Australian Government
Australian Fisheries Management Authority

ISMP Annual Report 2019

AFMA Observer Program

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Introduction

The Southern and Eastern Scalefish and Shark Fishery (SESSF) Integrated Scientific Monitoring Program (ISMP) provides fisheries managers, research organisations, environmental agencies, the fishing industry and the wider community with independent, reliable, verified and accurate information on the fishing catch, effort and practice of Commonwealth vessels.

ISMP data, collected by the Australian Fisheries Management Authority (AFMA) observers, is utilised in the SESSF Harvest Strategy through a tiered framework that assesses the stock status of commercial species. The stock assessments are ranked according to the amount of data that is required and how the assessments measure abundance. Data needs for specific species depend on what stock assessment tier is used (for more information refer to the Harvest Strategy Framework for the SESSF).

The ability to collect ISMP data. Including biological data, in the SESSF is dependent on many factors. The key influences impacting the ability of AFMA's observers to meet biological, spatial and temporal targets include fishing effort, availability of target species, weather conditions, availability of vessels and availability of observers in relation to AFMA's other commitments.

This report summarises the biological data collected in the 2019 calendar year against targets outlined in the SESSF Data Plan 2017-20 and spatial and temporal data targets against the Proportional Method for data collection as described by Bergh et al. (2009). The following legend has been used to provide visual representation of performance against these targets.

KEY	
RED	<50% of Target
ORANGE	50 – 75% of Target
GREEN	>75% of Target

Observer Sea Days

Total Sea Days by Stratum

Table 1. Annual ISMP targets and achieved sea days by strata (2019)

Commonwealth Trawl Sector Sea Days 2019				
Stratum	**Zone**	**Gear**	**Target**	**Actual**
Eden/Lakes	60	Danish Seine	20	**10.0**
Eden/Lakes	20	Danish Seine	22	**23.0**
Eden/Lakes Inshore	20	Trawl	43	**31.5**
Eden/Lakes Offshore	20	Trawl	20	**17.3**
NSW Inshore	10	Trawl	21	**22.4**
NSW Offshore	10	Trawl	15	**5.8**
NSW (GEM Spawn)	10 (GEM)	Trawl	20	**0.0**
NSW (royal red)	10 (JAQ)	Trawl	4	**3.0**
South West VIC	50	Trawl	25	**56.0**
East TAS	30	Trawl	26	**39.0**
East TAS (Roughy)	30 (ORY)	Trawl	65	**69 (7)***
West TAS	40	Trawl	16	**21.0**
West TAS (GRN Spawn)	40 (GRN)	Trawl	20	**30 (34)***
East Coast Deep Water	70	Trawl	0	**(7)***
Total			**317**	**328 (48)***

*The numbers in brackets in the Actual Days column represent achieved sea days in those strata that were charged out on a fee for service basis.

Sea Days by Quarter

Table 2. Quarterly ISMP targets and achieved sea days by strata (2019)

Commonwealth Trawl Sector Sea Days By Quarter2019 Sea Days by Quarter										
			Q1		Q2		Q3		Q4	
Stratum	**Zone**	**Gear**	**Target**	**Actual**	**Target**	**Actual**	**Target**	**Actual**	**Target**	**Actual**
Eden/Lakes	60	Danish Seine	7	5.0	5	2.0	4	3.0	4	0.0
Eden/Lakes	20	Danish Seine	5	7.0	5	4.0	6	7.0	6	5.0
Eden/Lakes Inshore	20	Trawl	9	4.2	11	9.4	11	10.4	12	7.6
Eden/Lakes Offshore	20	Trawl	3	2.1	6	6.7	6	1.1	5	7.4
NSW Inshore	10	Trawl	6	3.9	5	8.5	5	6.0	5	4.0
NSW Offshore	10	Trawl	2	1.8	5	1.5	5	2.5	3	0.0
NSW (GEM Spawn)	10 (GEM)	Trawl	0	0.0	10	0.0	10	0.0	0	0.0
NSW (royal red)	10 (JAQ)	Trawl	1	0.0	1	1.0	1	1.0	1	1.0
South West VIC	50	Trawl	7	21.0	7	14.0	5	12.0	6	9.0
East TAS (30)	30	Trawl	10	15.0	6	9.0	4	7.0	6	8.0
East TAS (Roughy)	30 (ORY)	Trawl	0	0.0	35	35.0	30	41.0	0	0.0
West TAS	40	Trawl	4	5.0	2	3.0	5	8.0	5	5.0
West TAS (GRN Spawn)	40 (GRN)	Trawl	0	0.0	20	18.0	0	46.0	0	0.0
East Coast Deep Water	70	Trawl	0	0.0	0	0.0	0	7.0	0	0.0
Total			**54**	**65.0**	**118**	**112.0**	**92**	**152.0**	**53**	**47.0**

Observed Shots by Stratum

In 2019, a total of 924 shots were observed for catch composition and biological data collection in the Commonwealth Trawl Sector (CTS). Table 2 shows the breakdown of shots by stratum. The target percentage for shots observed in each stratum was 3.4%.

Table 3. Observed and logbook shots by stratum (2019)

Commonwealth Trawl Sector Shots Observed					
Stratum	**Zone**	**Gear**	**Shots Observed**	**Logbook Shots****	**Percentage Observed**
Eden/Lakes	60	Danish Seine	42	4738	**0.9%**
Eden/Lakes	20	Danish Seine	67	4490	**1.5%**
Eden/Lakes Inshore	20	Trawl	90	3488	**2.6%**
Eden/Lakes Offshore	20	Trawl	48	1407	**3.4%**
NSW Inshore	10	Trawl	61	985	**6.2%**
NSW Offshore	10	Trawl	23	1118	**2.1%**
South West VIC	50	Trawl	116	1910	**6.1%**
East TAS	30	Trawl	265*	2799	**9.5%**
West TAS	40	Trawl	212*	1332	**15.9%**
Total			**924**	**22267**	**4.15%**

*Shots in Zones 30 and 40 include those that were observed during seasonal operations targeting Orange Roughy and Blue Grenadier respectively.

**Logbook shots were extracted from the AFMA database and were accurate at the time of extraction.

Biological Data Collection Summary

Total Lengths Collected

Table 4. Target and actual lengths collected (2019) (CTS)

Commonwealth Trawl Sector Lengths Collected 2019						
Species		Number of Lengths				
Common Name	**Species Code**	**Target**	**Observers**	**Port Samplers**	**Total**	**% Collected**
Alfonsino	BYS	2000	896	56	952	**48%**
Blue Grenadier (N-spawn)	NS GRN	1500	1553	995	2548	**170%**
Blue Grenadier (Spawn)	S GRN	2000	4784	0	4784	**239%**
Blue Warehou (East)	E SEM	1000	701	689	1390	**139%**
Blue Warehou (West)	W SEM	1000	593	0	593	**59%**
Blue-eye Trevalla	BWA	800	12	18	30	**4%**
Deepwater Sharks (East)	E DEEP SRK	1000	424	748	1172	**117%**
Deepwater Sharks (West)	W DEEP SRK	1000	544	0	544	**54%**
Gemfish (East)	E GEM	2000	1298	987	2285	**114%**
Gemfish (West)	W GEM	2000	1713	0	1713	**86%**
Jackass Morwong (East)	E TAK	1000	893	1358	2251	**225%**
Jackass Morwong (West)	W TAK	1000	901	0	901	**90%**
John Dory	JOD	2000	908	1689	2597	**130%**
Pink Ling (East)	E CUS	1000	1295	1009	2304	**230%**
Pink Ling (West)	W CUS	1000	1326	0	1326	**133%**
Mirror Dory (East)	E ZNE	1000	353	1312	1665	**167%**
Mirror Dory (West)	W ZNE	1000	509	0	509	**51%**
Reef Ocean Perch	HFR	1000	858	469	1327	**133%**
Bigeye Ocean Perch	37287093	1000	1184	679	1863	**186%**
Orange Roughy	ORY	1000	3172	132	3304	**330%**
Oreos other	ORO/ONV	1000	813	166	979	**98%**
Redfish	CXF	2000	2183	165	2348	**117%**
Ribaldo	RIB	1000	1251	433	1684	**168%**
Royal Red Prawn	JAQ	2000	1979	0	1979	**99%**
School Whiting (Trawl)	ILQ	1000	69	438	507	**51%**
School Whiting (D. Seine)	ILQ	1500	1126	1719	2845	**190%**
Silver Trevally	TRZ	2000	175	0	175	**9%**
Smooth Oreo	SSO	1000	13	0	13	**1%**
Spotted Warehou (East)	E SEP	1000	1699	1133	2832	**283%**
Spotted Warehou (West)	W SEP	1000	1468	0	1468	**147%**
Tiger Flathead (Trawl)	PHI	1000	1739	812	2551	**255%**
Tiger Flathead (D. Seine)	PHI	1000	1419	1017	2436	**244%**
Hapuka	WHA	1000	1	17	18	**2%**
Ocean Jacket	NLY	1000	613	0	613	**61%**
King Dory	ZCT	1000	916	153	1069	**107%**
Frostfish	SFS	1000	642	0	642	**64%**
Total		**44,800**	**40,023**	**16,194**	**56,217**	

Table 5. Target and actual lengths collected (2019) (GABT)

Great Australian Bight Trawl Lengths Collected 2019						
Species		Number of Lengths				
Common Name	Species Code	Target	Observers / Crew	Port Samplers	Total	% Collected
Bight Redfish	CXZ	2000	5328*	52	5380	269%
Blue Grenadier (N-spawn)	NS GRN	800	0	139	139	17%
Deepwater Flathead	FTL	2000	40754*	78	40832	2042%
Total		**7,800**	**30,201**	**269**	**30,470**	

*Lengths were collected by Great Australian Bight Trawl (GABT) vessel crew members. AFMA did not place observers in the GABT during 2019.

