

## Addendum to the 2021 SAFE Report for the Pribilof Islands Blue King Crab Fisheries of the Bering Sea and Aleutian Islands Regions

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### Summary

The Pribilof Islands blue king crab (PIBKC) assessment is on a biennial cycle. 2021 is the “on” year in the cycle, and a full assessment was conducted in May 2021 to determine overfished status. Because the fishery year (July 1, 2020 to June 30, 2021) was incomplete at that time, only a preliminary determination of whether or not overfishing of PIBKC occurred in 2020/21 could be given. This addendum to the 2021 SAFE report provides the 2020/21 overfishing status for PIBKC based on final retained catch and bycatch mortality estimates in the directed fishery, other crab fisheries, and the groundfish fisheries (Tables 1 and 2).

The overfishing limit (OFL) for PIBKC in 2020/21 was 1.16 t, with an acceptable biological catch (ABC) of 0.87 t (NPFMC, 2020). Following completion of the 2020/21 crab fishery year, data on retained catch and bycatch of PIBKC was obtained from the Alaska Department of Fish and Game (ADFG) and the NMFS Alaska Regional Office (via the Alaska Fisheries Information Network [AKFIN]) for crab fisheries and groundfish fisheries, respectively. No retained catch or bycatch was taken in 2020/21 because the directed fishery was closed due to its overfished status (Table 3). Also, no bycatch of PIBKC was observed in other crab fisheries (e.g., Tanner crab; Table 4). Bycatch in the groundfish fisheries totaled 0.006 t across all gear types in 2020/21 (Table 4), with all bycatch occurring in the fixed gear (hook-and-line) fisheries (almost all in fisheries targeting Pacific cod). After applying gear-specific discard mortality rates (0.2 for fixed gear, 0.8 for trawl gear), this amounted to 0.001 t total catch mortality (Table 5). Because this was less than the OFL for 2020/21 (1.16 t), **overfishing did not occur on this stock in 2020/21.**

The following two tables update the management performance tables presented in the 2021 SAFE Report with the final fishing mortality estimates for 2020/21:

Table 1. Management performance; all units in metric tons.

| Year    | MSST  | Biomass<br>(MMB <sub>crab</sub> ) | TAC    | Retained<br>Catch | Total Catch<br>Mortality | OFL  | ABC  |
|---------|-------|-----------------------------------|--------|-------------------|--------------------------|------|------|
| 2017/18 | 2,053 | 230                               | closed | 0                 | 0.33                     | 1.16 | 0.87 |
| 2018/19 | 2,053 | 230                               | closed | 0                 | 0.40                     | 1.16 | 0.87 |
| 2019/20 | 2,049 | 180                               | closed | 0                 | 0.42                     | 1.16 | 0.87 |
| 2020/21 | 2,049 | 181                               | closed | 0                 | 0.00                     | 1.16 | 0.87 |
| 2021/22 | --    | 180                               | --     | --                | --                       | 1.16 | 0.87 |

Table 2. Management performance; all units in millions of pounds.

| <b>Year</b> | <b>MSST</b> | <b>Biomass<br/>(MMB<sub>ma(ting)</sub>)</b> | <b>TAC</b> | <b>Retained<br/>Catch</b> | <b>Total Catch<br/>Mortality</b> | <b>OFL</b> | <b>ABC</b> |
|-------------|-------------|---|------------|---------------------------|----------------------------------|------------|------------|
| 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     | 4.517       | 0.398                                       | closed     | 0                         | 0.0009                           | 0.0026     | 0.002      |
| 2020/21     | 4.517       | 0.398                                       | closed     | 0                         | 0.0000                           | 0.0026     | 0.002      |
| 2021/22     | --          | 0.398                                       | --         | --                        | --                               | 0.0026     | 0.002      |

### References

NPFMC. 2020. Stock Assessment and Fishery Evaluation Report for the King and Tanner Crab Fisheries of the Bering Sea and Aleutian Islands: 2020 Final Crab SAFE. North Pacific Fishery Management Council, 1007 West Third, Suite 400 Anchorage, AK 99501-2252.

