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Summary of Crab Dockside Sampling in Southeast Alaska during the 2019/2020 Commercial Fishing Season

by

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and

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January 2022

Alaska Department of Fish and Game **Division of Commercial Fisheries**

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Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat or long
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	′
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	″
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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ABSTRACT

The Alaska Department of Fish and Game (ADF&G) in Southeast Alaska utilizes a dockside sampling program to collect information on four different species of crab throughout the year. Dungeness, Tanner, golden king crab and red king crab may be sampled in this way. The primary ports where landings, and therefore potential sampling, occur are Petersburg, Wrangell, Juneau, Sitka, and Ketchikan. Other ports experience landings to a lesser degree. This report looks at how effective the port sampling program was in collecting samples from Dungeness, Tanner, and golden king crab landings during the 2019/2020 season.

Keywords: Southeast Alaska, dockside sampling program, port sampling, Dungeness crab, *Metacarcinus magister*, Tanner, *Chionoecetes bairdi*, golden king crab, *Lithodes aequispinus*, red king crab, *Paralithodes camtschaticus*

INTRODUCTION

The Alaska Department of Fish and Game (ADF&G), Division of Commercial Fisheries, Shellfish Management in Southeast Alaska requested dockside sampling be conducted during the 2019/2020 crab season. Dockside sampling of crab inseason has been done continuously in Registration Area A since 1975 for Dungeness (Messmer et al. 2011), since 1970 for Tanner (Stratman, Bishop, et al. 2011), and since 1970 for golden king crab (Stratman, Messmer, et al. 2011). A commercial fishery for red king crab fishery did not occur during the 2019/2020 season. This report summarizes the dockside sampling program for each of the three crab fisheries occurring in 2019/2020.

DUNGENESS CRAB

METHODS AND PROCEDURES

Dungeness is managed by size, sex, and season (3-S) in Southeast Alaska, with a provision to shorten the fishing season if the predicted harvest falls short of certain thresholds. Because 3-S management does not require annual population estimates, there is no fishery-independent survey program for the Southeast Alaska Dungeness crab stock. Dockside sampling is conducted for two purposes: to monitor fishery performance and to facilitate quality of commercial fish ticket entry (Bishop 2013).

The sampling methods followed are described in the Dungeness crab section of the Southeast Alaska (SEAK) ADF&G Shellfish Port Sampling Manual (unpublished). Samples of Dungeness crab were obtained dockside while fishing vessels or tenders offloaded to the processor. A subsample of 50 or 75 crab was taken from each landing, depending on where the fishing occurred. The total weight of the subsample was divided by the number of crab in that sample to approximate an average weight. The width of each carapace was then measured with a Vernier caliper to the nearest millimeter, excluding the carapace spines. The shell condition of each crab was determined based on the condition of the dactyls, carapace spines, claws, legs, hardness, and overall look of the crab in comparison to others within the sample. A shell condition code of (1) soft, (2) light, (3) new, (4) old, or (5) very old was subsequently assigned to each crab. Crab were inspected for carapace abnormalities, presence of parasites, and leg loss. A leg condition of (1) for all legs present, (2) for one missing or regenerated leg, (3) for more than one missing or regenerated leg, or (4) abnormal carapace was assigned. This information was recorded on the sampling form along with the dates fished, location, pot lifts, number of crab, vessel name and ADF&G number. The permit holder was asked where they fished, how many pots were pulled for the delivery, and the number of crab harvested in each statistical area. They were also asked what percentage of legal male crab in the pots were softshell and whether they had any other comments or observations

such as; percentage of sublegal males and/or females in the catch, percentage of females with eggs, or soak time. Once the information from each Dungeness sampling form was matched to a fish ticket the form was entered into a Zander application and loaded into OceanAK, the integrated fisheries database for Southeast Alaska.

The goals set by ADF&G Shellfish Management for the 2019/2020 season were included in a memorandum dated June 13, 2019 (Table 1). Beyond these goals and to the degree feasible, shellfish management asked that dockside sampling efforts be temporally allocated by month (Table 2) for each area, according to the proportion of harvest taken in that month during the previous season. This design spreads the effort out to allow for representative sampling from both the summer season (June 15–August 15), and the fall/winter season (October 1–February 28). These goals are meant to describe the size and shell age composition, average weight, and catch rates of Dungeness crab in the commercial fishery (Messmer et al. 2011). Table 3 (Bishop 2013) shows how recruit class was determined using the size and age composition. For each pure landing sampled, meaning all crab were harvested from one management area, the recruit status of all crab sampled were summed and from this a percentage or ratio of crab considered to be recruits was determined. Each percentage derived in this way was treated as one sample. The power analysis used was identical to last season. The memorandum stated that sampling goals for Dungeness are evaluated every five years. This power analysis attempts to detect a 5% difference in recruits 85% of the time. A larger degree of variation in a particular management area would suggest a larger amount of sampling was necessary for catches originating in that location.