Lengths Collected by Quarter

Table 6. Lengths collected by quarter (2019) (CTS)

Commonwealth Trawl Sector Otoliths by Quarter 2019					
Species		Lengths Collected			
Common Name	Species Code	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Alfonsino	BYS	2	130	748	72
Blue Grenadier (N-spawn)	NS GRN	881	522	591	554
Blue Grenadier (Spawn)	S GRN	0	1171	3613	0
Blue Warehou (East)	E SEM	236	415	556	183
Blue Warehou (West)	W SEM	17	231	316	29
Blue-eye Trevalla	BWA	5	19	0	6
Deepwater Sharks (East)	E DEEP SRK	0	596	264	312
Deepwater Sharks (West)	W DEEP SRK	298	77	131	38
Gemfish (East)	E GEM	332	797	738	418
Gemfish (West)	W GEM	187	385	635	506
Jackass Morwong (East)	E TAK	750	533	348	620
Jackass Morwong (West)	W TAK	354	346	66	135
John Dory	JOD	369	914	763	551
Pink Ling (East)	E CUS	399	810	579	516
Pink Ling (West)	W CUS	416	344	279	287
Mirror Dory (East)	E ZNE	286	482	359	538
Mirror Dory (West)	W ZNE	129	81	29	270
Reef Ocean Perch	HFR	72	576	424	255
Bigeye Ocean Perch	37287093	368	752	294	449
Orange Roughy	ORY	0	1239	2065	0
Oreos other	ORO/ONV	169	325	300	185
Redfish	CXF	661	854	507	326
Ribaldo	RIB	595	764	191	134
Royal Red Prawn	JAQ	431	359	504	685
School Whiting (Trawl)	ILQ	62	38	255	152
School Whiting (D. Seine)	ILQ	938	847	640	420
Silver Trevally	TRZ	0	160	15	0
Smooth Oreo	SSO	0	13	0	0
Spotted Warehou (East)	E SEP	395	712	1341	384
Spotted Warehou (West)	W SEP	347	223	707	191
Tiger Flathead (Trawl)	PHI	616	621	967	347
Tiger Flathead (D. Seine)	PHI	561	390	915	570
Hapuka	WHA	4	9	0	5
Ocean Jacket	NLY	79	264	221	49
King Dory	ZCT	537	321	181	30
Frostfish	SFS	274	263	105	0
Total		**10,770**	**16,583**	**19,647**	**9,217**

Total Otoliths Collected

Table 7. Target and actual otoliths collected (2019) (CTS)

Commonwealth Trawl Sector Otoliths Collected 2019						
Species		**Otoliths Collected**				
Common Name	**Species Code**	**Target**	**Observers**	**Port Samplers**	**Total**	**% Collected**
Alfonsino	BYS	1000	468	0	468	**47%**
Blue Grenadier (N-spawn)	NS GRN	800	714	215	929	**116%**
Blue Grenadier (Spawn)	S GRN	1000	1465	0	1465	**147%**
Blue Warehou (East)	E SEM	375	258	104	362	**97%**
Blue Warehou (West)	W SEM	375	186	0	186	**50%**
Blue-eye Trevalla	BWA	500	26	20	46	**9%**
Gemfish (East)	E GEM	600	579	328	907	**151%**
Gemfish (West)	W GEM	600	754	0	754	**126%**
Jackass Morwong (East)	E TAK	360	223	163	386	**107%**
Jackass Morwong (West)	W TAK	360	240	0	240	**67%**
John Dory	JOD	500	77	486	563	**113%**
Pink Ling (East)	E CUS	350	265	273	538	**154%**
Pink Ling (West)	W CUS	350	359	0	359	**103%**
Mirror Dory (East)	E ZNE	300	39	396	435	**145%**
Mirror Dory (West)	W ZNE	200	61	0	61	**31%**
Reef Ocean Perch	HFR	400	275	134	409	**102%**
Bigeye Ocean Perch	37287093	400	276	250	526	**132%**
Orange Roughy	ORY	1250	1320	60	1380	**110%**
Redfish	CXF	800	554	138	692	**87%**
Ribaldo	RIB	300	214	83	297	**99%**
School Whiting (Trawl)	ILQ	100	2	98	100	**100%**
School Whiting (D. Seine)	ILQ	400	292	275	567	**142%**
Silver Trevally	TRZ	400	2	0	2	**1%**
Spotted Warehou (East)	E SEP	375	248	222	470	**125%**
Spotted Warehou (West)	W SEP	375	582	0	582	**155%**
Tiger Flathead (Trawl)	PHI	400	467	91	558	**140%**
Tiger Flathead (D. Seine)	PHI	400	407	226	633	**158%**
Hapuka	WHA	500	0	0	0	**0%**
Total		**13,770**	**10,364**	**3,562**	**13,915**	

Table 8. Target and actual otoliths collected (2019) (GABT)

Great Australian Bight Trawl Otoliths Collected 2019						
Species		**2019 Calendar Year**				
Common Name	**Species Code**	**Target**	**Observers / Crew***	**Port Samplers**	**Total**	**% Collected**
Bight Redfish	CXZ	560	0	531	531	**95%**
Blue Grenadier (N-spawn)	NS GRN	400	0	196	196	**49%**
Deepwater Flathead	FTL	560	0	561	561	**100%**
Total		**1,520**	**0**	**1,288**	**1,288**	

* While GABT vessel crew members collected lengths they are not required to collect otoliths; that work was done periodically throughout the year by AFMA Observers in port.

Otoliths Collected by Quarter

Table 9. Otoliths collected by quarter (2019) (CTS)

Commonwealth Trawl Sector Otoliths Collected by Quarter					
Species		**Otoliths Collected**			
Common Name	**Species Code**	**Quarter 1**	**Quarter 2**	**Quarter 3**	**Quarter 4**
Alfonsino	BYS	0	0	468	0
Blue Grenadier (N-spawn)	NS GRN	305	227	152	245
Blue Grenadier (Spawn)	S GRN	0	588	877	0
Blue Warehou (East)	E SEM	127	107	98	30
Blue Warehou (West)	W SEM	0	32	129	25
Blue-eye Trevalla	BWA	3	24	11	8
Gemfish (East)	E GEM	192	291	234	190
Gemfish (West)	W GEM	198	97	278	181
Jackass Morwong (East)	E TAK	116	120	34	116
Jackass Morwong (West)	W TAK	109	52	79	0
John Dory	JOD	116	127	192	128
Pink Ling (East)	E CUS	103	170	143	122
Pink Ling (West)	W CUS	69	75	140	75
Mirror Dory (East)	E ZNE	138	111	80	106
Mirror Dory (West)	W ZNE	0	0	22	39
Reef Ocean Perch	HFR	54	202	61	92
Bigeye Ocean Perch	37287093	175	75	176	100
Orange Roughy	ORY	19	1095	266	0
Redfish	CXF	71	195	309	117
Ribaldo	RIB	43	81	26	147
School Whiting (Trawl)	ILQ	9	1	65	25
School Whiting (D. Seine)	ILQ	166	112	189	100
Silver Trevally	TRZ	0	0	2	0
Spotted Warehou (East)	E SEP	84	169	132	85
Spotted Warehou (West)	W SEP	158	62	362	0
Tiger Flathead (Trawl)	PHI	178	103	114	163
Tiger Flathead (D. Seine)	PHI	176	142	173	142
Hapuka	WHA	0	0	0	0
Total		**2,609**	**4,258**	**4,812**	**2,236**

Table 10. Otoliths collected by quarter (2019) (GABT)

Great Australian Bight Trawl Otoliths Collected by Quarter					
Species		**Otoliths Collected**			
Common Name	**Species Code**	**Quarter 1**	**Quarter 2**	**Quarter 3**	**Quarter 4**
Bight Redfish	CXZ	0	364	54	113
Blue Grenadier (N-spawn)	NS GRN	146	0	50	0
Deepwater Flathead	FTL	0	403	60	98
Total		**146**	**767**	**164**	**211**

Observations by Species

The tables and figures below show the observation percentages and length-frequency distribution for species sampled in the CTS for the 2019 calendar year. Each length-frequency histogram provides a breakdown between retained and discarded catch. Note that logbook catch was extracted from the AFMA database and was accurate at the time of extraction.

Alfonsino

Table 11. Summary of Alfonsino observations (CTS) (2019)

Observed Weight (kg)	**6,521**
Logbook Weight (kg)	**7,747**
% of Logbook Catch Observed	**84%**
% of Length Target Collected	**48%**
% of Otolith Target Collected	**47%**

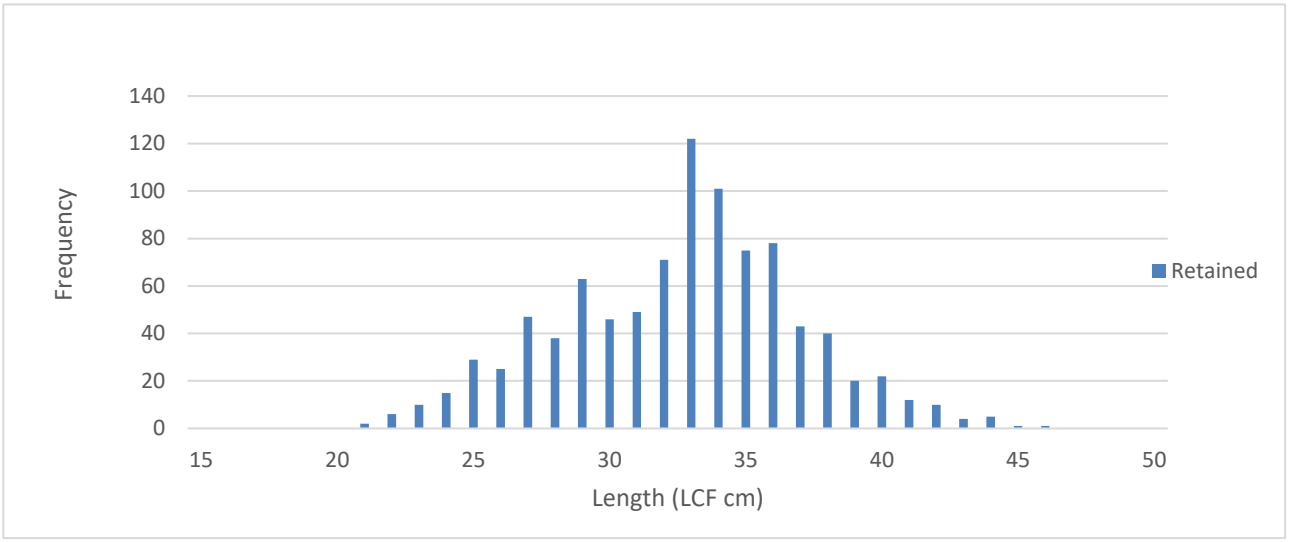

Figure 1. Length-frequency histogram for Alfonsino (CTS) (2019)

Blue Grenadier

Table 12. Summary of Blue Grenadier observations (CTS) (2019)

Observed Weight (kg)	**4,830,313**
Logbook Weight (kg)	**7,545,350**
% of Logbook Catch Observed	**64%**
% of Length Target Collected	**209%**
% of Otolith Target Collected	**133%**

