

Ministry of Agriculture Fisheries Department

Seabob Catch per Unit Effort (CPUE) Annual Report 2018

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HCR DESCRIPTION

The HCR chosen by the industry (225pv_DaS) was consistent with attaining MSY and maintaining the stock above the limit reference point. For the HCR index, three reference points were proposed (Table 2). These were based around the observation that approximately 15000 standardized days-at-sea (approximately 20000 nominal days-at-sea) achieve an average SSB of 40% of the unexploited SSB, a proxy for BMSY. The average catch rate at this level of depletion was 630kg processed tail weight per fishing day (Medley 2014).

Consultations with the industry suggested the lowest acceptable of 315kg processed tail weight per fishing day was an acceptable limit reference point (i.e. 50% BMSY). That is, if catch rates fell to this level, a moratorium would be acceptable for economic reasons. Additionally, two trigger points were suggested. Firstly, the main trigger for stock rebuilding at 540kg per standardized day-at-sea, which is approximately 70% of the range between the limit and target reference points. Secondly, a reasonable catch rate based on economic considerations suggested by industry was approximately 600 kg per standardized boat day, a little below the target (Medley 2014).

Table 1 - Shows the HCR index reference points used in developing a precautionary HCR.

	Index Value (kilograms processed tail weight per standardised day at sea)
Target Reference Point (TRP)	600
Alternative TRP	630
Trigger Point	540
Limit Reference Point	315

HCR CALCULATION

For the calculation of the harvest control rule index the standardized effort was calculated based on each trip length. The TAE (Days-at-sea) was calculated using the procedure recommended in the HCR rule report, 2014. Please see calculation below:

Important Note:

The current index for each year shall be calculated as the average between the previous year's index value and the catch rate of the previous year (i.e. a moving average). The catch rate will be based on reported catch and effort data for all vessels. The catch rate is calculated as the total landings of seabob processed (peeled tail) weight in kilograms divided by the total number of standardised days-at-sea.

The HCR Index in any given year t (I_t) is calculated as:

$$I_t = 0.5 \left(I_{t-1} + \frac{C_{t-1}}{0.766 D_{t-1}} \right)$$

Therefore the TAE (DaS) Quota for 2018 is as follows:

Current Index Value calculation:

$$I_t = 0.5(616 + 715)$$

$$I_t = 0.5(1,331)$$

$$I_t = 665.5$$

The DaS Quota for 2018 will be set at the maximum; 225 DaS per vessel, in accordance with bullet point number two (2) under the procedure for setting TAE i.e. "A Maximum 225 days at sea per licenced vessel when the indexed catch index is at or above the target index".

DATA PRESENTATION AND ANALYSIS

CATCH AND EFFORT OVERVIEW

A total of eighty-three (83) vessels operated in 2018, spending approximately twelve thousand, eight hundred and forty standardized days-at-sea (12,840 sdas). A sum of eleven million, seven hundred and five thousand, six hundred and fifty-one kilograms (11,705,651 kgs) of seabob was processed after landing. The observed catch per unit effort (CPUE) was nine hundred and twelve kilograms per standardized day-at-sea (912 kg/sdas). The Seabob vessels were permitted to operate between the 7-18 fathom lines abut was then amended on the 16th April, 2018 to operate 8-18 fathoms which were established along Guyana's coastline, within the Exclusive Economic Zone.

Table 2 - Shows a summary of Guyana's industrial processed Seabob landings 2018.

INDUSTRIAL SEABOB CPUE 2018			
Months	Processed Weight (kg)	Standardised DAS (sdas)	Monthly CPUE (kg/sdas)
January	1,347,194	1,338	1006
February	1,239,065	1,289	961
March	1,667,284	1,459	1142
April	1,401,914	1,416	990
May	1,535,882	1,471	1044
June	1,128,950	1,359	831
July	729,678	1,038	703
August	47,987	84	567
September	0	0	0
October	685,131	973	704
November	958,316	1,196	801
December	964,249	1,212	795
	<u>11,705,651</u>	<u>12,840</u>	<u>912</u>