RESULTS AND DISCUSSION

During the 2019/2020 Dungeness season dockside samples were taken by port sampling staff in Juneau, Petersburg, Sitka, and Wrangell (Table 4). Samples were taken in both the summer and fall/winter season (Table 5). Nearly 77% of the landings that occurred for the 2019/2020 season occurred between June 15th and August 15th (Table 6). Sampling goals were either met or exceeded in three out of the thirteen management areas (Table 7).

Port sampling staff made every attempt to target specific permit holders who fished in management areas where the goals were typically difficult to obtain. The port samplers were not always able to speak with the permit holder prior to the offloading and sampling. This resulted in excessive sampling in some fishery areas. An attempt was made to avoid landings where harvest occurred in multiple management areas within the load, as shellfish management stated that these mixed landings provide no useful data. A concerted effort has been made to reduce this unnecessary sampling.

Dungeness landings occurred throughout the week during the 2019/2020 season, though sampling efforts were concentrated on Monday through Friday. Weekend port sampling is typically staffed with fewer people. Sampling ceased in management areas once goals were met. The overall sampling rate was 3%, which was a decrease from the 2018/2019 season (Rice and Reynolds Manney 2021).

Shore-based processor landings in 2018/2019 made up over 95% of overall landings. The remaining landings included catcher/sellers, and direct market catcher/processors (Table 8). At the end of the season, shellfish management staff provided a Dungeness season summary (Tables 9–12).

TANNER CRAB

METHODS AND PROCEDURES

The Tanner crab fishing season length for Registration Area A is determined by estimated mature male biomass and the number of registered pots at the start of the fishery. The most productive fishing grounds have been classified as "core", while the less productive fishing grounds are classified as "non-core" areas (Stratman, Bishop, et al. 2011). The 2019/2020 season began on February 17, 2020. The "core" areas remained open for six fishing days and the "non-core" areas remained open an additional five, for a total of eleven fishing days. Additionally, it was announced an exploratory area would close after 25 fishing days on March 13, 2020.

The sampling methods followed are described in the Tanner crab section of the SEAK ADF&G Shellfish Port Sampling Manual (unpublished). Samples of Tanner crab were obtained dockside while fishing vessels or tenders offloaded to the processor. A subsample of 75 crab was taken from each landing. The total weight of the subsample was divided by 75 to approximate an average weight. The width of each crab's carapace was then measured with a Vernier caliper to the nearest millimeter excluding the carapace spines. The shell condition was determined based on the condition of the dactyls, carapace spines, claws, legs, hardness, and overall look of the crab in comparison to others within the sample. A shell condition code of (1) soft, (2) light, (3) new, (4) old, or (5) very old was assigned to each crab. Crab were inspected for carapace abnormalities, presence of parasites, and leg loss. A leg condition of (1) for all legs present, (2) for one missing or regenerated leg, (3) for more than one missing or regenerated leg, or (4) abnormal carapace was assigned. Permit holders were required to keep a logbook for each Tanner crab trip that contained the dates fished, location, pot lifts, number of crab and gear type. Tanner crab fishermen that used ring nets instead of crab pots were not required to keep logbooks, yet when sampled were interviewed to obtain this same information. Once the information from each Tanner crab sampling form was matched to a fish ticket the form was entered into a Zander application and loaded into OceanAK, the integrated fisheries database for Southeast Alaska.

Sampling goals were provided by memorandum from ADF&G Shellfish Management staff prior to the 2019/2020 season. Beginning in the 2009/2010 season, management of the fishery has been affected through a harvest strategy adopted by the Board of Fisheries in 2009 [5 AAC 35.113] incorporating an abundance threshold (Stratman, Bishop, et al. 2011). Since the 2010/2011 season, port sampling has been asked by shellfish management to conduct dockside sampling for the purpose of maintaining the long-term historic database. For this reason, they requested that priority in covering landings be given to golden king crab which opens concurrently with Tanner crab and where no fishery-independent data is available. Unlike golden king crab, shellfish management conduct annual stock assessment surveys for Tanner crab. The surveyed areas of Thomas Bay (110-12), Port Camden (109-43), Holkham Bay (111-21), Stephens Passage (111-40, 41, 50), Icy Strait (114-23), and Glacier Bay (114-70) were given the highest sampling priority. These surveyed areas fall within four management areas (Table 13) which received a high or medium priority with specific dockside sampling goals for each. The statistical objectives of this sampling were to estimate the average weight of crab, and the proportion of crab within the various recruit classes. Table 14 (adapted from Stone et al. 2003) shows size and age composition currently in use for determining recruit class in male tanner crab in Southeast Alaska. For each pure landing sampled, meaning all crab were harvested from one management area, the recruit status of all crab sampled were summed and from this a percentage or ratio of crab considered to be recruits was determined. Each percentage derived in this way was treated as one sample. A power analysis of

these samples was run which attempts to detect a 5% difference in recruits 85% of the time. A larger degree of variation in a particular management area would suggest a larger amount of sampling was necessary for catches originating in that location. The results of this power analysis were used by shellfish management to develop the dockside sampling goals for Tanner crab. Shellfish management provided the dockside sampling data from the 2001 to 2019 Tanner seasons (Table 15–19).