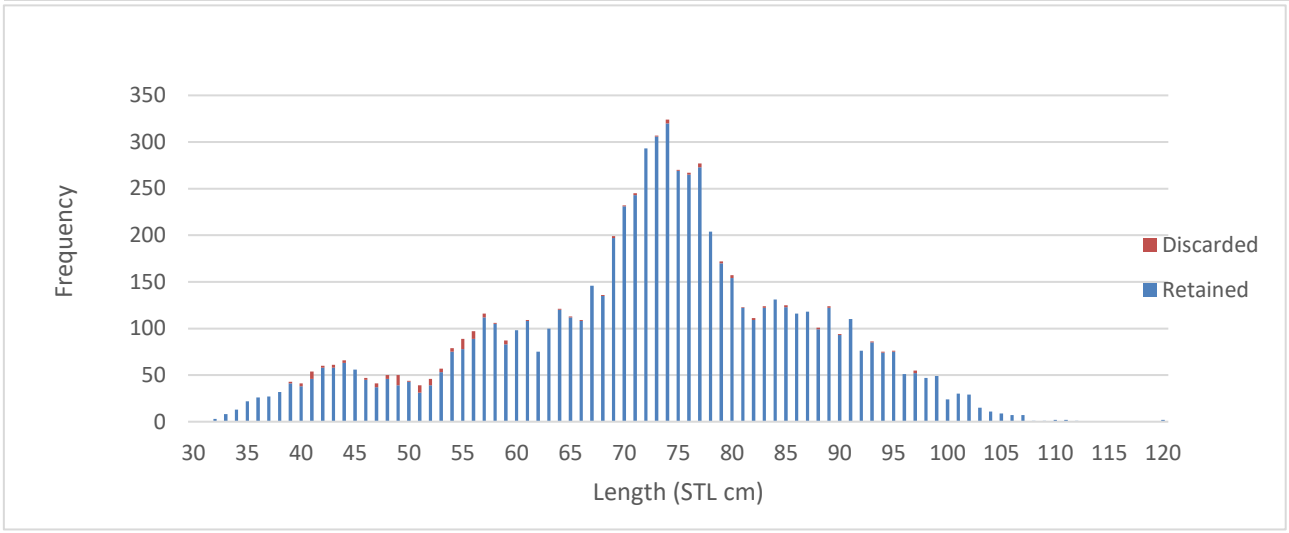

Figure 2. Length-frequency histogram for Blue Grenadier (CTS) (2019)

Blue Warehou (east)

Table 13. Summary of Blue Warehou (east) observations (CTS) (2019)

Observed Weight (kg)	**596**
Logbook Weight (kg)	**24,750**
% of Logbook Catch Observed	**2.4%**
% of Length Target Collected	**139%**
% of Otolith Target Collected	**97%**

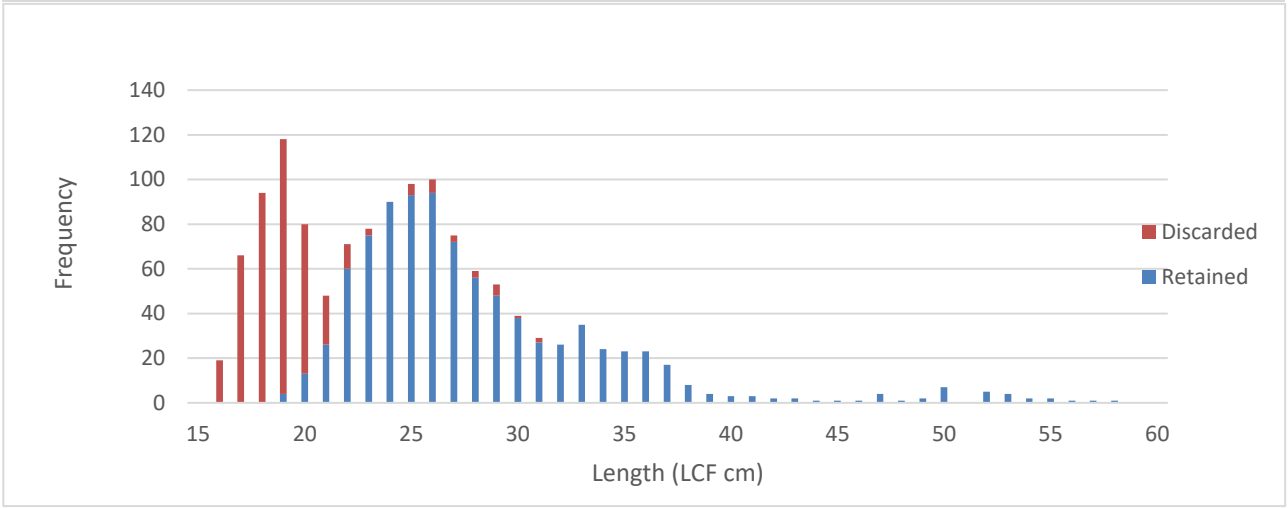

Figure 3. Length-frequency histogram for Blue Warehou (east) (CTS) (2019)

Blue Warehou (west)

Table 14. Summary of Blue Warehou (west) observations (CTS) (2019)

Observed Weight (kg)	**1,243**
Logbook Weight (kg)	**7,546**
% of Logbook Catch Observed	**16%**
% of Length Target Collected	**59%**
% of Otolith Target Collected	**50%**

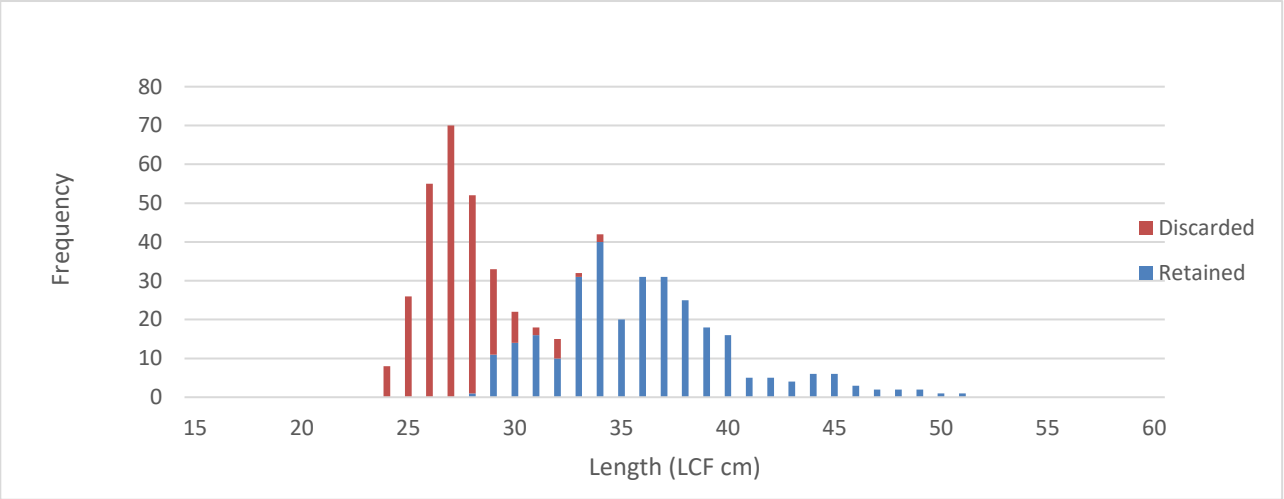

Figure 4. Length-frequency histogram for Blue Warehou (west) (CTS) (2019)

Gemfish (east)

Table 15. Summary of Gemfish (east) observations (CTS) (2019)

Observed Weight (kg)	**2,466**
Logbook Weight (kg)	**46,356**
% of Logbook Catch Observed	**5.3%**
% of Length Target Collected	**139%**
% of Otolith Target Collected	**151%**

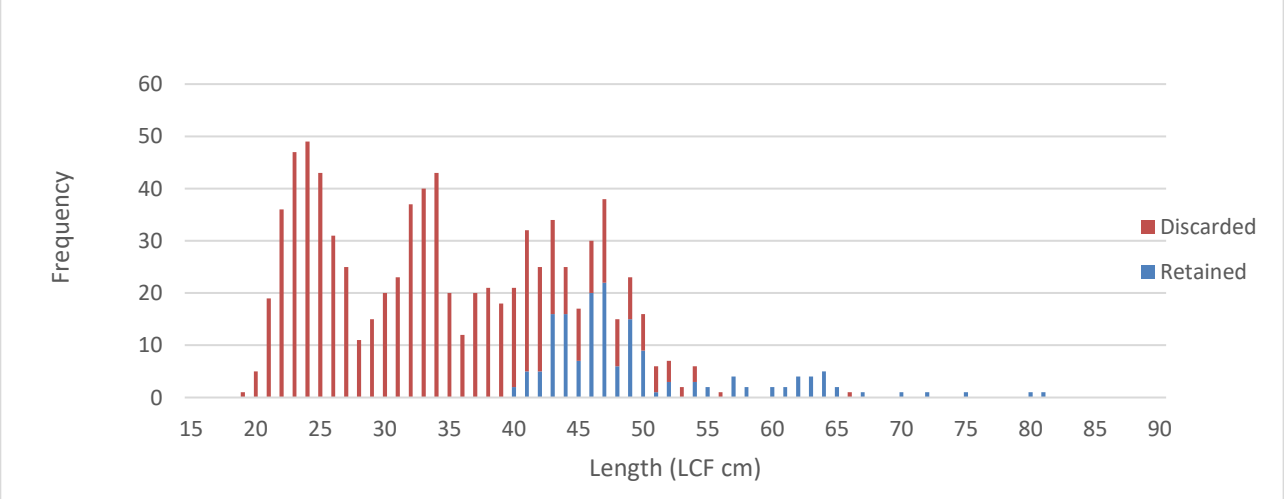

Figure 5. Length-frequency histogram for Gemfish (east) (CTS) (2019)

Gemfish (west)

Table 16. Summary of Gemfish (west) observations (CTS) (2019)

Observed Weight (kg)	**4,776**
Logbook Weight (kg)	**105,345**
% of Logbook Catch Observed	**4.5%**
% of Length Target Collected	**86%**
% of Otolith Target Collected	**126%**

