Description and layout of KPFM2 input files. Please see Watters et al. 2013 for details.

Contact: Emily Klein (Emily.klein04@gmail.com)

SETUP									
N.SSMU	N.Bathtub	N.season	Timeseries.Yrs	Krill.Rage	Init.Season	Base.Fishing.Option			
15	3	2	38	2	1	3			
SSMU.INFO									
SSMU	SSMU	Area.(m2)	Historical.Catch(g)						
1	APPA	4.22E+11	2.54E+10						
2	APW	3.51E+10	7.4E+09						
3	APDPW	1.51E+10	2.28E+11						
4	APDPE	1.56E+10	1.03E+11						
5	APBSW	2.1E+10	1.15E+10						
6	APBSE	2.74E+10	5.95E+09						
7	APEI	3.53E+10	9.49E+10						
8	APE	5.87E+10	25000000						
9	SOPA	8.09E+11	6.25E+09						
10	SOW	1.56E+10	2.17E+11						
11	SONE	1.03E+10	1.59E+10						
12	SOSE	1.5E+10	1.95E+10						
13	SGPA	9.20E+11	7.82E+09						
14	SGW	4.21E+10	3.14E+10						
15	SGE	5.37E+10	2.09E+11						
16	BT1	1.88E+12	NA						
17	BT2	7.80E+11	NA						
18	BT3	5.24E+11	NA						

Initial model setup information:
Number of SSMUs
Number of "bathtubs" (sources for krill outside model arena)
Years in the initiating time series
Krill age at recruitment
Initial season (summer = 1)
Base fishing option

Spatial data information: Delineation of spatial areas (in this case, small-scale management units, SSMUs), with their size and historical catch.

WHALES									
		Rage	init.type	init.value	Jphi	M	Mswitch	Mprop	Ralpha
SSMU	SSMU	NA	NA	NA	NA	1	1	1	1
1	APPA	5	N	2680	NA	0.035	0	0	0.1077
2	APW							NA	NA
3	APDPW							NA	NA
4	APDPE							NA	NA
5	APBSW							NA	NA
6	APBSE							NA	NA
7	APEI							NA	NA
8	APE							NA	NA
9	SOPA	6	N	2970	NA	0.0289	0	0	0.1032
10	SOW	6	N	0	NA	NA	NA	NA	NA
11	SONE	6	N	0	NA	NA	NA	NA	NA
12	SOSE	6	N	0	NA	NA	NA	NA	NA
13	SGPA	6	N	0	NA	NA	NA	NA	NA
14	SGW	6	N	0	NA	NA	NA	NA	NA
15	SGE	6	N	0	NA	NA	NA	NA	NA
SEALS									
		Rage	init.type	init.value	Jphi	M	Mswitch	Mprop	Ralpha
SSMU	SSMU								
1	APPA								
2	APW								
3	APDPW								
4	APDPE								
5	APBSW								
6	APBSE								

Input data for predators:
Parameters for each predator, including initial conditions, recruitment, mortality, consumption etc. Predator groups are Whales, Seals, Penguins, and Fish (in that order). As this is for example purposes only, not all columns for predator parameters or all predator groups are shown.

7	APEI								
8	APE								
KRILL									
		wbar	init.density	M0	Ralpha	Rbeta	Rphi	M0	Ralpha
Area	SSMU	NA	NA	1	1	1	1	2	2
1	APPA	0.46	39.2	0	1.73E+12	1000	1	0	0
2	APW	0.46	272	0	2.07E+13	1000	1	0	0
3	APDPW	0.46	272	0	1.45E+13	1000	1	0	0
4	APDPE	0.46					1	0	0
5	APBSW	0.46					1	0	0
6	APBSE	0.46					1	0	0
7	APEI	0.46					1	0	0
8	APE	0.46					1	0	0
9	SOPA	0.46					1	0	0
10	SOW	0.46	638.84	0	3.51E+13	1000	1	0	0
11	SONE	0.46	638.84	0	2.30E+13	1000	1	0	0
12	SOSE	0.46	638.84	0	3.08E+13	1000	1	0	0
13	SGPA	0.46	62.94	0	7.66E+09	1000	1	0	0
14	SGW	0.46	67.68	0	4.5E+09	1000	1	0	0
15	SGE	0.46	67.68	0	2.1E+09	1000	1	0	0
16	BT1	0.46	NA	NA	NA	NA	NA	NA	NA
17	BT2	0.46	NA	NA	NA	NA	NA	NA	NA
18	BT2	0.46	NA	NA	NA	NA	NA	NA	NA
CATCH.SETUP									
Year	Season	SSMU.1	SSMU.2	SSMU.3	SSMU.4	SSMU.5	SSMU.6	SSMU.7	SSMU.8
1	1								
1	2								

Input data for krill:
Parameters for krill on initial conditions, recruitment, mortality, etc. *As above, not all columns for krill parameters are shown.*