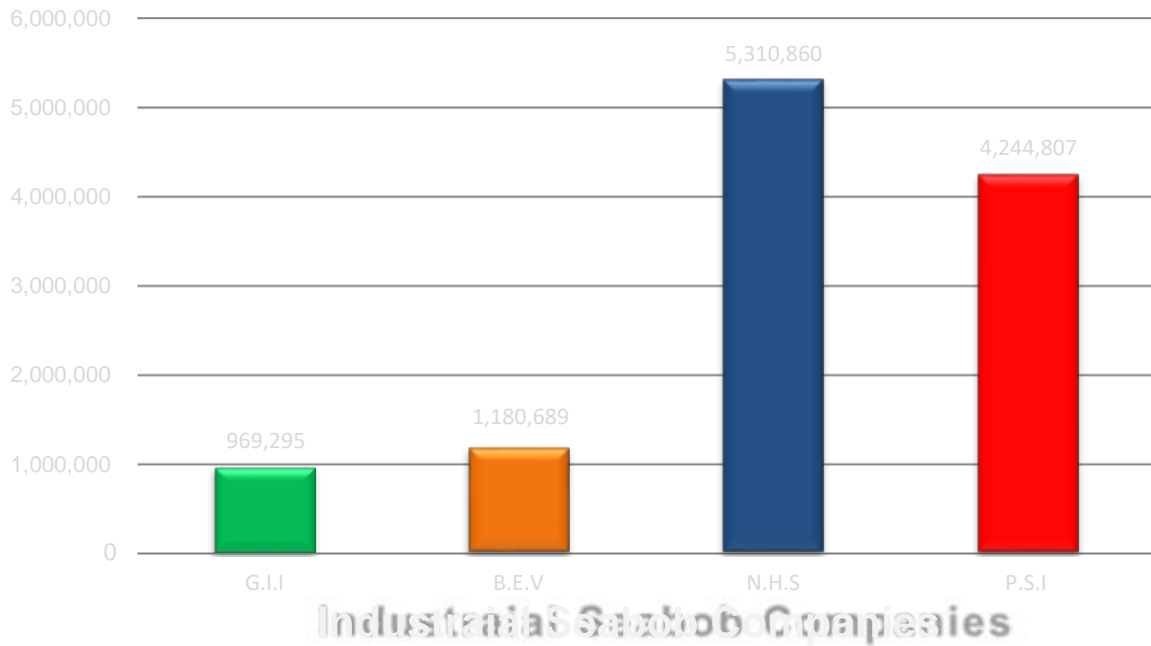
The close season was observed during 1st August to 27th September, 2018 (both dates inclusive).

CATCH

Table 3 - Shows Guyana`s industrial processed Seabob landings 2018 by company.

Seabob CPUE 2018 by Company				
Companies	Processed Wt (kg)	% Breakdown	Standardised DAS (sdas)	% Breakdown
GII	969,295	8	1,450	11
BEV	1,180,689	11	1,639	13
NHS	5,310,860	45	4,599	36
PSI	4,244,807	36	5,152	40
Total	11,705,651	100	12840	100

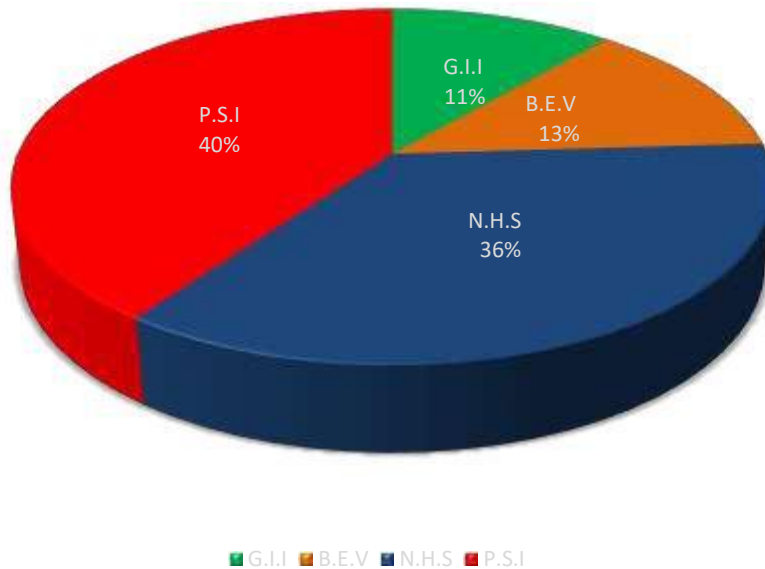
Figure 1. Graph showing Guyana`s industrial processed Seabob landings 2018 by companies.



The table/graph above represents the total number of seabob processed after landing (kilograms) by each of the industrial Seabob companies. From January to December 2018, a total of eleven million, seven hundred and five thousand, six hundred and fifty-one kilograms (11,705,651 kgs) of seabob was processed after landing. Pritipaul Singh Investments Inc. landed four million, two hundred and forty-four thousand, eight hundred and seven kilograms (4,244,807 kgs) of that amount; this represents 36% (the second highest) of the total weight. Noble House Seafoods Ltd. landed five million, three hundred and ten thousand, eight hundred and sixty kilograms (5,310,860 kgs), this translated to 45% (the highest) of the total weight. BEV processors Inc. landed one million, one hundred and eight thousand, six hundred and eighty-nine kilograms (1,180,689 kgs), representing 11%. This company also operated only for the first half of the year (January to June). Guyana Investment Inc. landed nine hundred and sixty-nine thousand, two hundred and ninety five kilograms (969,295kgs), representing 8% (the lowest) of the total weight landed and the only company to record below one million kilograms, processed Seabob after landing.