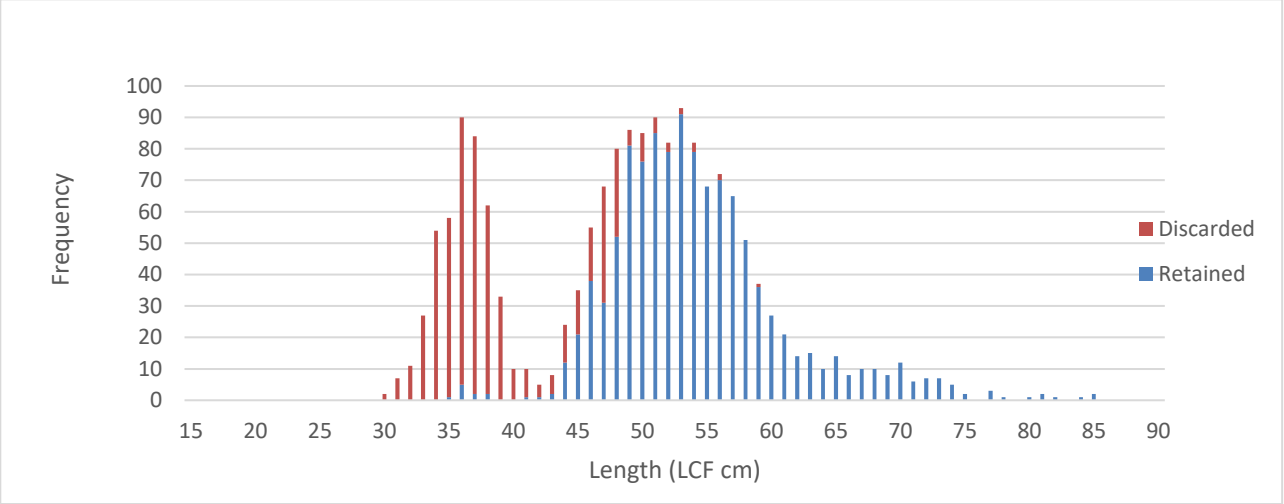

Figure 6. Length-frequency histogram for Gemfish (west) (CTS) (2019)

Jackass Morwong (east)

Table 17. Summary of Jackass Morwong (east) observations (CTS) (2019)

Observed Weight (kg)	**8,541**
Logbook Weight (kg)	**129,164**
% of Logbook Catch Observed	**6.6%**
% of Length Target Collected	**225%**
% of Otolith Target Collected	**107%**

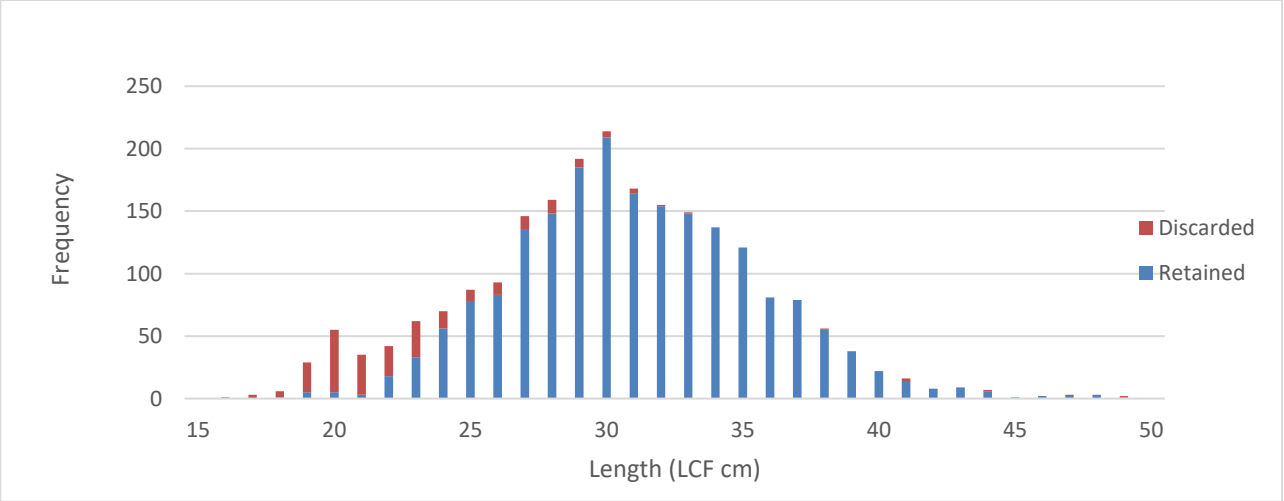

Figure 7. Length-frequency histogram for Jackass Morwong (east) (CTS) (2019)

Jackass Morwong (west)

Table 18. Summary of Jackass Morwong (west) observations (CTS) (2019)

Observed Weight (kg)	**1,502**
Logbook Weight (kg)	**24,937**
% of Logbook Catch Observed	**6.0%**
% of Length Target Collected	**90%**
% of Otolith Target Collected	**67%**

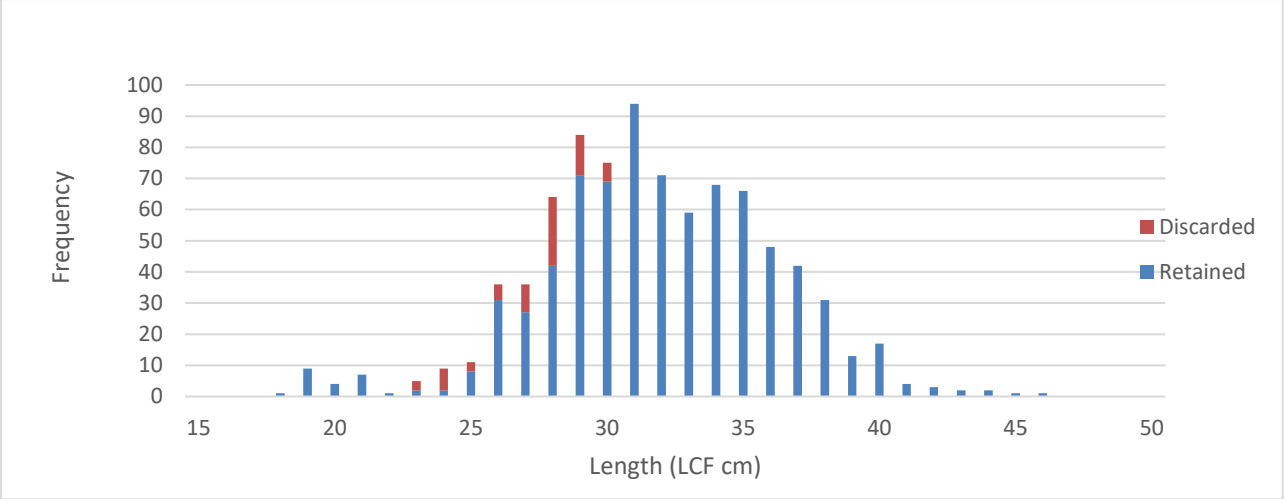

Figure 8. Length-frequency histogram for Jackass Morwong (west) (CTS) (2019)

Pink Ling (east)

Table 19. Summary of Pink Ling (east) observations (CTS) (2019)

Observed Weight (kg)	**12,604**
Logbook Weight (kg)	**263,046**
% of Logbook Catch Observed	**4.8%**
% of Length Target Collected	**230%**
% of Otolith Target Collected	**154%**

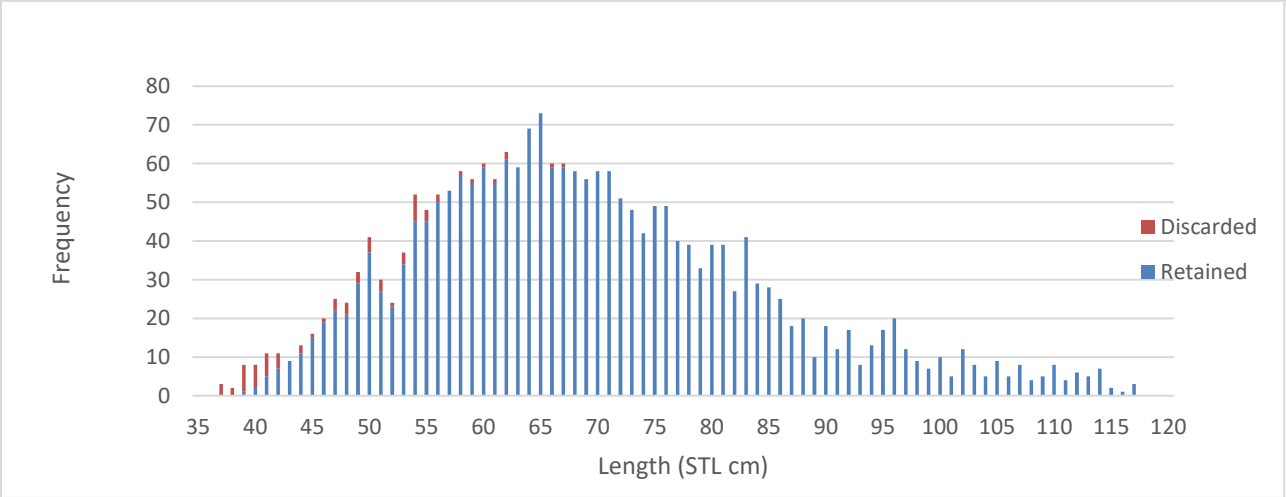

Figure 9. Length-frequency histogram for Pink Ling (east) (CTS) (2019)

Pink Ling (west)

Table 20. Summary of Pink Ling (west) observations (CTS) (2019)

Observed Weight (kg)	**10,812**
Logbook Weight (kg)	**245,727**
% of Logbook Catch Observed	**4.4%**
% of Length Target Collected	**133%**
% of Otolith Target Collected	**103%**

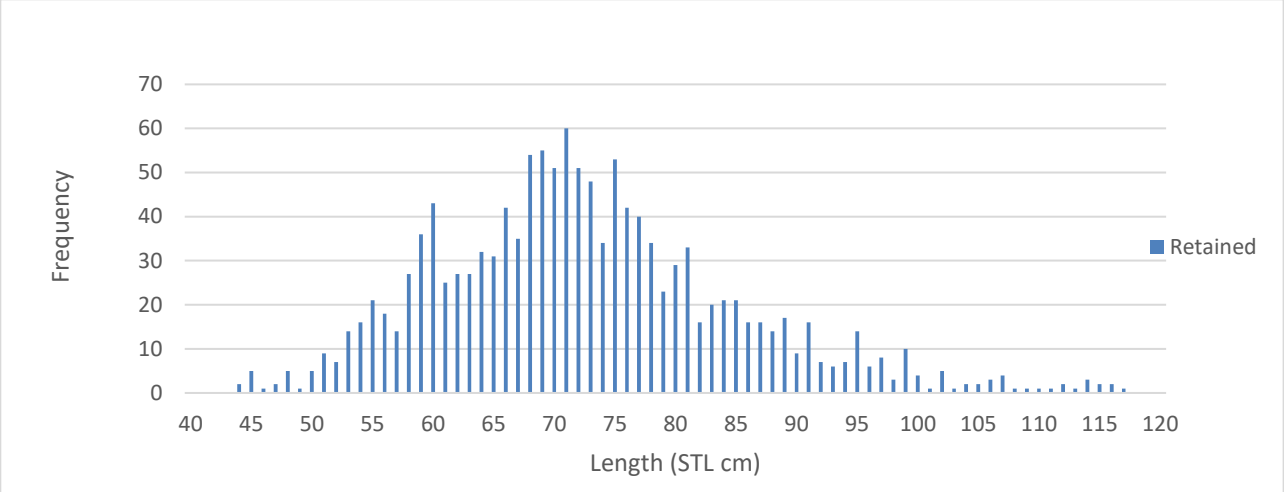

Figure 10. Length-frequency histogram for Pink Ling (west) (CTS) (2019)

