (Fish - lg)	$100,000.00	6	$600,000.00
Annual Export Licence (Shrimp - lg)	$100,000.00	6	$600,000.00
Annual Processing Plant (Fish/Shrimp - lg)	$100,000.00	9	$900,000.00
Annual Processing Plant (Fish/Shrimp - sml)	$75,000.00	21	$1,575,000.00
Individual Export Licence	$2,000.00	590	$1,180,000.00
Individual Import Licence	$2,000.00	114	$228,000.00
Artisanal		357	$5,434,560.00
E.E.Z Trawler	$250,000.00	98	$24,500,000.00
Territorial Sea (Trawler)	$50,000.00	98	$4,900,000.00
E.E.Z Red Snapper	$150,000.00	25	$3,750,000.00
Territorial Sea (Red Snapper)	$50,000.00	25	$1,250,000.00
Workman	$1,000.00	1803	$1,803,000.00
Fish Pen	$1,000.00	261	$261,000.00
E.E.Z Tuna	$500,000.00	4	$2,000,000.00
Territorial Sea (Tuna)	$50,000.00	4	$200,000.00
Registration	$1,000.00	108	$108,000.00
Foreign Red Snapper (Amar) Licence*	$250,000.00	39	$9,750,000.00
Foreign Red Snapper (PSI) Licence*	$250,000.00	20	$5,000,000.00
Foreign Red Snapper (PSI) Licence**	$250,000.00	10	$2,500,000.00
Sub-Total (Local)		3529	$49,289,560.00
Sub-Total (Foreign)		69	$17,250,000.00
TOTAL		**2511**	**$66,539,560.00**

Complaints and Disputes

Four (4) complaints and disputes were recorded for 2020. Complaints/disputes received by the Fisheries Department for 2020 decreased significantly. The Unit however continue to receive complaints involving artisanal fisherfolk engaged in anchor seine, drift seine and Caddell operations. These complaints occur mainly in Regions 3, 4 and 6 and appear to be seasonal in nature. The Unit is constantly engaged with fisherfolk to bring permanent solution to this issue. Some disputes among Chinese seine fishermen operating in Regions 3 and 4 were also received but these were amicably resolved. Fisherfolk were also directed to take their complaints to the

Marine Branch of the Guyana Police Force for resolution, if it could not be handled within the Fisheries Department, Legal and Inspectorate Unit.

Enforcement

One (1) enforcement activity was conducted during the reporting period. One (1) vessel was intercepted and was found to be Venezuelan in origin, having several sharks, catfish, and other species of fish not typical of offshore fishing. The vessel was held at the Guyana Defence Force – Coast Guard Headquarters and has since been forfeited to the Government of Guyana as per Guyana Revenue Authority (GRA) reports.

It was the general investigative consensus that the vessel was being used to transport illegal fuel under the guise of being a foreign fishing vessel, arriving into port Georgetown, under force majeure circumstances.

Inspectorate Operation

Turtle Excluder Device Inspection Programme

All trawl vessels operating in Guyana's EEZ are required by law to have installed fully functional Turtle Excluder Devices (TEDs) and By-catch Reduction Devices (BRDs), which are inspected by Inspectors from the Fisheries Department before and after the return for fishing trips for compliance with the Regulations. In 2020 a total of ninety-eight (98) trawlers operated, which is broken-down to eighty-nine (89) seabob and eight (9) prawn trawlers. A total of six thousand, seven hundred and sixty-six (6,766) inspections were conducted in 2020, two hundred and twenty-two (222) TEDs failing during inspections, translating to a compliance rate of ninety-seven (97%).

Table 14: Breakdown of Ted Inspections for the year 2020

COMPANY	TOTAL TED PASSED	TOTAL TEDS FAILED	TOTAL TEDS INSPECTED	TECHNICAL COMPLIANCE RATE	TOTAL INSPECTIONS
PRIVATE	273	2	275	99.3	55
NHS	1926	23	1949	98.8	390
PSI-S	3000	179	3179	94.4	636
PSI-P	110	0	110	100.0	22
GII	1457	18	1475	98.8	295
TOTAL	**6766**	**222**	**6988**	**96.8**	**1397.6**

Inspection of foreign Vessels

Several joint port inspections were conducted together with the Ministry of Health to ascertain the health status (with regards to covid19) of all fisherfolk originating from Venezuela. This was a first of its kind collaboration with the aforementioned Ministry.