EFFORT

Figure 2. Graph showing the standardized days-at-sea (sdas) usage by the companies in 2018

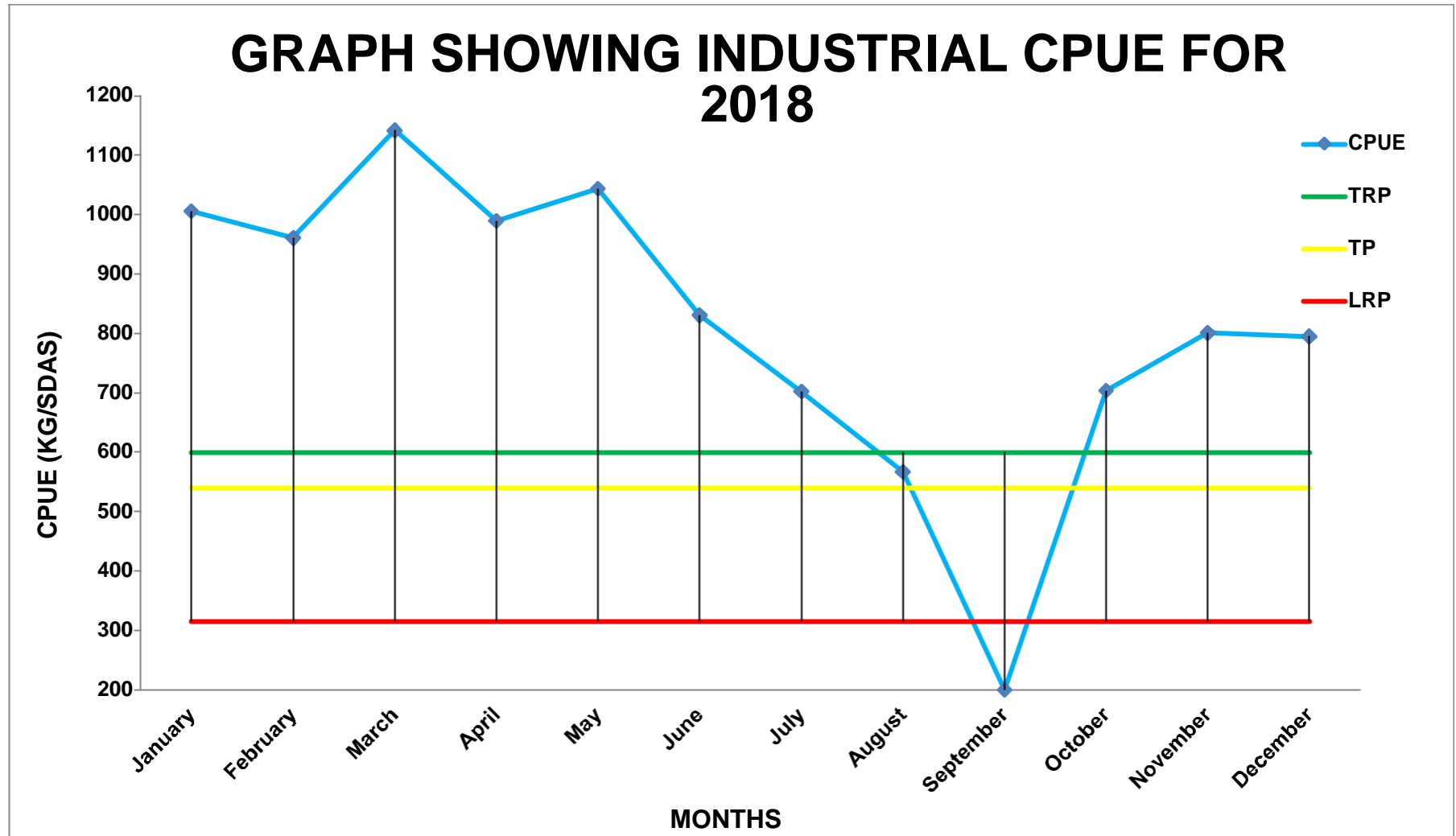


The graph above is a representation of the respective fishing efforts (standardized days at sea/sdas). Noteworthy, is the fact that the total effort utilized during 2018 was observed to be below the total allowable effort which is approximately 15,000 sdas.

Pritipaul Singh Investments Inc. standardized days at sea represents 40% of the total days utilized by industrial fleet (five thousand, one hundred and fifty two sdas) .Noble House Seafood Ltd. `s spent 36 % of the aforesaid days(four thousand five hundred and ninety nine sdas). The two companies combined shared the greater majority (76%) of the days spent at sea. The two remaining companies; BEV processors Inc. and Guyana Investment Inc. were responsible for 13% (one thousand six hundred and thirty nine sdas) and 11% (~one thousand, four hundred and fifty sdas) respectively, of the total days spent at sea.

INDUSTRIAL CPUE

Figure 3. Graph showing the Seabob Catch Per Unit Effort (CPUE) for the Industry (all companies) in 2018.