Mirror Dory (east)

Table 21. Summary of Mirror Dory (east) observations (CTS) (2019)

Observed Weight (kg)	**3,094**
Logbook Weight (kg)	**73,821**
% of Logbook Catch Observed	**4.2%**
% of Length Target Collected	**167%**
% of Otolith Target Collected	**145%**

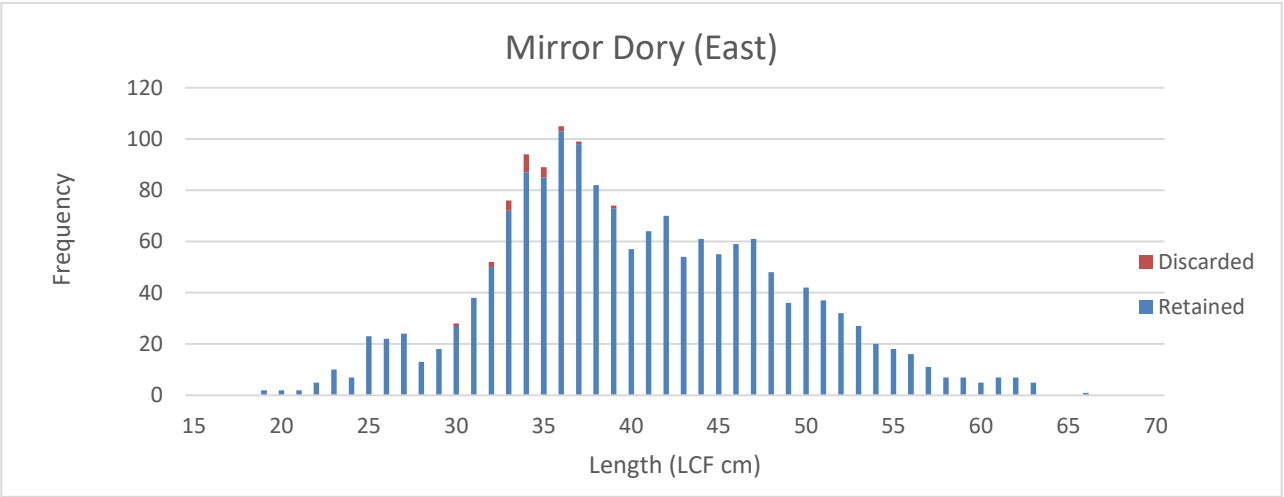

Figure 11. Length-frequency histogram for Mirror Dory (east) (CTS) (2019)

Mirror Dory (west)

Table 22. Summary of Mirror Dory (west) observations (CTS) (2019)

Observed Weight (kg)	**1,470**
Logbook Weight (kg)	**35,343**
% of Catch Observed	**4.2%**
% of Length Target Collected	**51%**
% of Otolith Target Collected	**31%**

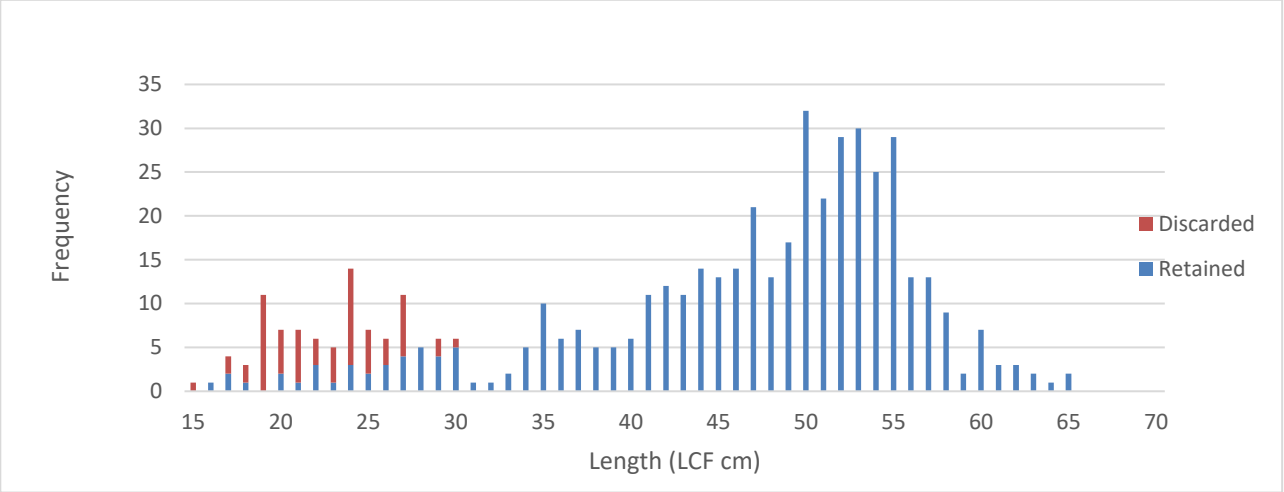

Figure 12. Length-frequency histogram for Mirror Dory (west) (CTS) (2019)

John Dory

Table 23. Summary of John Dory observations (CTS) (2019)

Observed Weight (kg)	**2,208**
Logbook Weight (kg)	**46,688**
% of Logbook Catch Observed	**4.7%**
% of Length Target Collected	**130%**
% of Otolith Target Collected	**113%**

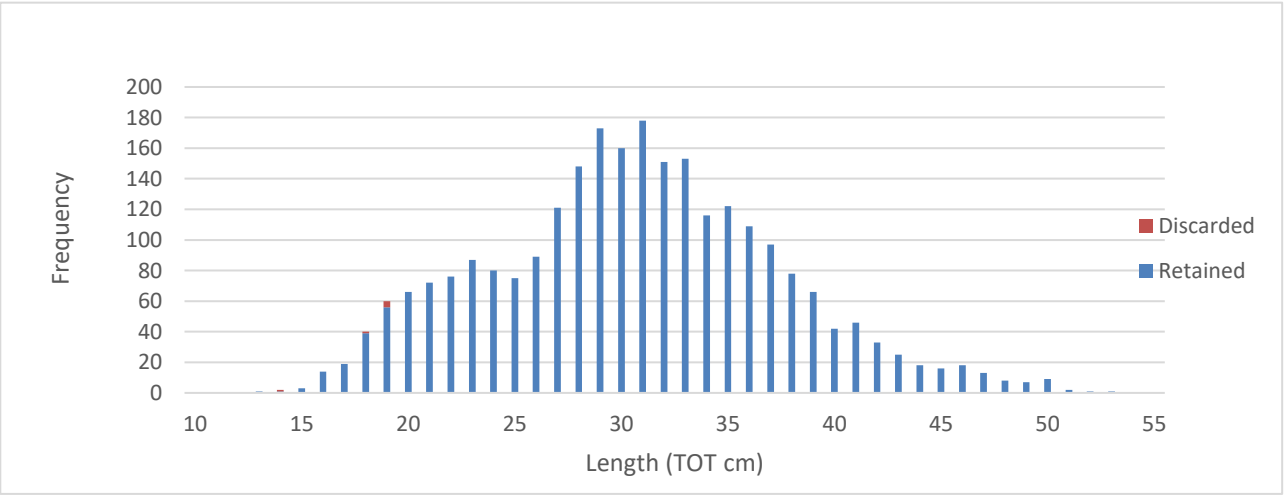

Figure 13. Length-frequency histogram for John Dory (CTS) (2019)

Orange Roughy

Table 24. Summary of Orange Roughy observations (CTS) (2019)

Observed Weight (kg)	**367,762**
Logbook Weight (kg)	**880,853**
% of Logbook Catch Observed	**42%**
% of Length Target Collected	**330%**
% of Otolith Target Collected	**110%**

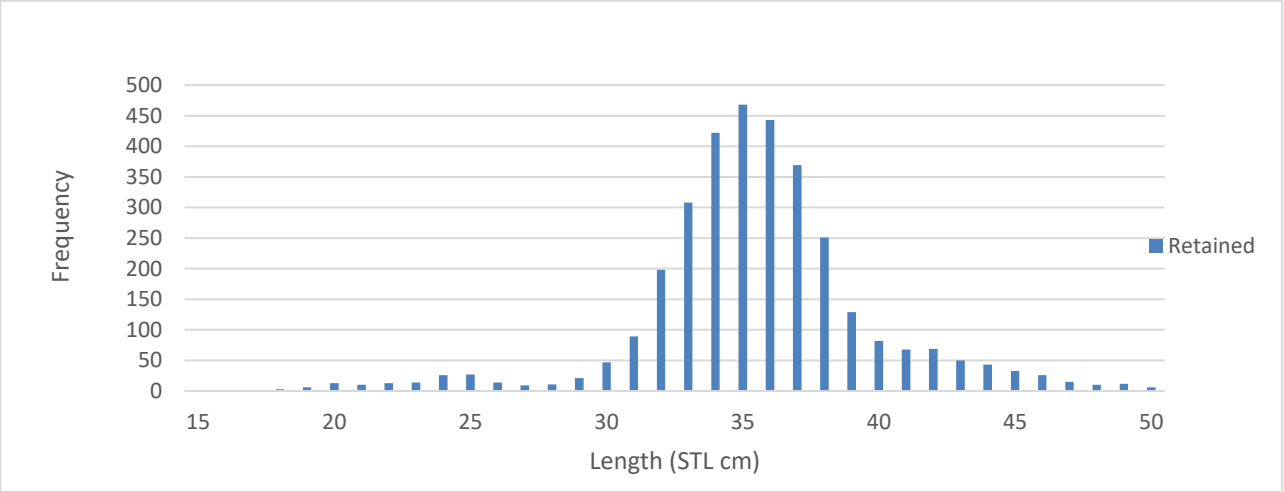

Figure 14. Length-frequency histogram for Orange Roughy (CTS) (2019)

Redfish

Table 25. Summary of Redfish observations (CTS) (2019)

