A template to compare the latest version of GMACS with the last available assesment.

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Contents

F. Norton Sound Red King Crab Stock Assessment (*Paralithodes camtschaticus*)

This document presents a comparison between the latest available assessment results and the latest available version of GMACS for all stocks currently assessed (or intended to be assessed) with the ***Generalized Assessment Model for Crustaceans***.

This comparison covers various quantities and includes graphs where useful. This includes:

1. Management quantities for each version
2. Estimated recruitment time series
3. Estimated recruitment length distribution
4. Model fit to the observed mature biomass
5. Model fits to catch data (catch and bycatch)
6. Model fits to size composition data (in catch and surveys)
7. Model predicted fishing mortalities and selectivities for all sources of mortality
8. Abundances of immature and mature crab in the last year

The latest available version of GMACS is version 2.01.K - It was last compiled on 06/06/2022. Here is a summary of the latest changes from the version 2.01.J:

- Added an option to select how to calculate the average recruitment used in the computation of the reference points. This involves to options:
    1. Use an average recruitment over a given period of time, or
    2. Consider the estimated average recruitment estimate for the current year.

This analysis includes the following species: AIGKC/EAG, AIGKC/WAG, BBRKC, SMBKC, SNOW_M_time_varying

#Comparaison of AIGKC/EAG for 2 version of GMACS.

Table 1: Changes in management quantities for each scenario considered. Reported management quantities are derived from maximum likelihood estimates.

Model	MMB	B35	F35	FOFL	OFL	Status	M	Av_Recr
Last_Assessment	9166.195	6977.515	0.589	0.589	2896.413	1.314	0.21	0.234
Latest_Version	9166.196	6977.515	0.589	0.589	2896.413	1.314	0.21	0.234

#Comparaison of AIGKC/WAG for 2 version of GMACS.

Table 2: Changes in management quantities for each scenario considered. Reported management quantities are derived from maximum likelihood estimates.

Model	MMB	B35	F35	FOFL	OFL	Status	M	Av_Recr
Last_Assessment	4622.938	5341.368	0.552	0.493	1199.749	0.865	0.21	0.198
Latest_Version	4622.939	5341.368	0.552	0.493	1199.749	0.865	0.21	0.198

#Comparaison of BBRKC for 2 version of GMACS.

Table 3: Changes in management quantities for each scenario considered. Reported management quantities are derived from maximum likelihood estimates.

Model	MMB	B35	F35	FOFL	OFL	Status	M	Av_Recr
Last_Assessment	14113.97	24324.64	0.298	0.173	2297.520	0.580	0.180	1536.875
Latest_Version	14025.96	22512.18	0.299	0.186	2425.493	0.623	0.299	1563.362

#Comparaison of SMBKC for 2 version of GMACS.

Table 4: Changes in management quantities for each scenario considered. Reported management quantities are derived from maximum likelihood estimates.

Model	MMB	B35	F35	FOFL	OFL	Status	M	Av_Recr
Last_Assessment	1144.575	3298.391	0.18	0.048	49.323	0.347	0.180	82.973
Latest_Version	1144.575	3298.391	0.18	0.048	49.323	0.347	0.196	82.973

#Comparaison of SNOW_M_time_varying for 2 version of GMACS.

Table 5: Changes in management quantities for each scenario considered. Reported management quantities are derived from maximum likelihood estimates.

Model	MMB	B35	F35	FOFL	OFL	Status	M	Av_Recr
Last_Assessment	25.528	135.317	2.309	0.566	11.226	0.189	0.356	189.522
Latest_Version	25.607	135.553	2.345	0.574	11.341	0.189	0.438	306.285

A. Aleutian Islands Golden King Crab (AIGKC; *Lithodes aequispinus*) Stock Assessments

west of 174° W longitude (WAG)

Management quantities for each version

Estimated recruitment time series

Estimated recruitment length distribution

Model fit to the observed mature biomass

Model fits to catch data (catch and bycatch)

Model fits to size composition data (in catch and surveys)

Model predicted fishing mortalities and selectivities for all sources of mortality

Abundances of immature and mature crab in the last year

East of 174° W longitude (EAG)

Management quantities for each version

Estimated recruitment time series

Estimated recruitment length distribution

Model fit to the observed mature biomass

Model fits to catch data (catch and bycatch)

Model fits to size composition data (in catch and surveys)

Model predicted fishing mortalities and selectivities for all sources of mortality

Abundances of immature and mature crab in the last year

B. Saint Matthew Island Blue King Crab (SMBKC; *Paralithodes platypus*) Stock Assessment

Management quantities for each version

Estimated recruitment time series

Estimated recruitment length distribution

Model fit to the observed mature biomass

Model fits to catch data (catch and bycatch)

Model fits to size composition data (in catch and surveys)

Model predicted fishing mortalities and selectivities for all sources of mortality

Abundances of immature and mature crab in the last year

C. Bristol Bay Red King Crab (BBRKC; *Paralithodes camtschaticus*) Stock Assessment

Management quantities for each version

Estimated recruitment time series

Estimated recruitment length distribution

Model fit to the observed mature biomass

Model fits to catch data (catch and bycatch)

Model fits to size composition data (in catch and surveys)

Model predicted fishing mortalities and selectivities for all sources of mortality

Abundances of immature and mature crab in the last year

D. Snow crab (*Chionoecetes opilio*) Stock Assessment

Management quantities for each version

Estimated recruitment time series

Estimated recruitment length distribution

Model fit to the observed mature biomass

Model fits to catch data (catch and bycatch)

Model fits to size composition data (in catch and surveys)

Model predicted fishing mortalities and selectivities for all sources of mortality

Abundances of immature and mature crab in the last year

E. Tanner Crab (*Chionoecetes bairdi*)

Management quantities for each version

Estimated recruitment time series

Estimated recruitment length distribution

Model fit to the observed mature biomass

Model fits to catch data (catch and bycatch)

Model fits to size composition data (in catch and surveys)

Model predicted fishing mortalities and selectivities for all sources of mortality

Abundances of immature and mature crab in the last year

F. Norton Sound Red King Crab Stock Assessment (*Paralithodes camtschaticus*)

Management quantities for each version

Estimated recruitment time series

Estimated recruitment length distribution

Model fit to the observed mature biomass

Model fits to catch data (catch and bycatch)

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