Closed Circuit Television Inspection

Closed-circuit television (CCTV) –this is also known as video surveillance, comprising video camera, recorders and display monitors to provide a visual imagery of all the recorded activities. All fishing vessels are equipped with the CCTV surveillance system for compliances of the By-catch Reduction Device (BRD) and Turtle Excluder Device (TED) regulations. The CCTV video footage is inspected by staff of the fisheries department. Vessels are randomly selected and their CCTV camera footage is inspected by the Fisheries Officials.

Inspections and monitoring of the CCTV cameras began on 13th February 2020.

The target for 2020 was fifty (50) inspections, a total of thirteen (13) vessels' CCTV were reviewed for the period February – December 2020. The unit achieved 26% completion for the year 2020.

The companies targeted for this exercise in 2020 are as follows:

- Pritipaul Singh Investments (PSI)
- Noble House Seafoods (NHS)
- Gopie Investments International (GII)

Inspections completed by the target company are as follows:

- Pritipaul Singh Investments (PSI) – 9
- Noble House Seafoods (NHS)- 3
- Gopie Investment International (GII) -1

All vessels CCTV reviewed showed the TED was used.

Limitations of the CCTV Review Process

The target for 2020 was not achieved due to the following circumstances:

- Inspections ceased-due to the country's general election in March.
- The current Covid-19 pandemic caused the inspections to be at a standstill.

- Unavailability of staff –this is due to a rotational system which allowed for a reduced staff count on duty.
- Staffs were reluctant to go out in the fields to conduct inspections.
- Inspections were halt due to the closed season August – October 2020.
- Both Noble House Seafood and Gopie Investment Inc did not have backup of the vessels CCTV footage to be reviewed.

Cameras

- The quality and position of the cameras on some vessels affect the clarity of the recorded images, catch and by- is also difficult to determine, moreover the use of TEDs or BRDs are not always in frame
- Cameras malfunctions frequent

By-Catch Reduction Devices

- The color (green) of the BRDs used by some companies makes it difficult to determine if the BRD is on the fishing apparatus. This issue has not been addressed by the companies.

Vessel Monitoring System (VMS)

A new vessel monitoring system service provider was selected and approved for use by Guyana's industrial seabob fleet. The decision was made based on the quality and technical capabilities of the new service provider, SASCO Inc.

Since the selection and approval 90% of industrial trawl vessels, have been fitted with beacons and have since began transmitting.

In recognition of the Laws of Guyana and the recently acquired, marine stewardship council certification (2018) the Fisheries Department through its Legal and Inspectorate Unit (L&IU) will remain committed to ensuring effective remote monitoring of its industrial fleet.

Internal Audit

The Fisheries Department, Legal and Inspectorate Unit, conducted its first review/audit of the licencing/permit process. The Audit period was January to October 2020, the internal audit verified the issuance of licences and permits (3,407 issued) totalling $ 57,356,200 which represented a 99.97% reconciliation of the total revenue collected i.e., $57,327,700.

Constraints

The Legal and Inspectorate Unit suffered a number of setbacks: -

- Although a joint enforcement operation was conducted during the latter part of 2020, the Guyana Police Force or any other enforcement agency did not relay a formal report, outlining charges or outcome of the activity and the vessel found in breach of local regulations.
- Unreliable internet access throughout the year severely affected the monitoring of vessels by the Fisheries Vessel Monitoring Centre, and will continue to do same, if it is not corrected.
- The Unit presently comprise of eleven (11) office staff and four (4) TED Inspectors. There is need for improved furnishing to accommodate the increased number of staff to enable the Unit to reach its objectives and targets. There is need for a vehicle and driver to be permanently assigned to the Unit as a simple financial review would demonstrate, that staff from the L&IU, travel and need to travel in order to be effective during activities such as licencing and inspection.
- Very limited transportation is available to staff to carry out their daily functions, as such, activities such as inspection of processing plants and visits to landing sites and wharfs is severely affected.
- Many processing plants do not submit required data to the Unit in a timely manner. This severely affects the Units ability to conduct analysis of trends within the industry.
- There is a very limited communication/coordination between the Guyana Coast Guard, Maritime Administration Department, the Fisheries Department and other related government agencies. An improvement in this area will lead to better management of the fisheries sector.