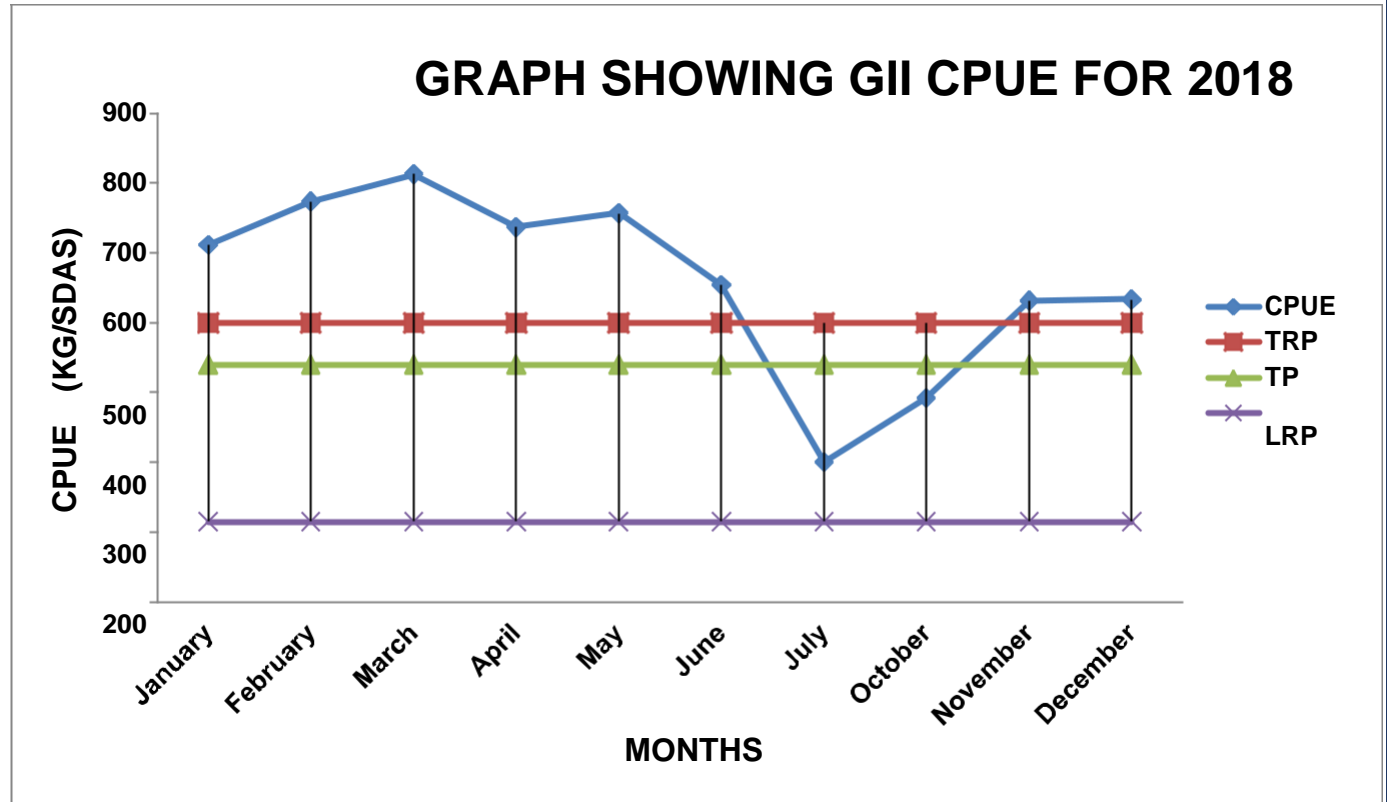


The overall performance of the Seabob Industry during 2018 can be considered acceptable since monthly catch rates (CPUE) were all above the target reference point (TRP). The CPUE (annual) for the Industry was 912 kgs/sdas; representing 52% above the target reference point. The highest recorded Seabob CPUE (i.e. outside of the primary closed seasons months) was observed in March (1142 kgs/sdas) and the lowest in July (703 kgs/sdas). The highest recorded processed tail weight of Seabob (i.e. outside of the primary closed seasons months) was observed in the month of March (1,239,065 kgs) and the lowest in July (729,678 kgs).

The Industry collectively exhausted twelve thousand, eight hundred and forty (12,840) fishing days between January to December, 2018. The highest recorded total fishing days was observed in the month of May (1,471 sdas) and the lowest (i.e. outside of the primary closed seasons months) in the month of October (973 sdas).

GUYANA INVESTMENT INC. CPUE

Figure 4. Graph showing the Seabob Catch Per Unit Effort (CPUE) for Guyana Investment Inc. in 2018

