

(THE NORWEGIAN DIRECTORATE OF FISHERIES)

Ministry of Trade, Industry and Fisheries	Administrative Unit:	Fisheries Regulations Section
Postboks 8090 Dep	Executive Officer:	Guro Gjelsvik
0032 OSLO	Telephone:	90063839
Norway	Our reference:	13/7056
	Your reference:	
	Date:	5 May 2017

Assessment of biological advice relating to snow crab in the Barents Sea

Reference is made to the biological advice from the Norwegian Institute of Marine Research (IMR) relating to snow crab and the order that was received on 21 April 2017 from the Ministry of Trade, Industry and Fisheries concerning an assessment of this.

1. Quota advice for 2017

IMR's results from the expedition can be summarized as follows:

Stocks have increased considerably since 2010. The biomass of snow crab above the minimum measurement is estimated at between 30-90% of the biomass that gives the maximum sustainable yield (B_{MSY}), however there is major uncertainty associated with this estimate.

Fishing mortality is estimated at between 0.28-1.5 F_{MSY} , i.e. the rate of fishing mortality when the maximum sustainable yield is achieved.

Production of the stocks is estimated at between 2,800 and 11,800 tonnes, however there is also major uncertainty associated with this estimate.

IMR has prepared various harvest options for 2017 which vary between 2,700 and 5,400 tonnes. The advice also provides the calculated probability of fishing mortality exceeding F_{MSY} , that the biomass will be lower than B_{MSY} and that stocks will increase one year into the future. IMR stated that fishing mortality (F) should rarely have a probability of more than approximately 50% of exceeding F_{MSY} and that this probability should normally be approximately 35%.

1.1 Status of the Norwegian snow crab harvesting

As we are aware, Norwegian vessels started harvesting snow crab in 2013. From 2013 to 2015, snow crab were only caught on the Russian continental shelf. In 2016 there was one vessel harvesting snow crab on the Russian continental shelf, while other vessels engaged in harvesting activities on the Norwegian continental shelf outside Svalbard. Table 1 shows that of the 5,400 tonnes of snow crab landed by Norwegian vessels in 2016, almost 3,400 tonnes were caught on the Norwegian continental shelf. Norwegian vessels are not permitted to catch snow crab on the Russian continental shelf in 2017, which means that all harvesting activities by Norwegian vessels now take place on the Norwegian continental shelf.

Table 1: Norwegian snow crab catch (tonnes) divided into area and year

Area	2014	2015	2016	2017
Russian continental shelf	1,816	2,280	2,030	10
Norwegian continental shelf	65	826	3,375	1,399
Total	1,881	3,105	5,406	1,409

Source: The Directorate of Fisheries' Register of Landing and Sales Notes as of 3 May 2017

Figure 1 shows that Norwegian vessels catch snow crab the entire year, however smaller quantities of snow crab are landed in January, February and September. On the whole, catch rates thus far this year are lower in comparison with 2016. However, if one looks at the catch rates on the Norwegian continental shelf (Figure 2), these have generally been somewhat higher in 2017 than in 2016.

Figure 1: Norwegian snow crab catch divided by month and year

(Figure)

Source: The Directorate of Fisheries' Register of Landing and Sales Notes as of 3 May 2017

Figure 2: Norwegian snow crab catch on the Norwegian continental shelf from 2015 to 2017

(Figure)

Source: The Directorate of Fisheries' Register of Landing and Sales Notes as of 3 May 2017

Table 2 shows the Norwegian snow crab catch at vessel level, where vessels with a catch of 1 tonne or less have been included as "Other vessels". In 2016, five to six vessels engaged in the targeted harvesting of snow crab, while there appears to be something of an increase in the number of participating vessels in 2017.

Table 2: Snow crab catch by vessel

Vessel name	2014	2015	2016	2017	Total
ARCTIC PIONEER		112	938	147	1,196
ARCTIC WOLF	263	122		68	453
HARHAUG I		27	3	61	91
KVITUNGEN	748	385	66	114	1,313
NORTHEASTERN	60	1,090	1,246	400	2,796
POLAR PIONEER			109	61	171
POLARIS	714	841	728	42	2,326
PROWESS		522	2,030	208	2,761
RØSTNESVÅG			282	5	287
TROMSBAS	16			302	318
Other vessels	79	5	3	1	88
Total	1,881	3,105	5,406	1,409	11,800

Source: The Directorate of Fisheries' Register of Landing and Sales Notes as of 3 May 2017

1.2 The Directorate of Fisheries' assessment

The Directorate of Fisheries agrees with the overarching principles that IMR has used as a basis. The total allowable catch (TAC) is dependent on how quickly we wish to build up stocks. The lower the TAC, the faster stocks will increase.

As mentioned, about 3,400 tonnes of snow crab were caught on the Norwegian continental shelf in 2016, while the total catch was 5,400 tonnes (Table 1).

The Directorate of Fisheries recommends that the TAC for 2017 should not exceed 4,500 tonnes. This entails fishing mortality with a probability of about 50% that stocks will not exceed FMSY and an almost 80% probability that stocks will increase into the next year.