Recommendations

- There is need for improvement in the Department's relationship with Marine Administration Department (MARAD), Guyana Police Force Marine Wing and Guyana Defence Force Coast Guard (GDFCG) to ensure better management of activities within the fisheries sector.
- In collaboration with Marine Administration Department (MARAD), Guyana Police Force Marine Wing and Guyana Defence Force Coast Guard (GDFCG) conduct enforcement exercises to ensure compliance with the existing regulations.
- The Department has the capacity to prosecute persons found not in compliance with the Fisheries Laws and Regulations and should exercise same as a means of ensuring compliance at both the local and international level. This can also prove to be useful in garnering additional revenue and near and offshore marine vessels**.**
- There is need for the development of an awareness programme for fishers artisanal, semi-industrial and industrial to ensure sustainable utilization of the resource.
- Make available transportation to work directly with the Legal and Inspectorate Unit.
- Training of new staff and others attached to the Legal and Inspectorate Unit both locally and overseas.
- Conduct more at sea monitoring, control, and surveillance activities of the various fishing fleets.
- Training of local Red Snapper fishers in the use of long line. This would lead to a significant reduction in juveniles caught using the present trap gear.

Proposals and Projects For 2021

- Regularization of the Chinese seine fishery in Regions 3, 4 and 6. This will involve the plotting of all fish pen by GPS and the creation of a map and database of the activities.
- Monitoring and enforcement for the artisanal vessels in the various regions and the institution of a vessel inspection form.
- Training of small processors of seafood in quality assurance management from harvesting to market.
- Up-grade training for TED Inspectors, captains and crewmembers on the use of TEDs and sea turtle conservation and conduct at the least, quarterly at sea inspections to ensure operators compliance with the use of TEDs.
- Continue the implementation and monitoring of Bycatch Reduction Devices (BRD) and Vessel Monitoring Systems (VMS) on all trawlers operating in Guyana's EEZ.
- Awareness programme using both radio and television on aspects pertaining to quality assurance in the fishing industry.

- Conduct Management Workshops for all Co-operative Societies to improve their management skill so that they will better serve the fisherfolk.

Inland and Aquaculture Unit

To ensure that aquaculture is developed in a sustainable and controlled manner optimising economic and environmental.

Key Responsibilities

- Maintain and operate the Satydeow Sawh Aquaculture Station and Anna Regina Fish Culture Station, with the intention of establishing other stations to provide seed stock to farmers and to serve as centers for technical excellence.
- Co-ordinate the development of the aquaculture industry at the national level.
- Identify species to be cultured based on scientific information
- Collect and obtain disease free specimens for culturing.
- Establish culture systems to determine food requirements, growth rates, environmental and tolerance, and rates of reproduction.
- Identify incentives that will facilitate growth of the aquaculture industry.
- Collaborate with other agencies regarding the development of aquaculture and use of resources.

Staffing

The Inland and Aquaculture Unit in 2020 operated primarily on a rotational basis due to the COVID19 pandemic situation. The full staff compliment was twelve (12) comprising of the following designations:

Table 15: The Inland and Aquaculture unit staff composition

Resource assessment and Statistical Unit staff	Amount
Fisheries officer	4
Fisheries field assistant	2
Pond Attendant	2
Driver	1
Charwoman	1