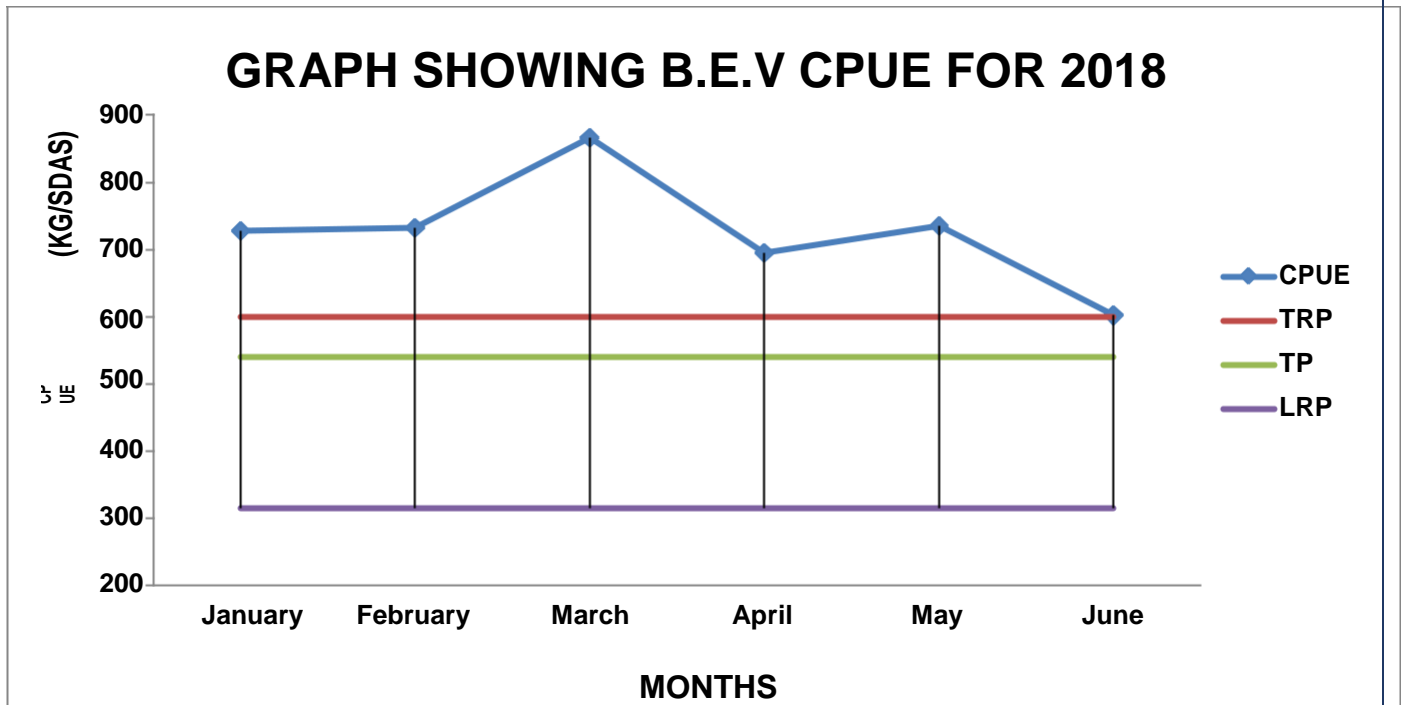


The overall performance of Guyana Investment Inc. during 2018 can be considered acceptable, as the monthly CPUE (i.e. outside of the primary close season month) were above the TRP except for the months of July (400kg/sdas) and October (492 kg/sdas). The annual catch rate for the company was 668 kg/sdas. The highest recorded Seabob CPUE (i.e. outside of the primary close season month) was observed in March (813 kgs/sdas) and the lowest in July (400 kgs/sdas). Overall the company produced nine hundred and sixty-nine thousand, two hundred and ninety five kilograms (969,295 kgs) processed tail weight of seabob. The highest recorded processed tail weight of Seabob (i.e. outside of the primary close season month) was observed in the month of March (141,418 kgs) and the lowest in July (30,499kgs).

Guyana Investment Inc. (GI) utilized a total of one thousand, four hundred and fifty (1,450) fishing days between January to December, 2018. The highest recorded total fishing days was observed in the month of December (198 sdas) and the lowest (i.e. outside of the primary closed seasons months) in the month of July (91 sdas).

BEV PROCESSORS INC. CPUE

Figure 5 .Graph showing the Seabob Catch Per Unit Effort (CPUE) for B.E.V Processors Inc. in 2018

