

5 Pribilof Islands blue king crab

Since 2017, assessment for PIBKC has been moved to an odd-year biennial schedule, with 2019 being “in cycle”.

Fishery information relative to OFL setting.

The Pribilof Islands blue king crab fishery began in 1973, with peak landings of 11.0 million lb during the 1980/81 season. A steep decline in landings occurred after the 1980/81 season. Directed fishery harvest from 1984/85 until 1987/88 was annually less than 1.0 million lb with low CPUE. The fishery was closed from 1988/89 through 1994/95 fishing seasons. The fishery reopened for the 1995/96 to 1998/99 seasons. Fishery harvests during this period ranged from 1.3 to 2.5 million lb. The fishery closed again for the 1999/00 season due to declining stock abundance and has remained closed to the present.

The stock was declared overfished in 2002 and a rebuilding plan implemented in 2004. The rebuilding plan closed directed fishing for Pribilof blue king crab until the stock is rebuilt. In 2009, NMFS determined the stock would not meet its 10-year rebuilding horizon. Subsequently, Amendment 43 to the King and Tanner Crab FMP and Amendment 103 to the BSAI Groundfish FMP were approved by the Secretary of Commerce in 2014. This action, a revised rebuilding plan, closed the Pribilof Island Habitat Conservation Zone to Pacific cod pot fishing, which accounts for the highest recent rates of bycatch of this stock. This area was already closed to groundfish trawl fishing. To prevent overfishing in the future, ADF&G will implement closure areas for the commercial crab fisheries to reduce the blue king crab bycatch. NMFS recently implemented a procedure to account for blue king crab bycatch in the groundfish fisheries inseason and will take inseason action to prevent overfishing.

Data and assessment methodology

The calculation of the 2018/19 survey biomass uses the stock area definition established in 2012/13 that includes an additional 20 nm strip east of the Pribilof District. This assessment uses the 2016/17 methodology to project MMB and calculate B_{MSY} . Prior to 2016/17, MMB for the current year was estimated from the NMFS EBS bottom trawl survey using a three-year running average weighted by the inverse of the variance of the area-swept estimate. The new methodology to calculate MMB and B_{MSY} was recommended by the CPT and uses a random effects model to smooth the survey time series. This model smooths the MMB estimates without low abundance estimates having undue influence. Differences in abundance estimates from the two methods were largest during periods of high inter-annual variability.

Since 2017, the timing of the assessment was moved from September to May, which has required that several data inputs to the model (assessment year MMB at the time of the survey and retained catch and bycatch values from the crab fishery year prior to the assessment year) be estimated in some fashion. For the 2019 assessment, MMB at the time of survey (July 2019) was estimated from the observed time series using the random effects as a 1-step ahead prediction—i.e., it is the same value as that from the 2018 survey. The values of year-to-date bycatch in the crab and groundfish fisheries on April 1, 2019 were taken as estimates of the 2018/19 year-end values and will be updated in September 2019. Because the directed fishery was closed, retained catch and bycatch in the directed fishery would necessarily be zero.

Stock biomass and recruitment trends

The 2019/20 MMB at mating is projected to be 175 t, which is approximately 4% of the proxy for B_{MSY} . The Pribilof blue king crab stock biomass continues to be low with no indication of recruitment.

Tier determination/Plan Team discussion and resulting OFL and ABC determination

This stock is recommended for placement into Tier 4. B_{MSY} was estimated using the time periods 1980/81-1984/85 and 1990/91-1997/98. This range was chosen because it eliminates periods of extremely low abundance that may not be representative of the production potential of the stock. B_{MSY} is estimated at 4,106 t (9.05 million pounds) for 2019/20.

Because the projected 2019/20 estimate of MMB is less than 25% B_{MSY} , the stock is in stock status c and the directed fishery F is 0. However, an F_{OFL} must be determined for the non-directed catch. For this stock, the F_{OFL} is based on average groundfish bycatch between 1999/00 and 2005/06, a time period determined as part of the rebuilding plan. The recommended OFL for 2019/20 is 1.16 t (0.0026 million lb).

The CPT continues to recommend setting the ABC less than the maximum permissible by employing a 25% buffer on the OFL. This recommendation was based upon continuing concerns with stock status and consistency with relative buffer levels for other stocks for which the OFL is based upon average catch.

Historical status and catch specifications for Pribilof Islands blue king crab (t). Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2015/16	2,058	361	Closed	0	1.18	1.16	0.87
2016/17	2,053	232	Closed	0	0.38	1.16	0.87
2017/18	2,053	230	Closed	0	0.33	1.16	0.87
2018/19	2,053	230	Closed	0	0.41	1.16	0.87
2019/20		175				1.16	0.87
2020/21		175				1.16	0.87

Historical status and catch specifications for Pribilof Islands blue king crab (million lb). Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2015/16	4.537	0.796	Closed	0	0.0026	0.0026	0.002
2016/17	4.526	0.511	Closed	0	0.0008	0.0026	0.002
2017/18	4.526	0.507	Closed	0	0.0007	0.0026	0.002
2018/19	4.526	0.507	Closed	0	0.0009	0.0026	0.002
2019/20		0.386				0.0026	0.002
2020/21		0.386				0.0026	0.002

The total catch for 2017/18 (0.33 t, 0.0007 million lb) and 2018/19 (0.41 t, 0.0009 million lb) was less than the associated OFLs (1.16 t, 0.0026 million lb for both years) so overfishing did not occur during 2017/18 or 2018/19. The 2019/20 projected MMB estimate of 175 t (0.386 million lb) is below the proxy for MSST ($MMB/B_{MSY} = 0.04$) so the stock is projected to continue to be in an overfished condition.