RESULTS AND DISCUSSION

During the 2019/2020 season dockside samples of Tanner crab were collected by port sampling staff in Juneau, Petersburg, and Sitka. The goals requested by shellfish management were met in one of the four management areas (Table 20).

Port sampling staff made every attempt to target specific permit holders that fished in management areas where the goals were typically difficult to obtain. The port samplers were not always able to speak with the permit holder prior to offloading and sampling. This resulted in excessive sampling in Lynn Canal/Upper Stephen. The relatively short Tanner crab season does not offer a lot of time for fishermen to move gear, therefore an individual landing where more than one management area had been fished was not common. Tendered landings were not sampled if they included mixed management areas.

Port samplers were available to cover landings every day of the fishery. Weekend port sampling staffed prioritized golden king crab sampling, but samplers were able to cover Tanner crab landings as well. Tanner crab landings occurring in the early morning or late evening were only sampled when port samplers were available.

The 2019/2020 Tanner crab catch was landed at shorebased processors the overwhelming majority of the time. The large amount of shorebased landings offered ample opportunities for dockside sampling. At the end of the season, shellfish management offered a Tanner season summary (Table 21–26).

GOLDEN KING CRAB

METHODS AND PROCEDURES

Samples of golden king crab (GKC) were obtained dockside while fishing vessels offloaded to the processor. The methods followed are described in the king crab section of the SEAK ADF&G Shellfish Port Sampling Manual (unpublished). A subsample of 50 crab was taken from each landing. The total weight of the subsample was divided by 50 to approximate an average weight. The length of the crab's carapace was then measured with a Vernier caliper to the nearest millimeter. An individual weight (in grams) of each crab that had no leg loss or regeneration was taken using a bench scale. The shell condition of each crab was determined based on the condition of the dactyls, carapace spines, claws, legs, and overall look of the crab in comparison to others within the sample. A shell condition code of (1) soft, (2) light, (3) new, (4) old, or (5) very old was assigned to each crab. Crab were inspected for carapace abnormalities, presence of parasites, and leg loss. A leg condition of (1) for all legs present, (2) for one missing or regenerated leg, (3) for more than one missing or regenerated leg, or (4) abnormal carapace was assigned. This information was recorded on the sampling form. The permit holder kept a logbook for each trip that contained the dates fished, location, pot lifts, number of crab, and gear type. That information, along with the vessel name and ADF&G number were recorded on the sampling form. Once the information

from each golden king crab sampling form was matched to a fish ticket the form a Zander application and loaded into OceanAK, the integrated fisheries database for Southeast Alaska.

The port sampling goals for the 2019/2020 season were provided by a memorandum from ADF&G Shellfish Management staff dated February 6, 2020 (Table 27). The information collected through port sampling allows for assessment of the relative strength of various components (e.g. size, recruits) of the commercially exploited component of the population and a qualitative estimate of stock condition (Stratman, Bishop, et al. 2011). Table 28 shows recruit class categories for golden king crab based on the size and age composition (Koeneman and Buchanan, 1985). For each pure landing sampled, meaning all crab were harvested from one management area, the recruit status of all crab sampled were summed and from this a percentage or ratio of crab considered to be recruits was determined. Each percentage derived in this way was treated as one sample. The memorandum stated that a power analysis was conducted to determine the number of trips to sample from each management area to detect a 5% change in the recruit composition with a power of 0.85. Furthermore, in order to determine the appropriate number of crab: trip, 32 100-crab trips from East Central in 1990 were randomly subsampled to obtain subsets of 50 and 75 crab measurements. Crab carapace lengths (CL) were grouped and separated by trip, from the original, and the two subsets were compared using ANOVA. As no significant difference was found between mean CL of crabs either when trips were combined or individual at α=.05, shellfish management decided that a sample size of 50 crabs randomly collected from a delivery should continue to be used. A larger degree of variation in a particular management area would suggest a larger amount of sampling was necessary from catches originating in that particular location.

RESULTS AND DISCUSSION

The 2019/2020 golden king crab season began on February 17, 2020 at noon. Dockside samples were taken during the GKC season by port sampling staff in Juneau, Petersburg, and Wrangell (Table 29). The goals requested by shellfish management were not met in any of the three management areas (Table 30). When determining whether to sample a golden king crab landing, port samplers had attempted to only sample pure landings.

Port sampling effort focused on Monday through Friday landings throughout the fishery. When port sampling had prior knowledge that a landing would occur outside of normal work hours an effort was made to cover that landing. Weekend sampling was conducted at the beginning of the fishery when fishing effort was at its strongest and the sampling goals had not yet been met. In the 2019/2020 season all landings occurred between February and April (Table 31). The last samples were taken on March 19, 2020. On March 19th, a News Release announced the closure of the last management areas that remained open on March 27th and thus ended the 2019/2020 GKC fishery in Registration Area A.