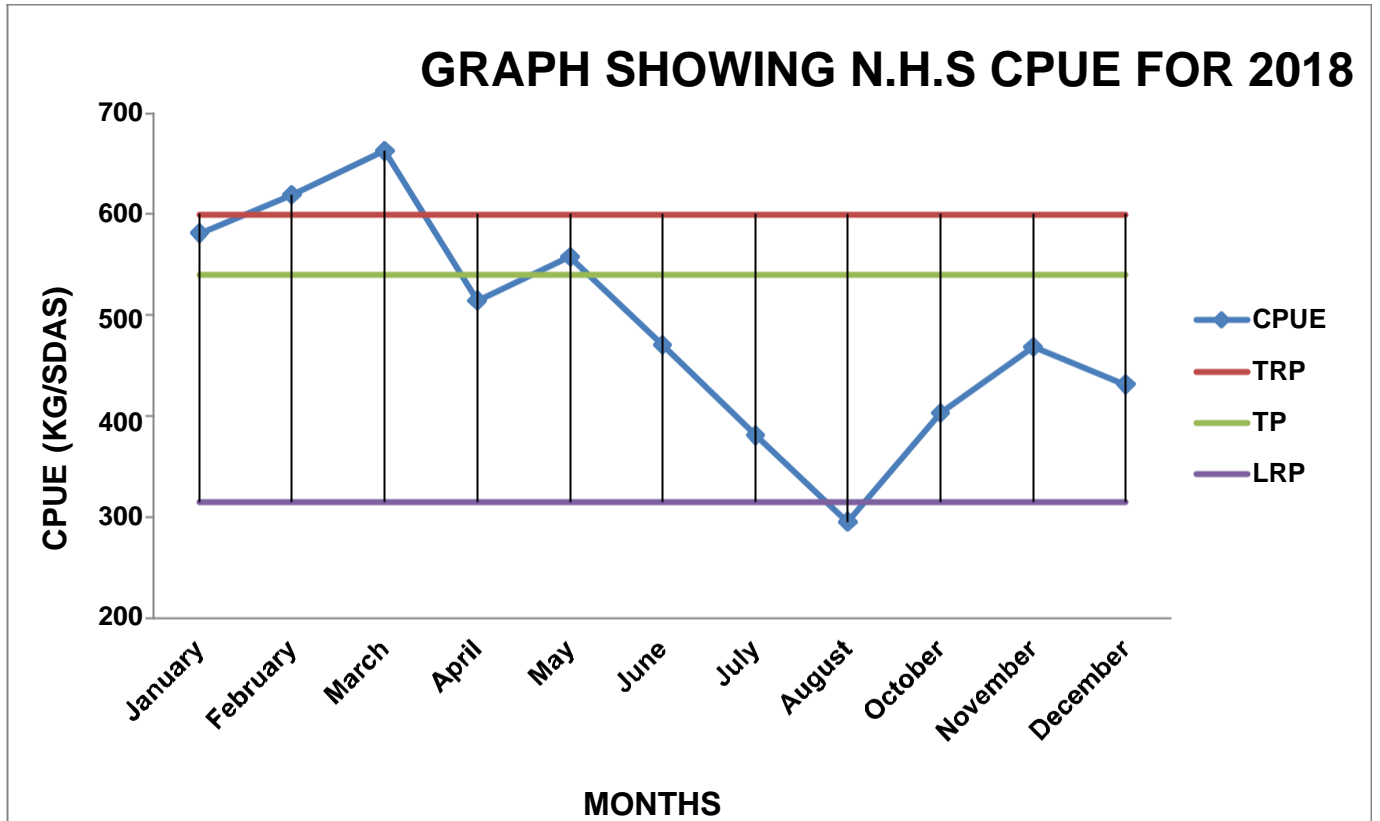


The overall performance of BEV Processors Inc. which operated for the period January to June 2018 was satisfactory as all monthly CPUE were above the TRP. The overall average for the company was 720 kg/sdas. The highest recorded Seabob CPUE (i.e. outside of the primary closed seasons months) was observed in March (866 kgs/sdas) and the lowest in June (602 kgs/sdas). The Company recorded a total of one million, one hundred and eighty thousand, six hundred and eight nine kilograms (1,180,689 kgs) processed tail weight of seabob for the period of operation in 2018. The highest recorded processed tail weight of Seabob was in the month of May (231,246 kgs) and the lowest in the month of January (163,069 kgs).

BEV Processors Inc. (BEV) spent a total of one thousand, six hundred and thirty-nine (1,639) fishing days between January to June, 2018. The highest recorded total fishing days was observed in the month of May (314 sdas) and the lowest (i.e. outside of the primary closed seasons months) in the month of January (224 sdas).

NOBLE HOUSE SEAFOODS LTD. CPUE

Figure 6. Graph showing the Seabob Catch Per Unit Effort (CPUE) for Noble House Seafoods Ltd. in 2018.