Without regulating participation it is difficult to regulate the catch with vessel quotas. An alternative may be to use maximum quotas. However, this will impact on the most established operators, who have already caught a significant quantity. We are therefore of the view that the expedient course of action would be to have free fishing within a total quota in 2017, and rather establish a more stringent regulatory system when regulation of participation is potentially in place.

2. Minimum measurement

The Norwegian minimum measurement for snow crab of 100mm shell width was set on 23 February 2015. There were a number of considerations behind this minimum measurement, including harmonisation with Russian regulations and the precautionary principle. Russia has established a minimum measurement of 100mm shell width based on the biological grounds that approximately 50% of the male crab population is sexually mature at this size and that reproduction would be ensured even if the male crab population was to be overfished. Norwegian fishing operators in the Barents Sea have reported that they already use a minimum measurement of approximately 100mm shell width due to market considerations.

IMR does not presently have sufficient knowledge about snow crab biology in the Barents Sea to be able to calculate the optimal biological minimum measurement. The Directorate of Fisheries agrees with IMR that the current minimum measurement of 100mm should be maintained until further notice, however there will be a new assessment of this when there is better knowledge about the biology of snow crab in the Barents Sea.

3. Periods in which fishing is suspended

According to IMR, most large crabs change shell in the spring/early summer, and snow crab are therefore vulnerable to external forces for a period.

IMR recommended that the harvesting of snow crab should be avoided during periods in which there is a high proportion of soft-shelled crabs and crabs with a low meat content and also stated that a suspension period between 1 June to 31 August can be considered or possibly continual on board monitoring with an associated suspension regime.

As we understand it, IMR does not presently have sufficient information about the seasonal variations, geographical variations and the actual intermixture of soft-shelled crab in the Norwegian catches.

Norwegian vessels report that the shell changing process for snow crab in the Barents Sea can vary by several weeks from year to year, and that there are also geographical variations. There are several factors that appear to have an effect, for example, ice conditions, water temperature and depth.

As was also stated in the advice provided by IMR, pot fishing takes place in areas that partly overlap with bottom trawling. There are strong grounds to believe that trawling in areas with snow crab can also constitute an “external force” for soft-shelled crab in particular. From this perspective it would be natural to view these types of fishing activities as a whole when determining measures for reducing harm and mortality among snow crab due to external forces.

On the east coast of Canada they operate with an upper limit of 20% intermixture of soft-shelled crab before fishing is suspended. This form of regulation requires the presence of observers in the catch area.

In the view of the Directorate of Fisheries, we have little information about shell changing and the intermixture of soft-shelled crab in the Barents Sea. We therefore recommend that a general rule is introduced that the Directorate of Fisheries can prohibit the harvesting of snow crab for periods and in areas when biological conditions so warrant.

4. Other administrative considerations

The harvesting of snow crab with pots in the Barents Sea has been ongoing for some years and during periods there have been, at times, major gear conflicts between pot fishing and trawling that have also resulted in the loss of pots, and these losses have sometimes been significant. However, it is very conspicuous that no loss of pots has been reported to the Norwegian Coast Guard as required in Section 78 of the Performance Regulations in the event of loss of fishing gear. This means that there is also no gear clearing in these areas.

Knowledge from other pot fishing shows that so-called “ghost fishing” from lost pots is more significant than previously assumed and is of course extremely unfortunate from an ethical or environmental perspective. We are aware that some of the vessels use so-called “Canadian pots”. These have features that make them dissolve in such a manner that they stop fishing after a certain period of time. Together with IMR, we are working on Norwegian solutions to this.

5. Proposed amendments to regulations

Based on what is described above, the Directorate of Fisheries proposes that the following regulations are laid down:

Regulations relating to amendments to Regulations relating to prohibition against the harvesting of snow crab

Stipulated by the Ministry of Trade, Industry and Fisheriespursuant to Section 16 of Act no. 37 of 6 June 2008 relating to the management of wild living marine resources (Marine Resources Act):

I

The following amendments are made to Regulations no. 1836 of 19 December 2014 relating to the prohibition against the harvesting of snow crab:

The new Section 3 shall read:

Section 3 Total quota

Without prejudice to the prohibition in Section 1, vessels that have an exemption from the prohibition against the harvesting of snow crab, may catch and land up to 4,500 tonnes of snow crab.

The new Section 4 shall read:

Section 4 Prohibition against fishing for certain periods and in certain areas

The Norwegian Directorate of Fisheries can prohibit the harvesting of snow crab for periods and areas if biological considerations so warrant.

The current Section 3-6 will become the new Section 5-8.

II

The Regulations shall enter into force immediately.

With kind regards

Stein Åge Johnsen
Head of Section

Guro Gjelsvik
Senior Advisor

This letter has been electronically approved and sent without a handwritten signature.

Recipient list:

Ministry of Trade, Industry and Fisheries

Postboks 8090 Dep 0032 OSLO