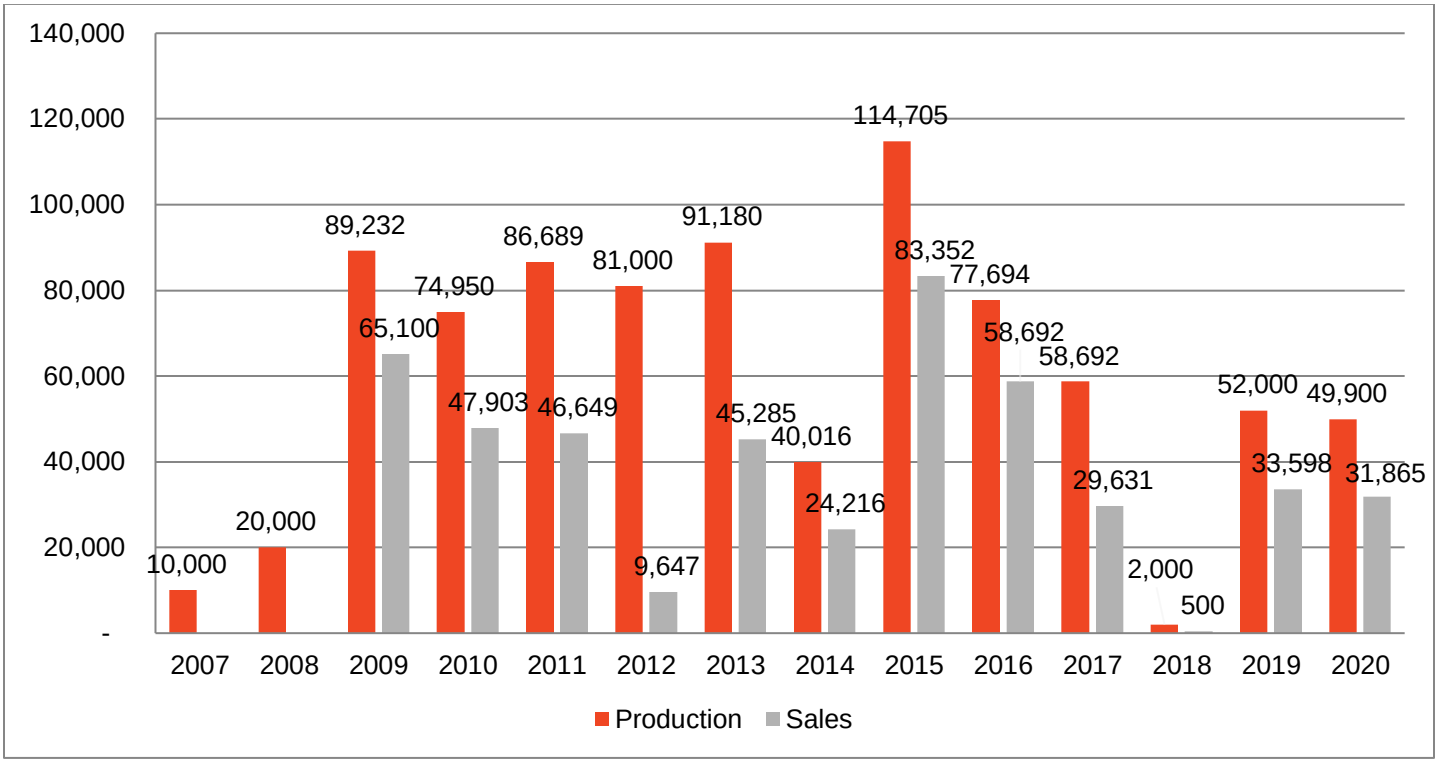
Satyadeow Sawh Aquaculture Station (SSAS)
Agriculture Road,
Mon Repos,
East Coast Demerara,
Guyana.
Contact: (592) 220-1508

Region 2 Office Anna Regina Fish Station

Essequibo Coast,
Guyana,
Contact: (592) 225-9551

Fingerling production and sale

Figure 10: Fingerling production and sales of Oreochromis spp. at the SSAS (2007-2020)