Over 53% of the 2019/2020 golden king crab catch was landed at shorebased processors. The remaining 47% were made up of catcher/exporter, catcher/seller, and direct marketer landings. At the end of the season, shellfish management provided a golden king crab season summary (Table 32).

REFERENCES CITED

Bishop, G. 2013. Summary of Dungeness crab dockside sampling in Southeast Alaska with an emphasis on 2001/2002 through 2010/2011 commercial fishing seasons. Alaska Department of Fish and Game, Regional Report Series No. 1J13-06, Douglas, Alaska.

Messmer, A., G. Bishop, C. Siddon, and J. Stratman. 2011. 2012 Report to the Alaska Board of Fisheries on Southeast Alaska/Yakutat Dungeness crab fisheries. Alaska Department of Fish and Game, Fishery Management Report No. 11-62, Anchorage.

Koeneman, T. M., and D. V. Buchanan. 1985. Growth of the golden king crab, Lithodes aequispina, in southeast Alaskan waters. In: Proceedings of the International King Crab Symposium, Anchorage, Alaska.

Rice, J. R., and A. M. Reynolds Manny. 2021. Summary of crab dockside sampling in Southeast Alaska during the 2018/2019 commercial fishing season. Alaska Department of Fish and Game, Regional Information Report No. 1J21-03, Douglas, Alaska.

Stone, R. P., M. M. Masuda, and J. E. Clark. 2003. Growth of male Tanner crabs, Chionoecetes bairdi in a Southeast Alaska estuary. Alaska Fishery Research Bulletin 10:137–148.

Stratman, J., G. Bishop, A. Messmer, and C. Siddon. 2011. 2012 Report to the Alaska Board of Fisheries on Southeast Alaska/Yakutat Tanner crab fisheries. Alaska Department of Fish and Game, Fishery Management Report No. 11-57, Anchorage.

Stratman, J., A. Messmer, G. Bishop, C. Siddon, and A. Olson. 2011. 2012 Report to the Alaska Board of Fisheries on Southeast Alaska/Yakutat king crab fisheries. Alaska Department of Fish and Game, Fishery Management Report No. 11-68, Anchorage.

TABLES

Table 1.–Sampling goals by management area for the 2019/2020 Dungeness season.

Fishery area	Number of crab per sample (landing) 2019/20	Sample goals (# landings) 2019/20
Behm Canal, Portland Canal	75	19
Duncan Canal	50	8
East Admiralty /Mainland Bays	50	13
East Coast, Prince of Wales	75	16
Ernest Sound/Clarence Strait	75	6
Icy Straits/Glacier Bay	75	9
Lynn Canal	75	17
Outer coast Baranof, Chichagof	75	N/A
Peril Strait	50	13
Port Camden/West Kuiu	50	8
Stikine Flats	50	11
Tenakee Inlet	75	15
Thomas/Farragut Bays	75	8
West Prince of Wales	75	14
West Prince of Wales, outside	75	N/A

Table 2.–Sampling goals, in terms of the number of landings to sample, by fishery area and month for the 2019/20 season.

Fishery	Month	Sampling goals landings	Crab/landing	Crab sample size
Behm Canal, Portland Canal	October	9	75	675
	November	9	75	675
	December	1	75	75
	January	0	75	0
	February	0	75	0
Duncan Canal	June	2	50	100
	July	2	50	100
	August	1	50	50
	October	2	50	100
	November	1	50	50
East Admiralty /Mainland Bays	June	2	50	100
	July	4	50	200
	August	2	50	100
	October	3	50	150
	November	2	50	100
East Coast, Prince of Wales	October	9	75	675
	November	6	75	450
	December	1	75	75
	January	0	75	0
	February	0	75	0

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Table 2.–Page 2 of 3.

Fishery	Month	Sampling goals landings	Crab/landing	Crab sample size
Ernest Sound/Clarence Strait	June	3	75	225
	July	1	75	75
	August	1	75	75
	October	1	75	75
	November	0	75	0
Icy Straits/Glacier Bay	June	2	75	150
	July	4	75	300
	August	1	75	75
	October	3	75	225
	November	1	75	75
Lynn Canal	June	8	75	600
	July	8	75	600
	August	3	75	225
	October	3	75	225
	November	0	75	0
Peril Strait	June	4	50	200
	July	5	50	250
	August	2	50	100
	October	1	50	50
	November	1	50	50
Port Camden/West Kuiu	June	2	50	100
	July	3	50	150
	August	1	50	50
	October	2	50	100
	November	1	50	50
Stikine Flats	June	6	50	300
	July	3	50	150
	August	1	50	50
	October	1	50	50
	November	0	50	0
Tenakee Inlet	June	4	75	300
	July	3	75	225
	August	3	75	225
	October	5	75	375
	November	0	75	0

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Table 2.–Page 3 of 3.