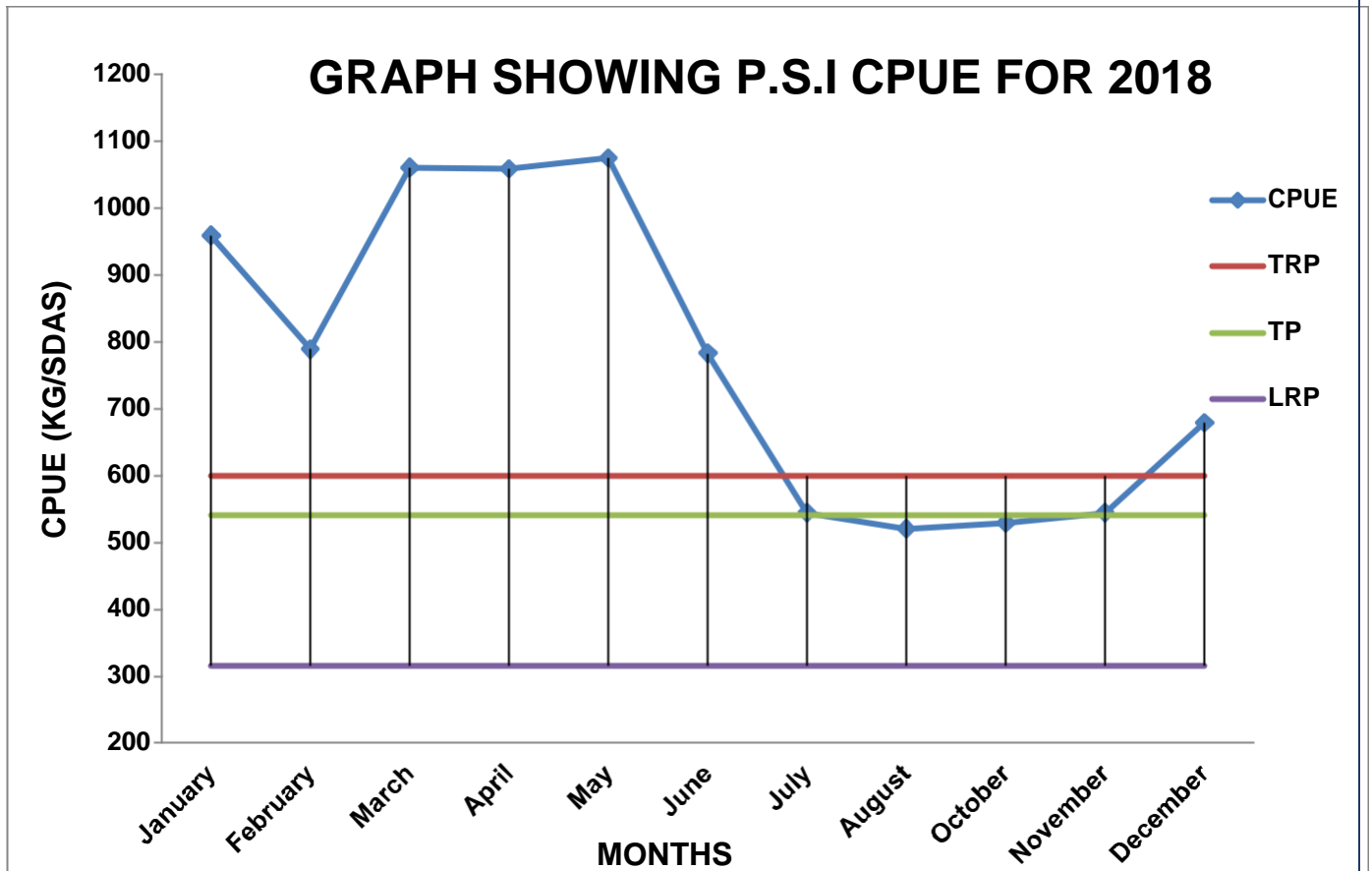


Noble House Seafoods Ltd. the annual catch rate of (502 kg/sdas) was the lowest amongst the companies; thus being the only company to fall beneath the alternative and target reference points (i.e. 630 & 600 kg/sdas, respectively). The highest recorded Seabob CPUE (i.e. outside of the primary closed seasons months) was observed in March (663 kg/sdas) and the lowest in July (381 kg/sdas). The company produced a total of five million, three hundred and ten thousand, eight hundred and sixty kilograms (5,310.860 kgs) processed tail weight of seabob in 2018 the highest among companies. The highest recorded processed tail weight of Seabob (i.e. outside of the primary closed seasons months) was observed in the month of November (585,970 kgs) and the lowest in October (411,661 kgs).

Noble House Seafoods Ltd. (NHS) exhausted a total of four thousand, five hundred and ninety nine (4,599) fishing days between January to December, 2018. The highest recorded total fishing days was observed in the month of July (528 sdas) and the lowest (i.e. outside of the primary closed seasons months) in the month of January (385 sdas).

PRITIPAUL SINGH INVESTMENT INC. CPUE

Figure 7. Graph showing the Seabob Catch Per Unit Effort (CPUE) for Pritipaul Singh Investment Inc. in 2018



The overall performance of Pritipaul Singh Investment Inc. (PSI) during 2018 can be considered excellent. . Pritipaul Singh Investment Inc. (PSI) recorded the second highest annual processed tail weight (4,244,806 kgs) but the highest catch rate of (824 kg/sdas). Further, the CPUE was above the TRP(i.e. outside of the primary closed seasons months) except for the months of July (544 kg/sdas), October (529 kg/sdas) and November (460kg/sdas) .The highest recorded Seabob CPUE (i.e. outside of the primary closed seasons months) was observed in May (1,075 kgs/sdas) and the lowest in both July & October (544kgs/sdas). Overall the company produced four million two hundred and forty-four thousand, eight hundred and six kilograms (4,244,806 kgs) processed tail weight of seabob. The highest recorded processed tail weight landing of Seabob (i.e. outside of the primary closed seasons months) was observed in the month of May (634,441kgs) and the lowest in October (186,650 kgs).

Pritipaul Singh Investment Inc. (PSI) exhausted a total of five thousand, one hundred and fifty-two (5,152) fishing days between January to December, 2018. The highest recorded total fishing days was observed in the month of January (602 sdas) and the lowest (i.e. outside of the primary closed seasons months) in the month of October (460 sdas).