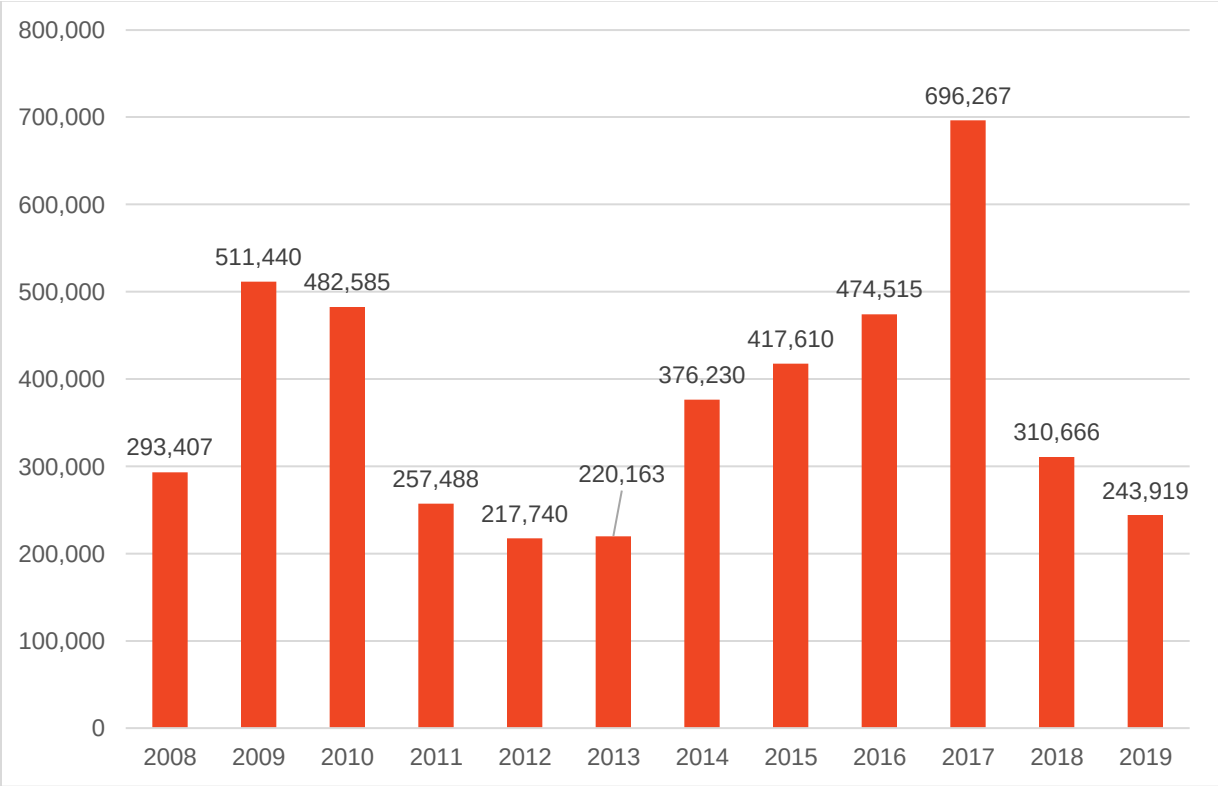
The SSAS from 2006 has been producing *Oreochromis Spp*. fingerlings at a cost to farmers country wide at a cost of GYD$14/ fingerlings. In 2020, thirty-one thousand eight hundred and sixty-five (31,865) fingerlings were sold. The total revenue raised through fingerlings sales was four hundred and forty-six thousand one hundred and ten dollars **($446,110 *GYD*)**. Production and sales declined a little from 2019, due to the lack of demand for the species, along with the panic and scare COVID 19 brought from the onset in March, 2020. Please refer to appendix 4 for tabular representation of production and sales 2007-2020.

Aquaculture production

Table16: Showing aquaculture production 2020 (kg) by species

	Total Weight (kg)				
Months	**Tilapia**	**Black Shrimp**	**Tambaqui**	**Hassar**	**Total**
January	-	11,616	2,233	2,215	16,064
February	93	11,020	3,563	3,347	18,023
March	83	8,612	3,207	2,334	14,236
Q1	176	31,248	9,003	7,896	48,323
April	62	8,728	349	1,284	10,423
May	-	7,023	200	702	7,925
June	-	8,728	127	4,668	13,523
Q2	62	24,479	676	6,654	31,871
% Change Q2:Q1	(65)	(22)	(92)	(16)	(34)
HY	**238**	**55,727**	**9,679**	**14,550**	**80,194**
July	-	8,500	18	504	9,022
August	-	8,500	-	272	8,772
September	-	8,160	-	273	8,433
Q3	**-**	**25,160**	**18**	**1,049**	**26,227**
% Change Q3:Q2	**(100)**	**3**	**(97)**	**(84)**	**(7)**
October	-	8,386	91	2,000	10,477
November	10	8,348	36	2,000	10,394
December	9	8,298	27	2,000	10,334
Q4	**19**	**25,032**	**154**	**6,000**	**31,205**
% Change Q4:Q3	**#DIV/0!**	**(1)**	**756**	**472**	**19**
HY2	**19**	**50,192**	**172**	**7,049**	**57,432**
Year Total	**257**	**105,919**	**9,851**	**21,599**	**137,626**