Observed Weight (kg)	**3,853**
Logbook Weight (kg)	**25,131**
% of Catch Observed	**15%**
% of Length Target Collected	**117%**
% of Otolith Target Collected	**87%**

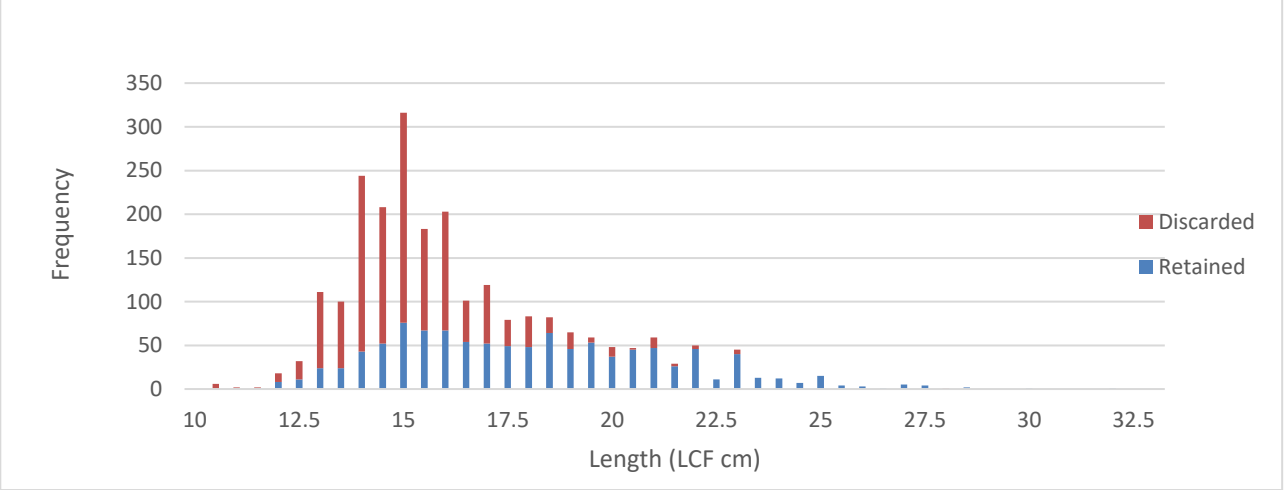

Figure 15. Length-frequency histogram for Redfish (CTS) (2019)

Ribaldo

Table 26. Summary of Ribaldo observations (CTS) (2019)

Observed Weight (kg)	**4,049**
Logbook Weight (kg)	**68,841**
% of Catch Observed	**5.9%**
% of Length Target Collected	**168%**
% of Otolith Target Collected	**99%**

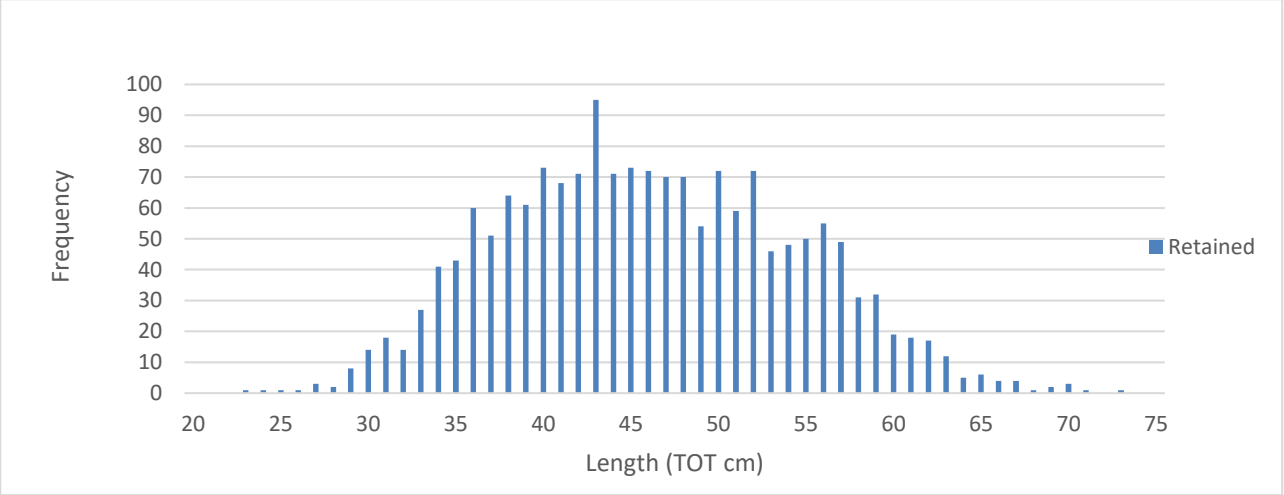

Figure 16. Length-frequency histogram for Ribaldo (CTS) (2019)

Eastern School Whiting (trawl)

Table 27. Summary of Eastern School Whiting (trawl) (CTS) (2019)

Observed Weight (kg)	**45**
Logbook Weight (kg)	**33,296**
% of Logbook Catch Observed	**0.1%**
% of Length Target Collected	**51%**
% of Otolith Target Collected	**100%**

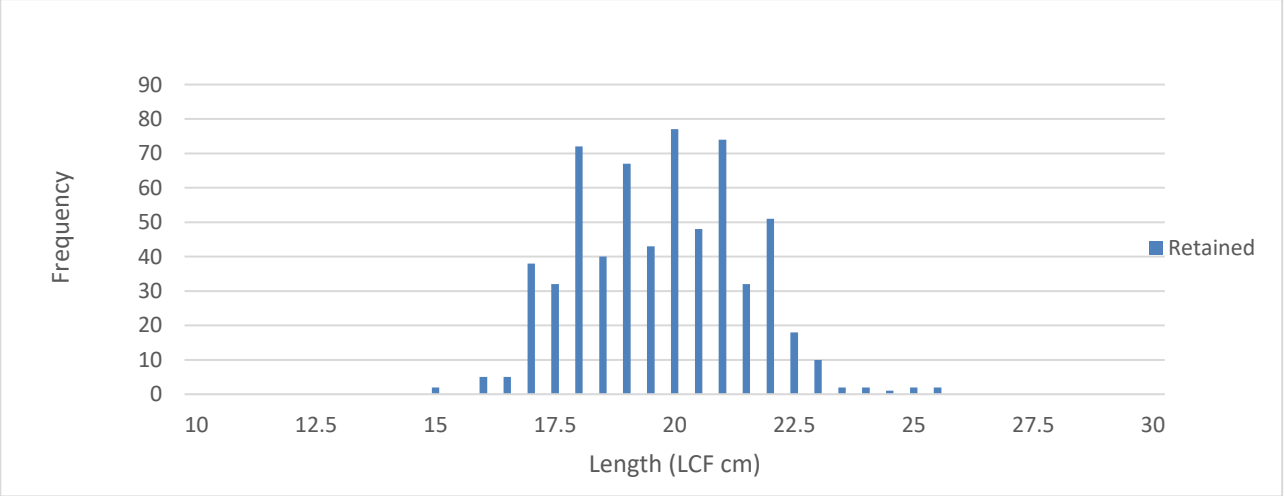

Figure 17. Length-frequency histogram for Eastern School Whiting (trawl) (CTS) (2019)

Eastern School Whiting (Danish seine)

Table 28. Summary of Eastern School Whiting (Danish seine) observations (CTS) (2019)

Observed Weight (kg)	**10,761**
Logbook Weight (kg)	**421,015**
% of Logbook Catch Observed	**2.6%**
% of Length Target Collected	**190%**
% of Otolith Target Collected	**142%**

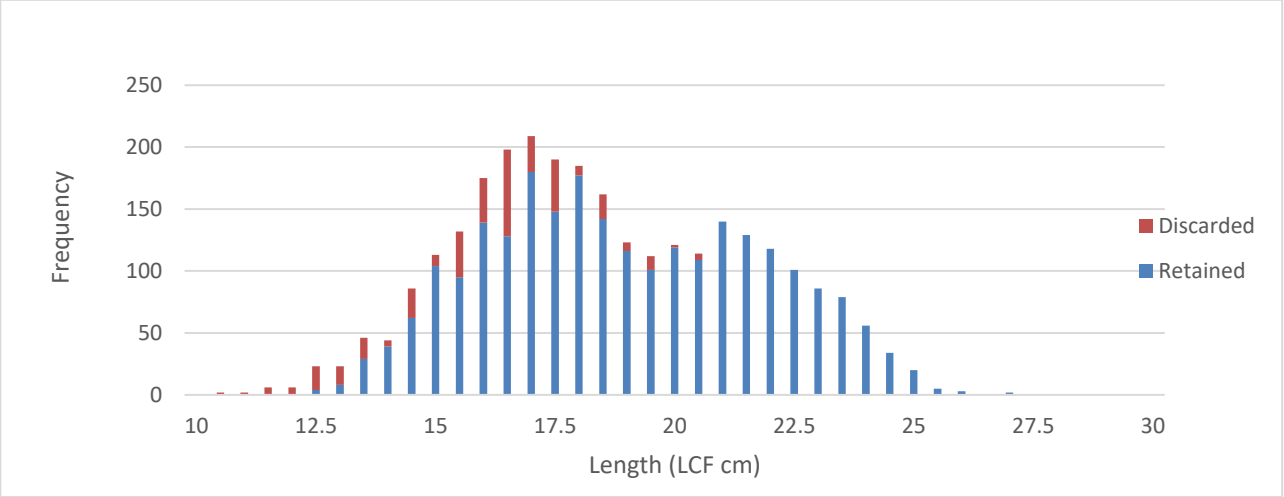

Figure 18. Length-frequency histogram for Eastern School Whiting (Danish seine) (CTS) (2019)

Royal Red Prawns

Table 29. Summary of Royal Red Prawn observations (CTS) (2019)

Observed Weight (kg)	**5,480**
Logbook Weight (kg)	**145,415**
% of Logbook Catch Observed	**3.8%**
% of Length Target Collected	**99%**
% of Otolith Target Collected	**NA**