CONCLUSION

The CPUE effort observed for the year 2018 can be considered acceptable, as the CPUE observed (i.e. 912 kgs/sdas) was 52% above the target/first trigger and a corresponding 44% above the alternative target reference point. The aforesaid catch rate was 27% more than that obtained in 2017 (715 kgs/sdas). Additionally, the annual processed tail weight of seabob has increased by 18% in 2018 while the overall effort (DaS) decreased by 7.5%, when compared to the previous year, respectively. The number of days at sea in 2019 for the seabob vessels will be 225 days.

APPENDICES

PROCEDURE FOR SETTING THE TAE FOR GUYANA SEABOB

The Total Allowable Effort days-at-Sea (DaS) Quota shall be set at:

- Maximum 87 licences to fish seabob
- Maximum 225 days at sea per licenced vessel when the indexed catch index is at or above the target index.
- a linearly declining value when the current index is above the trigger index, but below the target index, according to the calculation (TAE in days at sea per vessel):

$$TAE = 205 + 20 * (\text{Current Index} - \text{Trigger Index}) / (\text{Target Index} - \text{Trigger Index})$$

- a linearly declining value when the current index is above the limit index, but below the trigger index, according to the calculation (TAE in days at sea per vessel):

$$TAE = 205 * (\text{Current Index} - \text{Limit Index}) / (\text{Trigger Index} - \text{Limit Index})$$

- zero (there is an export moratorium) if the current index is at or below the limit index. The current index for each year shall be calculated as the average between the previous year's index value and the catch rate of the previous year (i.e. a moving average). The catch rate will be based on reported catch and effort data for all vessels. The catch rate is calculated as the total landings of seabob processed (peeled tail) weight in kilograms divided by the total number of standardised days-at-sea.

The HCR Index in any given year t (I_t) is calculated as:

$$I_t = 0.5 \left(I_{t-1} + \frac{C_{t-1}}{0.766 D_{t-1}} \right)$$

Where C_{t-1} = catch (kg processed tail weight) in the year t-1 and D_{t-1} = total nominal days-at-sea required to catch C_{t-1} . The index calculation should include all observed reliable catch and effort data.

SEABOB CPUE 2018

GUYANA INVESTMENT INC. - SEABOB CPUE 2018			
Months	Processed Weight (kg)	Standardised DAS (sdas)	CPUE (kg/sdas)
January	88,686	124.562	712
February	115,048	148.700	774
March	141,418	174.017	813
April	109,490	148.590	737
May	90,546	119.622	757
June	59,756	91.370	654
July	30,499	76.168	400
October	86,820	176.518	492
November	121,482	192.268	632
December	125,548	198.226	633
	<u>969,295</u>	<u>1,450.041</u>	<u>668</u>

B.E.V PROCESSORS INC. - SEABOB CPUE 2018			
Months	Processed Weight (kg)	Standardised DAS (sdas)	CPUE (kg/sdas)
January	163,069	224.097	728
February	192,319	262.805	732
March	206,523	238.424	866
April	201,782	290.362	695
May	231,246	314.639	735
June	185,750	308.685	602
	<u>1,180,689</u>	<u>1,639.012</u>	<u>720</u>

NOBLE HOUSE SEAFOODS - SEABOB CPUE 2018			
Months	Processed Weight (kg)	Standardised DAS (sdas)	CPUE (kg/sdas)
January	515,635	385.758	581
February	535,048	375.539	619
March	684,902	449.402	663
April	527,133	445.397	515
May	615,345	479.658	558
June	479,734	443.350	470
July	462,931	528.406	381
August	16,733	24.640	295
October	411,661	444.272	403
November	585,970	543.705	469
December	475,770	479.600	431
	<u>5,310,860</u>	<u>4,599.727</u>	<u>502</u>

PRITIPAUL SINGH INVESTMENT - SEABOB CPUE			
2018			
Months	Processed Weight (kg)	Standardised DAS (sdas)	CPUE (kg/sdas)
January	579,805	604.404	959
February	396,650	502.589	789
March	634,441	597.982	1061
April	563,509	532.179	1059
May	598,745	557.085	1075
June	403,709	515.758	783
July	236,248	433.922	544
August	31,255	60.039	521
October	186,650	352.610	529
November	250,864	460.832	544
December	362,932	534.743	679
	<u>4,244,806.818</u>	<u>5,152.143</u>	<u>824</u>

INDUSTRIAL SEABOB CPUE 2018			
Months	Processed Weight (kg)	Standardised DAS (sdas)	CPUE (kg/sdas)
January	1,347,195	1,338.821	1006
February	1,239,065	1,289.633	961
March	1,667,284	1,459.825	1142
April	1,401,914	1,416.528	990
May	1,535,882	1,471.004	1044
June	1,128,950	1,359.163	831
July	729,678	1,038.496	703
August	47,987	84.679	567
October	685,131	973.400	704
November	958,316	1,196.805	801
December	964,249	1,212.569	795
	<u>11,705,651</u>	<u>12,840.923</u>	<u>912</u>