Figure 10: Shows Aquaculture production(kg) from 2004-2020



Production from 2019 to 2020 declined by 43%. This was attributed primarily to the impacts of COVID 19 and political unrest due to 2020 elections. During the onset of COVID 19 in Guyana serious measures were taken to safeguard the population. These measures affected the aquaculture value chain. There was restriction on flights (airport was closed), imposed curfew and general fright of contracting the virus. The brackish water shrimp industry in region 6 depend on the overseas diaspora from Canada and USA to purchase the shrimp when they visit on vacation. With close airports and restricted flights less, sales were reduced in region 6. This was coupled by political unrest which gave little confidence to the business environment to continue operating and investing.

Tilapia, tambaqui, brackish water shrimp and hassar production from 2019 to 2020 showed the following -92%, -72%, -45% and 46% respectively. Many small tilapia farmers in 2020 didn't harvest because of COVID. On the other hand, tambaqui production declined not only due to COVID but the exit of CARANA farm in March, 2020 due to lack of access to markets. All the

large farmers have exited tambaqui farming except for the new owners of the former CARANA farm.

Figure 11: Shows Aquaculture species prices(kg) from 2018-2020

Species	2018 Price/Kg	2019 Price/Kg	2020 Price/Kg	% Change 2019-2020
Tilapia	660	480	396	-0.17
Blackwater shrimp	880	1,544	1804	16.83
Tambaqui	880	948	968	2.10
Hassar	1000	1000	1000	

Table 17: Inland export data 2019 – 2020

	Total		
	2019	2020	% Change
Hassar	16,060	19,204	19.58
Patwa	29,003	31,155	7.42
Houri	21,668	17,352	-19.92
Tilapia	5,730	23,111	303.33
Lukanani	29,837	23,105	-22.56
Hi-mara	12,417	151	-98.78
Black shrimp	15,678	9,222	-41.18
Cocobelly	10,540	16,502	56.57
Snail	4,904	6,102	24.43
Pacu	620	780	25.81

Extension

The Extension services offered by the department encompass site selection, pond construction and management of the fish through to harvest. There were one hundred and thirty-three (133) visits made, covering regions 1,4,5, 6.and 10. Visits were made to new and existing farmers, most of which expressed concerns about feed and available markets for sales. There has been a significant decrease in the extension visits for this reporting period compared to 2019. This is as a result of the restricted movement of persons due to the pandemic.

Visitors

The SSAS saw approximately 20 visitors and 5 schools visits for 2020.

Table 18: Shows visitor breakdown

Date Visited	Name of institute	Number of Students	Number of teachers	Total
28th Jan	Queen's College	30	2	32
14th Feb	Mahaicony Secondary	34	4	38
20th Feb	Black Bush Polder Sec	42	8	50
20th Feb	ISA Primary	36	4	40
27th Feb	Clonbrook Primary	30	4	34
TOTAL				**194**

Training Conducted

Table 19: Shows training conducted 2020

DATE	NAME OF TRAINING	VENUE	NUMBER OF FARMERS	NARRATION
25th Feb	Aquaculture Management, focusing on tambaqui	Baramita, Region 1	10 village members	Village members were trained and provided with basic knowledge on aquaculture. Water quality testing of the proposed irrigation water was done, and results showed favourable conditions for the rearing of tambaqui. It was advised after a site visit to construct a 30*20*5 ft pond which will allow for 60 tambaqui fishes (adults). Staff will contact farmer on the progress of pond preparation.

Research

Local species as potential aquaculture species

In order to make the aquaculture industry sustainable consideration has been given towards the development of local commercially viable inland species into farmed species. The species were identified using inland data export reports. These species were lukanani, snail, patwa and hassar. This is a long-term research initiative to avoid introduction of alien species that may have detrimental effects on the local stocks. Broodstock were purchased for the species listed and data is being collected to develop a methodology for breeding. Thus far, the snails and hassars have bred.

Each staff was assigned an inland species to research on the methodology of breeding and its management practices of lukanani (*Cichla ocellaris*), snail (kreteke) (*Pomacea sp.*), patwa (*Cichlasoma bimaculatum*) and arapaima (*arapaima sp.*). The objective of this task is to have a basic knowledge on the species and to effectively plan on the best breeding method of each species to be bred at the SSAS.