**Tables**

Table 3. Retained catch in the directed PIBKC fishery.

| Year                     | Retained Catch |             | Avg. CPUE<br>legal crabs/pot |
|--------------------------|----------------|-------------|------------------------------|
|                          | Abundance      | Biomass (t) |                              |
| 1973/1974                | 174,420        | 579         | 26                           |
| 1974/1975                | 908,072        | 3,224       | 20                           |
| 1975/1976                | 314,931        | 1,104       | 19                           |
| 1976/1977                | 855,505        | 2,999       | 12                           |
| 1977/1978                | 807,092        | 2,929       | 8                            |
| 1978/1979                | 797,364        | 2,901       | 8                            |
| 1979/1980                | 815,557        | 2,719       | 10                           |
| 1980/1981                | 1,497,101      | 4,976       | 9                            |
| 1981/1982                | 1,202,499      | 4,119       | 7                            |
| 1982/1983                | 587,908        | 1,998       | 5                            |
| 1983/1984                | 276,364        | 995         | 3                            |
| 1984/1985                | 40,427         | 139         | 3                            |
| 1985/1986                | 76,945         | 240         | 3                            |
| 1986/1987                | 36,988         | 117         | 2                            |
| 1987/1988                | 95,130         | 318         | 2                            |
| 1988/1989                | 0              | 0           | --                           |
| 1989/1990                | 0              | 0           | --                           |
| 1990/1991                | 0              | 0           | --                           |
| 1991/1992                | 0              | 0           | --                           |
| 1992/1993                | 0              | 0           | --                           |
| 1993/1994                | 0              | 0           | --                           |
| 1994/1995                | 0              | 0           | --                           |
| 1995/1996                | 190,951        | 628         | 5                            |
| 1996/1997                | 127,712        | 425         | 4                            |
| 1997/1998                | 68,603         | 232         | 3                            |
| 1998/1999                | 68,419         | 234         | 3                            |
| 1999/2000 -<br>2020/2021 | 0              | 0           | --                           |

Table 4. Estimated bycatch of PIBKC in the crab and groundfish fisheries. These values do not include discard mortality rates.

| fishery<br>year | crab (pot) fisheries (t) |             |                   | groundfish fisheries (t) |            |
|-----------------|--------------------------|-------------|-------------------|--------------------------|------------|
|                 | females                  | legal males | sublegal<br>males | fixed gear               | trawl gear |
| 1991/92         | --                       | --          | --                | 0.067                    | 6.199      |
| 1992/93         | --                       | --          | --                | 0.879                    | 60.791     |
| 1993/94         | --                       | --          | --                | 0.000                    | 34.232     |
| 1994/95         | --                       | --          | --                | 0.035                    | 6.856      |
| 1995/96         | --                       | --          | --                | 0.108                    | 1.284      |
| 1996/97         | 0.000                    | 0.000       | 0.807             | 0.031                    | 0.067      |
| 1997/98         | 0.000                    | 0.000       | 0.000             | 1.462                    | 0.130      |
| 1998/99         | 3.715                    | 2.295       | 0.467             | 19.800                   | 0.079      |
| 1999/00         | 1.969                    | 3.493       | 4.291             | 0.795                    | 0.020      |
| 2000/01         | 0.000                    | 0.000       | 0.000             | 0.116                    | 0.023      |
| 2001/02         | 0.000                    | 0.000       | 0.000             | 0.833                    | 0.029      |
| 2002/03         | 0.000                    | 0.000       | 0.000             | 0.071                    | 0.297      |
| 2003/04         | 0.000                    | 0.000       | 0.000             | 0.345                    | 0.227      |
| 2004/05         | 0.000                    | 0.000       | 0.000             | 0.816                    | 0.002      |
| 2005/06         | 0.050                    | 0.000       | 0.000             | 0.353                    | 1.339      |
| 2006/07         | 0.104                    | 0.000       | 0.000             | 0.138                    | 0.074      |
| 2007/08         | 0.136                    | 0.000       | 0.000             | 3.993                    | 0.132      |
| 2008/09         | 0.000                    | 0.000       | 0.000             | 0.141                    | 0.473      |
| 2009/10         | 0.000                    | 0.000       | 0.000             | 0.216                    | 0.207      |
| 2010/11         | 0.000                    | 0.000       | 0.186             | 0.044                    | 0.056      |
| 2011/12         | 0.000                    | 0.000       | 0.000             | 0.112                    | 0.007      |
| 2012/13         | 0.000                    | 0.000       | 0.000             | 0.170                    | 0.669      |
| 2013/14         | 0.000                    | 0.000       | 0.000             | 0.065                    | 0.000      |
| 2014/15         | 0.000                    | 0.000       | 0.000             | 0.144                    | 0.000      |
| 2015/16         | 0.103                    | 0.000       | 0.230             | 0.744                    | 0.808      |
| 2016/17         | 0.000                    | 0.000       | 0.000             | 0.077                    | 0.455      |
| 2017/18         | 0.064                    | 0.000       | 0.000             | 0.000                    | 0.378      |
| 2018/19         | 0.000                    | 0.000       | 0.101             | 0.020                    | 0.466      |
| 2019/20         | 0.000                    | 0.000       | 0.000             | 0.009                    | 0.518      |
| 2020/21         | 0.000                    | 0.000       | 0.000             | 0.006                    | 0.000      |