Fishery	Month	Sampling goals landings	Crab/landing	Crab sample size
Thomas/Farragut Bays	June	3	75	225
	July	2	75	150
	August	1	75	75
	October	1	75	75
	November	1	75	75
West Prince of Wales	June	3	75	225
	July	6	75	450
	August	5	75	375
	October	0	N/A	0
	November	0	N/A	0

Table 3.–Recruit class definitions currently in use for Dungeness Crab in Southeast Alaska (sizes are carapace widths in mm).

Recruit Class	Carapace width	Shell condition code
Pre-Recruit	≥ 135 mm CW < 165 mm CW	1, 2, 3, 4, or 5
Recruit	≥ 165 mm CW < 195 mm CW	1, 2, or 3
Post-recruit	≥ 165 mm CW < 195 mm CW	4 or 5
	≥ 195 mm CW	1, 2, 3, 4 or 5

Table 4.–Number and percentage of 2019/2020 Dungeness season landings sampled by port.

Port	Landings	Landings sampled	% sampled
Angoon	4	0	0%
Craig	32	0	0%
Haines	166	0	0%
Hoonah	13	0	0%
Hydaburg	3	0	0%
Hyder	5	0	0%
Juneau	422	51	12%
Ketchikan	22	0	0%
Petersburg	1451	21	1%
Sitka	118	16	14%
Skagway	1	0	0%
Wrangell	1182	8	1%
Total	3419	96	3%

Table 5.–2019/2020 Dungeness season sampling by summer and fall/winter season.

Port	Summer	Fall/Winter
Juneau	38	13
Petersburg	11	10
Sitka	13	3
Wrangell	8	0
Total Sampled	70	26

Table 6.–2019/2020 Dungeness season landings by port and month.

	Jun	Jul	Aug	Oct	Nov	Dec	Jan	Feb	Total
Angoon	0	2	2	0	0	0	0	0	4
Craig	7	9	1	4	5	4	1	1	32
Haines	51	38	17	53	7	0	0	0	166
Hoonah	6	3	4	0	0	0	0	0	13
Hydaburg	0	0	0	3	0	0	0	0	3
Hyder	0	0	0	0	4	1	0	0	5
Juneau	97	160	61	70	34	0	1	0	422
Ketchikan	6	6	0	4	3	2	0	1	22
Petersburg	551	420	129	251	97	3	0	0	1451
Sitka	16	35	19	29	15	3	0	0	118
Skagway	1	0	0	0	0	0	0	0	1
Wrangell	424	428	130	189	10	3	5	5	1182
Total	1159	1101	363	454	165	16	6	7	3419

Table 7.–2019/2020 Dungeness season landings goals sampled by management area.

Management Area	Sample Landing Goals	Actual Landings Sampled	% of Landing Goal Sampled
Behm Canal, Portland Canal	19	0	0%
Duncan Canal	8	8	100%
East Admiralty /Mainland Bays	13	31	238%
East Coast, Prince of Wales	16	0	0%
Ernest Sound/Clarence Strait	6	2	33%
Icy Straits/Glacier Bay	9	8	89%
Lynn Canal	17	9	53%
Outer coast Baranof, Chichagof	n.a.	n.a.	n.a.
Peril Strait	13	18	138%
Port Camden/West Kuiu	8	1	13%
Stikine Flats	11	9	82%
Tenakee Inlet	15	6	40%
Thomas/Farragut Bays	8	2	25%
West Prince of Wales	14	0	0%
West Prince of Wales, outside	n.a.	n.a.	n.a.
Mixed	0	2	
Total		96	

Table 8.–2019/2020 Dungeness season landings by processor type.

Ports	Catcher/Seller	Direct Market Catcher/Processor	Shore-based Processor	Total Landings
Angoon	4	0	0	4
Craig	28	0	4	32
Haines	29	0	137	166
Hoonah	2	7	4	13
Hydaburg	3	0	0	3
Hyder	0	0	5	5
Juneau	8	24	390	422
Ketchikan	16	0	6	22
Petersburg	1	0	1450	1451
Sitka	10	13	95	118
Skagway	1	0	0	1
Wrangell	13	0	1169	1182
Total	115	44	3260	3419

Table 9.–2019/2020 Commercial Dungeness crab harvest summery.

	Summer	Fall	Total
Pounds	4,201,094	1,124,831	5,330,101
Percentage	79%	21%	

Table 10.–2019/2020 Commercial Dungeness harvest by permit type.

	D9AA (300 pots)	D9BA (225 pots)	D9CA (150 pots)	D9DA (75 pots)
Permits	47	37	67	49
Pounds	2,383,108	1,259,997	1,424,593	263,403
Pounds/permit	50,683	34,054	14,626	5,376
Percent	45%	24%	26%	5%

Table 11.–Commercial Dungeness crab harvest summary by district in 2018/2019 and 2019/2020 seasons.