Catch setup: Spatial and season distribution of catch by SSMU

FISHING.OPTION5.SETUP								
Option5.Areas	Monitored.Spp.	Monitoring.Season	N.Points	Density.dist	Obs.Multiplier	Obs.SD		
1	NA	NA	NA	runif(n=100,min=5,max=45)	NA	NA		
2	NA	NA	NA	runif(n=100,min=5,max=45)	NA	NA		
3	pengs	1	10	runif(n=100,min=5,max=45)	1	0.01		
4	NA	NA	NA	runif(n=100,min=5,max=45)	NA	NA		
5	NA	NA	NA	runif(n=100,min=5,max=45)	NA	NA		
6	NA	NA	NA	runif(n=100,min=5,max=45)	NA	NA		
7	NA	NA	NA	runif(n=100,min=5,max=45)	NA	NA		
8	NA	NA	NA	runif(n=100,min=5,max=45)	NA	NA		
9	NA	NA	NA	runif(n=100,min=5,max=45)	NA	NA		
10	pengs	1	10	runif(n=100,min=5,max=45)	1			
11	NA	NA	NA	runif(n=100,min=5,max=45)	NA	NA		
12	NA	NA	NA	runif(n=100,min=5,max=45)	NA	NA		
13	NA	NA	NA	runif(n=100,min=5,max=45)	NA	NA		
14	pengs	1	10	runif(n=100,min=5,max=45)	1			
15	NA	NA	NA	runif(n=100,min=5,max=45)	NA	NA		
16	NA	NA	NA	runif(n=100,min=5,max=45)	NA	NA		
17	NA	NA	NA	runif(n=100,min=5,max=45)	NA	NA		
18	NA	NA	NA	runif(n=100,min=5,max=45)	NA	NA		
	NA	NA	NA	runif(n=100,min=5,max=45)	NA	NA		
THESHOLD.DENSITY								
SSMU.1	SSMU.2	SSMU.3	SSMU.4	SSMU.5				SSMU.9
0	0	0	0				0	0
AVAILABLE.FRACTION								
SSMU.1	SSMU.2	SSMU.3	SSMU.4				SSMU.8	SSMU.9

Information on fishing under options that require monitoring and observations (i.e. catch depends on changes in predators). *These have not been previously been employed in published research*

Threshold density: Level of krill below which the krill fishery suspends operations for the season in that area. *Not all rows shown.*

Available fraction: Proportion of krill available to predators in each spatial area (SSMU). *Not all rows shown.*

0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95

VMATRIX										
Name	SSMU.1	SSMU.2	SSMU.3	SSMU.4	SSMU.5	SSMU.6	SSMU.7	SSMU.8	SSMU.9	SSMU.10
Season	1	1	1	1	1	1	1	1	1	1
SSMU.1	0	0.0386	0.0091	0.0015	0.0091	0.0152	0.0137	0	0.3117	0.0061
SSMU.2	0.077	0	0	0	0.0187	0	0	0	0.3254	0
SSMU.3	0	0	0	0	0	0	0	0	0	0
SSMU.4	0	0						0	0	0
SSMU.5	0	0.0328						0	0.0328	0
SSMU.6	0.0235	0						0	0.0235	0
SSMU.7	0	0						0	0.2603	0
SSMU.8	0.0861	0						0	0.1803	0.0314
SSMU.9	0.0046	0						0	0	0.0018
SSMU.10	0	0						0	2.9957	0
SSMU.11	0	0	0	0	0	0	0	0	2.7726	0
SSMU.12	0	0	0	0	0	0	0	0	1.6582	0
SSMU.13	0	0	0	0	0	0	0	0	0	0
SSMU.14	0	0	0	0	0	0	0	0	0	0
SSMU.15	0	0	0	0	0	0	0	0	0	0
BT.1	0.1287	0.005	0.0028	0.0032	0.0007	0.0025	0.0075	0	0.015	0
BT.2	0	0	0	0	0	0	0	0	0.0022	0
BT.3	0.1363	0	0	0	0	0	0.0082	0.0555	0.3504	0.0113

Movement matrix: Defines krill movement across spatial units (SSMUs)

COMPETITION.MATRIX										
	Seals	Pengs	Whales	Fish	Fishery					
SSMU.1	1	1	1	1	1					
SSMU.2	1	1	1	1	1					
SSMU.3	1	1	1	1	1					
SSMU.4	1	1	1	1	1					
SSMU.5	1	1	1	1	1					
SSMU.6	1	1	1	1	1					
SSMU.7	1	1	1	1	1					
SSMU.8	1	1	1	1	1					
SSMU.9	1	1	1	1	1					
SSMU.10	1	1	1	1	1					
SSMU.11	1	1	1	1	1					
SSMU.12	1	1	1	1	1					
SSMU.13	1	1	1	1	1					
SSMU.14	1	1	1	1	1					
SSMU.15	1	1	1	1	1					
BT1	1	1	1	1	1					
BT2	1	1	1	1	1					
BT3	1	1	1	1	1					
TIMESERIES										
Year	Season	Tub1	Tub2	Tub3	Env.anomoly	Fill down as required				
1										
1										
2										
2										

Competition matrix: Denotes relative competition among predators and with fishery. Currently, all are equal competitors for krill (1). *This has not been altered in any published research thus far.*

Time series to drive conditions based on environment and those in the bathtubs as needed. Also use to initiate model for calibration