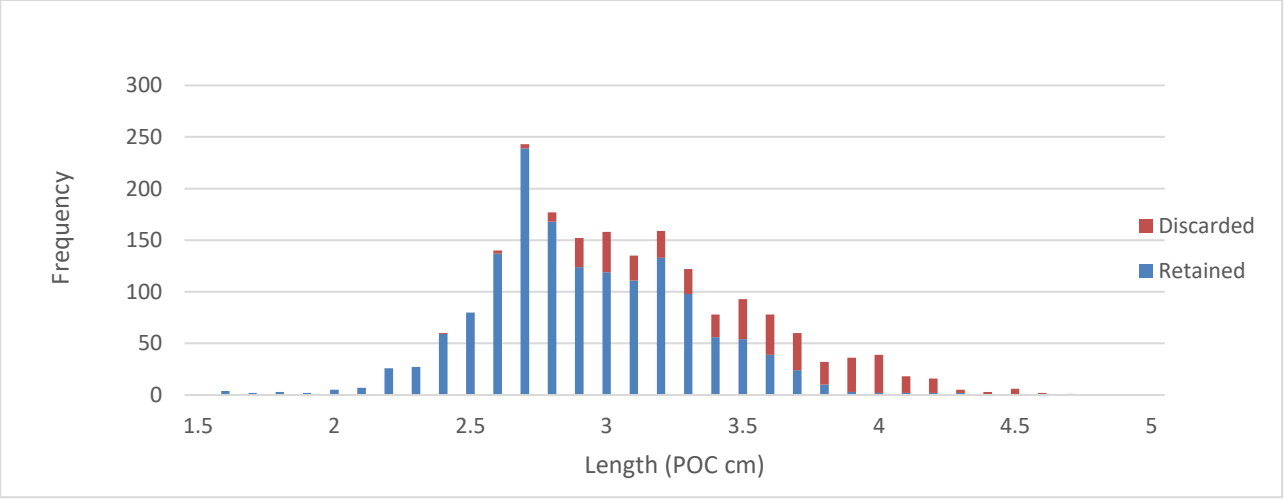

Figure 19. Length-frequency histogram for Royal Red Prawns (CTS) (2019)

Spotted Warehou (east)

Table 30. Summary of Spotted Warehou (east) observations (CTS) (2019)

Observed Weight (kg)	**5,119**
Logbook Weight (kg)	**93,478**
% of Catch Observed	**5.5%**
% of Length Target Collected	**283%**
% of Otolith Target Collected	**125%**

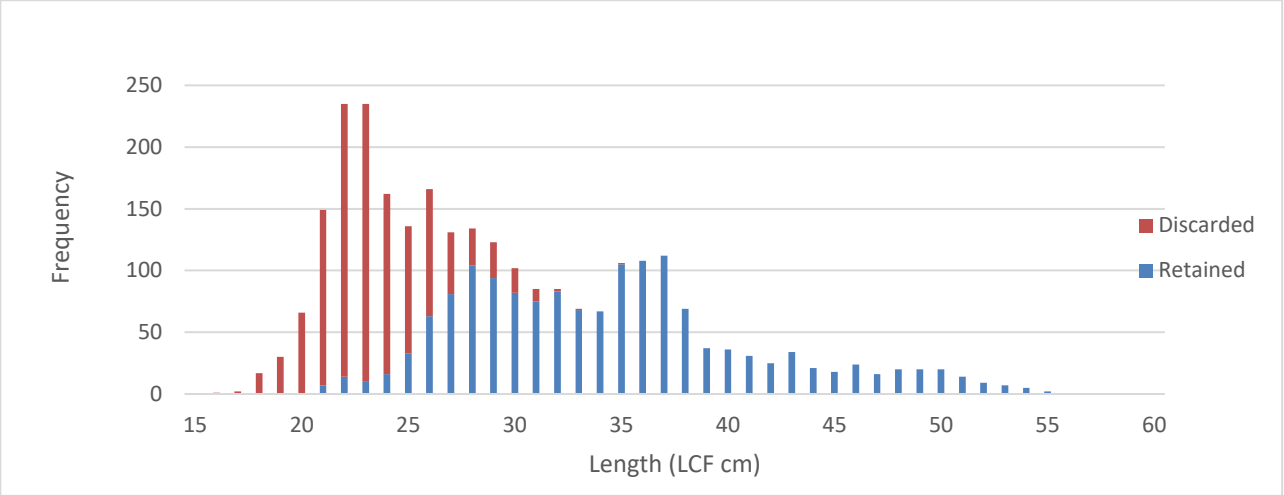

Figure 20. Length-frequency histogram for Spotted Warehou (east) (CTS) (2019)

Spotted Warehou (west)

Table 31. Summary of Spotted Warehou (west) observations (CTS) (2019)

Observed Weight (kg)	**21,283**
Logbook Weight (kg)	**245,968**
% of Catch Observed	**8.7%**
% of Length Target Collected	**147%**
% of Otolith Target Collected	**155%**

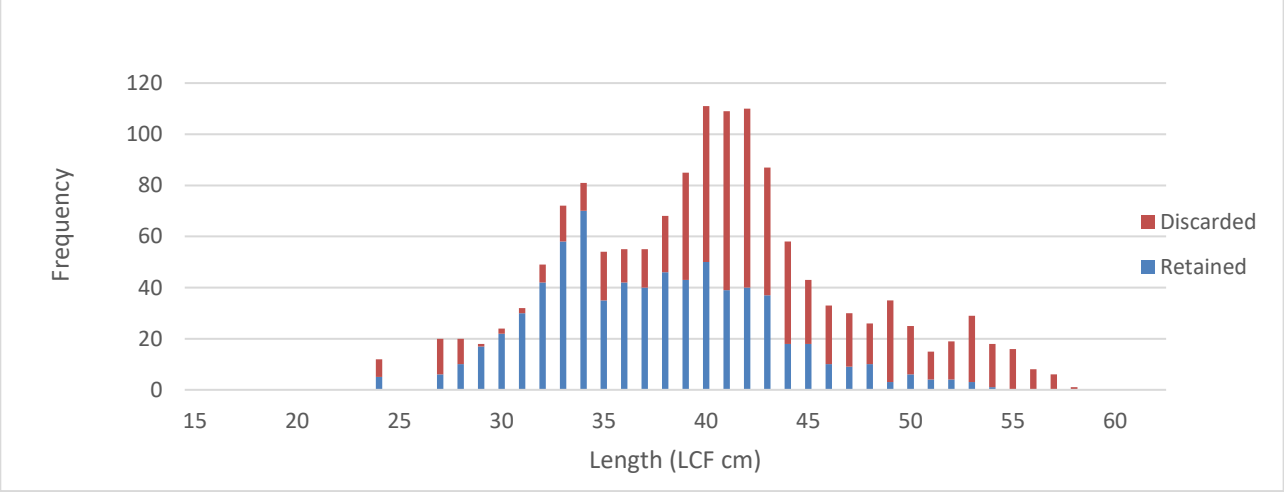

Figure 21. Length-frequency histogram for Spotted Warehou (west) (CTS) (2019)

Tiger Flathead (trawl)

Table 32. Summary of Tiger Flathead (trawl) observations (CTS) (2019)

Observed Weight (kg)	**35,064**
Logbook Weight (kg)	**601,968**
% of Catch Observed	**5.8%**
% of Length Target Collected	**255%**
% of Otolith Target Collected	**140%**

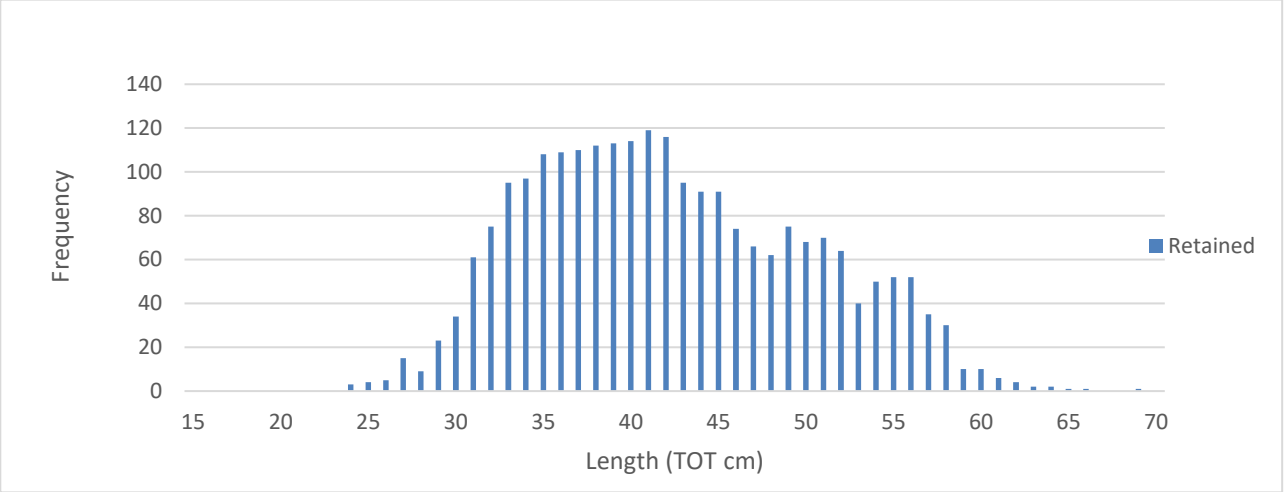

Figure 22. Length-frequency histogram for Tiger Flathead (trawl) (CTS) (2019)

Tiger Flathead (Danish seine)

Table 33. Summary of Tiger Flathead (Danish seine) observations (CTS) (2019)

Observed Weight (kg)	**9,951**
Logbook Weight (kg)	**346,655**
% of Logbook Catch Observed	**2.9%**
% of Length Target Collected	**244%**
% of Otolith Target Collected	**158%**

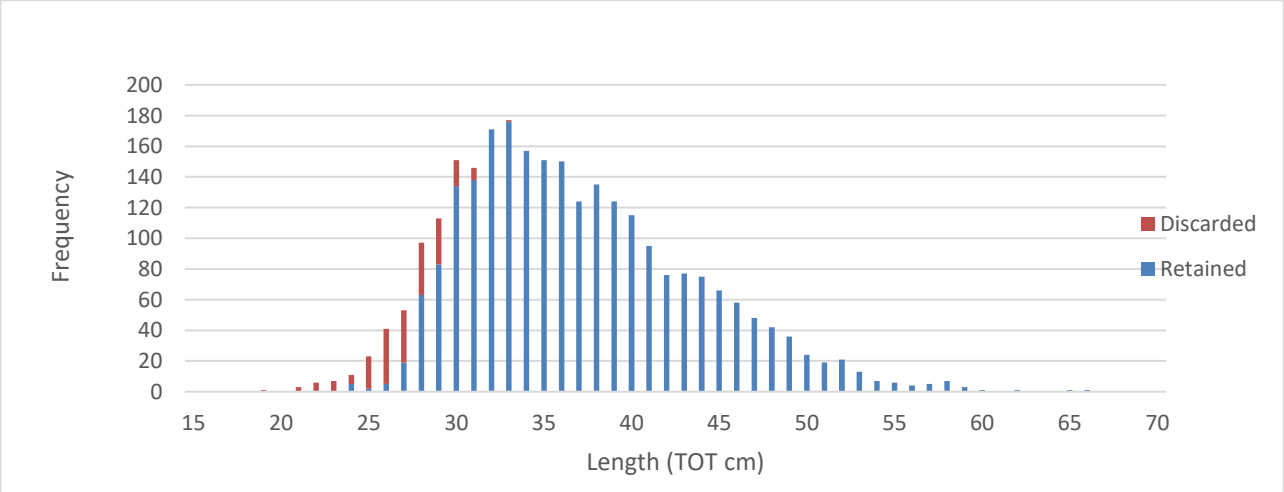

Figure 23. Length-frequency histogram for Tiger Flathead (Danish seine) (CTS) (2019)