District	2018/19	2019/20
1	85,718	95,221
2	70,125	98,241
3	*	*
4	*	*
5	*	*
6	535,418	632,713
7	183,572	245,332
8	730,854	1,117,565
9	84,114	97,122
10	343,576	516,843
11	909,634	1,097,562
12	295,991	467,690
13	328,055	257,692
14	340,300	219,757
15	178,626	480,210
16	*	*
Total	4,089,214	5,330,101

*Less than three permits fished; information confidential.

Table 12.–Commercial Dungeness crab harvest summary ranges, averages, and fishery value.

	Range	Average
Price per pound:	$1.44–$8.00	$3.02*
Weight range (lb):	1.49–2.95	2
Total value of fishery:	$15,925,230.00	

* Average price doesn't include crabs landed as softshell, deadloss, or personal use.

Table 13.–Tanner crab sampling goals for the 2019/2020 commercial season and number of trips sampled by management area for the 2018/2019 commercial season in Southeast Alaska.

Management Area	Statistical Areas	Priority	Trips	
			Goal	Sampled 2018/2019
Lynn Canal /Upper Stephens Passage	All of District 15, Subdistricts 111-30 to 111-55	High	27	23
Fredrick Sound/Lower Stephens Passage	All of District 8 & District 10, Subdistricts 111-00 to 111-29	High	13	15
Icy Strait	All of District 14	High	11	7
Other	Districts 6, 9, 12, 13, etc.	Medium	36*	10

* The power analysis resulted in creating potentially unattainable goals for "other areas". Please be advised that "other areas" should be sampled only as opportunity and time allows.

Table 14.–Southeast Tanner crab recruit categories (sizes are carapace widths in mm).

	Size, shell 1,2,3		Size, shell 4		Size, shell 5	
Category	Min	Max	Min	Max	Min	Max
Juvenile	-	108	-	108	-	108
Pre-Recruit	109	137	109	137	109	137
Recruit	138	170	-	-	-	-
Post-recruit	171	-	138	-	138	-

Table 15.–Dockside sampling data for the number of crab sampled by management area for Southeast Tanner crab fisheries, 2000/01–2018/2019 commercial seasons.

Data	Season	Management Area				
		Fredrick Sound/ Lower Stephens Passage	Icy Strait	Lynn /Upper Stephens Passage	Other	Total
Sample size (no. crab)	2001	3,448	1,197	2,128	1,498	8,271
	2002	2,422	1,563	2,993	1,541	8,519
	2003	2,443	843	2,545	1,508	7,339
	2004	2,608	1,210	2,219	665	6,702
	2005	2,318	1,348	1,275	1,457	6,398
	2006	1,947	1,575	1,125	797	5,444
	2007	1,637	1,122	1,250	1,378	5,387
	2008	1,122	1,124	824	943	4,013
	2009	1,103	675	300	672	2,750
	2010	1,725	376	1,051	586	3,738
	2011	1,270	225	1,055	663	3,213
	2012	1,277	525	1,338	974	4,114
	2013	1,817	375	1,250	1,243	4,685
	2014	1,050	226	1,425	2,017	4,718
	2015	1,201	225	2,327	529	4,282
	2016	2,021	226	1,950	1,201	5,398
	2017	1,431	381	2,525	983	5,320
	2018	1,026	750	2,177	1,228	5,181
	2019	949	525	1,574	701	3,749

Table 16.–Dockside sampling data for the number of landings sampled by management area for Southeast Tanner crab fisheries, 2000/01–2018/2019 commercial seasons.

Data	Season	Management Area				
		Fredrick Sound/ Lower Stephens Passage	Icy Strait	Lynn /Upper Stephens Passage	Other	Total
Sample size (no. landings)	2001	39	16	30	21	106
	2002	33	21	40	23	117
	2003	33	12	34	25	104
	2004	35	16	30	12	93
	2005	32	16	17	22	87
	2006	26	21	15	12	74
	2007	22	15	17	19	73
	2008	15	15	12	14	56
	2009	15	9	4	10	38
	2010	23	5	14	8	50
	2011	17	3	14	9	43
	2012	17	7	18	15	57
	2013	25	5	17	18	65
	2014	14	3	19	28	57
	2015	16	3	31	7	57
	2016	28	3	26	16	73
	2017	19	5	34	13	71
	2018	14	10	29	18	71
	2019	15	7	23	10	55

Table 17.–Dockside sample data for average weights (lb) of tanner crab sampled by management area for Southeast Tanner crab fisheries, 2000/01–2018/2019 commercial seasons.