At the end of the 4th quarter presentations were done by staff on their assigned species and breeding methods were discussed and partly decided upon. Further research on the species will continue in the upcoming year.

Status update:

- Kreteke (*Pomacea sp.*) - 3000 of snails were procured in December, 2020. During this time different types of feed (market scraps- leafy crops, grass and pelleted feed) were introduced to determine which was mostly accepted. Studies were also done to determine how eggs can be hatched in a controlled environment. There was a high hatching rate observed, however the survivability rate was low. This will be furthered research and trials of hatching and hatchling growth will continue in the 2021.

- Lukanani (*Cichla ocellaris*) - an Amerindian community, Rockstone was identified as an ideal area to ‘catch’ this species. However, due to the heavy rains which resulted to high water levels in the river posed a threat to capture the fish stock from the wild. As such, the community is expected to supply 150 lukanani in the first quarter of 2021.

- Patwa (*Cichlasoma bimaculatum*) – 1359 of fish stock was captured from GSA pond and is currently in the grow-out stage at the SSAS. Fishes are fed twice daily and have accepted the fingerling feed. Sex identification of this species was achieved and in early December, four fishes at approximately 3-3.5 inches were removed (1M:3F) from the pond and placed in a tank in the hatchery. They are fed twice daily and water quality was maintained within its optimal range. The purpose of this is to observe behavior patterns

and to determine whether they can breed in the tanks and their survivability in a controlled environment.

- Arapaima (*arapaima sp*.) – due to limited space at the SSAS fishes cannot be set aside for breeding. Also, sex identification continues to be a challenge. However, one of the main goals is to increase the feeding rate of the adults, since nutrition is paramount for breeding.

- There was a high hatching rate for the hassar. However, their survival rate started to decline by the 6^{th} – 8^{th} weeks when kept in an aquarium. Fries were then placed in a happa in a concrete pond outdoors. They were fed on duckweed and pelleted feed, after about 3months in the outdoor conditions about 8 fingerlings survived.

Regulatory and strategic framework

The FAO has provided 100,000 USD for 2 years period (2019-2021) to strength the strategic and regulatory framework for inland fisheries and aquaculture development in Guyana. In 2020, the *Strategic Plan for Inland Fisheries and Aquaculture Development and Management in Guyana (2013-2018*) was updated to a draft 2021-2026 through extensive stakeholder engagement. The final draft strategy will be present to the Minister of Agriculture for endorsement December, 2020.

Regulations addressing inland fisheries and aquaculture stakeholder consultation have been completed and final draft will be presented to the Minister of Agriculture in first quarter 2021.

Constraints

- Lack of expertise in fish breeding and larval rearing
- Lack of expertise feed formulation
- High dependence on import aqua feed
- Lack of markets for aquaculture products

Recommendations

- Train staff specifically in the above areas.
- Conduct research to utilize local ingredients.
- Work in collaboration with New GMC on acquiring markets.

Proposals and Projects For 2021

- Seek endorsement for Inland fisheries and aquaculture strategy from MOA and finalize Aquaculture and Inland Regulation
- Resuscitation of the National Aquaculture Association (NAAG) and cooperatives.
- Conduct studies relating to the development of key inland species into potential aquaculture species.
- Aqua feed formulation and development
- Upgrade and expand SSAS
- Upgrade the Anna Regina Fish Station
- Review and finalize Arapaima Management Plan and
- Review and finalize Arapaima regulation
- Provide awareness and training in inland fisheries.
- Conduct Inland Management training

Appendix 1

ANNUAL MONTHLY DATA COLLECTION FOR RETAIL PRICES 2020			
January – December			
Name of Species	**Average Price ($)**	**Common Price ($)**	**Range ($)**
Annafolk	134	160	100-200
Bangamary	222	240	200-280
Bashaw	176	180	100-200
Butterfish	303	340	300-380
Cabio	473	400	400-480
Catfish	152	160	100-200
Cavalli	226	200	200-280
Cuffum	285	300	200-300
Cuirass	187	200	100-200
Dolphin	195	-	-
Gillbacker	826	1000	800-1000
Grey Snapper (Small)	217	200	200-280
Grey Snapper (large)	492	540	400-580
Grouper	300	300	0-300
Fish Eggs	650	600	600-680
Highwater	163	200	100-200
Lane snapper	700	700	0-700
Mackerel	304	300	300-380
Mullet	231	260	200-280
Negli	205	200	200-280
Pagi	185	200	100-200
Packoo	224	240	200-300