Table 5. Estimated bycatch mortality of PIBKC in the crab and groundfish fisheries. A discard mortality rate of 0.2 was applied to PIBKC caught with crab pots or groundfish fixed gear; a rate of 0.8 was applied to PIBKC caught with groundfish trawl gear.

| fishery year | crab (pot) fisheries (t) |             |                | groundfish fisheries (t) |            | total bycatch mortality (t) |
|--------------|--------------------------|-------------|----------------|--------------------------|------------|-----------------------------|
|              | females                  | legal males | sublegal males | fixed gear               | trawl gear |                             |
| 1991/92      | --                       | --          | --             | 0.013                    | 4.959      | 4.973                       |
| 1992/93      | --                       | --          | --             | 0.176                    | 48.633     | 48.809                      |
| 1993/94      | --                       | --          | --             | 0.000                    | 27.386     | 27.386                      |
| 1994/95      | --                       | --          | --             | 0.007                    | 5.485      | 5.492                       |
| 1995/96      | --                       | --          | --             | 0.022                    | 1.027      | 1.049                       |
| 1996/97      | 0.000                    | 0.000       | 0.161          | 0.006                    | 0.054      | 0.221                       |
| 1997/98      | 0.000                    | 0.000       | 0.000          | 0.292                    | 0.104      | 0.396                       |
| 1998/99      | 0.743                    | 0.459       | 0.093          | 3.960                    | 0.063      | 5.319                       |
| 1999/00      | 0.394                    | 0.699       | 0.858          | 0.159                    | 0.016      | 2.125                       |
| 2000/01      | 0.000                    | 0.000       | 0.000          | 0.023                    | 0.018      | 0.042                       |
| 2001/02      | 0.000                    | 0.000       | 0.000          | 0.167                    | 0.023      | 0.190                       |
| 2002/03      | 0.000                    | 0.000       | 0.000          | 0.014                    | 0.238      | 0.252                       |
| 2003/04      | 0.000                    | 0.000       | 0.000          | 0.069                    | 0.182      | 0.251                       |
| 2004/05      | 0.000                    | 0.000       | 0.000          | 0.163                    | 0.002      | 0.165                       |
| 2005/06      | 0.010                    | 0.000       | 0.000          | 0.071                    | 1.071      | 1.152                       |
| 2006/07      | 0.021                    | 0.000       | 0.000          | 0.028                    | 0.059      | 0.108                       |
| 2007/08      | 0.027                    | 0.000       | 0.000          | 0.799                    | 0.106      | 0.931                       |
| 2008/09      | 0.000                    | 0.000       | 0.000          | 0.028                    | 0.378      | 0.407                       |
| 2009/10      | 0.000                    | 0.000       | 0.000          | 0.043                    | 0.165      | 0.209                       |
| 2010/11      | 0.000                    | 0.000       | 0.037          | 0.009                    | 0.045      | 0.091                       |
| 2011/12      | 0.000                    | 0.000       | 0.000          | 0.022                    | 0.006      | 0.028                       |
| 2012/13      | 0.000                    | 0.000       | 0.000          | 0.034                    | 0.535      | 0.569                       |
| 2013/14      | 0.000                    | 0.000       | 0.000          | 0.013                    | 0.000      | 0.013                       |
| 2014/15      | 0.000                    | 0.000       | 0.000          | 0.029                    | 0.000      | 0.029                       |
| 2015/16      | 0.021                    | 0.000       | 0.046          | 0.149                    | 0.646      | 0.862                       |
| 2016/17      | 0.000                    | 0.000       | 0.000          | 0.015                    | 0.364      | 0.379                       |
| 2017/18      | 0.013                    | 0.000       | 0.000          | 0.000                    | 0.303      | 0.315                       |
| 2018/19      | 0.000                    | 0.000       | 0.020          | 0.004                    | 0.373      | 0.397                       |
| 2019/20      | 0.000                    | 0.000       | 0.000          | 0.002                    | 0.415      | 0.416                       |
| 2020/21      | 0.000                    | 0.000       | 0.000          | 0.001                    | 0.000      | 0.001                       |