Data	Season	Management Area			
		Fredrick Sound/ Lower Stephens Passage	Icy Strait	Lynn /Upper Stephens Passage	Other
Avg. wt. (pounds)	2001	2.7	2.5	2.8	2.5
	2002	2.7	2.7	2.6	2.4
	2003	2.6	2.6	2.5	2.3
	2004	2.6	2.5	2.4	2.3
	2005	2.5	2.4	2.5	2.4
	2006	2.5	2.5	2.5	2.3
	2007	2.6	2.6	2.4	2.4
	2008	2.6	2.5	2.4	2.3
	2009	2.5	2.4	2.6	2.4
	2010	2.5	2.5	2.6	2.4
	2011	2.6	2.8	2.8	2.5
	2012	2.6	2.5	2.8	2.5
	2013	2.6	2.5	2.7	2.5
	2014	2.6	2.5	2.7	2.5
	2015	2.5	2.5	2.5	2.4
	2016	2.4	2.3	2.5	2.4
	2017	2.4	2.3	2.5	2.3
	2018	2.3	2.4	2.2	2.1
	2019	2.5	2.5	2.5	2.3

Table 18.–Dockside sampling data for average carapace length (mm) of Tanner crab by management area for Southeast Tanner crab fisheries, 2000/01–2018/2019 commercial seasons.

Data	Season	Management Area			
		Fredrick Sound/ Lower Stephens Passage	Icy Strait	Lynn /Upper Stephens Passage	Other
Avg. carapace width (mm)	2001	155.1	151.4	158.1	151.5
	2002	153.9	153.8	152.8	150.2
	2003	153.7	153.3	155.4	147.5
	2004	153.5	150.9	152.7	148.2
	2005	151.6	149.6	153.4	148.7
	2006	152.7	151.0	153.1	147.7
	2007	153.2	153.7	152.9	149.0
	2008	152.0	151.6	153.0	147.7
	2009	151.7	150.0	156.0	149.6
	2010	152.0	152.2	154.6	149.8
	2011	152.5	151.0	155.9	150.4
	2012	152.9	151.6	158.7	150.6
	2013	153.9	152.8	157.6	152.0
	2014	154.3	151.2	156.5	151.0
	2015	151.8	151.0	155.4	149.7
	2016	151.2	149.3	154.9	148.2
	2017	148.7	148.1	152.3	148.0
	2018	150.1	148.8	152.6	146.7
	2019	151.3	151.5	154.2	147.2

Table 19.–Dockside sampling data for the percentage of recruits of Tanner crab by management area for Southeast Tanner crab fisheries, 2000/01–2018/2019 commercial seasons.

Data	Season	Management Area			
		Fredrick Sound/ Lower Stephens Passage	Icy Strait	Lynn /Upper Stephens Passage	Other
% Recruit	2001	68.1	90.1	46.0	64.8
	2002	72.8	88.5	64.3	81.1
	2003	78.1	85.0	74.5	75.5
	2004	75.4	91.1	71.9	59.7
	2005	74.2	67.1	67.0	46.6
	2006	71.8	83.6	69.6	55.2
	2007	67.3	76.6	69.1	62.8
	2008	57.1	64.2	58.9	53.0
	2009	71.2	82.2	83.7	67.4
	2010	62.4	80.8	65.3	66.7
	2011	61.1	71.6	60.2	46.0
	2012	72.7	75.1	53.0	64.4
	2013	67.4	58.9	62.0	53.5
	2014	64.4	65.3	61.5	52.3
	2015	67.6	56.0	63.4	66.2
	2016	76.1	64.6	67.2	64.7
	2017	71.9	80.6	66.1	47.6
	2018	60.2	81.7	74.8	54.9
	2019	63.0	84.7	68.8	59.8

Table 20.–2019/2020 Tanner crab season landings by management area and port.

Management Areas	Juneau	Petersburg	Sitka	Total Landings Sampled	Sampling Goals	% of Landing Goals Sampled
Frederick Sound/ Lower Stephen	2	19	0	21	13	78%
Icy Strait	3	1	4	11	11	73%
Lynn Canal/ Upper Stephen	10	0	8	18	27	138%
Other Tanner Crab	0	5	2	7	36*	19%
mixed	0	1	0	1	0	n/a
Total	15	26	14	55	n/a	n/a

* The power analysis resulted in creating potentially unattainable goals for “other areas”. Please be advised that “other areas” should be sampled only as opportunity and time allows.

Table 21.–2019/2020 Commercial Tanner crab permit summary.

	T10A	T19A	K49A	K59A	K69A	Tender
Registered*	20	22	16	4	20	13
Total w/landings						
Core area w/landings, 2/17–2/23	12	22	15	4	20	0
Non-core areas, 2/17–2/23	3	8	3	1	5	0
Non-core areas, 2/24–2/28	0	9	4	1	7	0
Exploratory areas, 2/17–2/28	0	0	0	0	0	0
Exploratory areas, 2/24–2/28	0	0	0	0	0	0
Exploratory areas, 2/29–3/13	0	0	0	0	0	0

* Data from ADF&G registration file.

Table 22.–2019/2020 Commercial Tanner crab harvest by management area and time period.