Pampido	375	380	300-400
Queriman	358	380	300-400
Bringle	310	340	300-380
Manarie	303	400	300-400
Red Snapper	646	700	600-700
Salmon	376	400	300-400
Sea Donkey/ Jackass	200	100	100-200
Sea Trout (small)	229	240	200-280
Sea Trout (large)	318	340	300-400
Shad	200	260	200-280
Snook (small)	209	200	180-240
Snook (large)	278	300	200-300
Shark	413	500	400-500
Marine Avg Price/Pound	**301**		
SHRIMP SPECIES			
Seabob Unpeeled	484	500	400-1000
Seabob Peeled	828	1000	800-1000
Whitebelly Unpeeled	544	560	500-600
Whitebelly Peeled	935	1000	800-1000
Prawns	1717	1500	1400-1800
Shrimp Avg Price/Pound	**Peeled - 882** **Unpeeled - 514** **Prawns- 1717**		
INLAND SPECIES			
Hasssar	978	1000	800-1000
Houri	406	480	400-500
Patwa	419	460	400-500
Tilapia	630	1000	600-1000

Inland Avg Fish Price/Pound	**608**		
Black shrimp Unpeeled	1450	-	-
Black Shrimp Peeled	1838	-	-
Pink Shrimp peeled	500	-	-

Appendix 2

Wholesale prices of fish species from municipal markets in 2020 quoted in GYD ($)

ANNUAL MONTHLY DATA COLLECTION FOR WHOLESALE PRICES 2020			
January – December			
Name of Species	**Average Price ($)**	**Common Price ($)**	**Range ($)**
Annafolk	55	-	-
Bangamary	110	100	100-200
Fine Bangamary	68	90	80-100
Bangamary sml	60	60	0-60
Bashaw	107	120	100-200
Butterfish	130	140	100-200
Cabio	127	80	80-140
Catfish	79	140	80-180
Cavalli	64	-	-
Cuffum	94	140	80-160
Cuirass	92	100	100-200
Cuma Cuma	200	-	-
Gillbacker	382	400	300-400
Grey Snapper (Small)	165	260	140-280
Greysnapper (Big)	278	300	200-380
King fish	146	160	100-200
Queriman	190	-	-
Pacu	148	-	-
Pagi	112	140	100-200
Highwater	84	100	100-200
Lane Snapper	-	-	-
Mackerel	98	120	100-200

Manarie	500	-	-
Sea Trout	165	180	100-200
Seabob	353	400	300-400
Blacktip Shark	104	180	100-200
Salmon	300	-	-
Shad	230	240	180-260
Shark	100	100	0-100
Snook	128	140	100-200
Waterbelly shark	159	200	100-200
Whitebelly Shrimp	95	100	80-100
Surname Mullet	141	180	100-180
Negli	900	1200	800-1200

Appendix 3

Comparison of annual landing for the previous years

Industrial	2020	% change	2019	% change	2018
Prawns	465		478		142
Seabob	8,817		13988		19897
Finfish	628		930		2204
Total	9,910		15396		22522
Artisanal					
Seabob	549		52		49
Whitebelly	3,712		1290		1574
Finfish	17,590		19549		16802
Total	21,851		20891		18425
Deep slope					
Red Snapper	1,648		1736		1017
Tuna	127		363		284
Total	1,775		2099		1301
Grand Total	33,536	-6%	36386	-13%	42277

Appendix 4

Fingerling production and sales of Oreochromis spp. at the SSAS (2007-2020)

Year	Fingerling Production	Sales
2009	89,232	65,100
2010	74,950	47,903
2011	86,689	46,649
2012	81,000	9,647
2013	91,180	45,285
2014	40,016	24,216
2015	114,705	83,352
2016	77,694	58,454
2017	58,692	29,631
2018	2000	500
2019	52,000	33,598
2020	49,900	31,865