Reef Ocean Perch

Table 34. Summary of Reef Ocean Perch observations (CTS) (2019)

Observed Weight (kg)	**1,825**
Logbook Weight (kg)	**90,941**
% of Catch Observed	**2.0%**
% of Length Target Collected	**133%**
% of Otolith Target Collected	**102%**

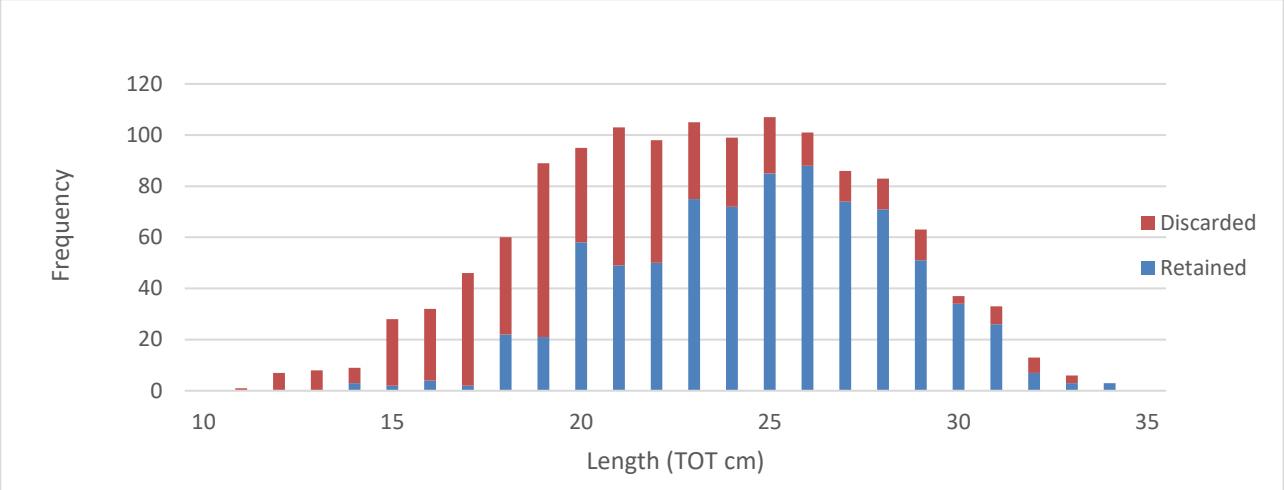

Figure 24. Length-frequency histogram for Reef Ocean Perch (CTS) (2019)

Bigeye Ocean Perch

Table 35. Summary of Bigeye Ocean Perch observations (CTS) (2019)

Observed Weight (kg)	**5,014**
Logbook Weight (kg)	**54,401**
% of Catch Observed	**9.2%**
% of Length Target Collected	**186%**
% of Otolith Target Collected	**132%**

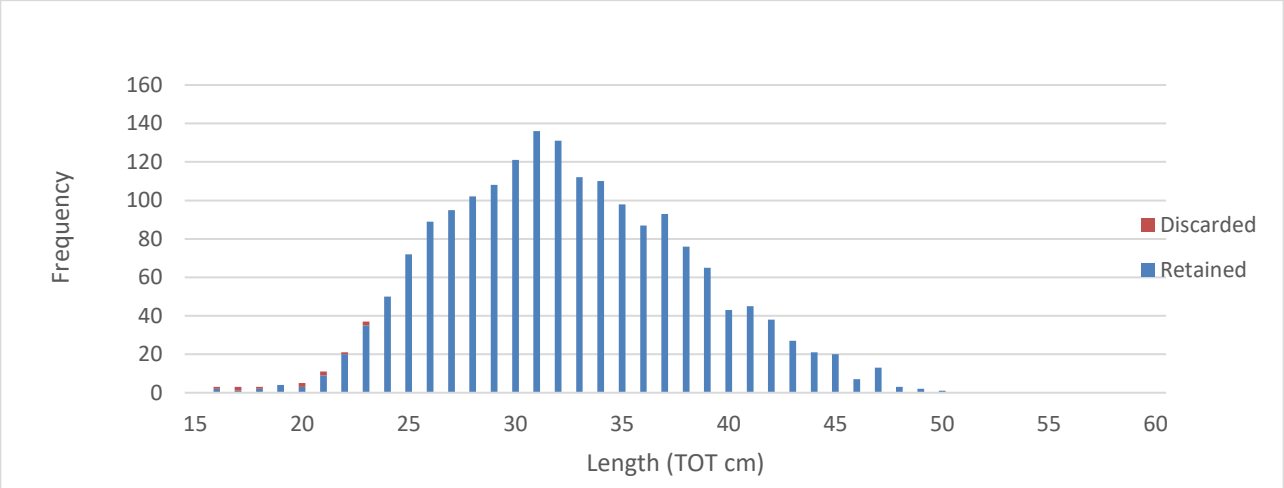

Figure 25. Length-frequency histogram for Big-eye Ocean Perch (CTS) (2019)

Ocean Jacket

Table 36. Summary of Ocean Jacket observations (CTS) (2019)

Observed Weight (kg)	**9,510**
Logbook Weight (kg)	**102,938**
% of Catch Observed	**9.2%**
% of Length Target Collected	**61%**
% of Otolith Target Collected	**NA**

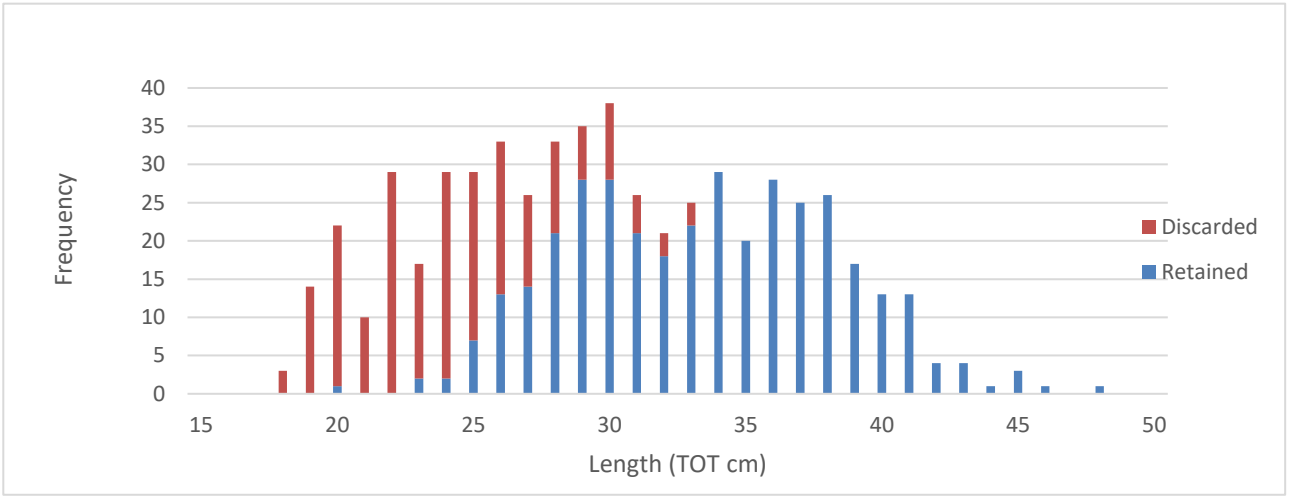

Figure 26. Length-frequency histogram for Ocean Jacket (CTS) (2019)

King Dory

Table 37. Summary of King Dory observations (CTS) (2019)

Observed Weight (kg)	**7,646**
Logbook Weight (kg)	**98,855**
% of Catch Observed	**7.7%**
% of Length Target Collected	**107%**
% of Otolith Target Collected	**NA**

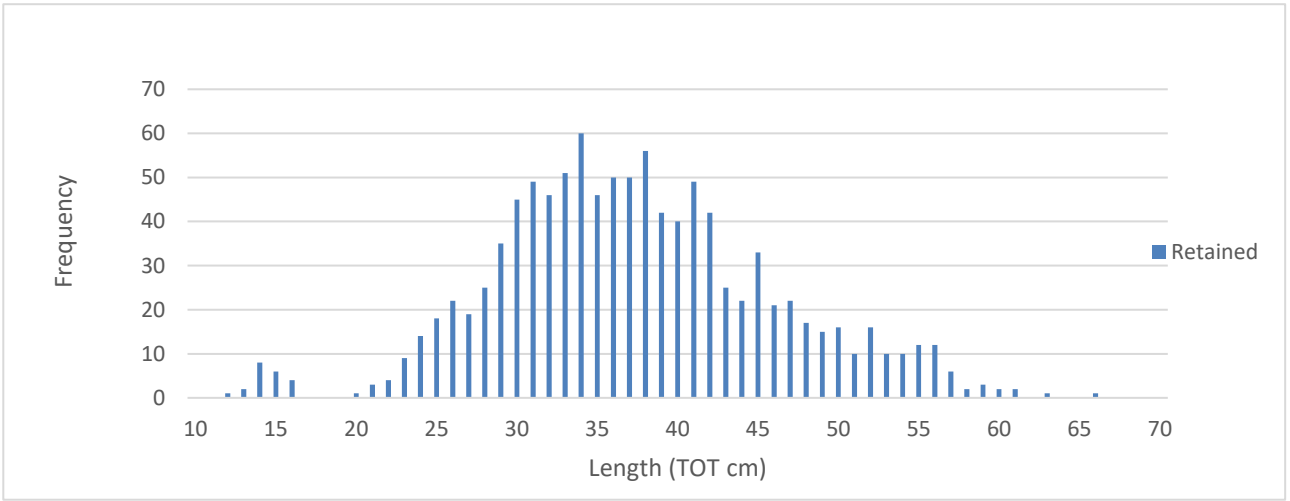

Figure 27. Length-frequency histogram for King Dory (CTS) (2019)

Attachments

SESSF ISMP Scalefish Zones