	Pots			Rings		
Area/Time Period	Pounds	# Crab	# Lifts	Pounds	# Crab	# Lifts
Core area, 2/17-2/23	975,501	384,253	22,453	5,461	2,427	3,146
Non-core, 2/17-2/23	160,320	65,302	4,286	423	170	326
Non-core, 2/24-2/28	51,348	20,872	2,052	0	0	0
Total	1,266,841	477,130	29,876	5,884	2,597	3,472
CPUE (crab/lift):		15.32			0.7	
Average Weight (lbs):		2.5			2.3	

Table 23.–2019/2020 Commercial Tanner crab season harvest summary.

	Core	Non-Core	Total
Pounds	1,000,634	212,091	1,212,725
Percentage	82.5%	17.5%	-

Table 24.–2019/2020 Commercial Tanner crab harvest summary of district.

District	2018/19	2019/20
5	0	*
6	5,948	3,651
7	0	*
8	30,573	18,280
9	*	*
10	91,749	74,264
11	606,646	447,096
12	46,666	52,105
13	*	6,162
14	361,291	452,072
15	134,127	153,586
16	0	*
Total	1,286,091	1,212,725

* Less than three permits fished; information confidential.

Table 25.–2019/2020 Commercial Tanner crab fishery value.

	Value	Ave $/lb
Pot	$3,869,256.44	$3.68
Ring	$20,827.55	$3.60
Total	$3,890,083.99	$3.68

Number of Buyers:	6

Table 26.–Sampling goals in terms of number of landings for the 2019/2020 golden king crab fishery by management area. Goals are based on achieving 5% accuracy in estimating the percent recruit for each management area. A landing of 50 crab is preferred, but a sampled landing can consist of crab totaling 20 or more.

	Management Area						
Data	Mid-Chatham	East Central	North Stephens	Northern	Icy Strait	Lower Chatham	Southern
2019 Harvest (lb)	4,481	6,749	17,581	Closed	*	*	20,105
2019 Harvest (# Crab)	712	1,123	2,320	Closed	*	*	3,088
2019 Landings	10	14	11	Closed	4	Closed	12
2020 Landings to Sample Goal	Closed	Closed	21	Closed	7	Closed	12
2020 Individual Crab Weight Goal	Closed	Closed	200	Closed	200	Closed	200

* Less than three permits fished; information confidential.

Table 27.–Southeast golden king crab recruit categories (sizes are carapace lengths in mm)

					Size	
	Premolt CL	Postmolt CL	Molt increment		Min	Max
Juvenile	116.0	134.3	18.3	J	116	133
Pre-recruit 1	134.0	151.3	17.3	PR-1	134	150
Recruits	151.0	167.3	16.3	R	151	166
Post-recruit 1	167.0	182.3	15.3	PR+1	167	181
Post-recruit 2	182.0	196.4	14.4	PR+2	182	195
Post-recruit 3	196.0	209.6	13.6	PR+3	196	209
Post-recruit 4	210.0	222.8	12.8	PR+4	210	222

Table 28.–2019/2020 Golden king crab season landings sampled by port.

Port	Sampled	Total landings	% sampled
Juneau	4	5	80%
Ketchikan	0	2	0%
Petersburg	5	18	28%
Sitka	0	2	0%
Wrangell	2	4	50%
Total	11	31	35%

Table 29.–2019/2020 Golden king crab season dockside sampling by management area.

Management Area	Sampled	Management Sampling Goal	% of Goals completed
East Central	n.a.	Closed	n.a.
Icy Strait	2	7	29%
Lower Chatham Strait	n.a.	Closed	n.a.
Mid-Chatham Strait	n.a.	Closed	n.a.
North Stephens Passage	4	21	19%
Northern	n.a.	Closed	n.a.
Southern	3	12	25%
Total	11		

Table 30.–2019/2020 Golden king crab season landings by month and port.

	Juneau	Ketchikan	Petersburg	Sitka	Wrangell	Total
Feb	9	1	8	0	1	19
Mar	2	1	13	1	2	19
Apr	3	0	2	0	0	5
May	1	0	2	0	0	3
Jun	0	0	0	0	0	1
Total	15	2	26	1	3	47

Table 31.–2019/2020 Region I - Golden King Crab Fishery.

			Harvest				
Management Area	GHL	Vessels	Pounds	% of GHL	# of Crab	Pot Lifts	CPUE crab/lift*
East Central	CLOSED	-	-	-	-	-	-
North Stephens Passage	13,000	8	19,769	152%	2,516	939	3.62
Northern	CLOSED	-	-	-	-	-	-
Icy Strait	7,500	6	6,833	91%	976	781	1.18
Mid Chatham	CLOSED	-	-	-	-	-	-
Lower Chatham	CLOSED	-	-	-	-	-	-
Southern	21,000	5	20,557	98%	3,188	1,580	2.30
ALL Areas Combined	41,500	19	47,159	114%	6,680	3,300	2.17

*Calculated by dividing # crab/# pot lifts for each line of fish ticket data, not by dividing total # crab/total #pot lifts